UNIVERSITY OF SOUTHAMPTON

FACULTY OF SOCIAL AND HUMAN SCIENCES

School of Psychology

Towards Understanding the Onset of Preadolescent Binge Eating: the Role of Attachment to Mother, Relationship with Primary School Teacher and Self-Esteem

by

Sophie Rebecca Bailey

Thesis for the degree of Doctor of Educational Psychology

June 2014

UNIVERSITY OF SOUTHAMPTON

ABSTRACT

FACULTY OF SOCIAL AND HUMAN SCIENCES

Doctorate in Educational Psychology

Thesis for the degree of Doctor of Educational Psychology

TOWARDS UNDERSTANDING THE ONSET OF PREADOLESCENT BINGE EATING: THE ROLE OF ATTACHMENT TO MOTHER, RELATIONSHIP WITH PRIMARY SCHOOL TEACHER AND SELF-ESTEEM.

Sophie Rebecca Bailey

Binge eating has been found to be evident in children as young as six years old. A range of negative outcomes have been associated with binge eating yet few predictors have been identified in longitudinal studies. It is important to better understand why children might engage in this behaviour. The present study utilizes the Interpersonal vulnerability model of binge eating as a frame for studying the risk factors for binge eating in children. This model proposes that insecure attachment to parents predisposes to low self-esteem, high social self-concern and poor self-regulation, which in turn could lead to binge eating to compensate for these negative experiences and feelings. The present study also examined whether teacher relationships could play a protective role due to children spending large amounts of time with their teacher during the day. Eight to 11 year olds (N=66) completed self-report questionnaires on binge eating, attachment security to mothers, self-esteem and teacher relationship quality. Attachment security to mothers nor teacher relationships or self-esteem predicted binge eating. However, a number of additional important associations were found. Self-esteem and attachment security to mothers were related. Teacher conflict, but not teacher closeness, appeared to play a negative role in the association between self-esteem and attachment to mothers. Findings are discussed in terms of their implications.

Table of Contents

List of tables

Chapter 2.

List of figures

DECLARATION OF AUTHORSHIP

I, SOPHIE REBECCA BAILEY declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

Towards Understanding the Onset of Preadolescent Binge Eating: the Role of Attachment to Mother, Relationship with Primary School Teacher and Self-Esteem

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. None of this work has been published before submission.

Signed:.....

Date:.....

Acknowledgements

I would like to express my thanks to my thesis supervisor, Dr Jana Kreppner for her support, advice and guidance over the past two years and her understanding and patience with me. My thanks also goes to Tim Cooke, Colin Woodcock, Simon Burnham and Sarah Wright for their amazing dedication to us over our three years training and for always being a listening ear when I needed to offload. They helped get me through my course.

I would also like to send my warmest thanks to the schools that participated in my study and provided me with valuable access to their students which made this research possible. They were so welcoming and helpful during my data collection and opened their doors widely for me which I will always be grateful for.

My final thanks goes to the wonderful friends I made on the course who I have laughed, cried and celebrated with over the last three years. They are some of the best friends that I have ever had and their help, support and understanding helped me cope with the pressures that accompany a doctorate. Thanks to the friends that have been patient with me for not being around much over the past few years and I owe them many nights and days out to make up for my absence. My parents and family have stood by me through thick and thin and I truly could not have done this without them. Thank you for the belief you had in me and for always pushing me to strive further, you were right. Finally, thank you to my wonderful boyfriend who came into my life during the course and has taken it all in his stride and has been my rock this last year and a half, I could not have asked for a more special person to be there for me.

Definitions and Abbreviations

α	Cronbach's Alpha
ANOVA	Analysis Of Variance
APA	American Psychiatric Association
AS	Attachment Security Scale (Kerns, Klepac & Cole, 1999)
B	B-value from linear regression
β	Standardised coefficient of Beta
BED	Binge Eating Disorder
BMI	Body Mass Index
BN	Bulimia Nervosa
CBCL	Children's Behaviour Checklist **(**Achenbach & Edelbrock, 1991)
CDI	Children's Depression Inventory (Kovacs, 1995)
ChEDE(Q)	Children's Eating Disorder Examination (Fairburn & Cooper, 1993)
CI	Confidence Intervals
D	Statistic from KS test
DEBQ	Dutch Eating Behaviour Questionnaire
df	Degrees of freedom
DM	Diabetes Mellitus
DSM-5	Diagnostic Statistical Manual. Version 5
ExpB	Label for Odds Ratio
F	F statistic from ANOVA
FSM	Free School Meals
GUTS	Growing Up Today Study
KS	Kolmogorov-Smirnov test

KS2	Key Stage 2
LOC	Loss of Control
M	Mean
MS	Mean Square
MZ twins	Monozygotic Twins
Ns	Non-significant result
OBE	Objective Binge Eating
OO	Objective Overeating
OR	Odd's Ratio
p	significance value
Project EAT	Project Eating Among Teens
QEWP	Questionnaire of Eating and Weight Patterns
RFI	Oxford Risk Factor Interview
SBE	Subjective Binge Eating
SD	Standard Deviation
SE B	Standard error of B
SEN	Special Educational Needs
SES	Socio Economic Status
SPPC	Self-Perception Profile for Children (Harter, 2012)
SS	Sum of Squares
STRS	Student-Teacher Relationship Scale (Pianta, 1992)
t	Statistic from T-test
χ^2	Chi-Square statistic

z	z-score

Towards Understanding the Onset of Preadolescent Binge Eating: the Role of Attachment to Mother, Relationship with Primary School Teacher and Self-Esteem

This thesis investigates the role of attachment relationships to parents in relation to binge eating behaviours in children and young people. Chapter one reviews the existing literature base on the role of parenting and attachment relationships for binge eating behaviours in children and young people. Through a systematic literature search, the review highlights the key findings from the papers examined as well as raising some key methodological issues in the existing literature on this topic. Future directions for research are highlighted. The empirical paper in chapter two examines the role of attachment to mothers, relationships with primary school teachers and self-esteem on binge eating in pre-adolescent children based on the Interpersonal vulnerability model of binge eating. This chapter discusses the findings of this research in terms of the existing literature base and the implications on professional practice as well as the limitations of the study and future ideas for research in this area.

Chapter 1: **Investigating the Role of Parent-Child Attachment in Binge Eating in Children and Young People: A Systematic Review.**

This systematic review examines the role of attachment relationships with parents in relation to the onset of binge eating in young people. Binge eating will be defined and the associated outcomes of engaging in this behaviour will be discussed. Second, a theoretical framework of binge eating will be presented; the Interpersonal vulnerability model of binge eating. Third, predictors of binge eating are then examined to illustrate the complexity in the etiology around this behaviour. Finally, the main focus of the review will be on the role of the parents in their many ways of influence as role models and educators to their children and the attachments they form with their children in relation to the emergence and course of binge eating.

Binge Eating

Binge eating is described as "eating, in a discrete period of time, an amount of food that is definitely larger than most people would eat in a similar time period under similar circumstances", accompanied by loss of control which is "the inability to refrain from eating or to stop eating once started" (p.350-351, DSM-5 definition, APA, 2013). The DSM-5 classifies Binge Eating Disorder (BED) as an eating disorder where someone engages in recurrent binge eating episodes while experiencing marked distress and negative feelings following the event at least once a week for three months on average (APA, 2013). The difference between BED and Bulimia Nervosa (BN) is that people with BED do not engage in compensatory behaviours (for example,

vomiting, using laxatives or exercise) after binging to ensure weight gain does not occur. This does happen in the course of BN. -

Nangle, Johnson, Carr-Nangle and Engler (1994) separated binge eating into three basic elements: the amount of food consumed, the time period during which the food was consumed and the perception of control the individual has when consuming the food. According to their study, the key element to binge eating was the experience of Loss of Control (LOC) over eating. This has also been emphasised by researchers examining child populations whereby the experience of LOC appears more salient than the actual amount of food eaten due to the associated negative emotions that appear to accompany LOC over eating (Marcus & Kalarchin, 2003; Tanofsky-Kraff, Marcus, Yanovski & Yanovski, 2008).

Varying prevalence rates of binge eating are reported in the literature. This may be due to studies employing different definitions of binge eating. Some researchers define binge eating as experiencing at least one LOC episode in the past. Others divide binge eating into two categories: Subjective Binge Eating (SBE, “a sense of LOC accompanied by eating a large amount of food according to the subject, but that other people would not quantify as unambiguously large”, p.448, Gossens, Braet, Van Durme, Decaluwé & Bosmans, 2012) and Objective Binge Eating (OBE, “sense of LOC accompanied by eating a large amount of food that other people would also qualify as large”, p.448, Gossens et al., 2012). Accordingly, it is important to bear in mind the different measurements of binge eating when examining prevalence rates of the behaviour.

Children as young as six have been reported to engage in binge eating. For example, Shomaker et al. (2010) interviewed 367 children aged six to 17

years old about whether they had experienced LOC eating. 12.5% of the sample reported they had at least one OBE episode in the past, whilst 11.4% reported at least one SBE episode in the past. Whilst, Elliott et al. (2010) reported a higher proportion of youngsters (28.31%) aged between eight and 17 had engaged in at least one LOC episode a month prior to the study. In both studies girls engaged in this behaviour significantly more than boys. Finally, Allen, Byrne, Puma, McLean and Dains (2008) found a comparatively small rate of binge eating in their sample of 259 youngsters aged between eight and 13, only 4.2% reported OBE and 5% reported SBE. All studies used the Children's Eating Disorder Examination (ChEDE, Fairburn & Cooper, 1993) to measure binge eating which suggests that these different rates may be more related to the age ranges studied and the timing of the previous binge eating episode compared to the construct of binge eating measured in the studies.

Children, who are overweight with a Body Mass Index (BMI) of over 25, appeared to be at higher risk of binge eating over the course of their childhood. Rates for binge eating in the literature in the overweight child population varied from 29.5% to 36.5% (Decaluwé, Braet & Fairburn, 2002; Morgan et al., 2002; Tanofsky-Kraff, Faden, Yanovski, Wilfley & Yanovski, 2005). Other research has also found that children who were overweight or obese were significantly more likely to binge eat (Allen et al., 2008; Elliott et al., 2010; Lamerz et al., 2005; Tanofsky-Kraff et al., 2004).

Other associated features that have been implicated with the onset of binge eating include: heritable links (Bulik, Sullivan & Kendler, 2003; Klump, Burt, McGue & Iacono, 2007) , early pubertal development (Keel, Fulkerson & Leon, 1997; Striegel-Moore, 1995), peer influences (Paxton, Schutz, Wertheim & Muir, 1999), dieting (Allen et al., 2008; Field et al., 2003; Rome et al., 2003),

shape concerns (Hilbert, Hartmann, Czaja & Schoebi, 2013), depression (Hilbert et al., 2013) and stress (Striegel-Moore et al., 2007).

A range of associated risks have been identified in children who engage in binge eating. Firstly, longitudinal studies suggest that binge eating can place children at risk of later obesity (Field et al., 2003; Stice, Presnell & Spangler, 2002; Tanofsky-Kraff et al., 2009). Presumably the additional amount of calories the child ingests during binge eating episodes increases vulnerability to obesity (Field et al., 2003; Stice et al., 2002). This highlights that obesity may be an outcome and a precipitating factor in relation to binge eating. Secondly, binge eating in children has been associated with increased eating disordered attitudes and concerns over body image, including overall eating attitudes, body dissatisfaction and weight concerns, compared to those who do not (Goldschmidt et al., 2008; Gossens, Braet & Decaluwé, 2007; Morgan et al., 2002; Shomaker et al., 2010; Tanofsky-Kraff et al., 2004). Thirdly, depression, anxiety and self-esteem have been linked with binge eating. Higher levels of reported depression and anxiety and lower levels of self-esteem have been found in children and adolescents engaging in binge eating compared to those who do not (Elliott et al., 2010; Gossens, Braet, Vlierberghe & Mels, 2009; Tanofsky-Kraff, Marcus, Yanovski & Yanovski, 2008) Finally, social and behavioural problems, measured by the Children's Behaviour Checklist (CBCL, Achenbach & Edelbrock, 1991), also appeared to be associated with binge eating in children, with children who binge eat obtaining higher scores on social and overall behaviour problems. This indicated social and overall behaviour problems were higher in children who binge eat compared to those who did not (Elliott et al., 2010; Morgan et al., 2002).

From the evidence presented above, binge eating appears to be associated with a range of negative risks: obesity, concerns over body image, depression, anxiety, self-esteem and behaviour problems. One of the major limitations of the work on the factors that are associated with binge eating in children is that the majority of research is carried out concurrently. A second limitation is that there is a lack of empirical research that allows for the exploration of causal influences of the variables. In spite of this, it appears that binge eating is associated with a number of negative behaviours and cognitions.

The Interpersonal Vulnerability Pathway of Binge Eating

Wilfley, Pike and Striegel-Moore (1997) proposed an integrated model of binge eating disorder. They examined the restraint model and the interpersonal vulnerability model to examine the risk factors that can lead to the onset and maintenance of BED. The restraint model suggests that binge eating occurs due to "excessive dietary restraint" (p.7). The model proposes that the social expectations of thinness in society and the internalisation of these ideals can lead to body dissatisfaction and dieting as a result. The onset of binge eating is posited to start from the resulting dietary restraint experienced. Wilfley, Pike and Striegel-Moore (1997) examine the research on dietary restraint and eating disorders and discuss that this model is commonly used to explain the etiology of eating disorders due to the high proportions of people with AN or BN who report dieting prior to the onset of their disorder. However, they found lower rates of dieting behaviours preceding binge eating in the literature which suggests that dieting cannot solely explain the etiology of binge eating. As a result Wilfley, Pike and Striegel-Moore (1997) examined the interpersonal vulnerability model to examine another pathway for the risk

factors that can lead to the onset of binge eating disorder. This model proposed that inadequate parenting or caregiving can play a risk factor for binge eating due to the associated difficulties with social relationships and sense of self that develops as a result of insecure attachment styles and exposure to poor parenting. Binge eating is suggested to begin as a way of dealing with these negative experiences and feelings.

Wilfley, Pike and Striegel-Moore (1997) discuss how these two models can complement each other to support an explanation as to the etiology of binge eating, for example, they discuss how interpersonal events in an individual's life can increase the risk of developing low self-esteem and high social concerns about the self which then can leave one vulnerable to binge eating as explained by the restraint model whereby social pressures might lead to the behaviour. For the purpose of this review, the interpersonal vulnerability model was examined to explore risk factors of parenting and attachment in relation to the onset of binge eating and is now discussed in more detail.

The interpersonal vulnerability model of binge eating outlined in Wilfley, Pike and Striegel-Moore's (1997) paper discussed the risk factors of early life events and parenting in terms of binge eating. Negative early life experiences, such as trauma or abuse, are associated with the formation of insecure attachments to caregivers (Bowlby, 1980). Those with insecure attachment styles appear to be at a higher risk of having difficulties in social relationships (Bowlby, 1980; Groh et al., 2014). According to the model, this in turn, is associated with the development of an inadequate sense of self and concerns about the social self. This argument is rooted in the notion from researchers that an "individual's self-image is constructed on the basis of interpersonal experience" (p.16, Wilfley et al., 1997). Ineffective self-regulation strategies of

trying to cope with negative experiences and emotions as a result of poor social relationships, low self-worth and high social self concerns appear were suggested to place an individual at risk of binge eating with the person trying to 'fill the void left' from inadequate attachments with food . Lacey (1986, as cited in Waller & Osman, 1998) suggested that binging appeared to follow negative affect as a way of reducing awareness of these unpleasant emotions (see Figure One)

Figure 1. *Interpersonal Vulnerability Model of Binge Eating from Wilfley, Pike and Striegel-Moore (1997).*

The Interpersonal vulnerability model of binge eating provides a conceptual explanation of some of the risk factors for the onset of binge eating. However,

the model can appear vague and difficult to measure. The issue with finding specific conceptual explanations in the literature to establish the link between low self-esteem and binge eating and the lack of description over the process of 'filling the void' means that this concept is difficult to operationalise for measurement. This makes it hard to concretely understand some of the mechanisms that could lead to increased risks of binge eating which is a limitation of the proposed model.

Wilfley et al. (1997) state that the interpersonal vulnerability model of binge eating needs to be further empirically tested to explore the assertions further. This could also help build up specific formulations about the psychological processes that underpin this association to gain a better understanding of the proposed mechanisms. Another limitation of this model is that it is often based on adult populations and generally examines BED subjects or applies research from other eating disorders to make its assertions and does not examine general binge eating behaviour. However, this model provides a theoretical framework which highlights the importance of parent relationships, specifically attachment relationships, in relation to the risks of binge eating in children and young people.

Attachment Relationships to Parents and the Role of Binge Eating

Attachment can be described as "the emotional bond between an infant and a caregiver" (p.84, Woolfolk, Hughes & Walkup, 2008). Bowlby argued that secure attachment is an important base for later relationships and mental health (as cited in Woolfolk et al., 2008).

There is much literature on attachment styles and their association with general eating disorders (for example, see Ward, Ramsay & Treasure, 2000

review on attachment and eating disorders) which highlights the importance of attachment to parents and later eating pathology.

Attachment relationships have been theoretically linked to play a role in the onset of binge eating as described in the Interpersonal vulnerability model of binge eating. However, there is limited research on attachment and binge eating in general. In adult populations, attachment relationships were found to play a role in the onset of binge eating. Pace, Cacioppo and Schimmenti (2012) found that 18 to 20 year old females who had less secure relationships with their fathers were more likely to binge eat. The key association was around perceived fathers' care towards their child (i.e. showing parental affection, warmth and empathy) rather than overprotection from the father. They also found that the impact of binge eating symptoms were lessened when father care was perceived to be high. This suggests that attachment to fathers play a role in binge eating in adults.

Due to the limited literature on specific effects of parent-child attachment relationships on binge eating, the present literature review extended its focus to include examination of a broader set of parenting behaviours, which in turn could affect the quality of the attachment relationship between the parents and child, and associations with children's binge eating. This review will include the following constructs that will reflect influences of parents: a sense of family bonding, the way the family function as a unit at meal time, critical comments about weight towards children and ineffective parenting behaviours. These were examined in relation to binge eating as well as examining the role that attachment to parents can have with binge eating in children. The aim of the present review is to examine the role of parenting and attachment to parents on binge eating behaviours in children and young people.

Method

The systematic search for this literature review was based on two journal databases; Psycinfo via EBSCO host and Web of Knowledge. The search terms included a range of words related to binge eating, attachment, parenting and childhood (see Appendix A for more details) to elicit papers specifically related to this area of research. Filters were applied to ensure only peer reviewed journals were included in the search as well as papers written in English. Strict exclusion criteria were applied to the papers retrieved to ensure a focused systematic search (see Appendix B for list of exclusion criteria). The final papers needed to be specifically related to parental influences on binge eating behaviours in children and young people and therefore a large number of papers were excluded from the review, mainly due to the fact that many did not focus specifically enough on these variables. From this systematic search, 18 publications in journals were retrieved (see Appendix C for flow diagram and Appendix D for summary table of references). The following review examines each of 18 papers in terms of their methods, results and strengths and limitations.

Findings

The systematic search identified two main topic areas for discussion: (i) the way the family and parent environment around the home impacted on a child's risk of binge eating, for example family meal environment and sense of family bond and (ii) more direct parenting influences, for example, family weight-related teasing, inadequate parenting and attachment difficulties, which played a role in binge eating in children. Each section will be examined separately and will be further broken down into specific constructs around family and parental effects.

Family Effects

Family Bonds

Two papers discussed variables examining binge eating in the context of the bond, or sense of connectedness, children share with their family and parents. Neumark-Sztainer et al. (1996) examined the role of family connectedness which was defined as "the degree of integration adolescents feel towards their families" (p.291). They assessed this construct with a six-item measure which had a Cronbach's Alpha of 0.87 indicating good internal reliability for the measure. Wertheim et al. (1992) used the Family Adaptability and Cohesion Evaluation III (Olsen et al., 1986) to assess family cohesion (or the degree of emotional bonding with family members) and family adaptability (or the degree to which family systems can change), as well as the Parental Bonding Instrument (Parker, Tupling & Browning, 1979) which assessed perceptions of caring and overprotection from mothers and fathers.

Neumark-Sztainer et al. (1996) examined psychosocial predictors of binge eating in adolescents with and without Diabetes Mellitus (DM). Their sample was drawn from the Minnesota Adolescent Health Survey which consisted of 36,284 students from grades seven to 12. From this large sample, 158 females and 152 males reported to have DM. A comparison group of 409 females and 441 males without DM were randomly selected from the larger sample and were matched on a 3:1 ratio with the DM group via Socio-Economic Status (SES). The sample was predominately white (82%) and middle class (52%) although there were slightly higher rates of ethnic minorities in the DM group. Accordingly, the study controlled for ethnic background. The participants completed self-report questionnaires at one time point. In addition to the

assessment of disordered eating behaviours, which included binge eating and purging, weight dissatisfaction, weight perception, concern with body development, emotional well-being and family connectedness were also examined. Binge eating was assessed by asking "Have you ever eaten so much food in a short period of time that you felt out-of-control and would be embarrassed if others saw you?" with a 'yes'/'no' response required.

Neumark-Sztainer et al. (1996) found that adolescents with DM had significantly higher rates of binge eating through chi-square analyses ($p<.05$ for females with DM, $p<.01$ for males with DM). Family connectedness did not significantly contribute to a regression model examining binge eating with either the DM or no DM group. Importantly, this paper did not find that a sense of family connectedness was related to binge eating in either group.

Wertheim et al. (1992) examined psychosocial predictors of binge eating and weight loss behaviours in adolescents from Australia. Their sample consisted of 606 female and 315 male high school students from a range of private, public and co-educational public schools. Binge eating was assessed with the Eating Disorders Inventory (Garner, Olmstead & Polivy, 1983), the Bulimia subscale and one item from the Bulimia Test (Smith & Thelen, 1984). The other variables assessed in this study were family adaptability and cohesion, parental bonding, BMI, body dissatisfaction, body image, advantages of thinness scale, dieting and extreme weight loss behaviours through questionnaires designed for the study.

Principal Components Analyses (PCA) were run to reduce the number of variables used in analyses. For females, four factors were generated from the predictor variables which accounted for 58.7% of the variance, these were; desire to be thinner, family cohesion/adaptability and general satisfaction,

parental overprotection and low caring, and ideal and current figure. For males, six factors were generated from the predictor variables and accounted for 70.5% of the variance, these were; parental overprotection and low caring, desire to be thinner, dissatisfaction with self, ideal and current figure, adaptive and cohesive family, and advantages of fitness. Finally, the criterion variables produced two factors from the final PCA: dieting and binge eating. Following this, regression analyses examined whether the factors identified from the PCA significantly predicted binge eating. For boys, none of the six predictor variables were significant predictors for binge eating. However, all of the predictor variables (desire to be thinner, family cohesion/adaptability and general satisfaction, parental overprotection and low caring, and ideal and current figure) were significant predictors for binge eating in females. This suggested that family variables may have played a more important role in female adolescent's risk of binge eating compared to males.

From these two studies mixed results emerged as to whether family bonding and connectedness is linked with binge eating. Neumark-Sztainer et al. (1996) did not find that a sense of family connectedness predicted binge eating. In addition to this, family bonding and adaptability did not play a role in predicting binge eating in males in Wertheim et al.'s (1992) study. However, family cohesion/adaptability and general satisfaction, as well as parental overprotection and low caring predicted binge eating for females in Wertheim et al.'s (1992) study. This is in line with Wilfley et al's. (1997) discussion of gender differences within the interpersonal vulnerability model which suggests that females have a more 'internalising' style when coping with negative emotions and therefore this may place them at higher risks of binge eating in the context of less sense of belonging to the family. Neumark-Sztainer et al.

(1996) did not examine differences between female and males binge eating in relation to family connectedness so it cannot be known whether females are more vulnerable to feelings of less connectedness to their families in relation to binge eating or not in their study.

The differences in results could have been from the different constructs measured in the studies. Although, family connectedness and a sense of family cohesion and adaptability may share some similar features in terms of feeling part of a family unit, they do measure different areas of family belonging which could explain the differences in findings.

Both studies have a number of important limitations. Firstly, both rely on concurrent, self-report assessment. Accordingly, it is difficult to infer the direction of effects. Second, reliance on self-report data has a risk of being influenced by social desirability bias whereby the participant chooses answers that they feel are more socially desirable and therefore may not answer honestly due to this. Finally, both studies are dated in terms of their publication and it is difficult to generalise the results of the early and mid-1990's to the culture of the 2010's which is likely to be substantially different.

Family Meal Time Functioning

The way the family functions at meal times in relation to binge eating has also been explored in the literature. Three studies examined family meal time functioning through a naturalistic observation and two concurrent studies. Aspects of family meal time functioning were assessed differently across the studies. Czaja, Hartmann, Rief and Hilbert (2011) used six dimensions to measure family functioning during their observations of family mealtimes: task accomplishment, communication, affect management,

interpersonal involvement, behaviour control and overall family function. Neumark-Sztainer, Wall, Story and Fulkerson (2004) examined family meal patterns using questions adapted from the Family Eating Attitudes and Behaviour Scale (FEBAS, Hogen, 1988) which assessed priority of family meals, atmosphere at family meals, and structure and rules at mealtimes, parental encouragement to diet and family connectedness. Finally, Sierra-Baigrie, Lemos-Giráldez and Fonesca-Pedrero (2009) examined family meal atmosphere and family meal frequency although their paper does not include information on how this data was collected.

Czaja et al. (2011) used naturalistic observations to examine the quality of family interactions in the home environment. The sample consisted of eight to 13 year old German children and their families, with 43 children in the binge eating group and 31 children who did not binge eat. The ChEDE interview was used to assess binge eating in children. Families were video recorded during an evening family meal for coding of family functioning by a rater blind to the study's hypotheses. A second rater rated 28.4% of the videotapes and intraclass correlations were reported to be 'almost perfect' (.96<=ICC<=.97). In addition, parents reported on family functioning using the Family Assessment Device (Epstein et al., 1983). Child eating behaviour was assessed during the observations through bite speed as a behavioural indicator of binge eating. Children were asked whether they experienced LOC before and/or after dinner via self-report measures.

Data derived from the natural observation suggested that families with children who binge eat showed less healthy patterns of interpersonal involvement, less adequate communication patterns and more maladaptive overall family functioning at mealtimes compared to families with children who

did not binge eat. No significant group differences were found with parent-reported family functioning. The authors suggest these differences are in line with eating-related research which has reported that subjective and objective appraisals are often different, which could indicate that parents may not be aware of the way of how their family functions at meal times. Some caution should be exercised with regards to the observational data as families awareness of the observation taking place could have impacted on their interactional style. Still, the observational data derived from ratings suggested group differences in the ways families engaged with each other at meal times depending on binge eating status of children.

Neumark-Sztainer et al. (2004) examined family meal patterns in relation to binge eating as part of a wider epidemiological project (Project EAT) on eating patterns and weight concerns in adolescents living in Minnesota. Data was based on adolescent self-reports collected from an ethnically diverse sample of 4,746 adolescents (M= 14 years 9 months). Unhealthy weight control behaviours, binge eating with LOC and chronic dieting were measured using a questionnaire developed for Project EAT. Binge eating was assessed by the question "In the past year, have you ever eaten so much food in short period of time that you would be embarrassed if others saw you? During these times when you ate this way did you feel you couldn't stop eating or control what or how much you were eating?". In addition, adolescents completed questions adapted from the FEBAS as well as questions on maternal and paternal encouragement to diet, family connectedness, BMI, gender, ethnicity and SES.

The authors ran three sets of analyses to examine the association of family meal patterns and disordered eating; one unadjusted analyses, one analysis controlling for BMI and sociodemographics and a final analysis

controlling for familial factors. Odd's Ratios (OR) were produced from these analyses which are "the ratio of the odds of an event occurring in one group compared to another" (p.790, Field, 2009). For the unadjusted analyses, positive atmosphere at family meals was inversely associated with binge eating ($p<.002$) for adolescent females. However, the associations with family meal environments and binge eating were reported to be inconsistent for adolescent males. When adjusting for BMI and sociodemographics, more frequent family meals, high priority over family meals and positive atmosphere at family meals were protective factors for binge eating for adolescent females (OR for having family meal together five times or more a week compared to never=0.82, OR for priority of family meal=0.75 and OR for family meal atmosphere=0.68). For adolescent males, these associations were not found. Finally, when family factors (such as family connectedness), as well as BMI and sociodemographics, were controlled for, none of the family meal variables remained significant for adolescent females with regards to binge eating. However, family meal priority became a significant protective factor for adolescent males (OR=0.57, $p<0.05$).

This study suggests that positive family meal functioning, especially positive atmosphere at meal times, could act as a protective factor for binge eating in female adolescents. However, when family connectedness was controlled for, the results became non-significant for females which suggest that, in relation to binge eating, overall sense of belonging to the family might impact on the way adolescent females perceive meal times with their families. Family meal functioning did not appear to be as important for adolescent males in relation to their binge eating, however, when family connectedness was controlled for, family meal priority became a significant predictor for binge eating.

Sierra-Baigrie et al. (2009) also examined family meal patterns assessing frequency and atmosphere of family meals in relation to binge eating. A sample of 259 Spanish secondary school students aged between 12 to 21 years (58.3% males) completed the Bulimic Investigation Test Edinburgh (BITE, Henderson & Freeman, 1987) to assess bulimic symptomatology, including binge eating. 13 additional questions were designed for this study measuring binge eating. Family meal frequency was reported to be "surprisingly high" with 81.9% of adolescents reporting that they had a daily family midday meal and 78% of the same adolescents also ate a daily evening family meal together. Atmosphere was reported as 'always positive' for 81.9% of the adolescents, whilst 15.1% said it could be tense 'at times'. Unlike Neumark-Sztainer et al. (2004), this study did not find an association between binge eating and family meal atmosphere. However, it is important to consider the different composition of the two samples in terms of their frequency of family meals and atmosphere during mealtimes. Sierra-Baigrie et al. (2009) had a high rate of participants experiencing daily, positive meals with their family whilst Neumark-Sztainer et al. (2004) reported a much wider spread of results over the two variables. This could be due to cultural differences which may place different emphasis on the importance of meals together, especially as Spanish children were highly likely to eat lunch with their families whereas it is customary in America to eat lunch at school. The finding of no effect between binge eating and family meal atmosphere could also be reflective of the fact that few adolescents reported negative atmosphere at meal times which meant that the effect may have been difficult to find due to reduced numbers.

In summary, studies from America and Germany found that family meal times and the interactions during them, specifically negative interactions, frequency, atmosphere and priority, seem to play a role in binge eating

behaviours in children and adolescents using different methodologies; naturalistic observation and concurrent self-report questionnaires (Czaja et al., 2011; Neumark-Sztainer, 2004). However, Sierra-Baigrie et al.(2009) did not find that family meal environments played a significant role in binge eating in their Spanish sample which could have been related to the cultural differences and high rates of positive family meal atmosphere as previously discussed. As family meals frequency and positive atmosphere were found to be protective factors in Neumark-Sztainer et al.'s (2004) paper, it may have been that Sierra-Baigrie et al.'s (2009) sample were less vulnerable to binge eating due to high rates in both variables.

Direct Parental Influences

Parent Weight-Related Teasing

Six papers focused on parent weight-related teasing toward their offspring. Weight-related teasing or a critical comment by a parent towards their child is a behaviour that is likely to be a negative experience for those targeted. Field et al. (2008), Haines, Gilman, Rifas-Shiman, Field and Austin (2010a) and Haines, Kleinmann, Rifas-Shiman, Field and Austin (2010b) used data from the Growing Up Today Study (GUTS) with parent weight-related teasing being assessed with the question: "In the past year, how often has your mother/father made a comment about your weight or eating that made you feel bad?". Hilbert, Tuschen-Caffier and Czaja (2010) carried out an experiment to assess mealtime interactions including overt and covert signs of parental critique regarding child's size, weight or eating which was videotaped and coded using the Family Problem Solving Code (Forbes, Vuchinich & Kneedler, 2001). Olvera, Dempsey, Gonzalez and Abrahamson (2013) used the McKnight

Risk Factor Survey-IV (McKnight Investigators, 2003) to measure weight-related teasing from parents through two items including “In the past year, how often has your mother/father made a comment about your weight or your eating that made you feel bad?”. Finally, Vincent and McCabe (2000) used single items to assess encouragement, criticism and discussion about weight loss with mothers, fathers, siblings and peers.

Field et al. (2008), Haines et al. (2010 a) and Haines et al. (2010 b) used data from the GUTS study. This is a longitudinal cohort study carried out over seven years with 16,539 American children aged between nine and 15 at baseline and whose mothers were nurses. The children responded to questionnaires every 12 to 18 months and were aged 16 to 22 by the end of the study. Each paper examined different aspects of the GUTS data for their analysis. Field et al. (2008) examined family, peer and media predictors of becoming eating disordered and therefore analysed data from the participants who had not engaged in binge eating at baseline which left them with 11,088 participants. Whereas, Haines et al. (2010 a) examined family dinner and disordered eating behaviours and had 13,448 participants who did not have missing data on family dinners between 1996 and 1998. Finally, Haines et al. (2010 b) looked at shared risk and protective factors for overweight and disordered eating in adolescents and specifically looked at data collected in 1998 (N=10,540). They examined the 1998 data cross-sectionally and then examined the risks and protective factors prospectively using the data from 1998-2001 (N=7172).

The questionnaires the participants received in the GUTS covered a range of areas including disordered eating behaviours (purging, binge eating and frequent dieting), family dinner time, weight concern, dieting, importance of

thinness to parents and peers, parental weight teasing, maternal dieting and desire to look like same-sex media figures. Some of the items were taken from standardised measures such as the McKnight Risk Factor Survey whilst others were constructed for the GUTS.

Haines et al. (2010a) found that frequent family meals was associated with lower incidences of binge eating a year later, again highlighting the potential protective factor of family meal frequency as found by Neumark-Sztainer et al. (2004). However, they did not find evidence that the association between frequent family meal and binge eating was altered by any of the three parental variables that they examined: importance of adolescents' thinness to parents, frequency of parental comments to child about weight and maternal dieting behaviours. The authors suggest that this could highlight the protective status of family meal frequency which meant that parental variables did not place children and adolescents at risk of binge eating when they experienced frequent family meals. They also highlight that parenting variables could have been a mediating factor in the association between the variables, so failure to explore this is a limitation of the study.

From Haines et al's. (2010b) cross-sectional analysis they found that for females, parental weight-related teasing was directly associated with binge eating (OR=1.23) and being overweight (OR=2.05) in adolescents. Similar to Haines et al. (2010a) they found that family meal frequency was inversely related to binge eating for females (OR=0.87). For males, parental weight-related teasing was directly associated with binge eating and being overweight (OR=1.31). From their prospective analysis of over four years, parental weight-related teasing was directly associated with binge eating (OR=1.29) and being overweight (OR=1.64) for females. None of the parenting factors were

significant for the prospective analysis for adolescent male binge eating. This study found that parent weight-related teasing impacted on binge eating for females and to some extent males (when examined cross-sectionally).

Finally, Field et al. (2008) found that over the course of the study, 10.3% of females and 3% of males started to binge eat or purge at least weekly. Importance placed on weight by fathers led to an increased, albeit non-significant, risk of beginning to binge eating weekly in adolescent females (OR=1.5) whilst negative comments about weight by fathers significantly predicted the onset of weekly binge eating in adolescent males (OR=2.3). This suggested that father's criticisms and beliefs about weight played a more important role in binge eating compared to comments from mothers in the present sample and significantly more so for male participants.

Although these three studies all used the same GUTS data set, they found different effects of parent weight-related teasing and comments in relation to binge eating in children. This could have been due to the different time periods each study analysed from the GUTS data set. Haines et al. (2010a) looked at the sample from 1996-1999, Haines et al. (2010b) examined the sample from 1998-2001 and Field et al. (2008) used the whole seven years (1996-2003) of data. The difference in results could be reflective of the changes in impact of family weight-related teasing as the children grew up. From the earliest study, it appeared that family meal frequency could have been more important in relation to binge eating than weight-related teasing. During the early years of adolescence, weight-related teasing appeared more important in relation to binge eating especially for girls. Whilst over the whole time period, father's comments appeared to play a larger role for males and not for females. It should be worth noting that each study had different exclusion and inclusion

criteria which may have led to different participants being used in these studies which could have affected the results.

Hilbert et al. (2010) carried out a laboratory experiment examining eating behaviours and familial interactions with children. The children were aged between eight and 13 from Germany. There were two groups: those who engaged in binge eating (N=60) and those who never binge eat (N=60). Parents accompanied their children during the experiment. Binge eating was assessed through preliminary interviews using the ChEDE. The child and parent were required to take part in a neutral interaction task to measure baseline behaviour. The experimental condition required half the participants to engage in a negative interaction task whereas the other half engaged in another neutral interaction task. The participants were given specific topics to discuss to manipulate either negative or neutral emotions during conversations. The parent and child then ate a test meal in the laboratory. Afterwards parents left the room and the child was provided with snacks whilst playing or watching TV. Parent-child interactions were videotaped and analysed by raters blind to the groupings and had interrater reliability that was “substantial or almost perfect” (0.63<= p<=0.83). Mealtime interactions were observed with the following variables in mind: negative behaviour, variable critical comments from parents about child’s shape, weight or eating and variable restrictive parental feeding behaviours. Food intake was measured by the amount of food consumed in the two eating session, children were also asked to self-rate their sense of LOC during the experiment.

They found that parents with children who binge eat were observed to make more critical comments towards their child about their shape, weight or eating in the neutral condition compared to those who did not binge eat

(p<.05). They found that children who experienced more critical comments about their shape, weight or eating from their parents were more likely to consume more calories during snack eating rather than during the meal (β =0.21, p<.05). This supports the children's self-report data which indicated a greater sense of LOC during snack eating regardless of the mood induction exposure. Mood induction did not seem to play a role in parent interactions and binge eating. These results could have been affected by the artificial experimental set-up that the family were put under in the laboratory setting and therefore the behaviours observed may have been as a consequence of the unique setting which is a limitation of this study. However, they found that critical comments from parents were more common towards children who binge eat which led to greater calorie intake later on. This could indicate that children may turn to food following negative comments about their weight which is perpetuated due to the additional calories they consume which is likely to lead to weight gain, therefore reinforcing the comments from parents.

Olvera et al. (2013) examined ethnic minorities in their sample when they investigated weight-related teasing, emotional eating, and weight control behaviours in 114 Hispanic and African American girls aged between nine and 14. This was an overweight population who were taking part in healthy lifestyle intervention in America. They used the McKnight Risk Factor survey to assess weight-related teasing by parents and peers, emotional eating and weight control behaviours. Binge eating was assessed by the two items "kept eating and eating and felt like could not stop" and "ate a lot of food in a short amount of time when it was not a meal or a holiday".

They found that 40% of their sample reported that their parents had teased them about their weight. They also found that parent weight-related teasing

(β=0.28, p<.01) was related to binge eating whereas peer teasing was not (β=0.1, p=.24). Although the generalizability of these results is limited, they do examine binge eating amongst ethnic minorities which are usually underrepresented in this field. This study suggests that parent weight-related teasing is more detrimental compared to peer weight-related teasing for overweight ethnic minority girls which highlights the potential damaging effect that exposure to criticism from parents can have.

Finally, Vincent and McCabe (2000) recruited participants from Australian secondary schools aged between 11 and 18 (306 girls, 297 boys). The variables measured included normative and extreme weight loss behaviours, binge eating, quality of relationships, sibling and peer relationships and direct and indirect influences of family and peers (modelling, encouragement, criticism and discussion about weight loss with parents, siblings and friends). Binge eating was assessed using the Bulimia Test-Revised (Thelen, Farmer, Wonderlich & Smith, 1991).

Boys were more likely to receive negative commentary about their body weight and shape from peers and experience more parental overprotection. In terms of binge eating, all IVs entered into a regression model, including body dissatisfaction, encouragement to lose weight by family and friends, family and peer modelling weight loss behaviours, family and peer negative commentary about body and parent care and overprotection, significantly predicted binge eating in girls and accounted to 37% of the variance (F(27,270)=5.76, p<.001). Discussion about weight loss with peers was a unique predictor for the model. For boys, only familial and peer variables, as mentioned above, predicted binge eating (F(27,255)=2.18, p<.001). Peer encouragement to lose weight was a unique predictor for the model which only accounted for 19% of the variance.

This model represented only a small proportion of the variance accounted by the variables discussed. However, these models indicated that parenting variables played a role in predicting binge eating in the sample including the criticism that they face from parents over their weight however peers seemed to have played a more unique role.

Five of the six papers relied on self-report accounts of binge eating (Haines et al., 2010a; Haines et al. 2010b; Field et al., 2008; Olvera et al., 2013; Vincent & McCabe, 2000) whilst one paper used interview methods to establish the presence of binge eating (Hilbert et al., 2010). It is not possible to check for comprehension in the questionnaire data to ensure that the sample correctly understood the questions. However, interviewing children about a sensitive topic such as binge eating could lead to under reporting of the behaviour as the young person may not want to disclose this behaviour. A second limitation of the studies is that they are all from Western countries (Australia, America and Germany) which limits the generalizability of the results as other cultures have different parenting practices and attitudes towards eating behaviours which may affect the results.

To summarise, of the six papers examining parent weight-related teasing, five found this variable to link, in some way, to binge eating. This was found to be important amongst different ages, ethnicities and genders in terms of binge eating which highlights it could be relatively important in the role of binge eating in cross-sectional analyses, longitudinal research and in experimental conditions. However, the three papers from the GUTS suggest it is not a clear cut association and the importance of parent weight-related teasing and comments could be affected by age and gender.

Ineffective Parenting Techniques

Ineffective parenting techniques, such as ignoring, high levels of conflict and hostility, were examined in four studies. Decaluwé, Braet, Moens and Van Vlierberghe (2006) looked at parental characteristics using the Ghent Parental Behaviour Scale (Van Leeuwen & Vermulst, 2004) to assess nine different areas of parenting including positive parenting behaviour, inconsistent discipline, harsh punishment, ignoring and autonomy with Cronbach's alphas ranging from 0.52-0.87. This indicates some questionable reliability for some of the subscales but the study did not break these down to let the reader know which subscales were less reliable. Spanos, Klump, Burt, McGue and Iacono (2010) examined parent-child conflicts in their sample using the Parental Environment Questionnaire (Elkins, McGue, & Iacono, 1997) which measured the degree of hostility and discontent within parent-child relationships. Hartmann, Czaja, Rief and Hilbert (2012) used the Oxford Risk Factor Interview (RFI, Fairburn, Welch, Doll, Davies & O'Connor, 1997) for children to report parental problems such as parental arguments, parental criticism, discipline and low parental involvement. Finally, Tomori and Rus-Makovec (2000) provided little detail on the way they assessed quality of parenting but from their presentation of results it appeared they examined three areas: little parental emotional support, frequent disputes with parents and frequent parental conflicts.

Decaluwé et al. (2006) examined Dutch obese youngsters aged between ten and 16 between 1999 and 2001 to look at the association of parental characteristics and psychological problems in the sample. Their sample consisted of 78 boys and 118 girls with 162 mothers and 131 fathers of the participants also participating (in 125 cases both parents took part in the study). Parents were questioned about their own parenting behaviours. Parents

filled in the CBCL to assess the psychopathology of their offspring and their children were interviewed using the ChEDE to assess binge eating.

Only 15 girls and five boys reported to have engaged in binge eating in the three months prior to the study which is a small sample with which to conduct analysis. Mother's ignoring behaviours towards their child were found to be significantly associated with OBE's (r=0.16). This suggests that maternal ignoring appears to be implicated in binge eating in youngsters; however less positive parenting was not significantly associated with binge eating.

Hartmann et al. (2012) examined the psychosocial risk factors of binge eating in primary school children using a retrospective case-control method. They had a community sample of eight to 13 year old German students, 60 who engaged in binge eating and 60 without binge eating. They assessed binge eating through the ChEDE interview, the ChEDE Questionnaire (ChEDE-Q, Hilbert, Hartmann, & Czaja, 2008) and the K-DIPS (Unnewehr, Schneider & Margraf, 2008). The RFI was adapted for children and measured exposure to biological, psychological and social risk factors and 18 potential critical life events.

Significantly more children who binge ate reported higher exposure to parental underinvolvement (χ^2=7.78, p<.005) and parental arguments (χ^2=4.66, p<.05) compared to those who did not binge eat. Parental unemployment and change of school were two critical life events which children from the binge eating group had experienced more of compared to those who did not binge eat. A stepwise regression showed that the following variables were found to be significant predictors of binge eating: parental underinvolvement (ExpB=0.34, p<005), critical comments by family about weight, shape or eating (ExpB=0.21, p<.05) and change of school (ExpB=0.27,

$p<0.05$). This model accounted for 22.5% variance. Although this model accounted for less than a quarter of the variance, it highlighted the importance of parental involvement and the types of comments parents expose their children to in relation to binge eating.

Spanos et al. (2010) used longitudinal methods to examine the relationship between disordered eating attitudes and parent-child conflict in Monozygotic (MZ, identical) twins. Their sample was from the Minnesota twin family study and examined 234 female MZ twin pairs which ran over six years. Participants were involved in the study at age 11, 14 and 17 years (retention rate= 88%). The Minnesota Eating Behaviour Survey assessed disordered eating using four factors: body dissatisfaction, weight preoccupation, binge eating and compensatory behaviour. The researchers removed the compensatory behaviour subscale due to its low internal consistency ($\alpha=0.4$). Parent-child conflict was assessed through self-report questionnaires.

They found that higher levels of parent-child conflict were associated with higher levels of disordered eating, including binge eating, at ages 11, 14 and 17. When looking at the longitudinal relationships, disordered eating at 11 and 14 years old predicted higher levels of parent-child conflict three years later which suggests that parent-child conflict may have been a consequence of disordered eating behaviours and not a risk factor as originally hypothesised by the authors. This could show the difficulties of raising a child with binge eating which could lead to tensions in the family.

Finally, Tomori and Rus-Makovec (2000) carried out their study in Slovenia with 4700 students from high schools (2507 females and 2193 males) aged between 14 and 19 to examine eating behaviour, depression and self-esteem.

The researchers used a self-constructed questionnaire including 117 variables which examined topics including family relations, social behaviour, healthy habits, eating behaviour, sexual behaviours and suicidal behaviours.

68.7% of girls and 47.6% of boys reported at least one binge eating episode in their lifetime. The following parenting variables were found to be significantly associated with binge eating: low level of parental emotional support (girls only, χ^2=24.89, p<.0001), frequent disputes with parents (for girls: χ^2=82.56, p<.0001, for boys: χ^2=36.52, p<.0001) and frequent parental conflicts (for girls: χ^2=42.53, p<.0001, for boys: χ^2=9.68, p<.005). This suggested that negative experiences with parents played a role in binge eating in adolescence, particularly for girls.

From these studies, it appears that parental ignoring, parental underinvolvement, disputes with parents, high parental conflict and low emotional maternal support play a role in binge eating. Three of the studies were cross-sectional in nature (Decaluwé et al., 2006; Hartmann et al., 2012; Tomori & Rus-Makovec, 2000) and therefore the direction of the effects from the variables cannot be deduced. However, Spanos et al. (2010) carried out a longitudinal study which found that disordered eating, including binge eating, predicted parent-child conflict three years later. This is an interesting finding which could suggest that parent-child interactions might be affected by binge eating behaviours in children. Further longitudinal research needs to be carried out to see if this is found in different populations as this was only examined in female twin pairs. Nevertheless, parenting behaviours appear to play a role in binge eating for children and adolescents.

Attachment

Parental attachment relationships were examined in three papers. Gossens, Braet, Bosmans and Decaluwé (2011) and Gossens et al. (2012) both used the Attachment Security scale (AS, Kerns, Klepac & Cole, 1996) which examines children's perceptions of security to parents. Boone (2013) used the Experiences of Close Relationship Scale (Fraley, Waller & Brenan, 2000) to measure whether adolescents had attachment anxiety or attachment avoidance towards their parents and the subscale 'Trust' from Other People in my Life measure (Cook, Greenberg, & Kusche, 1995) to assess secure attachment towards parents.

Gossens et al. (2011) examined binge eating and the role of attachment and self-esteem in a pre-adolescent population. Their study consisted of 482 eight to 11 years olds from six Belgian schools. 73.6% of the sample had parents who were still together and the majority of participants came from middle class (63.4%) or upper-middle class backgrounds (22.4%). The researchers measured self-esteem using Harter's Self-Perception Profile for Children (SPPC), attachment using the AS, BMI and binge eating through the EDE-Q Dutch version.

Children in the binge eating group had less secure attachments towards their mothers and fathers than those who did not engage in binge eating ($F(2, 477)=6.88$, $p<.001$). They also found that children who binge eat had lower self-esteem compared to those who did not ($F(1,478)=5.69$, $p<.05$). Through mediational analysis, Gossens et al. found that attachment to mothers fully accounted for the relationship between self-esteem and binge eating and was classed as a full mediator by rendering the relationship between self-esteem and binge eating to non-significance ($b=-0.07$, $p=.09$). Attachment to fathers only partially accounted for the relationship between self-esteem and binge

eating and was deemed as a partial mediator due to the association between self-esteem and binge eating being only reduced in its significance (*b*=-.08, *p*=.03). These findings suggest that even though attachments to both parents play a role in binge eating, attachments to mothers appeared to be more salient in this relationship.

Gossens et al. (2012) carried out a longitudinal study examining parent-child relationships as predictors of eating pathology on 516 Dutch children from third, fourth and fifth grades in 2009 with a follow-up one year later (87.4% retention rate). Children completed the ChEDE-Q Dutch version to assess binge eating and the AS to measure attachment at both testing sessions.

Children who indicated less secure relationships with their mothers and fathers were found to be associated with higher levels of OBEs (r=-.17 for security to mothers and r=-.13 for security to fathers) and SBEs (r=-.12 for security to mothers and r=-.1 for security to fathers). From their longitudinal data, less secure attachments the previous year were not found to predict binge eating a year later. However, they did find that insecure attachments towards fathers significantly predicted persistence of SBE at time one and time two of measurement.

This paper found that attachment and binge eating were significantly correlated but did not find that attachment predicted binge eating a year later. This could have been down to a number of reasons. Firstly, a year is a relatively short time period to examine the variables. It may have been that those vulnerable to regular binge eating had not started in this age group by the follow-up study. The authors discuss the possibility that attachment could be a predictor of binge eating in later adolescence when binge eating may be more

of a stable behaviour. Alternatively, children who indicated less secure attachments may have already been engaging in binge eating as the child may have already been trying to compensate for their relationship difficulties with their parents in line with the Interpersonal vulnerability model of binge eating.

Lastly, Boone (2013) investigated whether attachment styles were related to interpersonal perfectionism and binge eating. She looked at an older sample of middle class, Caucasian 14 to 20 year olds with 78% coming from intact families in Belgium. Attachment was measured via the two measures discussed previously , binge eating was assessed using the Bulimia scale of the Eating Disorder Inventory-II (Garner, 1991) and perfectionism was measured through the Perfectionist self-presentation scale (Hewitt et al., 2003).

Boone found that less secure relationships were associated with more binge eating and higher perfectionism in adolescents. Those who came from intact families had the most trust in their child-parent relationships and less avoidant and anxious attachment rates compared to those from separated families. Those with anxious attachment styles to their mothers and anxious and avoidant attachment styles to their fathers were positively associated with binge eating. Following mediational analysis, perfectionism fully mediated the relationship between avoidant attachment towards mothers and binge eating although there were only small indirect effects. This highlights other mechanisms that might play a role in binge eating, particularly a sense of perfectionism which appeared to reduce the association between avoidant attachment with mothers and binge eating.

A limitation across all three papers is the lack of generalizability of the results as the majority of participants were white, middle class and from intact

families. Gossens et al. (2011) and Boone (2013) used cross-sectional methods which prevents conclusions of direction of causality. Gossens et al. (2012) used longitudinal methods, however this was only limited to a year which could have affected the results as the children may still remember the questionnaires from the last time they completed them. Finally, much of the research is based on associations and therefore causation cannot be determined from the results.

To conclude, attachment relationships towards parents appear important in relation to binge eating. It is difficult to know whether poor attachment relationships increase the risk of binge eating due to the limited longitudinal literature examining this topic. However, in Gossens et al. (2012) study, attachment towards parents did not predict binge eating a year later. These papers also highlight the importance of the father role in attachment as each analysis found significant association between attachment to fathers and binge eating.

Conclusions

Using a systematic literature search to examine the role of family contextual factors in the emergence of binge eating a number of important themes were extracted. First, there are mixed findings as to whether family bonding is related to binge eating and this appears more important for females than males in relation to the behaviour when the literature did find a significant effect of family bonding in binge eating. Second, the way the family functions at meal times was implicated in binge eating behaviours particularly in terms of frequency, atmosphere and priority given to family meals. Notably, there appeared to be some cultural differences which led to inconsistent findings across all papers. Third, parent weight-related teasing was found to be related to binge eating in most of the studies that examined this variable,

although for some of the studies this appeared to be affected by age and gender. Fourth, ineffective parenting strategies such as ignoring and conflict were related to binge eating. Longitudinal analysis indicated that binge eating could lead to difficulties in the parent-child relationship in terms of increased conflict. Finally, attachment security to parents was also found to be related to binge eating in children with mothers potentially playing a slightly more salient role than fathers. The only longitudinal analysis examining these variables did not find that attachment security to parents predicted binge eating a year later.

The current review appears to lend some support to the Interpersonal vulnerability model of binge eating (Wilfley et al., 1997) notion that insecure attachment and negative experiences with parents may play a risk factor for binge eating behaviours. However, many of the studies measured these constructs concurrently which means that it cannot be deduced whether negative parenting and insecure attachments leads to binge eating, only that they seem to relate to one another. Two of the papers examined these relationships longitudinally (Gossens et al., 2012; Spanos et al., 2010). Spanos et al. (2010) found that binge eating actually predicted conflict with parents following binge eating behaviours rather than the other way round as is suggested by the Interpersonal vulnerability model of binge eating. In addition, Gossens et al. (2012) did not find that attachment security to parents significantly predicted binge eating a year later. As discussed previously, this could indicate that binge eating leads to difficulties with interpersonal interactions at home which leads to parenting difficulties. These studies seem to differ from the pathway suggested by the interpersonal vulnerability model of binge eating which suggests that other risk factors may be playing an increasingly important role in the onset and maintenance of binge eating for

the participants in the studies described above. This was highlighted in Wilfley, Pike and Striegel-Moore's (1997) paper examining an integrated model of binge eating whereby they discuss the difficulty of using one model to explain the etiology of binge eating behaviours. Nevertheless, the literature is very limited on testing the assertions made in the Interpersonal vulnerability model of binge eating and further research should be carried out on a more longitudinal basis to examine the direction of the proposed pathway of the model.

It is important to note is that there is little consistency across studies in the way binge eating has been assessed. This makes it difficult to compare across studies due to different operationalisations of the concept. It is possible that subtle differences in the questions could have led to different rates of participants signalling binge eating.

This literature search highlights that only a small body of research exists on parenting and family context effects on binge eating in children and young people. All the studies examined in this review were carried out in westernised cultures and predominantly used white, middle class populations, with the exception of a few (for example, Olvera et al., 2013) which limits the generalizability of the results. Interestingly, not one study was carried out in England or the UK which highlights an area for further investigation. This would be particularly helpful for practitioners who work with families and children in the UK to be able to employ preventative practices to support children who may be vulnerable to this behaviour by supporting positive parenting and family environments.

The present literature search could be subject to publication bias as only articles from peer review journals were examined. This could have limited the

range of studies to those with mainly significant outcomes and eliminated work that failed to find binge eating and parent variables to be related.

In terms of future research, there is scope for the role of attachment with parents and binge eating in children to be further explored. Since binge eating has been found in children as young as six, it would be important to further understand the mechanisms which lead to such young children engaging in behaviours which have such potentially negative consequences. It would be particularly interesting to use the Interpersonal vulnerability model of binge eating as a basis to investigate the risks factors of this behaviour as it has been relatively neglected by researchers and could help provide important messages as to the treatment and prevention of such behaviours occurring. In addition to exploring parenting relationships, variables relating to self-esteem would also help build up a more in depth picture of the way binge eating can develop in children in line with Wilfley et al's. model (1997). Gossens et al. (2012) used this framework in their study and found that attachment to parents mediated the relationship between self-esteem and binge eating in a Dutch population. This could be extended to look at an English sample as well as looking at other factors which may play a role in protecting or placing a child at further risk of binge eating.

In conclusion, from the literature review, parent relationships appear to be implicated with binge eating in children and young people. This is important to consider when supporting children who engage in this behaviour to consider the wider factors that could impact on the child that could be maintaining the behaviour. Further research needs to be carried out in this field to investigate this area in more depth and to try to establish evidence as to the direction of causality amongst the variables.

Chapter 2: **Towards Understanding the Onset of Preadolescent Binge Eating: the Role of Attachment to Mother, Relationship with Primary School Teacher and Self-Esteem.**

This empirical paper examines the role the attachment to mothers, relationship with primary school teachers and self-esteem on binge eating in preadolescent children. Binge eating behaviours are defined and the Interpersonal vulnerability model of binge eating is discussed as a potential explanation as to some of the risk factors that may lead to binge eating. Teacher relationships with their students are explored in terms of their potentially protective factor that they can have for children. The methodology of the study is then described to allow for replication. The results from the study are presented and the findings are discussed in light of the literature examined previously and the implications for professional practice.

Binge eating has been described as “disordered eating behaviour characterised by the sense that one cannot stop eating” (Goosens, Braet, Bosmans & Decaluwe, 2011). Binge eating has been found to be associated with greater eating disorder pathology (Tanofsky-Kraff et al., 2004), negative feelings after a binge eating episode (Tanfosky-Kraff et al., 2007) and higher depression scores (Tanofsky-Kraff, Faden, Yanovski, Wilfley and Yanovski, 2005). Children as young as six years old have reported to have engaged in this behaviour (Tanofsky-Kraff et al., 2004). Children who engage in binge eating are more likely to be overweight and have higher BMI scores compared to those who do not engage in binge eating behaviours (Tanofsky-Kraff et al.,

2004). Due to the negative consequences for both physical and mental health it is important to better understand the psychological processes which underpin binge eating in order to develop preventative programmes to support children who may be at risk of experiencing these behaviours.

Interpersonal Vulnerability Model of Binge Eating

Wilfley, Pike and Striegel-Moore (1997) examined an integrated model of binge eating disorder looking at the restraint model (whereby binge eating occurs due to excessive dietary restraint as a consequence of social pressures to be thin and body dissatisfaction) and the interpersonal vulnerability model to examine the risk factors that can explain the etiology of BED. For this study, the interpersonal vulnerability model was examined in detail as a way of looking at specific risk factors of binge eating in relation to parenting and attachment influences.

The interpersonal vulnerability model suggests that insecure attachments can be a risk factor for binge eating behaviours. Insecure attachment relationships have been reported to impact on an individual's social competence and can impact on their ability to have successful social interactions (Bohlin, Hagekull & Rydell, 2000; Groh et al., 2014). These factors were argued to be a risk factor in developing an inadequate sense of self and concerns about the social self, as an "individual's self-image is constructed on the basis of interpersonal experience" (p.16, Wilfley et al., 1997). As a consequence of poor social capabilities, low self-esteem and high social self-concern, an individual may be at a higher risk of binge eating due to poor regulatory strategies employed when experiencing negative emotions and situations whereby they eat as a way of coping due to the potential soothing

effect that food can have on a person (See Chapter 1 for additional comments on this theory).

This theory provides the context for one etiological pathway to binge eating. Research has found that compared to children with secure attachment styles, children with insecure attachments are at risk of a number of negative life outcomes including poorer peer relationships (Kerns, Klepac & Cole, 1996), lower academic achievement (Bergin & Bergin, 2009), poorer emotional adjustment (Granot & Mayseless, 2001) and an increased risk of developing a range of psychopathology (Ward, Lee & Polan, 2006). Difficulties with interpersonal relationships have also been found to be associated with insecure attachment styles (see Groh et al., 2014 for a meta-analysis of studies examining attachment and social skills).

The Interpersonal vulnerability model of binge eating suggests that early negative life experiences and poor social skills can place a person at risk of low self-esteem and negative feelings. There is some evidence in the literature to support this claim. For example, Laible, Carlo and Roesch (2004) found that attachment security to parents was concurrently related to higher self-esteem in college students. Huntsinger and Luecken (2004) also found that secure attachment to parents was associated with higher self-esteem in young adults aged between 18 and 35 in their study. In terms of general parenting, Bulanda and Majumdar (2009) found that parental availability, involvement and perceived quality of the relationship (measured by how close they felt to their parents, perceptions of warmth and loving from parents, communication with parents and a good relationship with them) were positively associated with higher self-esteem in adolescents. Although this highlights that self-esteem and attachment are related, the literature appears to lack longitudinal analyses

to provide evidence that insecure attachment to parents leads to lower self-esteem. However, using a longitudinal design, Boutelle, Eisenberg, Gregory and Neumark-Sztainer (2009) found that greater parent-child connectedness was associated with higher self-esteem in adolescents five years later. Although this is not an explicit measure of attachment, it does provide some evidence that parent-child relationships might predict self-esteem development in adolescents which begins to lend support to the Interpersonal vulnerability model of binge eating. In terms of the role that interpersonal skills can have on negative feelings, Elliott et al (2010) examined binge eating in 219 non-treatment seeking eight to 17 year olds. They found that social problems were associated with negative affect in their sample which lends support to the notion that social experiences might impact on an individual's emotional state.

According to the Interpersonal vulnerability model of binge eating, a person might be at a risk of engaging in binge eating as a way of coping and distracting themselves from their low self-perception and ineffective social relationships. Goldschmidt, Wall, Loth, Le Grange and Neumark-Sztainer (2012) found that low self-esteem predicted binge eating in their ten year longitudinal study examining dieter's risks of binge eating. They found that self-esteem predicted binge eating regardless of dieting behaviours. Other studies have reported associations between self-esteem and binge eating episodes in children even if they had only engaged in one binge eating episode (Gossens et al., 2011; Tanofsky-Kraff et al., 2005). In addition to this, Elliott et al (2010) found that children who reported to engage in binge eating were more likely to have higher social problem ratings from their parents. Through mediational analysis they found that negative affect was a significant mediator in the pathway between social problems and binge eating in their sample. Together

these studies support the notion that poor interpersonal skills, lower self-esteem and negative affect may be risk factors in the onset of binge eating and as such begin to provide support for the assertions of the Interpersonal vulnerability model of binge eating.

The Interpersonal vulnerability model of binge eating suggests that insecure attachment relationships with caregivers and poor social skills can lead to difficulties in regulating the self in conjunction with low self-esteem. They posit that these self-regulation difficulties could be a mechanism that leads to an increased risk of binge eating due to issues with coping with emotional situations whereby they turn to food as a method of soothing and escape. Few studies have investigated the association between binge eating and self-regulation. Czaja, Rief and Hilbert (2009) found that children aged between eight and 13 who engaged in binge eating had poorer skills in regulating themselves when experiencing negative emotions. They assessed emotional regulation by asking children to assess strategies they would use in response to anxiety, sadness and anger. They found that children who engaged in binge eating had higher reported rates of using maladaptive strategies (giving up, aggressive action, withdrawal, self-devaluation and perservation) under all three emotions compared to those who did not engage in binge eating. They also found that self-regulation correlated with measures of emotional eating (r=.2, p<.05) and on the DEBQ-K external eating subscale (r=.29, p<.01). This study suggested that children who binge eat might be at more risk of using maladaptive emotional regulation strategies to cope with negative feelings. Few studies have examined the role of self-regulation and binge eating, however, there does appear to be some supporting evidence that

there could be a link between difficulties with regulating the self under negative emotions in children who binge eat.

The Interpersonal vulnerability model of binge eating suggests that negative early life experiences could be a risk factor for developing binge eating behaviours through the development of poor social relationships, low sense of self and high social self-concerns. Three papers have been found to discuss binge eating in relation to attachment to parents (Boone, 2013, Gossens et al., 2011, Gossens et al., 2012). Boone (2013) found that binge eating was associated with attachment styles in young people aged between 14 and 20. Those with insecure attachment were more likely to engage in binge eating. Goosens et al. (2011) reported that children, aged between eight and ten, who reported binge eating episodes, had less secure attachments towards their mothers and fathers. Finally Gossens et al. (2012) also found that insecure relationships with mothers and fathers were associated with binge eating in children in third, fourth and fifth grades in Holland. However, they did not find that insecure attachment predicted binge eating a year later in their sample which went against their initial hypothesis that insecure attachments would predict binge eating a year later. This was an unexpected finding but it may have been that those who experienced less secure attachments were engaging in binge eating prior to the study's commencement and therefore their scores would not have changed over the years. As the time frame was only one year, it could have been difficult to examine whether long term attachment difficulties with parents led to binge eating.

In addition, interventions using Interpersonal Therapy have been carried out with binge eaters which appear to support a reduction in binge eating (For

example, Wilfley et al., 1993; Wilfley et al., 2002) by examining issues with interpersonal skills such as role disputes and grief. The sessions do not address eating behaviours (Wilfley et al., 1993). This suggests that binge eating and interpersonal skills may be inextricably linked as binge eating was found to be reduced without any work on addressing the binge eating behaviour itself.

Because only few studies have explored the link between insecure attachment and binge eating directly, evidence is considered drawing from the broader literature on eating disorders. For example, Ward, Ramsay and Treasure (2000) reviewed the literature examining the links between eating behaviours and attachment styles and found there were a high proportion of people with insecure attachment styles within the eating disordered population, mainly of those with BN and Anorexia Nervosa (AN). This is also supported by Shanmugam, Jowett & Meyer (2012) who found elevated levels of eating psychopathology (including binging, purging, weight concern and eating concern) in athletes with insecure attachments in adulthood compared to those with secure attachment styles in adulthood. Additionally to this, Bäck (2011) found that secure attachment to mothers appeared to work as a protective factor for eating problems by decreasing body and weight dissatisfaction in high school students in Stockholm. Attachment relationships to parents appear to play a role in eating pathology in both adults and adolescents which begins to support the assertion that poor attachment relationships can lead to disordered eating patterns from the Interpersonal Theory of Psychiatry.

From the evidence presented above, some of the limited literature on binge eating and parent-child attachment does begin to lend some support to

the Interpersonal vulnerability model of binge eating. However, it is far from conclusive that the mechanisms that were posited in the model increase the risk of engaging in binge eating in the model have been empirically found. More research in this area needs to be carried out to be able to test the assertions made in the model to see if it is an accurate explanation as to why binge eating may occur for some people.

To my knowledge, only one paper has examined the associations between attachment, self-esteem and binge eating to test assertions made in the Interpersonal vulnerability model of binge eating (Gossens et al., 2011). Children who engaged in binge eating reported lower self-esteem (p<.02) compared to those who did not binge eat. They also found that children who engaged in binge eating reported lower attachment security scores to their mothers and fathers (both $p's$<.00) compared to those who did not engage in binge eating. To test the theory further, the authors examined whether attachment security to parents mediated the relationship between self-esteem and binge eating. The authors argued that a significant mediating effect would suggest that low self-esteem is formed as a result of insecure attachment to parents which induces binge eating behaviours. They found that children's attachments to their mothers fully mediated the relationship between self-esteem and binge eating reducing the effect of self-esteem on binge eating to non-significance (b=-0.7, p=.09), whilst attachment security to fathers partially mediated this relationship by reducing the significance of this relationship to p=.03 from p<.0001. Gossens et al.'s findings lend support to the notion that low self-esteem may play a risk factor for binge eating as a consequence of low attachment security in preadolescence. As such, the findings from this study provide support for the Interpersonal vulnerability model of binge eating in

identifying attachment quality as an important predictor of binge eating behaviours in young people. However, more research is needed to corroborate and extend these findings due to the limitations with the generalizability of the results in the Gossens et al. (2011) paper.

The Role of the Teacher

Children spend a considerable proportion of their time in school. In primary schools in England, children tend to have one teacher who educates them throughout the day over the whole school year. Although children begin school with their attachment to their primary caregiver(s) formed, teachers play a large role in the day-to-day lives of the children they teach. Therefore, teachers provide important relationship contexts for development. Positive teacher-child relationships have been found to positively affect children's behaviour and can support those with insecure attachments. O'Connor, Collins and Supplee (2012) found that teacher-child relationships, characterised by high closeness and low conflict, and early externalising behaviour fully mediated the relationship between insecure/other attachment style and later externalising behaviour for children in the fifth grade. This suggested that positive teacher-child relationships might modify their students' externalising behaviour in the context of their insecure/other attachment status. They also found that teacher-child relationships and early internalising behaviours partially mediated the relationship between insecure/other attachment style and later internalising behaviours for children in the fifth grade. In younger children, Buyse, Verscheuren and Doumen (2011) found that teacher-child closeness moderated the relationship between low-quality mother-child attachment and aggressive behaviours in kindergarten children; children who were close to their teachers demonstrated less aggressive behaviours despite

low-quality mother-child attachment. Students who experienced supportive relationships with their teachers were rated significantly higher on social/emotional adjustment and academic performance and also showed reduced levels of psychological ill-health (Murray-Harvey, 2010) and increases in self-esteem (Reddy, Rhodes & Mulhall, 2003) compared to those who did not have supportive relationships with their teachers. Finally, O'Connor, Dearing and Collins (2011) also found that high quality teacher-child relationships could protect a child from the effects of earlier internalising behaviours in later childhood at elementary school.

This suggests that relationships with teachers can provide powerful resilience contexts for children's development. Relevant for the present study, which is set within the framework of Interpersonal vulnerability model of binge eating, is the evidence that positive relationships with teachers appear to act as protective factors for children in terms of their general wellbeing even when they have experienced poor attachments in their early life. As insecure attachment appears to place a child at risk of binge eating, it is important to explore whether positive teacher relationships can play a protective role in the association between insecure attachment at home, low self-esteem and binge eating.

Present Study

Research has highlighted that children as young as six have engaged in binge eating behaviours (Tanofsky-Kraff et al., 2004) but there is little research examining the factors that contribute to the onset of binge eating behaviours in children. Attachment relationships are key contexts for healthy development of children (Grossman, Grossman, & Waters, 2005; Sroufe, Egeland, Carlosn &

Collins, 2005). Importantly, attachment appears to play a critical role in the onset of various eating disorders including Binge Eating Disorder (BED). The Interpersonal vulnerability model of binge eating provides a theoretical model as to why binge eating behaviours may emerge. One goal of the present study is to test the propositions of Interpersonal vulnerability model of binge eating in a sample of primary school aged children in the U.K.

In addition, the present study will examine relationship quality with teachers as a potential moderator between binge eating and less secure attachment with mothers. Accordingly the present study aims to take account of different relationship contexts which have both been shown to make important contributions to a child's adjustment. With respect to binge eating, it seems that the role of teacher-child relationships has not been explored. However, research has indicated that good relationships with teachers can decrease the risk of internalising behaviours (O'Connor et al., 2012). It is possible that the relationship with the primary teacher could moderate associations between less secure attachment and binge eating.

The present study investigated the role of self-esteem, attachment quality to mothers, and teacher-child relationship quality in relation to binge eating in children. This study partly replicated Gossens et al. (2011) research which examined the mediating role of attachment in the association between self-esteem and binge eating (See Figure 1). To extend Gossens et al. (2011) research, the present study explored the role of teacher relationships in the context of binge eating (See Figure 2).

Figure 1. *Gossens et al. (2011) model investigating whether attachment security to mothers mediate the relationship between self-esteem and binge eating*

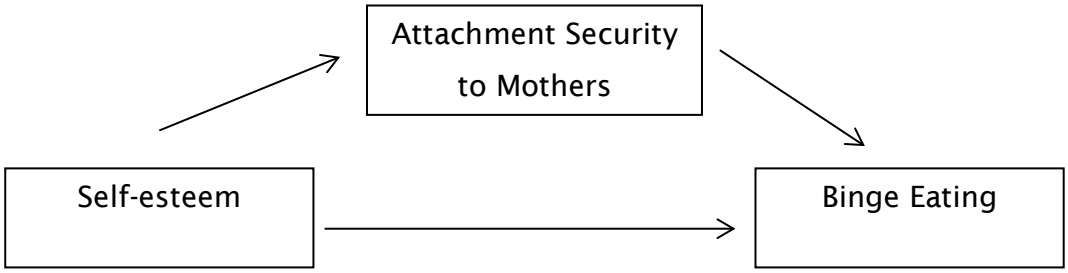
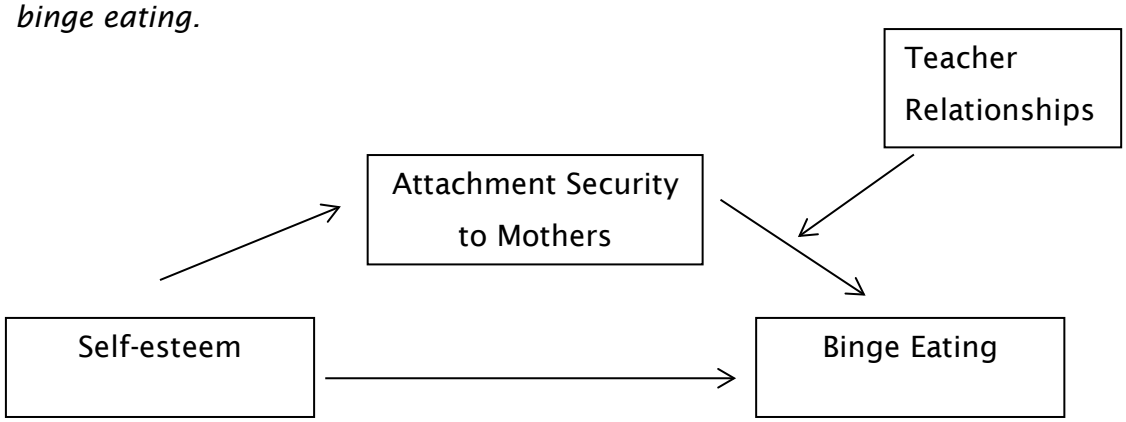


Figure 2. *Current study investigating whether attachment security to mothers mediates the relationship between self-esteem and binge eating and whether teacher relationships can moderate the relationship between attachment and binge eating.*



These variables were investigated in a pre-adolescent population with primary school children in Key Stage 2 (KS2). There were two reasons for selecting this age group. Firstly, binge eating episodes have been found in children as young as six with much of the research recruiting children aged between eight and 11. Accordingly, children of primary school age are a critical population to study the onset of binge eating. Moreover, by understanding the processes which lead to the emergence of binge eating in young children,

better targets for preventative practice can be identified. Secondly, primary school children receive their main teaching input from one teacher across the year and have a significant amount of contact with this one teacher. Therefore it would be more likely that a child's relationship with their teacher at primary school would be easier for a child to report on compared to those at secondary school due to the reduced time secondary school students spend with each teacher.

The present study has two goals. Firstly, it aims to test the assumptions of the Interpersonal vulnerability model of binge eating in children and replicate Gossens et al. (2011) work in a different population (in English primary schools). Specifically, the study examines whether less secure attachments to mothers and lower self-esteem are associated with each other and with binge eating in primary school children. Secondly, the study extends Gossens et al. (2011) paper by including a measure of teacher-child relationship quality and assessing its role in the association between less secure attachments, low self-esteem and binge eating.

Research Questions

This study set out to explore the following research questions:

1. Are children with lower attachment security ratings to their mothers at a higher risk of binge eating compared to those with higher attachment security ratings to their mothers?
2. Are children with lower self-esteem scores more at risk of binge eating compared to those with higher self-esteem scores?
3. Does lower attachment security to mothers predict lower self-esteem scores in children?

4. Do attachment security ratings to mothers mediate the relationship between self-esteem scores and binge eating?
5. Do positive teacher-child relationships act as a protective factor for binge eating and self-esteem scores in children?
6. Do children with higher attachment security scores perceive their relationships with their teachers more positively?
7. Do teacher-child relationships moderate the relationship between attachment security to mothers and binge eating?

Hypotheses

The study has the following hypotheses:

- In line with the Interpersonal vulnerability model of binge eating, children who engage in binge eating would be more likely to have lower ratings of attachment security and lower self-esteem compared to children who do not report binge eating.
- Lower ratings of attachment security significantly predict lower self-esteem.
- To replicate Gossens' et al. (2011) findings, Lower ratings on attachment security mediate the association between low self-esteem and binge eating.
- Positive teacher-child relationships correlate with higher self-esteem, no binge eating in children and also with higher secure attachment scores.
- Quality of teacher-child relationship moderates the association between attachment security to mothers and binge eating.

Method

Participants

Participants were recruited from primary schools in the South-East of England using opportunistic sampling. Initial phone calls were carried out to head teachers of primary schools to gauge their interest in the project. Letters were then emailed or sent to the school to provide the headteachers with written information about the project and for them to sign up to the study if they so wished (See Appendix F). A copy of the questionnaires were given to the headteacher to read through before deciding to go ahead with the study (See Appendix H). Once signed consent from the headteacher was given, the school were provided with consent letters to be sent home to every year four, five and six student (see Appendix G).

Participants were 68 children aged between eight and 11 (M=9.34, SD=0.11; 40 females, 28 males). Data from two participants were removed due to missing data on the QEWP indicating whether they had ever engaged in binge eating. Therefore, the final sample consisted of 66 children (40 females and 26 males). 47 children (71.2%) said that they lived with both parents (coded as an intact family home) whilst 19 reported to live in other arrangements (28.8%) such as living with one parent, grandparents, carers or in other arrangements.

Three primary schools located in urban areas in the South-East of England took part in the study (See Table 1 for characteristics of the three schools). Participants were taken from year four (N=32), five (N=20) and six (N=16) at each school. Using opt-in consent, the response rate from parents to give permission for their children to take part in this study was low with around 10% per school.

Table 1. School characteristics compared to the national averages according to their most recent Ofsted reports

	School A	School B	School C
N	24 (35.5%)	18 (26.5%)	26 (38%)
Intake	Below average	Above average	Above average
EAL	Below average	Above average	Average
FSM	Above average	Above average	Above average
SEN	Above average	Above average	Above average
Ofsted report	October 2011	February 2012	November 2012

Design

This study used a correlational design to investigate the relationships between self-esteem, attachment to mothers and relationships with teachers in binge eating. All measures were assessed concurrently.

Measures

Attachment Security Scale (Kerns, Klepac & Cole, 1996)

Children's attachment security to their mother was measured using the Attachment Security Scale developed by Kerns, Klepac and Cole (1996). The scale is designed as a self-report measure for ages spanning middle childhood to early adolescence. The scale measured the child's perception of security to their mother by indicating the degree to which they feel their attachment figure was responsive and available, they are able to rely on their attachment figure under times of stress, and the degree to which they feel at ease and interested in communicating with their attachment figure. The questionnaire consists of 15 items rated on a four point scale using Harter's (1982) format: "Some kids….Other kids". Specifically, each item requires the child to compare two

statements and select the statement which was more like them. Once they made their selection, they were asked to rate whether the statement was really true for them or somewhat true for them. A higher score reflects increased security to their mother whilst lower scores indicated less security towards mother. Kerns et al. (1996) reported evidence for discriminant validity and good test-retest validity over a short time interval, $r(30) = .75$. The present study found that the measure had good internal consistency ($\alpha=0.8$) and scores ranged from 2.07 to 3.87 which is slightly narrower than the range Kerns et al. (1996) found (1.62-4) but still demonstrates a spread of answers.

For this study, children were asked about their attachments towards their mothers. Although research has highlighted that attachment towards fathers have an impact on eating behaviours in children and young people (for example, Boone, 2013), Gossens et al. (2012) found that attachment to mothers fully mediated the relationship between self-esteem and binge eating whilst attachment to fathers only partially mediated this relationship. This suggests that attachment to mothers, compared to fathers, played a greater significance in the association between self-esteem and binge eating. With this in mind and together with the need to maintain an appropriate duration of testing for this age group as well as maintaining a focussed approach in the light of a small sample, the present study will examine attachment to mothers only.

Questionnaire of Eating and Weight Patterns- Adolescent report (QEWP-A) (Johnson, Grieve, Adams & Sandy, 1999)

Binge eating was assessed using the QEWP-A which consists of 12 stem items with several items containing follow up questions for more detailed

answers. Most of the questions used 'Yes/No' responses, whilst some questions used five point responses regarding the frequency of behaviours of the feelings associated with the behaviour. From this measure, an indication of BED, non-clinical binge eating and no binge eating can be established. BED classification was assigned if the respondent endorsed episodic overeating, reported three out of five additional symptoms (such as rapid eating or eating when not hungry), experienced distress during binge eating, engaged in the behaviour at least twice a week and did not engage in purging behaviours. Non-clinical binge eating was coded when the respondent failed to meet the full criteria for BED but answered positively at least to the first two questions regarding losing control over eating. The label 'no binge eating' reflected those who did not indicate loss of control over eating.

The measure was designed for use with adolescents between the ages of 12 to 18. The present study will extend the use downwards to a slightly younger population. The researcher deemed the majority of questions suitable and understandable for children aged eight to 11 following the removal of question 9b ("Were these laxatives or diuretics?") which the researcher deemed to be concepts that might be difficult to understand for children in this age range.

Johnson, Grieve, Adams and Sandy (1999) reported adequate concordant validity of the QEWP-A with measures of eating behaviours and attitudes from the Children's Eating and Attitudes Test (F (2, 340) =16.19, $p < .001$) and depression (F (2, 340) = 18.12, $p < .001$) in children aged between ten and 18. The measure also showed stability over a three week period for young people aged between 12 and 18 although female responses were less stable over this time period (phi = .42, df = 104, $p < .001$) (Johnson, Kirk & Reed, 2000). Using

the data from the present study, an internal consistency analysis was run for the six 'Yes/No" question which provided a Cronbach's alpha of 0.68.

For the purpose of this study, only the first two questions were used to assess binge eating. A number of children who engaged in binge eating also reported to have engaged in some form of compensatory measures (e.g. vomiting, diet pills) which could indicate more bulimic style behaviours but for the purpose of the analysis, any indication of binge eating was included for analysis.

Self-Perception Profile for Children (SPPC, Harter, 2012)

Self-esteem was measured via the SPPC. The original scale consists of 36 items which feed into five specific domains of self-esteem (scholastic competence, social competence, athletic competence, physical competence and behavioural conduct) and one global self-esteem subscale. For this study, only the physical competence and global subscale were selected for analyses. The global measure was chosen to examine whether the child's overall self-worth was linked to binge eating and attachment security to mothers. The physical competence subscale was also selected as the researcher wanted to investigate whether specific feelings about physical appearance played a role in binge eating behaviours and attachment towards mothers. This was due to the fact that the literature has found an association between body dissatisfaction, weight concern and binge eating (Haines, Kleinman, Rifas-Shiman, Field & Austin, 2010; Neumark-Sztainer et al., 1996) which could indicate that a low self-perception of physical appearance could be linked to binge eating. The questions were presented in the "Some Kids…Other Kids" format which was

described above. Scores were averaged with higher scores indicating higher self-esteem in the areas defined by the subscale.

Harter (2012) reported evidence of convergent validity and construct validity for the SPPC. The present study found good internal consistency for both the physical competence subscale (α=0.8) and global subscale (α=0.7)

Student-Teacher Relationship Scale short form- Student report (STRS, based on Pianta, 1992)

The original STRS consists of 15 items rated on a five point scale which assesses closeness and conflict between students and teachers from the teacher's perspective. For this study, the measure was modified to enable children to report their perception of closeness and conflict in their relationship with their teacher. The adapted measure contained 14 questions with seven items measuring conflict and seven items measuring closeness between the child and teacher. Children were asked to rate each statement with five possible choices: definitely did not apply, not really, neutral/not sure, applies somewhat or definitely applies. Scores were averaged for each subscale and higher scores indicated increased conflict or closeness with their teacher. This study found good internal consistency for both the closeness subscale (α=0.8) and the conflict subscale (α=0.7).

Ethical Considerations

Due to the sensitive nature of this study a number of ethical considerations had to be considered before the study commenced. Opt-in parental consent was put in place to ensure that parents were providing fully informed consent and understood what the project was about before deciding whether their child took part or not (See Appendix G). In addition to this, a

copy of the questionnaires were available at each school so that parents could look through them before deciding whether they wanted their child to take part (See Appendix H).

When the children took part in the study, it was made very clear to them about their right to withdraw and that there would be no negative consequences as a result of choosing not to take part both verbally and in written form (see Appendix H). For those who decided to take part in the study, there was a mood lifter activity at the end to get the children to reflect on positive memories from school to help them end the session on a positive note (see Appendix I). The researcher was also present at every session to support children and to answer questions. If any safeguarding concerns were raised the researcher spoke to a member of senior staff to pass on these concerns.

Finally, when the children completed the study they were fully debriefed both orally and in writing. They were asked if they had any questions and given details about people that they could talk to if any part of the study upset them (See Appendix J). Letters were also sent back to parents with debriefing information as well as numbers for agencies that could help if they had any concerns about their child's wellbeing or eating habits (see appendix K).

Procedure

Once ethical approval was granted from the University of Southampton's ethical committee (see appendix D), schools were approached to take part in the study. The researcher contacted schools directly and sent letters out to schools to ask for their participation in the study (see appendix E). Schools from three different locations were approached but only four schools agreed to take part. One school then withdrew from the study on examination of the

questionnaires following concerns regarding the attachment measure due to the range of social care needs in the school and a fear of 'opening a can of worms' amongst the children. Once headteachers agreed to take part in the study, letters were sent to parents asking for opt-in consent (see appendix F). Opt-in consent was chosen due to the sensitive nature of the questions being asked in the study. Following parental consent the researcher collected the participants' data in schools. The questionnaires were completed on school computers presented on iSurvey and the children were required to answer questions on the computers (see appendix G for questionnaires). The researcher was available at every session to support the children throughout the session. Children carried out the study in groups of two to ten in their school's computer room. Children were asked to give their assent to take part in the study before they moved on to the questions. For children who had difficulties with reading, audio links were set up on iSurvey for the children to have the questions read out to them via headphones connected to the computers so children could answer questions in private. Once they had completed the four questionnaires, the children were asked to complete a mood lifting activity whereby they were asked to write or draw their three favourite memories from school (see appendix H). Completion of the questionnaires took around 30-45 minutes. Once children had completed all the tasks, the children were given a debrief sheet as well as a letter to give to their parents (see appendix I and J). Their data was then fully anonymised and analysed.

The researcher had also wanted to examine teacher perceptions of their relationships with the children taking part in the study using Pianta's (1992) student-teacher relationship measure. These questionnaires were distributed to participating schools (see appendix K). The aim was to compare child and

teacher reports around their relationships. Unfortunately, teachers' response rates were low and many teachers did not feel comfortable answering certain questions from the measure and opted to only answer a select few. Due to this, there were too few responses to be used for analysis.

Data preparation and analytic strategy

Initial assumptions were checked to see whether the data collected met assumptions of normality and if there were any outliers within the data. Descriptive statistics were analysed to examine the rates of gender, age, intact family home status and binge eating. An ANOVA and t-tests were run to examine whether there were differences in age, gender or family composition for the predictor and outcome measures examined. Fisher's Exact test was used to examine whether there were significant group differences in the binge eating data. Variables that had a significant effect on the questionnaires were controlled for in the later analyses.

To examine the assertions made in the Interpersonal vulnerability model of binge eating, logistic regressions using Enter method were conducted to examine whether attachment to mothers and self-esteem (global and physical) predicted binge eating in the current sample. A hierarchical multiple regression was also run to examine whether attachment to mothers significantly predicted self-esteem. When variables were controlled for in the analyses, they were entered into a second block. This was to enable examination of the unadjusted model before examining whether controlling for certain variables altered the results.

Logistic regressions were chosen because binge eating was a dichotomous dependent variable (which was dummy coded 0 for no binge eating and 1 for binge eating) and self-esteem, attachment to mothers and teacher-child relationships were continuous in nature. Although, the sample

size for this study is small, Bergtold, Yeager and Featherstone (2011) suggested that logistic regression was not as sensitive to small sample sizes (as low as N=50) in terms of biasing results. From this information, logistic regression would be appropriate for the data analysis for this study with the current sample size. In addition to this Tabachnick and Fidell (2001, as cited in Buyse, Verschueren & Doumen, 2011) reported that there needs to be a minimum of ten participants per IV to run a regression. As there were five IVs (attachment to mother, global self-esteem, physical competence, teacher closeness and teacher conflict), a minimum of 50 participants were needed which the present sample size exceeds. However, the researcher is aware that this sample size is smaller than desired and results need to be taken with caution due to the uneven grouping between the binge eating group (N=7) and the non binge eating group (N=59).

A discriminant functional analysis was considered for analysis as it can cope with smaller sample sizes. However, this method requires that each group contains at least two cases per IV in the study, as the binge eating group only contained seven participants the present study did not meet this requirement as there were five IVs (requiring a minimum of ten participants in the binge eating group). Discriminant functional analysis also has a greater number of assumptions that could have been violated compared to a logistic regression. Therefore, logistic regressions were deemed an appropriate method by the researcher.

If the pathway between self-esteem and binge eating was significant, attachment to mothers was going to be examined as a mediator between the two variables and teacher-child relationships were going to be explored in a moderating capacity.

Finally, logistic regressions, correlations and hierarchical multiple regressions were used to explore the role of teacher-child closeness and conflict in relation to binge eating, attachment security to mothers and self-esteem.

Results

Preliminary findings

Preliminary tests to check assumptions showed that the data from the three continuous measures (attachment, self-esteem and teacher-child relationship) were normally distributed from the histograms examined. From running KS tests, the SPPC global scores ($D(66)= 0.13$, $p<.05$) and teacher closeness scores ($D(66)=0.11$, $p<.05$) were both significantly non-normal (see Appendix L for all histograms). There was no kurtosis amongst the three measures and only the SPPC global score indicated mild Skewness ($z=2.24$). Field (2009) discusses whether data should be transformed or not due to non-normal distribution due to the fact that "by transforming the data you change the hypothesis being tested…transformation also means that you're now addressing a different construct to the one originally measured" (p.156). He also states that small samples make it difficult to determine normality. Considering the distribution of scores for both SPPC Global and Teacher Closeness showed good spread, the data were not transformed as suggested by Field (2009). Examining stem and leaf diagrams from the three measures and their subscales revealed that there were no outliers in the data.

Participants' rates of gender, age, year group, binge eating and intact parent status are presented in Table 2. Descriptive statistics of attachment security, self-esteem and teacher-child relationship measures are presented in Table 3.

Table 2. Rates of age, gender, year group, binge eating and intact parent status amongst the participants

	N	% of cases per variable
Gender		
Male	27	40.9%
Female	39	59.1%
Age		
8	12	18.2%
9	28	42.4%
10	17	25.8%
11	9	13.6%
Year Group		
Year 4	30	45.5%
Year 5	20	30.3%
Year 6	16	24.2%
Intact Parent status		
Yes	42	71.2%
No	19	28.8%
Binge Eating		
Yes	7	10.6%
No	59	89.4%

Table 3. Descriptive Statistics of Measures.

Measure	*M*	*SD*	*Minimum*	*Maximum*
Attachment Security	3.17	0.5	2.07	3.87
SPPC Physical	2.84	0.8	1	4
SPPC Global	3.09	0.65	1.5	4
STRS Closeness	3.47	1.02	1	5
STRS Conflict	2.5	0.79	1	4.14

Group differences were examined for self-esteem, attachment security to mothers and teacher relationships to see whether there were significant differences amongst ages, gender or coming from an intact family home in the measures (see table 4 for mean scores and standard deviations for gender, see table 5 for mean scores and standard deviations for age and see table 6 for mean and standard deviations for intact parent status).

Table 4. Mean and Standard Deviations for each measure according to gender.

	AS total		**SPPC Physical**		**SPPC global**		**STRS closeness**		**STRS conflict**	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	girls
M	3.16	3.18	2.88	2.8	3.09	3.09	3.29	3.6	2.46	2.47
SD	0.47	0.52	0.83	0.79	0.59	0.69	1.16	0.92	0.71	0.86

Table 5. Mean and Standard Deviations for Measures According to Age

Measure		M	SD
Attachment Security			
	Age 8	3.07	0.42
	Age 9	2.95	0.51
	Age 10	3.49	0.38
	Age 11	3.39	0.35
SPPC Physical			
	Age 8	2.68	0.87
	Age 9	2.73	0.7
	Age 10	2.79	0.95
	Age 11	3.46	0.46
SPPC Global			
	Age 8	2.94	0.58
	Age 9	2.96	0.66
	Age 10	3.13	0.7
	Age 11	3.57	0.42
STRS Closeness			
	Age 8	3.02	1.16
	Age 9	3.37	1.06
	Age 10	3.75	0.95
	Age 11	3.86	0.65
STRS Conflict			
	Age 8	2.92	0.98
	Age 9	2.55	0.77
	Age 10	2.23	0.69
	Age 11	2.08	0.49

Table 6. Mean and Standard Deviations of Measure according to Intact Parent Status

Measure	***Intact Parent***		***Other Living Arrangements***	
	M	SD	M	SD
Attachment Security	3.23	0.49	3.02	0.49
SPPC Physical	2.9	0.71	2.67	0.71
SPPC Global	3.21	0.57	2.78	0.57
STRS Closeness	3.41	1.07	3.63	0.92
STRS Conflict	2.43	0.79	2,56	0.79

Two independent t-tests were run to examine whether there were significant effects of gender or intact family status on the three predictor measures. There were no significant differences between boys and girls responses in terms of their self-esteem, attachment security to mothers and teacher-child relationship scores. Children from intact family homes were found to have significantly higher (M=3.21, SD= 0.57) overall self-worth according to the SPPC global subscale compared to those who did not come from intact family homes (M=2.78, SD=0.77), t=-2.52(64), p<.01 (see table 7 and 8 for t-test output). Therefore, intact family home was controlled for when global self-esteem was examined in further analysis. No other measures were significantly different due to intact family home status.

Table 7. T-test to examine Gender Differences in the Measures.

Measures	*T*	*Df*	*CI- Lower*	*CI-Higher*
Attachment Security	-0.14	64	-0.27	0.23
SPPC Physical	0.39	64	-0.32	0.48
SPPC Global	0.01	64	-0.33	0.33
STRS Closeness	-1.21	64	-0.82	0.2
STRS Conflict	-0.04	64	-0.41	0.39

Table 8. T-test to examine Intact Parent Status Differences in the Measures.

Measures	*T*	*Df*	*CI- Lower*	*CI-Higher*
Attachment Security	-1.61	64	-0.48	0.05
SPPC Physical	-0.95	25.83	-0.75	0.28
SPPC Global	-2.52*	64	-0.77	-0.09
STRS Closeness	0.81	64	-0.33	0.78
STRS Conflict	0.61	64	-0.3	0.57

**p<.01*

A one way ANOVA was run to see if age had a significant effect on attachment security to mothers, self-esteem and teacher relationship scores. There were significant effects of age on attachment security to mothers scores, $F(3,62)=6.3$, $p<.001$, and teacher-child conflict ratings, $F(3,62)=4.95$, $p<.05$ (see Table 9 for ANOVA output). Post-hoc tests using Bonferroni were run within the ANOVA. For the attachment security to mothers data, there was a significant difference between nine and ten year olds ($p<.001$). There were no

other significant differences in age scores for attachment security to mothers. For STRS conflict scores, there were no significant results following the Bonferroni post-hoc test, therefore this variable was not controlled for in analyses.

Table 9. ANOVA examining age differences amongst the measures.

Measures	SS	MS	F	Sig
Attachment Security	3.76	1.26	6.3	0.001
SPPC Physical	4.2	1.4	2.3	0.09
SPPC Global	2.83	0.94	2.37	0.08
STRS Closeness	5.4	1.8	1.78	0.16
STRS Conflict	4.95	1.65	2.84	0.05

From examining the results, attachment scores appeared to fall slightly from age eight to nine and then rise from nine to 10 and a slight decline from 10 to 11. Due to these age differences in attachment security scores, reliability analyses were run on the measure for the younger children (aged eight and nine) and the older children (aged 10 and 11) to examine whether this difference was due to difficulties in understanding the attachment security measure. Both Cronbach's alpha's demonstrated acceptable reliability (α=0.73 for the older group and α=0.76 for the y measure was reliable for use in both groups. The researcher also examined whether there was a significant difference between age and intact family home status to explore whether older children were more likely to live with both parents which could account for the differences in age and attachment security scores. The Chi-square analysis did not find a significant difference between intact family home status and age ($x^2(1)=0.68$, $p=.41$) which shows that older

children were not more likely to come from intact family homes. The analyses suggest that the age differences in the attachment security scores were not due to difficulties in understanding the measure, nor due to different family backgrounds. For the purpose of subsequent analyses, age was split into younger children (eight and nine year olds) and older children (10 and 11 year olds) groups and this binary variable was controlled for when attachment security to mothers was examined.

Binge Eating Characteristics

10.6% of the overall sample reported to have engaged in binge eating over the past six months (N=7). More girls (71.4%) reported binge eating compared to boys (28.6%). Two children aged eight (28.6%), four children aged nine (57.1%), one child aged 10 (14.3%) and no children aged 11 reported binge eating. Binge eating was equally spread across the schools: Schools A and B had two children reporting binge eating and School C had three children reporting binge eating. Finally, more children from intact families (71.4%) reported binge eating compared to those who lived in other circumstances (28.6%). Chi-square analyses could not be performed to examine whether there were significant differences between the groups due to the expected count of more than 20% of the cells being less than five which violated the sample size assumption of a chi-square analysis. Fisher's Exact Test was used instead, as it can deal with smaller sample sizes. Gender, age and intact family home did not have a significant effect on binge eating (p=.23-1)

The Role of Attachment to Mothers and Self-Esteem in Binge Eating in Children.

To test the assertions made by the Interpersonal vulnerability model of binge eating as previously discussed, a series of regressions were carried out to see if (i) attachment security to mothers predicted binge eating, (ii) self-

esteem, physical and global, predicted binge eating, and (iii) attachment security to mothers predicted self-esteem. All logistic regression models produced good fitting models with log-likelihood statistics being lower than the log-likelihood figure before the predictor was added to the model. This indicated that the models put forward were better at predicting whether someone engaged in binge eating compared to when the predictors were not entered into the model.

Does Attachment Security to mothers Predict Binge Eating?

The first logistic regression examined whether attachment security towards mothers significantly predicted binge eating in preadolescent children when age was controlled for. Attachment security to mothers did not significantly predict binge eating in children in both the unadjusted analysis (B=-1.23, *p=ns*) and when controlling for age (B=-0.88, *p=ns*). Although this indicates that attachment was a non-significant predictor of binge eating, the Odd's Ratio (OR) indicated that children who had less secure attachments to their mothers were 3.45 (ExpB=0.29) more likely to binge eat compared to those with more secure attachments to their mothers, however this risk reduced to 2.4 (ExpB=0.42) times more likely to binge eat compared to those with more secure attachments to their mothers when age was controlled for in the analysis (see Table 10 for output). Despite this, both analyses were non-significant.

Table 10. Logistic Regression examining whether Attachment Security to Mothers Predicts Binge Eating.

	B	SE	Wald	Sig	Exp(B)	CI lower	CI higher
Block 1							
Constant			0.47	0.49			
Attachment Security to Mothers	-1.23	0.79	2.42	0.12	0.29	0.06	1.38
Block 2							
Constant			.01	0.94			
Attachment Security to Mothers	-0.88	0.87	1.01	0.32	0.42	0.08	2.3
Old vs. Young	1.06	1.2	0.78	0.38	2.88	0.28	30.01

Note R^2= 3.8 (Hosmer & Lemeshow), .05 (Cox & Snell), .1 (Nagelkerke), Model $\chi^2(2)=3.37$, p=0.19

Does Self-Esteem Predict Binge Eating?

Two logistic regressions were run to examine whether perceptions of physical competence and global self-worth predicted binge eating in children. Intact family home status was controlled for in the global self-worth analysis.

Neither physical competence nor global self-esteem significantly predicted binge eating in children (B=-0.41, *p=ns* and B=-0.57, *p=ns* respectively). The ORs for self-esteem were as follows; those with lower global self-esteem were 1.8 times more likely to binge eat compared to those with higher global self-esteem (ExpB= 0.56) and those with lower physical self-esteem were 1.4 times more likely to binge eat compared to those with higher physical self-esteem (ExpB=0.67). Intact family home status had a negligible effect when controlled for in the analysis examining whether

global self-worth predicted binge eating (see Tables 11 and 12 for output). To summarise, global and physical self-esteem did not significantly predict binge eating in the present sample.

Table 11. Logistic Regression examining whether Physical Competence Predicts Binge Eating.

	B	SE	Wald	Sig	Exp(B)	CI lower	CI higher
Constant			0.58	0.4			
SPPC physical	-0.41	0.49	0.7	0.4	0.67	0.26	1.73

Note R^2= 6.84 (Hosmer & Lemeshow), .01 (Cox & Snell), .02 (Nagelkerke), Model $\chi^2(1)$= 0.69, p=0.41

Table 12. Logistic Regression examining whether Global Self-worth Predicts Binge Eating.

	B	SE	Wald	Sig	Exp(B)	CI lower	CI higher
Block 1							
Constant			0.57	0.81			
SPPC Global	-0.57	0.59	0.96	0.33	0.56	0.18	1.78
Block 2							
Constant			0.57	0.81			
SPPC Global	-0.65	0.63	1.06	0.3	0.52	0.15	1.8
Intact Family home	0.33	0.96	0.12	0.73	0.72	0.21	9

Note R^2= 8.98 (Hosmer & Lemeshow), .02 (Cox & Snell), .03 (Nagelkerke), Model $\chi^2(1)$= 1.06, p=0.59

Does Attachment Security to Mothers Predict Self-Esteem?

Hierarchical multiple regressions were run to examine if attachment security to mothers predicted either global self-esteem or physical self-esteem in children. Age and intact family home status were controlled for in the model for global self-esteem whilst only age was controlled for in the model examining the effects of physical self-esteem.

Attachment security to mothers significantly predicted global self-esteem (p<.001) accounting for 25% of the variance (26% of the adjusted variance). Attachment security to mothers also predicted physical self-esteem (p<.05) which only accounted for 13% of the variance (10% of the adjusted variance) (see tables 13 and 14). Children with more secure attachments to their mothers had significantly higher self-esteem with regards to their physical appearance and global self-worth compared to those who experience less security with their mothers.

Table 13. Regression output for Global Self-Esteem and Attachment Security to Mothers, controlling for Age and Intact Parent Status.

	B	SE B	β	CI lower	CI higher
Model 1					
Constant	1.02	0.45			
Attachment security to Mothers	0.65	0.14	0.5**	0.37	0.95
Model 2					
Constant	0.99	0.48			
Attachment security to Mothers	0.59	0.16	0.45**	0.27	0.91
Age	0.01	0.16	0.01	-0.31	0.33
Intact Family Status	0.3	0.16	0.21	-0.01	0.61

Note: R^2=0.25 for step 1, ΔR^2=0.26 for step 2 (p=.16). **p<.001

Table 14. Regression output for Physical Self-Esteem and Attachment Security to Mothers, controlling for Age.

	B	SE B	β	CI lower	CI higher
Model 1					
Constant	0.99	0.6			
Attachment Security	0.58	0.19	0.36**	0.21	0.96
Model 2					
Constant	1.03	0.65			
Attachment	0.56	0.22	0.35*	0.13	0.99
Old vs. Young	0.05	0.22	0.03	-0.34	0.4

Note: R^2=0.13 for step 1, ΔR^2=0.1 for step 2 (p=.84). *p<.01, **p<.005

Does Attachment Security to Mothers Mediate the Relationship between Self-Esteem and Binge Eating?

The initial analysis plan was to follow Preacher and Hayes' (2004) method for mediational analysis. As illustrated in Figure 2, the present study hypothesised that self-esteem would significantly predict binge eating. Mediational analyses would then have been carried out to examine direct and indirect effects of attachment security to mothers as a mediator between self-esteem and binge eating. This analysis was unable to be conducted due to the non-significant nature of the predictors in relation to binge eating which indicated that, in the present sample, there were no significant pathways to binge eating to explore.

The Role of Teacher-Child Relationships in Relation to Binge Eating, Self-Esteem and Attachment Security to Mothers.

The original goal of the present study was to examine the role of binge eating in teacher-child relationships. This was proposed as a moderator between attachment security to mothers and binge eating. However, since the

associations between these two variables are non-significant, the role of teacher relationships as a moderator could not be explored. However, teacher-child closeness and conflict with regards to binge eating, self-esteem and attachment security to mothers were explored.

Do Teacher-Child Relationships Predict Binge Eating?

Logistic regressions were run for teacher closeness and teacher conflict to examine whether teacher relationships played a role in binge eating which has not previously been examined in the literature.

Teacher closeness and conflict were not found to significantly predict binge eating in the current sample (B=-0.36, *p=ns* and B=0.77, *p=ns* respectively). ORs showed that children who were closer to their teachers were 1.43 times less likely to binge eat compared to those who were not close to their teachers. Whilst children who experienced more conflict with their teachers were 2.14 times more likely to binge eat compared to those who did not have a conflicting relationship with their teacher (see tables 15 and 16). However, these associations between teacher-child relationship quality and binge eating did not reach statistical significance.

Table 15. Logistic Regression for teacher closeness Predicting Binge Eating.

	B	SE	Wald	Sig	Exp(B)	CI lower	CI higher
Constant			0.55	0.46			
Teacher Closeness	-0.36	0.38	0.9	0.34	0.7	0.33	1.47

Note R^2= 6.23 (Hosmer & Lemeshow), .01 (Cox & Snell), .03 (Nagelkerke), Model $\chi^2(1)$= 0.88, *p*=.35

Table 16. Logistic Regression for Teacher Conflict Predicting Binge Eating.

	B	SE	Wald	Sig	Exp(B)	CI lower	CI higher
Constant			7.5	0.01*			
Teacher Conflict	0.76	0.52	2.18	0.14	2.14	0.78	5.87

Note R^2= 10 (Hosmer & Lemeshow), .03 (Cox & Snell), .07 (Nagelkerke), Model $\chi^2(1)$= 2.27, *p*=.13

The Role of Self-Esteem and Teacher-Child Relationships.

A series of correlations were carried out to examine whether teacher-child relationships were associated with global and physical self-esteem. Teacher closeness was not associated with either physical (*r*=.42, *p=ns*) or global (*r*=.14, *p=ns*) measures of self-esteem. On the other hand, teacher conflict was significantly negatively associated with physical (*r*=-.3, *p*<.05) and global (r=-.32, *p*<.005) self-esteem. The greater teacher conflict a child experienced the lower their self-esteem, both physically and globally, was likely to be.

From this, linear regressions were run to examine whether teacher conflict predicted self-esteem in children (See Tables 17 and 18 for output). Teacher conflict significantly predicted physical competence and global self-worth in children (both *p*<.01) accounting for 9% of the variance for physical competence and 10% of the variance for global self-worth (15% of the adjusted variance), whereby those who had higher conflict with their teachers were more likely to have lower self-esteem in terms of their physical appearance and global self-worth. When intact family home status was accounted for during the analysis examining whether teacher conflict significantly predicted global self-esteem, this reduced the association to *p*<.05, however teacher conflict was still a significant predictor of a child's sense of global self-worth.

Table 17. Regression output for Teacher Conflict Predicting Physical Self-Esteem

	B	SE B	β	CI lower	CI higher
Constant	3.59	0.31			
Teacher Conflict	-0.31	0.12	-0.3*	-0.55	-0.07

Note: R^2=0.09. *p<.01

Table 18. Regression output for Teacher Conflict Predicting Global Self-Esteem, controlling for Intact Parent Status.

	B	SE B	β	CI lower	CI higher
Model 1					
Constant	3.7	0.25			
Teacher conflict	-0.26	0.1	-0.32**	-0.46	-0.07
Model 2					
Constant	3.41	0.27			
Teacher Conflict	-0.24	0.09	-0.3*	-0.43	-0.06
Intact Family Home	0.4	0.16	0.28*	0.07	0.72

Note: R^2=0.1 for step 1, ΔR^2=0.15 for step 2 (p<.05). *p<.05 **p<.01

The Role of Attachment Security to Mothers and Teacher-Child Relationships

Finally, correlations were run to examine whether attachment security to mothers were associated with a child's relationship to their teacher. Teacher closeness was not associated with a child's attachment security to their mother, r=.12, p=*ns*. Teacher conflict had a significantly negative relationship with a child's attachment security to their mother, r=-.28, p<.05. In other terms, children who had less secure attachments to their mothers were more likely to experience greater conflict with their class teacher.

From this, a hierarchical multiple regression was carried out to see whether attachment security to mothers predicted teacher conflict (see Table 19). Attachment security significantly predicted teacher conflict in the

unadjusted analysis (p<.05) accounting for 8% of the variance. However, when age was controlled for, attachment security did not significantly predict teacher conflict in the present sample and accounted for 12% of the variance.

Table 19. Regression output for Attachment Security to Mothers Predicting Teacher Child Conflict, controlling for Age.

	B	SE B	β	CI lower	CI higher
Model 1					
Constant	3.89	0.61			
Attachment Security	-0.45	0.19	-0.28*	-0.83	-0.07
Model 2					
Constant	3.51	0.65			
Attachment Security	-0.29	0.2	-0.18	-0.71	0.14
Old vs. Young	-0.35	0.22	-0.22	-0.78	0.08

Note: R^2=0.08 for step 1, ΔR^2=0.12 for step 2 (p<.05). *p<.05

Discussion

From the current investigation of binge eating in children, there was a 10.6% reported rate of binge eating amongst the current sample. This proportion was lower than rates found by Elliot et al. (2010) who found that 28.4% of their sample aged six to 17 reported binge eating. However, the present sample found a slightly higher rate than those reported by Allen, Byrne, Puma, McLean and Dains (2008) who found 9.2% of their sample of eight to 13 year olds reported to have engaged in binge eating. This indicates that this sample found comparable rates of binge eating. The rate of binge eating amongst the present sample may be reflective of the age range that was studied. Elliot et al. (2010) may have found a higher prevalence rate due to the inclusion of older children in their sample whereas, the present sample had a younger and more limited age range.

A surprising finding was that there were significant age differences amongst the attachment security to mothers' data whereby attachment security scores appeared to increase across the ages examined (except for a minor dip at age nine and 11). Attachment styles were found to be relatively stable over the period of the first 20 years of life as reported by Waters, Merrick, Treboux, Cromwell and Albersheim (2000) which indicates that attachment security is unlikely to increase with age. However, it could be indicative of the measure used for the present analysis which may not have tapped into core attachment styles but is likely to reflect current security perceptions of the relationship. Despite this, Gossens et al. (2011) did not find that attachment security differed by age when using the same measure. This may have been a chance finding whereby older children had higher attachment scores in the present study which could have impacted on the results. Both unadjusted analyses and analyses controlling for age were run to examine both models and to see whether age made a significant impact on the results.

The hypotheses for this project were, for the majority, driven by the Interpersonal vulnerability model of binge eating (Wilfley et al., 1997) and replication of Gossens et al. (2011) paper, whereby they postulated that less secure attachments to parents could lead to higher risks of low self-esteem and engaging in binge eating. Despite the, albeit limited, previous research finding that attachment and self-esteem predicted binge eating (for example, Boone, 2013; Gossens et al., 2012; Tanofsky-Kraff et al., 2005) the present study did not find statistically significant findings to support this model of binge eating.

There has been limited research looking at the relationship between attachment relationships to parents and binge eating in the literature despite there being a fairly well-established link between attachment and other eating

disorders such as AN (for example, Ward et al., 2000). Despite the non-significant nature of attachment security to mothers predicting binge eating, it is worth noting that the OR of the model indicated that those with less secure attachments to their mothers were 3.4 times more likely to binge eat in the unadjusted analyses and still 2.4 times more likely to binge eat when age was controlled for which indicated a possible risk, albeit a non-significant one, for binge eating.

This could be due to several reasons. Firstly, although the sample size of 66 was large enough to run a logistic regression, it may have been too small to pick up a significant effect. Stice, Presnell and Spangler (2002) performed logistic regressions with 231 girls from America aged between 13 and 17 to examine the risk factors that predict binge eating and reported a significant Exp(B) of 0.5 which equated to an OR of a youngster being 2 times more likely to binge eat when they had less peer support. This was a lower risk value compared to the present study, yet in the present sample this remains a non-significant predictor. The small sample size is likely to have impacted on this due to the reduced power of the overall study. Secondly, there was a fairly limited spread of attachment security to mother's scores in the present sample with no participant scoring under two which indicated that the children were fairly secure in general. This could mean that there were not low enough scores amongst the participants to truly test whether less securely attached children were at a higher risk of binge eating. Thirdly, there were differences in the group sizes between those who reported binge eating and those who did not. It may have been that the binge eating group were too small in numbers (N=7) to find a significant effect between the variables. Finally, even though the prevalence rate of binge eating in this sample was comparable to other rates from the literature, the measure used to assess binge eating may have affected

some of the response rates in the sample. The QEWP-A was initially designed for use with 12 to 18 year olds although the researcher removed a question that seemed to be not appropriate for the younger sample. It may have been that the children did not fully understand all the concepts being discussed and therefore this may have limited the responses of the participants. Due to the nature of the measure, reliability analyses were difficult to run on all the items, however, on the six questions that permitted reliability analysis the Cronbach's alpha level was 0.68. This seemed to be, just about, at an acceptable level, although a large number of items were not able to be analysed for reliability so the alpha level should be taken with caution.

Self-esteem was not found to predict binge eating in the present sample and the effect sizes were much less than those for attachment security to mothers and binge eating. Although the literature suggested that self-esteem predicted binge eating (Goldschmidt et al., 2012), the present study failed to find this. As mentioned previously, the small sample size, the group size differences and use of the QEWP-A could have impacted on finding a significant effect.

Attachment security to mothers significantly predicted self-esteem, both globally and physically, in the present study. The regression examining attachment security to mothers and global self-esteem accounted for 25% of the unadjusted variance which was much larger than the 9% of the variance from the attachment security to mothers and physical self-esteem analysis. This supports the findings from the literature whereby self-esteem and attachment to parents have been found to be related (for example, Laible, Carlo & Roesch, 2004). This suggested that those who experience less security with their mothers were at a higher risk of having lower self-esteem compared to those with more secure attachments to their mothers. This is important

when considering the effects that attachment to mothers can have on their children's sense of self and is something that professionals working with children should consider when supporting children with low self-esteem.

Finally, teacher-child relationships were examined in terms of the child's perspective of closeness and conflict with their class teacher in relation to binge eating, self-esteem and attachment to parents. In the present sample, teacher closeness or conflict did not significantly predict binge eating. However, the OR for teacher conflict indicated that children who reported more conflict with their teacher were 2.14 times more at risk of binge eating. As mentioned previously, Stice et al. (2002) found comparable risk rates significant which could indicate that teacher conflict may be a risk factor, albeit non-significant, for binge eating in children. This was a novel investigation as teacher-child relationships have not been investigated in relation to binge eating in previous literature. Although this relationship was not significant for this study, it would be interesting to examine whether it could have had an effect on a larger sample and should not be dismissed from future examination.

Interestingly, from examining the ORs from the three analyses examining predictors of binge eating, the two predictors related to less positive relationships with others (less security to mothers and teacher conflict) had higher ORs for binge eating compared to self-esteem. This could mean that less secure attachment to mothers and high teacher conflict could place a child more at risk of binge eating compared to low self-esteem, albeit non-significantly. Interpersonal Therapy has been used as a treatment for binge eating to address social and interpersonal difficulties and has been found to be relatively successful in treating binge eating (Wilfley et al., 2002). This highlights the importance of social relationships in the treatment of binge

eating. This needs to be further explored as it could indicate that interpersonal relationships play an important role in relation to the onset and maintenance of binge eating in children which could support in the treatment of this behaviour.

Teacher closeness did not play a protective role in terms of self-esteem contrary to the research examining positive effects on teacher closeness for children (e.g. Reddy, Rhodes & Mulhall, 2003). Neither did it play a role in attachment security to mothers or binge eating in the present study.

Teacher conflict was found to be significantly negatively associated with self-esteem, both globally and physically, and attachment security to mothers which indicated that increased conflict with teachers were associated with lower feelings about the self and less secure relationships with mothers. This highlights that teacher conflict could play a risk factor in terms of children's perceptions of themselves. This is an important finding for teachers in schools as it would be important for them to realise that negative conflictual relationships with students could have a detrimental effect on their self-worth. However, it should be noted that the variances accounted for the relationships between teacher conflict and both measures of self-esteem were 10% or below which indicates that other variables play a role in self-esteem on top of conflict with teachers.

From the unadjusted analysis, attachment security to mothers was found to be a significant predictor of teacher conflict, although this only accounted for 8% of the variance. This could highlight that those who experienced less security in their relationships with their mothers may have been at a higher risk of engaging in conflictual relationships with teachers. This in line with the interpersonal vulnerability model of binge eating and Bowlby's (1980) work on attachment whereby those with less secure attachment styles are suggested to

have greater difficulties with their social interactions with other people. This is important for teachers to consider that children with less secure attachments may be vulnerable to increased levels of conflict within the student-teacher relationship. However, it should be noted that when age was controlled for in the analysis, this relationship was reduced to non-significance which means these results need to be taken with caution.

The study's original hypotheses predicted that positive teacher relationships would play a protective role with the variables but they were not significantly associated in any of the analyses. However, teacher conflict appears to play a significant role in a number of negative variables including lower self-esteem, lower attachment security, and to a lesser (non-significant) extent, binge eating. It is important for school staff to understand the potential effects that high conflict could have on sense of self-worth, both globally and physically, and on the risk of binge eating behaviours, albeit a non-significant risk. Whereas much of the previous literature has found that teacher closeness is important for children, the present study also begins to highlight the negative impact of teacher conflict and factors that may lead to higher conflict between student and teacher as this study cannot determine direction of the causality of the results. For example, lower overall self-esteem may lead to increased feelings of teacher conflict or teacher conflict could lead to lower overall self-esteem. By knowing this, staff could try to avoid falling into conflictual relationships with their students if they are aware of the associated negative factors with teacher conflict.

Initially, teacher reports on teacher-child relationships were going to be examined to see if the teacher's perspective on the relationship played a role in the variables examined. Unfortunately, there was a low response rate which this meant that the measure had to be dropped for analysis. It would have

been interesting to see whether teachers rating of closeness and conflict differed from the child's report and whether teacher perceptions of the relationship played a role in the variables examined. It would be interesting to investigate teacher-child relationships in more depth, especially examining its relationship to binge eating, self-esteem and attachment security to mothers following on from this study.

This study had a number of limitations. Firstly, the study relied on self-report data from the children and, as a consequence, the researcher cannot be sure that the children understood all of the questions asked. Interview methods would be preferable if the time scale of the project had been longer to enable the researcher to check for comprehension of the questions to ensure the children were understanding them. Due to the sensitive nature of the questions posed in this study, interviews could be challenging as they would be asking children personal questions about binge eating, their views of themselves and the relationship with their mothers.

Secondly, due to the opt in nature of the study there was very low response rates from parents which led to a small sample size. Although a minimum of ten participants are needed per IV to run a logistic regression, which the present study met, other sources suggest more participants should be used (15 to 20 per IV, Field, 2009) which suggests that the sample size of the study is reduced in power. It was difficult to recruit school's into this research project and as a consequence this limited participant numbers in the study. In the future a larger sample should be employed. However, the present study provides some important pointers for future analyses despite its small sample size.

Finally, only attachment security to mothers were assessed which does not account for the attachment role that a father can play. Due to the age of

the children the researcher did not want the questionnaires to take too long to avoid fatigue so it was decided that only one attachment figure would be assessed for attachment security in children. This was also decided due to the confusion some children may have over answering the same questionnaire twice but with different parents as subjects. However, this is a limitation of the study as the evidence suggests that attachment security to fathers plays a role in binge eating (Gossens et al., 2011) and this should be examined further.

This study builds on the very limited literature testing empirically the Interpersonal vulnerability model of binge eating. Unfortunately, the current analysis did not contribute significant findings in support of the theoretical model. However, a noteworthy effect, albeit not statistically significant, was obtained between attachment security to mothers and binge eating. This study also attempted to make a novel contribution by exploring teacher-child relationships in binge eating which has not previously been examined. This indicated that teacher conflict was a potential risk factor, although a non-significant one, for binge eating. More empirical research is needed to investigate whether the Interpersonal vulnerability model of binge eating is a valid model for this eating behaviour. The study needs to be replicated with a larger, more representative population with a wider age range. To ensure that there are more even groups for children who engage in binge eating and those who do not, screening processes could be set up to ensure that groups are even and matched to examine whether self-esteem, attachment security to parents and teacher-child relationship quality predict binge eating.

Appendices

Appendix A

Search terms used for Ebsco host and Web of Science data bases.

Binge eating OR loss of control over eating.

AND

Attachment OR parent-child attachment OR parents OR interpersonal theory OR parental influence OR parental behaviour OR parental involvement OR family OR family conflict OR family communication OR mother child relationship OR father child relationship OR parenting OR parent child relationship

AND

Children OR childhood OR preadolescent OR preadolescence OR child OR adolescent OR adolescence.

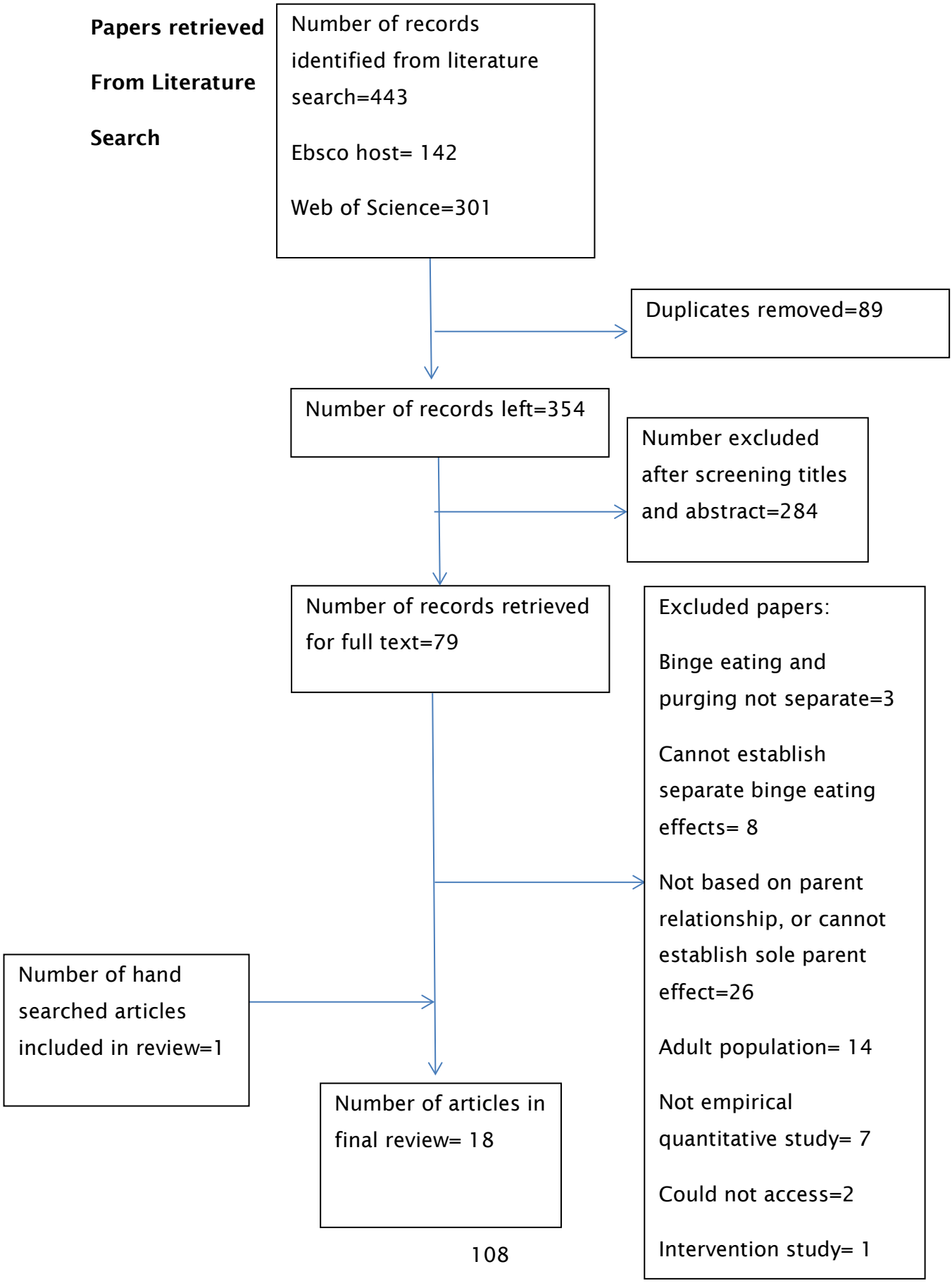
Appendix B

Exclusion Criteria for Literature Search

The following list shows the exclusion criteria applied to the systematic literature search which led to 19 final papers being reviewed:

- Languages other than English
- Sources other than peer review journals
- Qualitative papers
- Other eating disorders such as anorexia, bulimia or EDNOS
- No childhood binge eating
- Intervention studies
- Parenting eating disorders without examining children's binge eating
- Parent relationships not examined in relation to binge eating
- Parenting not able to be distinguished from family variables.
- Purging examined and not binge eating
- Binge eating not being distinguishable from disordered eating
- Unrelated topic
- Access difficulties

Appendix C


Papers retrieved
From Literature
Search
Number of records identified from literature search=443
Ebsco host= 142
Web of Science=301
Duplicates removed=89
Number of records left=354
Number excluded after screening titles and abstract=284
Number of records retrieved for full text=79
Excluded papers:
Binge eating and purging not separate=3
Cannot establish separate binge eating effects= 8
Not based on parent relationship, or cannot establish sole parent effect=26
Adult population= 14
Not empirical quantitative study= 7
Could not access=2
Intervention study= 1
Number of hand searched articles included in review=1
Number of articles in final review= 18

Appendix D

Key Information from Papers Extracted for Literature Review

Author(s)	Study characteristics	Participant characteristics	Outcomes
1. Boone, L (2013)	**Measures:** Experiences of close relationship scale (attachment measure) (Fraley, Waller and Brenan, 2005) Perfectionist self-presentation scale. Bulimia scale of EDI-II **Country**: Belgium **Design:**	**N**: 228 **Age range**: 14-20 (M=17.1) **Gender**: 57% females and 43% males. **Ethnicity**: all Caucasian **SES**: all middle class background.	Anxious and avoidant styles with mothers and fathers positively associated with perfectionism and binge eating. All insecure attachment styles (except avoidant style with mothers) were associated with binge eating.
2. Czaja, J., Hartmann, A. S., Rief, W., & Hilbert, A. (2011)	**Measures**: Adapted mealtime family interaction coding system. Family Assessment Device Bite Speed Self-report LOC Positive and negative affect schedule ChEDE German version **Country**: German **Design**: Naturalistic observation	**N**: 60 LOC 60 no LOC **Age range**: 8- 13 year olds with and without LOC eating	Families with children who engage in LOC had less healthy patterns of interpersonal involvement, less adequate communication patterns, more maladaptive overall family functioning compared to those who did not engage in LOC eating.
3. Decaluwe, V., Braet, C., Moens, E., & Van Vlierberghe, (2006).	**Measures**: Symptom checklist-90 Ghent Parental Behaviour Child Behaviour Checklist EDE **Country**: Holland **Design**: Concurrent	**N**: 196 obese children, 162 mothers and 131 fathers of obese children **Age range**: 10-16 **Gender**: 78 boys and 118 girl **Response rate**: 72%	Inadequate parenting by mother was associated with eating pathology. Inadequate parenting such as ignoring positively associated with binge eating in children

4. Field, A. E., Javaras, K.M., Aneja, P., Kitos, N., Camargo, C. A., Taylor, C. B., & Laird, N. N. (2008).	**Measures**: McKnight Risk Factor Survey Youth Risk Behaviour Surveillance System Questionnaire. Family history of eating disorders **Country**: **Design**: longitudinal **Part of Growing Up Today Study**	**N**: 11,087 for binge eating analysis **Age range:** 9-15 (at baseline), 16-22 at end of study **Gender**: 6185 female 4902 male **Ethnicity**:	Among female, negative comments about weight by males, importance of weight to fathers and importance of weight to peers were associated increased risk of starting to binge eat weekly. Among males, high level concern with weight and negative comments about weight by father were both significant predictors of starting to binge eat at least weekly.
5. Gossens, L., Braet, C., Bosmans, G., & Decaluwe, V. (2011).	**Measures**: EDE-Q Harter's Self-perception Profile for children Security scale. **Country**: Belgium **Design**:	**N**: 555 **Age**: 8-11 (mean 9.02) **Gender**: 47.2% female and 52.8% male. **SES**: 0.6% upper SES, 22.4% upper-middle, 63.4% middle, 1% lower	Children who reported binge eating had significantly less secure attachment to mothers and fathers. Attachment to mothers fully mediated the relationship between self-esteem and binge eating. Attachment to fathers partially mediated the relationship between self-esteem and binge eating.
6. Gossens, L., Braet, C., Van Durme, K., Decaluwe, V., & Bosmans, G. (2012).	**Measures**: ChEDE-Q, Security Scale- Attachment **Country**: Belgium **Design**:	**N**: 688, 1 year follow up 601 **Age**: 8-11 (M 9.05) **Gender**: 53.5% male and 46.5% female. **Retention rate**: 87.4%	Attachment towards mothers significantly and negatively correlated with children's disordered eating attitudes and behaviours Less secure relationship with mother and father higher rates OBE and SBE. Attachment towards mothers and fathers did not significantly predict the onset of OBE/SBE one year later. Less secure attachment to father predicted persistence of SBEs at both time 1 and 2
7. Haines, J., Gillman, M. W., Rifas-Shiman, S.,	**Measures**: Family dinner frequency	**N**: 13,448 **Age**: baseline age 9-14	Family meal frequency predicted binge eating in females.

Field, A. E., & Austin, S. B. (2010).	Youth Risk Behaviour Surveillance System Questionnaire McKnight Risk Factor Survey Importance of Thinness to parents Frequency of parental comments to child about their weight **Country**: USA **Design**: longitudinal over three years **Part of GUTS study**	(mean 11.9 years) **Gender**: 7535 females, 5913 males	Importance of thinness to parents, frequency of parental comments to child about weight and maternal dieting behaviours did not affect analysis.
8. Haines, J., Kleinman, K. P., Rifas-Shiman, S. L., Field, A. E., & Austin, S. B. (2010).	**Measures**: Purging binge eating McKnight Risk Factor Survey, youth/adolescent activity questionnaire, Maternal dieting Parental weight related teasing peer concern with thinness desire to look like same sex media figure family meal frequency **Country**: America **Design**: longitudinal **From GUTS**	**N**: 7172 **Age**: 11-17 year olds **Gender**: 4262 girls, 2910 boys	Parental-weight related teasing directly associated with binge eating and overweight for boys and girls. Family meal frequency inversely related binge eating for girls. In girls, parental weight-related teasing directly associated with binge eating prospectively. For boys, parent factors were not found to be related to binge eating.
9. Hartmann, A. S,. Czaja, J., Rief, W., &Hilbert, A. (2012).	**Measures**: ChEDE - ChEDE-Q K-DIPS- Oxford Risk Factor Interview **Country**: German **Design**: Concurrent	**N**: 60 children engaged in LOC 60 not LOC. **Age**: 8-13 year old with and without LOC (mean 10.77) **Gender**: 68 girls and 52 boys	LOC was significantly predicted by parental under involvement, critical comments by family about shape, weight or eating and change of school. Model accounted for 22.5% variance.
10. Hilbert, A., Tuschen-	**Measures**: Food intake	**N**: 60 children who	Parents with children who engaged in LOC expressed

Caffier, B., & Czaja, J. (2010).	Self-rated LOC Mealtime interactions observation CDI ChEDE Child-feeding questionnaire parent response Family Climate Meal representative measure **Country**: Germany **Design**: Experiment, test meal after mood induction	engaged in LOC, 60 who did not engage in LOC **Age**: 8-13 year olds (mean 10.77)	more critical comments about child's shape, weight or eating in the neutral condition. More critical comments about child's shape, weight or eating by parent at test meal predicted greater energy intake at snack eating.
11. Neumark-Sztainer, D., Story, M., Toporoff, E., Cassuto, N., Resnik, M. D., & Blum, R. W. (1996)	**Measures**: self-reported Disordered eating behaviours Weight dissatisfaction question Concern with body development Weight perception Sexual concerns Emotional well-being Family connectedness Frequency weight loss attempts **Country**: USA **Design: longitudinal** **From Minnesota Adolescent Health Survey**	**N:** 1160 students **Age**: 12-18 (Mean age 14.9) **Gender**: 158 females, 152 males with Diabetes Mellitus (DM). Comparison group 409 females, 441 males **SES**: 19% low, 52% middle, 29% high SES. **Ethnicity**: 82% white, 10% African American, 1% Hispanic, 3% Native Indian, 2% Asian Americans	Family connectedness did not make a significantly explain the variance of binge eating in those with and without DM.
12. Neumark-Sztainer, D., Wall, M., Story, M., Fulkerson, J. A. (2004)	**Measures**: survey constructed for project EAT **Country**: USA **Design: longitudinal** **Drawn from project EAT.**	**N**: 4746 **Age**: Mean age 14.9 **Ethnicity**: ethnically diverse adolescents.	Atmosphere at family meal was also inversely associated with binge eating. Girls: more frequent family meals were a protective factor for engaging in all forms of disordered eating.

			High priority and positive atmosphere at family meals served as protective factor. Boys: more frequent family meals, high priority of family meals were not protective for binge eating
13. Olvera, N., Dempsey, A., Gonzalez, E., Abrahamson, C. (2013).	**Measures**: McKnight Risk factor survey Weight related teasing. Emotional eating Weight control Binge eating **Country**: America **Design**: concurrent **Part of BOUNCE intervention**	**N**: 141 **Age**: 9-14 (mean 11.1 years) **Gender**: Females **Ethnicity**: Hispanic and African American	Weight related teasing by parents was associated with binge eating in female youngsters.
14. Sierra-Baigrie, S., Lernos-Giralez, S., Fonseca- Pedero, E. (2009)	**Measures**: Bulimic Investigations Test Edinburgh (Henderson & Freeman) Youth self-report (c, 1991) self-report 11-18. 13 additional questions about binge eating **Country**: Spain **Design**:	**N**: 259 **Age**: 12-21 (mean=14.72) **Gender**: 58.3% boys, 41.7% girls	No significant differences between children who binge eat and those who do not in terms of meal frequency or atmosphere at meals.
15. Spanos, A., Klump, K., Burt, S. A., McGue,M., & Iacono, W. G. (2010).	**Measures**: Minnesota Eating Behaviour survey Parental Environment Questionnaire **Country**: USA **Design**: longitudinal over 6 years **From Minnesota twin family study**	**N**: 234 female MZ twin pairs **Age**: 11, 14 and 17 **Gender**: female only **Retention rates**: 88%	Higher levels of disordered eating were associated with higher levels of parent child conflict at ages 11, 14, 17 years.
16. Tomori , M., & Rus-	**Measures**: Self-constructed	**N**: 4700	Binge eating was related to little parent emotional

Makovec, M. (2000)	questionnaire- 117 variables Zung's self-rating depression scale Rosenberg Self-esteem scale **Country**: Slovenia **Design**: Concurrent	**Age**: 14-19 (mean=17.3) **Gender**: 2507 females, 2193 males	warmth (girls only), frequent disputes with parents and frequent parental conflicts
17. Vincent, M. A., & McCabe, M. P. (2000)	**Measures**: Multidimensional Body Self Relations Questionnaire EDI, DEBQ, Bulimia Test-Revised The Family Adaptability and Cohesion Evaluation scale II Parental Bonding Instrument Clinical Measurement Package. **Country**: Australia **Design**: concurrent	**N**: 603 **Age range**: 11-18 **Gender**: 306 girls and 297 **Ethnicity**: 45% Australian, 15% Asian, 11% Italian, 5% Greek, 5% Indian, 19% different nationalities.	For girls, parent and peer variables helped account for a model which included all variables studied and accounted for 37% variance of the variability of binge eating scores For boys, only familial and peer variables accounted for binge eating leading to 19% of the variability explained for binge eating
18. Wertheim, E. H., Paxton, S. J., Maude, D., Szmukler, G. I., Gibbons, K., Hiller, L. (1992)	**Measures**: EDI Body figure perception questionnaire Advantages of thinness scale Satisfaction with fitness questionnaire Extreme Weight Loss Behaviour Scale EDI Bulimia scale. Rosenberg self-esteem inventory Wakefield Depression Inventory Family adaptability and cohesion evaluation scale III	**N**: 921 **Gender**: 606 females, 315 males **SES**: Range of geographic and socioeconomic status area	Girls: 58.7% of the variance for binge eating was accounted for by desire to be thinner, family cohesion/adaptability and general satisfaction, parental overprotection and low caring and ideal and current figure Boys: 70.5% of the variance for binge eating was accounted for by parental overprotection and low caring, desire to be thinner, dissatisfaction with self, ideal and current figure, adaptive and cohesive family, advantages of fitness

	Parental bonding instrument **Country**: Australia **Design**: concurrent		

Appendix E

Email from ERGO confirming Ethical Approval of Study

Research Governance Feedback on your Ethics Submission (Ethics ID:8209)
ERGO [ergo@soton.ac.uk]
Sent:18 November 2013 16:30
To: Bailey S.

Submission Number 8209:
Submission Title Investigating the Role of Parent and Teacher Relationships in the association between Self-Esteem and Binge Eating in Preadolescent Children (Amendment 1):
The Research Governance Office has reviewed and approved your submission

You can begin your research unless you are still awaiting specific Health and Safety approval (e.g. for a Genetic or Biological Materials Risk Assessment) or external ethics review (e.g. NRES).The following comments have been made:

"

Submission ID : 8209
Submission Name: Investigating the Role of Parent and Teacher Relationships in the association between Self-Esteem and Binge Eating in Preadolescent Children (Amendment 1)
Date : 18 Nov 2013
Created by : Sophie Bailey

"

ERGO : Ethics and Research Governance Online
http://www.ergo.soton.ac.uk

DO NOT REPLY TO THIS EMAIL

Appendix F

Letters for Headteachers interested in taking part in the study

Dear Headteacher,

I am Sophie Bailey, a third year trainee educational psychologist from the University of Southampton. I am writing to you to see whether you would be interested in taking part in a piece of research for my thesis. I am looking at whether there is a relationship between self-esteem and binge eating in children aged 8-11 and whether teacher and parent relationships can affect this relationship.

The study would require children from years 4 to 6 to complete four questionnaires online on iSurvey which should take no longer than 30 minutes. The questionnaires will have an audio link so that children with literacy difficulties can have the questions read to them via iSurvey to help them answer them. I would be available at each session to provide further assistance if there were any technical difficulties or questions about the study.

Teachers are also asked to fill in a questionnaire about their relationship with each child involved in the study which should take no longer than 5 minutes per questionnaire.

I will be asking for parents to provide opt-in consent for their children to take part in the study and will fully debrief the children and parents after the study via letters. I can also provide copies of the questionnaires to the school should parents want to see copies of them before they choose to allow their child to take part in the study.

I understand that this may cause some disruption to the school day but in return I would like to offer an information pack about ways of supporting children with attachment difficulties in the classroom.

If you want to take part in this study please return the slip below to Sophie Bailey, Building 44a, University of Southampton, SO17 1BJ, UK by the ……

If you have any questions about the study, please do not hesitate to email me on sb1v07@soton.ac.uk and we can arrange a meeting to discuss any of your queries in person.

Yours sincerely,

Sophie Bailey

Trainee Educational Psychologist

University of Southampton

Please initial the box(es) if you agree with the statement(s):

I have read and understood the letter above (version 2, 24/09/2013) and have had the opportunity to ask questions about the study ☐

I agree to take part in this research project and agree that the researcher may assess children during their school attendance ☐

I understand that families that meet the requirements of the study will be approached via letters being sent home with the child, and an 'opt in' option to the parents would be provided ☐

I understand the schools participation is voluntary and we may withdraw at any time without my legal rights being affected ☐

Name of School Establishment (print name)

……

Name of Consenting Head Teacher (print name)

……

Signature of consenting Head Teacher

……..…….

Date……

Appendix G

Opt-in Consent letters for parents

Dear Parent/Guardian,

Invitation to take part in a research project: Investigating children's eating behaviours, perceptions of self and relationships with parents and teachers.

I am Sophie Bailey, a third year Educational Psychology student from the University of Southampton. I am writing to you to ask for your permission for your child to be involved in a research project with the University of Southampton. Before you decide whether you want your child to take part in the study, here is the key information that you should know:

What is the purpose of the study?

I am investigating the whether there is a link between a child's self-perception and certain eating behaviours for children who are in years 4 to 6. I am also looking at whether children's relationships with their parents and teachers play a role between self-esteem and certain eating behaviours.

Why has my child been invited?

All children from year 4 to 6 are being asked to take part in this study.

What will happen to my child if they take part?

If you and your child are happy to take part in the study your child will be asked to complete four questionnaires on the computer in school. These questionnaires should take no longer than 30 minutes to complete. If your child has difficulty with reading, the questions can be read to them via an audio link on the computer. I will also be present at each session to be able to support your child should they need the question explaining to them or if they need help with their computer. After the questionnaires, your child will complete an activity relating to their three best memories at school. I will then check that your child has no questions before letting them go back to class and will also send home a letter providing you with further details about the study and contact details for myself and other support services should you need them.

What do I have to do?

If you are happy for your child to take part in this study, then you should fill in the consent sheet below and send it back to school.

If you would like to see a copy of the questionnaires before you decide if you want your child to be involved in this study a copy will be available at the school for parents to look at. If you wish to do this please ask your child's class teacher or a member of staff to give you access to the school's copy.

If you do not wish for your child to take part in this study, please do not return this form.

What are the possible disadvantages and risks of taking part?

This study should not disadvantage your child or put them at risk. If your child finds some of the questions from the questionnaires upsetting or distressing, then a teacher will be available to support your child. I will also provide you with the contact details of support lines should you become concerned about your child's eating behaviours or wellbeing.

What are the possible benefits of taking part?

From this study, we are hoping to have a better understanding about the relationship between children's perceptions of themselves and their eating behaviours. We are also hoping to see whether their relationships with their teachers and parents could support appropriate eating behaviours even if they have low perception of themselves.

What will happen to the results of the research study?

The study will be written up as part of my university thesis. I will provide the school with a summary of my findings and access to my final write up.

What if there is a problem?

It is very unlikely that any part of this study will cause you or your child harm. However, if any aspect of the way you have been approached or treated in the course of the study causes you concern or you wish to complain, please contact the Chair of the Ethics Committee, Psychology, University of Southampton, SO17 1BJ, UK. Phone: +44 (0)23 8059 4663, email slb1n10@soton.ac.uk.

Will my child's taking part in this study be kept confidential?

Yes, your child's result will be kept on password protected computers and once all their data has been collected their responses will be given a unique code so that their answers are anonymous. Your child's personal details will not be included in the final write up.

What will happen if my child does not want to carry on with the study?

Your child does not have to take part if they do not wish to. If they begin the task and decide to stop this is also fine and they can return back to class with no penalty to them.

Who has reviewed the study?

This piece of research has been reviewed and approved by the University of Southampton's ethics committee.

Does my child have to take part?

No, your child's participation is completely voluntary.

APPENDIX G

If you are happy for your child to take part in this study, please complete the consent sheet on the next page.

CONSENT FORM

Study title**: Investigating children's eating behaviours, perceptions of self and relationships with parents and teachers.**

Researcher name: Sophie Bailey

Study reference:

Ethics reference: 6883

Please initial the box(es) if you are happy for your child to participate in this study and if you agree with the statement(s):

I have read and understood the information sheet about my child's participation in this study. I have had the opportunity to consider the information, ask questions and have had these answered. ☐

I agree for my child to take part in this research project and agree for their responses to be used for the purpose of ☐

I understand my child's participation is completely voluntary and that they can withdraw at any time without their legal rights being affected ☐

Data Protection

I understand that information collected about my child during their participation in this study will be stored on a password protected computer and that this information will only be used for the purpose of this study. All files containing any personal data will be made anonymous.

Name of child _____Child's date of birth_____

Name .....Signature:.....

Relationship to child .....Date.....

PLEASE RETURN THE COMPLETED CONSENT FORM

TO YOUR CHILD'S SCHOOL BY .....

Appendix H

Assent and Questionnaires for Participation

Welcome,

I am Sophie Bailey from the University of Southampton. I was wondering if you would mind answering some questions for a research project that I am working on.

I am looking at how children feel about themselves, their eating habits and their relationships. There are four questionnaires to answer.

You do not have to take part in this activity if you do not want to, please tell an adult if you want to go back to class. You can go back to class at any time during this session if you want to.

If you have any questions please ask them now.

If you are happy to help us with this study, please tick the box below if you agree with the questions below:

Have you read about this project?

Has somebody else explained this project to you?

Do you understand what this project is about?

Have you asked all the questions you want?

Have you had your questions answered in a way you understand?

Do you understand it's OK to stop taking part at any time?

Are you happy to take part?

☐ Please tick (check) this box to indicate that you consent to taking part in this survey

Information sheet

Name:

Boy ☐ Girl ☐

Age:

School:

Class:

Who do you live with: Mum ☐ Dad ☐ Brother(s) ☐

Sister(s) ☐ Grandparents ☐ Carer(s) ☐

Other person ☐

APPENDIX H

Questionnaires

What I Am Like With My Mother

Instructions to Child:

This questionnaire asks about what you are like with your mother – like how you act and feel around her. Before we get to those questions, let's try a practice question. Each question talks about two kinds of kids, and we want to know which kids are most like you. Decide first whether you are more like the kids on the left side or more like the kids on the right side, then decide whether that is sort of true for you, or really true for you, and circle that phrase. For each question you will only circle one answer.

Practice Question:

	Some kids would rather play sports in their spare time.		**BUT**	Other kids would rather watch T.V.	
	Really true for me	Sort of true for me		Sort of true for me	Really true for me

1.	Some kids find it easy to trust their mom		**BUT**	Other kids are not sure if they can trust their mom.	
	Really true for me	Sort of true for me		Sort of true for me	Really true for me

2.	Some kids feel like their mom butts in a lot when they are trying to do things		**BUT**	Other kids feel like their mom lets them do things on their own	
	Really true for me	Sort of true for me		Sort of true for me	Really true for me

3. Some kids find it easy to count on their mom for help

BUT

Other kids think it's hard to count on their mom

Really true for me	Sort of true for me		Sort of true for me	Really true for me

4. Some kids think their mom spends enough time with them

BUT

Other kids think their mom does not spend enough time with them.

Really true for me	Sort of true for me		Sort of true for me	Really true for me

5. Some kids do not really like telling their mom what they are thinking or feeling

BUT

Other kids do like telling their mom what they are thinking or feeling.

Really true for me	Sort of true for me		Sort of true for me	Really true for me

6. Some kids do not really need their mom for much

BUT

Other kids need their mom for a lot of things.

Really true for me	Sort of true for me		Sort of true for me	Really true for me

7. Some kids wish they were closer to their mom

BUT

Other kids are happy with how close they are to their mom .

	Really true for me	Sort of true for me		Sort of true for me	Really true for me
8.	Some kids worry that their mom does not really love them		**BUT**	Other kids are <u>really</u> sure that their mom loves them.	
9.	Some kids feel like their mom really understands them		**BUT**	Other kids feel like their mom does not really understand them.	
10.	Some kids are really sure their mom would not leave them		**BUT**	Other kids sometimes wonder if their mom might leave them	
11.	Some kids worry that their mom might not be there when they need her		**BUT**	Other kids are sure their mom will be there when they need her.	

12. Some kids think their mom does not listen to them

BUT

Other kids do think their mom listens to them.

Really true for me	Sort of true for me		Sort of true for me	Really true for me

13. Some kids go to their mom when they are upset

BUT

Other kids do not go to their mom when they are upset

Really true for me	Sort of true for me		Sort of true for me	Really true for me

14. Some kids wish their mom would help them more with their problems

BUT

Other kids think their mom helps them enough.

Really true for me	Sort of true for me		Sort of true for me	Really true for me

15. Some kids feel better when their mom is around

BUT

Other kids do not feel better when their mom is around.

Really true for me	Sort of true for me		Sort of true for me	Really true for me

SELF-PERCEPTION PROFILE FOR CHILDREN

(GRADES 3 – 8)

(Revision of the Self-Perception Profile for Children; Harter, 1985) Some kids feel that they are very good at their school work		**BUT**	Other kids worry about whether they can do the school work assigned to them		2		1
2.	1	2	Some kids find it hard to make friends	**BUT**	Other kids find it pretty easy to make friends	3	4
3.	4	3	Some kids do very well at all kinds of sports	**BUT**	Other kids don't feel that they are very good when it comes to sports	2	1
4.	4	3	Some kids are happy with the way they look	**BUT**	Other kids are *not* happy with the way they look	2	1
5.	1	2	Some kids often do not like the way they behave	**BUT**	Other kids usually like the way they behave	3	4
6.	1	2	Some kids are often unhappy with themselves	**BUT**	Other kids are pretty pleased with themselves	3	4
7.	4	3	Some kids feel like they are just as smart as other kids their age	**BUT**	Other kids aren't so sure and wonder if they are as smart	2	1
8.	4	3	Some kids know how to make classmates like them	**BUT**	Other kids don't know how to make classmates like them	2	1

9.	1	2	Some kids wish they could be a lot better at sports	**BUT**	Other kids feel they are good enough at sports	3	4
10.	4	3	Some kids are happy with their height and weight	**BUT**	Other kids wish their height or weight were different	2	1
11.	4	3	Some kids usually do the right thing	**BUT**	Other kids often don't do the right thing	2	1
12.	1	2	Some kids don't like the way they are leading their life	**BUT**	Other kids *do* like the way they are leading their life	3	4
13.	1	2	Some kids are pretty slow in finishing their school work	**BUT**	Other kids can do their school work quickly	3	4
14.	1	2	Some kids don't have the social skills to make friends	**BUT**	Other kids do have the social skills to make friends	3	4
15.	4	3	Some kids think they could do well at just about any new sports activity they haven't tried before	**BUT**	Other kids are afraid they might not do well at sports they haven't ever tried	2	1
16.	1	2	Some kids wish their body was different	**BUT**	Other kids like their body the way it is	3	4

17.	4	3	Some kids usually act the way they know they are supposed to	**BUT**	Other kids often don't act the way they are supposed to	2	1
18.	4	3	Some kids are happy with themselves as a person	**BUT**	Other kids are often not happy with themselves	2	1
19.	1	2	Some kids often forget what they learn	**BUT**	Other kids can remember things easily	3	4
20.	4	3	Some kids understand how to get peers to accept them	**BUT**	Other kids don't understand how to get peers to accept them	2	1
21.	4	3	Some kids feel that they are better than others their age at sports	**BUT**	Other kids don't feel they can play as well	2	1
22.	1	2	Some kids wish their physical appearanc e (how they look) was different	**BUT**	Other kids like their physical appearanc e the way it is	3	4
23.	1	2	Some kids usually get in trouble because of things they do	**BUT**	Other kids usually don't do things that get them in trouble	3	4
24.	4	3	Some kids like the kind of person they are	**BUT**	Other kids often wish they were someone else	2	1
25.	4	3	Some kids do very well at their classwork	**BUT**	Other kids don't do very well at their classwork	2	1

26.	1	2	Some kids wish they knew how to make more friends	**BUT**	Other kids know how to make as many friends as they want	3	4
27.	1	2	In games and sports some kids usually watch instead of play	**BUT**	Other kids usually play rather than just watch	3	4
28.	1	2	Some kids wish something about their face or hair looked different	**BUT**	Other kids like their face and hair the way they are	3	4
29.	1	2	Some kids do things they know they shouldn't do	**BUT**	Other kids hardly ever do things they know they shouldn't do	3	4
30.	4	3	Some kids are very happy being the way they are	**BUT**	Other kids wish they were different	2	1
31.	1	2	Some kids have trouble figuring out the answers in school	**BUT**	Other kids almost always can figure out the answers	3	4
32.	4	3	Some kids know how to become popular	**BUT**	Other kids do not know how to become popular	2	1
33.	1	2	Some kids don't do well at new outdoor games	**BUT**	Other kids are good at new games right away	3	4
34.	4	3	Some kids think that they are good looking	**BUT**	Other kids think that they are not very good looking	2	1

35.	4	3	Some kids behave themselves very well	**BUT**	Other kids often find it hard to behave themselves	2	1
36.	1	2	Some kids are not very happy with the way they do a lot of things	**BUT**	Other kids think the way they do things is fine	3	4

Questionnaire of Eating and Weight Patterns (QEWP)

1. During the past 6 months, did you ever eat what most people, like your friends, would think was a
really big amount of food?

YES NO (IF NO: Go to question #5)

Did you ever eat a really big amount of food within a short time (2 hours or less)?

YES NO (IF NO: Go to question #5)

2. When you ate a really big amount of food, did you ever feel that you could not stop eating? Did you feel that you could not control what or how much you were eating?

YES NO (IF NO: Go to question #5)

3. During the past 6 months, how often did you eat a really big amount of food with the feeling that your eating was out of control?
There may have been some weeks when you did not eat this way at all. And some

weeks you may have eaten like this a lot. But, in general, how often did this happen?

1 Less than 1 day a week

2 One day a week

3 Two or three days a week

4 Four of five days a week

5 Almost every day

4. When you ate a really big amount of food and you could not control your eating, did you:

a) Eat very fast?
Yes No

b) Eat until your stomach hurt or you felt sick in your stomach? Yes No

c) Eat really big amounts of food even when you were not hungry? Yes No

d) Eat really big amounts of food during the day without regular meals like breakfast, lunch, dinner?
Yes No

e) Eat by yourself because you did not want anyone to see how much you ate? Yes No

f) Feel really bad about yourself after eating a lot of food? Yes No

5. During the past 6 months, how bad did you feel when you ate too much or more food than you think is best for you?

1 Not bad at all

2 Just a little bad

3 Pretty bad

4 Very bad

5 Very, very bad

0 I did not eat too much

6.How bad did you feel that you could not stop eating or could not control what or how much you were eating?

1 Not bad at all

2 Just a little bad

3 Pretty bad

4 Very bad

5 Very, very bad

0 I did not lose control over my eating

7.During the past 6 months, has your weight or the shape of your body mattered to how you feel about yourself? Compare this feeling to how you feel about other parts of your life—like how you get along with your parents, how you get along with friends, and how you do at school.

1 Weight and shape were not important at all to how I felt about myself.

2 Weight and shape were somewhat important to how I felt about myself.

3 Weight and shape were pretty important to how I felt about myself.

4 Weight and shape were very important to how I felt about myself.

8. Did you ever make yourself vomit, throw up, or get sick to keep from gaining weight after eating a really big amount of food?

YES NO (IF NO: Go to question #9)

How often—on the average—did you do that?

1 Less than once a week

2 Once a week

3 Two or three times a week

4 Four or five times a week

5 More than five times a week

9. Have you ever taken medicine (pills, liquid, gum, powder) that would make you go to the bathroom in order to not gain weight after eating a really big amount of food?

YES NO (IF NO: Go to question #10)

Did you ever take more than twice the amount you were told to take on the box or bottle?

YES NO

How often—on the average—did you do that?

1 Less than once a week

2 Once a week

3 Two or three times a week

4 Four or five times a week

5 More than five times a week

10. Did you ever not eat anything at all for at least 24 hours (a full day) to keep from gaining weight after eating a really big amount of food?

YES NO (IF NO: Go to question #11)

How often—on the average—did you do that?

1 Less than once a week

2 Once a week

3 Two or three times a week

4 Four or five times a week

5 More than five times a week

11. Did you ever exercise for more than one hour at a time only to keep from gaining weight after eating a really big amount of food?

YES NO (IF NO: Go to question #12)

How often—on the average—did you do that?

1 Less than once a week

2 Once a week

3 Two or three times a week

4 Four or five times a week

5 More than five times a week

12. During the past 3 months, did you ever take diet pills to keep from gaining weight after eating a really big amount of food?

YES NO (IF NO: Go on to the next page.)

Did you ever take more than twice the amount you were told to take on the box or bottle?

YES NO

How often—on the average—did you do that?

1 Less than once a week

2 Once a week

3 Two or three times a week

4 Four or five times a week

5 More than five times a week

Self-constructed student-teacher relationship- student report. Based on Pianta's teacher report student teacher relationship scale

Definitely does not apply 1	Not really 2	Neutral, not sure 3	Applies somewhat 4	Definitely applies 5

	1	2	3	4	5
1. I have a good relationship with my teacher					
2. I seem to always struggle with my teacher					
3. When I am upset, I can go to my teacher for support and comfort					
4. I feel uncomfortable if my teacher stands too close to me					
5. I value my relationship with my teacher					
6. I feel proud when my teacher praises me					
7. I like sharing information about myself with my teacher					
8. I find it's easy to get angry with my teacher					
9. My teacher understands how I am feeling in class					
10. If my teacher tells me off, I feel angry or upset for a long time afterwards					
11. I can tell my teacher how I feel and what I've been doing					
12. My teacher gets angry easily					
13. When I am in a bad mood with my teacher it takes me a long time to get over it					
14. The way I feel about my teacher can change quickly					

Appendix I

Mood Lifting Activity for Participants

Memories about school. *(To be given out as a hand out)*

Thank you for answering those questionnaires. As a final task I want you to think of your three best memories of school. These could be at any time during the school day with anyone. Write or draw each memory in a box below, don't worry about spelling during this, just write these down in your own words or draw a picture.

Memory 1

Memory 2

Memory 3

Appendix J

Child Debrief Form

Thank you for taking part in my study. It will really help me to better understand the way children see themselves, their eating habits and their relationships with their parents and teachers.

If you would like to ask any questions about this study please ask Sophie or your teacher.

If you feel upset about any of the questions that you have been asked you can talk to a number of different people. You could talk to your parents/carers at home or your teachers or staff at school. If you want to talk to someone privately, you could call someone at ChildLine for a chat. Staff at ChildLine are trained to talk to children about their worries and will keep their conversations private. You can call ChildLine on 0800 1111 or you can look them up online on http://www.childline.org.uk/.

Thank you again for your help.

Appendix K

Parent Debrief Form

Investigating children's eating behaviours, perceptions of self and relationships with parents and teachers.

Thank you for letting your child take part in this study.

Your child's involvement will help provide me with information about how children's relationships with their parents and teachers can affect their views of themselves and their eating behaviours.

Your child's responses are being stored on password protected computers. Their personal details and identifying details will not be given out under any circumstances and will not be included in the final write up or any related publication.

If you have any concerns about this study, please contact the Chair of the Ethics Committee, Psychology, University of Southampton, SO17 1BJ, UK. Phone: +44 (0)23 8059 4663, email slb1n10@soton.ac.uk.

If you are worried or concerned about your child's eating habits, the charity BEAT provides helplines and online support regarding eating disorders. The website address is www.b-eat.co.uk where you can access information about eating disorders. They can also be contacted via a hotline on 0845 634 1414. They also have a youth line should your child want to contact them directly on 0845 634 7650.

If your child appears distressed after the session, they can talk to the teachers at school or yourselves. They may wish to speak to someone impartial and support agencies like ChildLine could help them. Staff at ChildLine are trained to talk to children about their worries and will keep their conversations private. They can call ChildLine on 0800 1111 or they can look them up online on http://www.childline.org.uk/.

Sophie Bailey

Third year Trainee Educational Psychologist.

Appendix L

Questionnaire given to Teachers

STUDENT-TEACHER RELATIONSHIP SCALE – SHORT FORM

Robert C. Pianta

Child: _____ Teacher:_____
Grade:_____

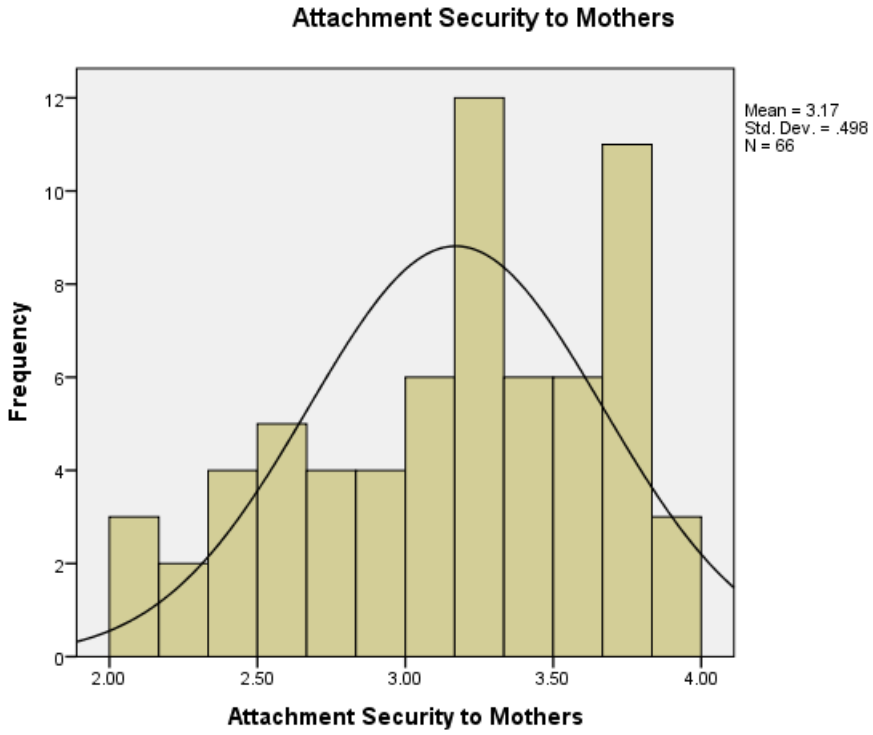
Please reflect on the degree to which each of the following statements currently applies to your relationship with this child. Using the scale below, circle the appropriate number for each item.

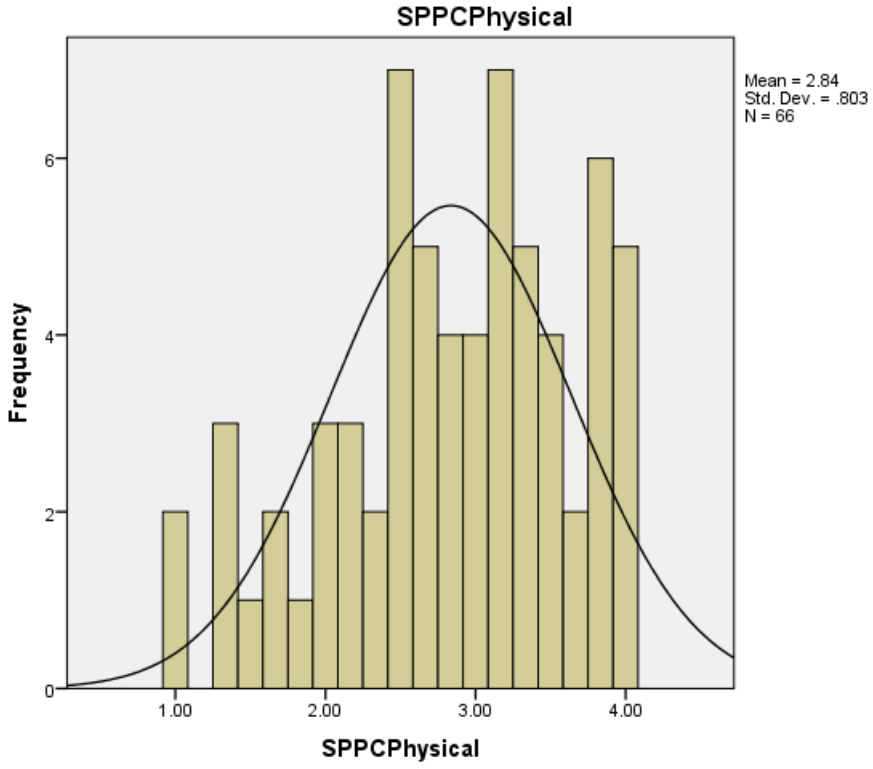
Definitely does not apply 1	Not really 2	Neutral, not sure 3	Applies somewhat 4	Definitely applies 5

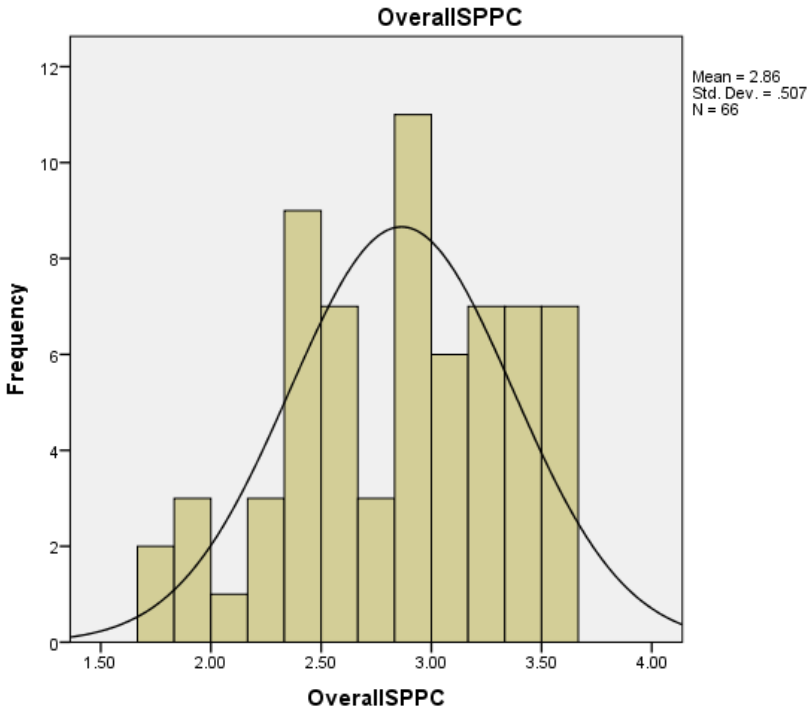
1.	I share an affectionate, warm relationship with this child.	1	2	3	4	5
2.	This child and I always seem to be struggling with each other.	1	2	3	4	5
3.	If upset, this child will seek comfort from me.	1	2	3	4	5
4.	This child is uncomfortable with physical affection or touch from me.	1	2	3	4	5
5.	This child values his/her relationship with me.	1	2	3	4	5
6.	When I praise this child, he/she beams with pride.	1	2	3	4	5
7.	This child spontaneously shares information about himself/herself.	1	2	3	4	5
8.	This child easily becomes angry with me.	1	2	3	4	5
9.	It is easy to be in tune with what this child is feeling.	1	2	3	4	5
10.	This child remains angry or is resistant after being disciplined.	1	2	3	4	5
11.	Dealing with this child drains my energy	1	2	3	4	5
12.	When this child is in a bad mood, I know we're in for a long and difficult day.	1	2	3	4	5
13.	This child's feelings toward me can be unpredictable or can change suddenly.	1	2	3	4	5
14.	This child is sneaky or manipulative with me.	1	2	3	4	5
15.	This child openly shares his/her feelings and experiences with me.	1	2	3	4	5

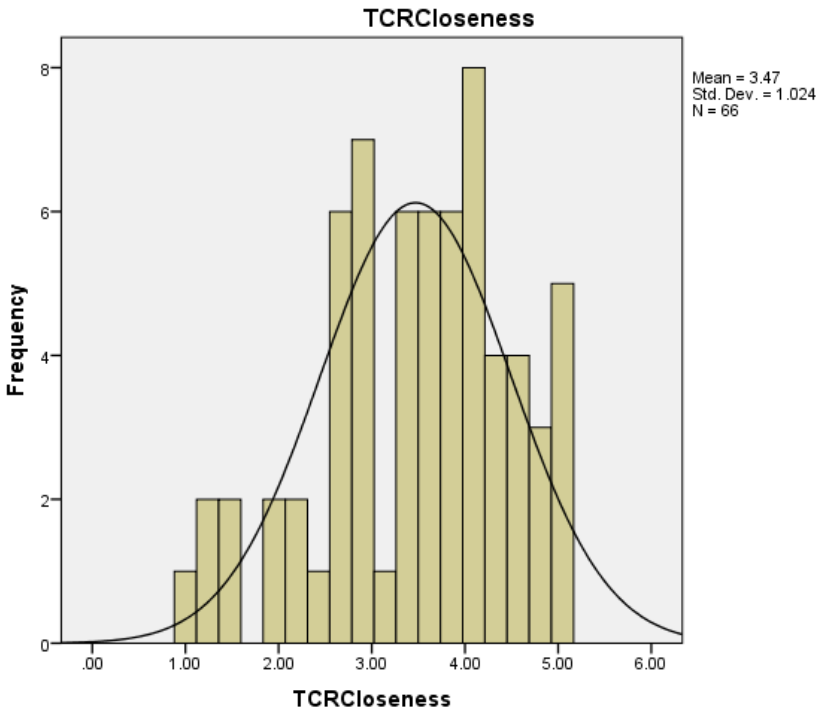
Appendix M

Histograms of Measures used to Examine Normality.

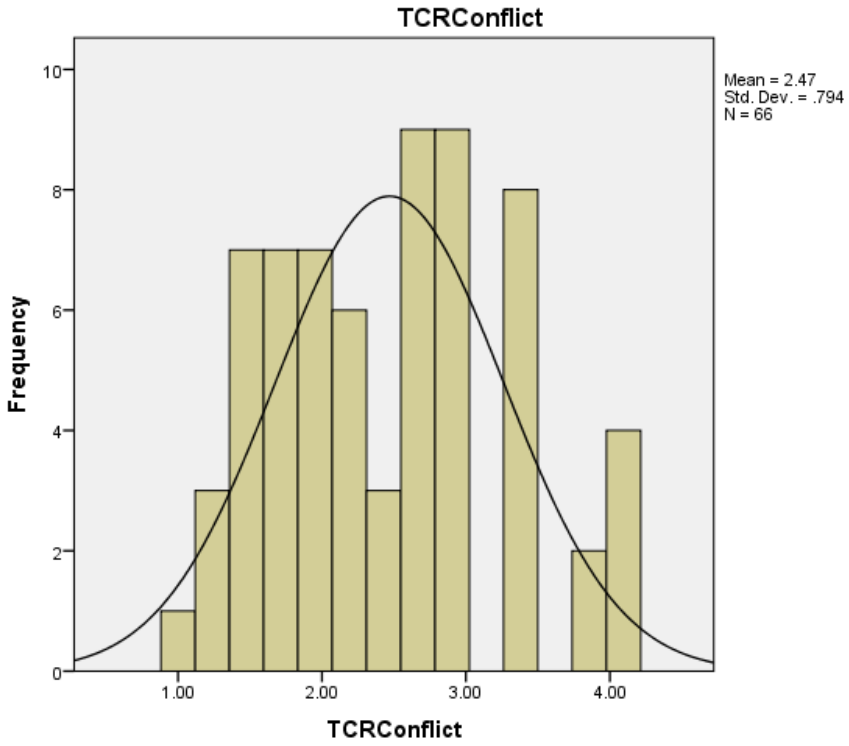





OverallSPPC
Mean = 2.86
Std. Dev. = .507
N = 66
Frequency
0
2
4
6
8
10
12
1.50
2.00
2.50
3.00
3.50
4.00
OverallSPPC


TCRCloseness
Mean = 3.47
Std. Dev. = 1.024
N = 66
Frequency
0
2
4
6
8
.00
1.00
2.00
3.00
4.00
5.00
6.00
TCRCloseness

APPENDIX M


TCRConflict
Mean = 2.47
Std. Dev. = .794
N = 66
Frequency
10
8
6
4
2
0
1.00
2.00
3.00
4.00
TCRConflict

List of References

Achenbach, T. M., & Edelbrock, C. (1991). *Manual for the child behaviour checklist and the revised child behaviour profile*. University of Vermont Department of Psychiatry: Burlington, VT.

Allen, K. L., Byrne, S. M., Puma, M. L., McLean, N., & Davis, E. A. (2008). The onset and course of binge eating in 8 to 13 year old healthy weight, overweight and obese children. *Eating Behaviours, 9, 438-446.* Doi: 10.1016/j.eatbeh.2008.07.008

American Psychiatric Association (2013). *Diagnostic and Statistical Manual of Mental Disorders. Fifth Edition.* American Psychiatric Association: VA, USA.

Bäck, E. A. (2011). Effects of parental relations and upbringing in troubled adolescent eating behaviours. Eating Disorders: *The Journal of Treatment and Prevention, 19 (5)*, 403-424.

Bergin, C., & Bergin, D. (2009). Attachment in the classroom. *Educational Psychology Review, 21*, 141-170.

Bergtold, J. S., Yeager, E. A., & Featherstone, A. (2011). Sample size and robustness of inferences from logistic regression in the presence of nonlinearity and multicollinearity. Presented at Agricultural and Applied Economics Association. Pennsylvania, USA. Presented July 2011.

Bohlin, G., Hagekull, B., & Rydell, A. (2000). Attachment and social functioning: A longitudinal study from infancy to middle childhood. *Social Development, 9 (1),* 24-39.

Boone, L (2013). Are attachment styles differently related to interpersonal perfectionism and binge eating symptoms? *Personality and Individual Differences, 54 (p8)*, 931-935.

Boutelle, K., Eisenberg, M. E., Gregory, M. L., & Neumark-Sztainer, D. (2009). The reciprocal relationship between parent-child connectedness and adolescent emotional functioning over 5 years. *Journal of Psychosomatic Research, 66,* 309-316. Doi: 10.1016/j/psychores.2008.10.019.

Bowlby, J. (1980). *Attachment and Loss: Volume 3. Loss, Separation and Depression.* Basic Books: New York, USA.

Bulanda, R. E., & Majumdar, D. (2009). Perceived parent-child relations and adolescent self-esteem. *Journal of Child and Family Study, 18,* 203-212. Doi: 10.1007/s10826-008-9220-3.

Bulik, C. M., Sullivan, P. F., & Kendler, K. S. (2003). Genetic and environmental contributions to obesity and binge eating. *International Journal of Eating Disorders, 33*, 293-298. Doi: 10.1002/eat.10140

Buyse, E., Verschueren, K., & Doumen, S. (2011). Pre-schoolers' attachment to mothers and risk for adjustment problems in kindergarten: Can teachers make a difference? *Social Development, 20 (1),* 33-50.

Cook, E. T., Greenberg, M. T., & Kusche, C. A. (1995). People in my life: Attachment relationships in middle childhood. Presented at Society for Research in Child Development: Indianapolis, March 1995.

Czaja, J., Hartmann, A. S., Rief, W., & Hilbert, A. (2011) Mealtime family interactions in home environments of children with loss of control eating. *Appetite, 56*, 587-593. Doi:10.1016/j.appet.2011.01.030.

REFERENCES

Czaja, J., Rief, W., & Hilbert, A. (2009). Emotion regulation and binge eating in children. *International Journal of Eating Disorders, 42 (4),* 356-362.

Decaluwé, V., Braet, C., & Fairburn, C. G. (2002). Binge eating in obese children and adolescents. *International Journal of Eating Disorders, 33*, 78-84.

Decaluwé, V., Braet, C., Moens, E., & Van Vlierberghe, L. (2006). The association of parental characteristics and psychological problems in obese youngsters. *International Journal of Obesity, 30 (12)*, 1766-1774. Doi: 10.1038/sj.ijo.0803336.

Elkins, I. J., McGue, M., & Iacono, W. G. (1997). Genetic and environmental influences on parent-son relationships: Evidence for increasing genetic influences during adolescence. *Developmental Psychology, 33,* 351-363

Elliott, C. A., Tanofsky-Kraff, M., Shomaker, L. B., Columbo, K. M., Wolkoff, L. E., Ranzenhofer, L. M., & Yanovski, J. A. (2010). An examination of the interpersonal model of loss of control eating in children and adolescents. *Behaviour Research and Therapy, 48*, 424-428. Doi: 10.1016/j.brat.2009.12.012

Epstein, N., Baldwin, L., & Bishop, D. (1983). The McMaster family assessment device. *Journal of Marital and Family Therapy, 9,* 171-180.

Fairburn, C. G., Welch, S. L., Doll, H. A., Davies, B. A., & O'Connor, M. E. (1997). Risk factors for bulimia nervosa. A community-based case-control study. *Archives of General Psychiatry, 54*, 509-517.

Fairburn, C.G., & Cooper, Z. (1993). The Eating Disorder Examination. *Assessment and Treatment* (pp 317-360). Guildford Press: New York, USA.

Field, A. E., Javaras, K.M., Aneja, P., Kitos, N., Camargo, C. A., Taylor, C. B., & Laird, N. N. (2008). Family, peer, and media predictors of becoming eating disordered. *Archives of Pediatric and Adolescent Medicine, 162 (6*), 574-579. Doi: 10.10001/archpedi.162.6.574

Field, A. (2009). *Discovering Statistics using SPSS (3rd Edition).* Sage Publications: London, UK.

Field, A. E., Taylor, A. C. B., Malspeis, S., Rosner, B., Rockett, H. R., Gillman, M. W., & Colditz, G. A. (2003). Relation between dieting and weight change among preadolescents and adolescents. *Pediatrics, 112 (4),* 900-906. Doi: 10.1542/peds.112.4.900.

Forbes, C., Vuchinich, S., & Kneedler, B. (2001). Assessing families with the Family Problem Solving Code. In Kerig, P.C., & Lindahl, K.M. (eds.) *Family Observational Coding Systems: Resources for Systemic Research* (pp.59-76). Lawrence Erlbaum Associates: New Jersey, America.

Fraley, R. C., Walker, N. G., & Brennan, K. A. (2000). An item response theory analysis of self-report measures of adult attachment. *Journal of Personality and Social Psychology, 78,* 350-365

Garner, D. M. (1991). *Eating Disorder Inventory-2 Professional Manual.* Psychological Assessment Resources: Florida, USA.

Garner, D. M., Olmstead, M. P., & Polivy, J. (1983). Development and validation of a multidimensional eating disorder inventory for Anorexia Nervosa and Bulimia. *International Journal of Eating Disorders, 2 (2),* 15-34.

Goldschmidt, A. B., Jones, M., Manwaring, J. L., Luce, K. H., Osborne, M. I., Cunning, D., Taylor, K. L., Doyle, A. C., Wilfley, D. E., & Taylor, C. B. (2008). The clinical significance of loss of control over eating in overweight

adolescents. *International Journal of Eating Disorders, 41 (2),* 153-158. Doi: 10.1002/eat.20481.

Goldschmidt, A. B., Wall, M., Loth, K. A., Le Grange, D., & Neumark-Sztainer, D. (2012). Which dieters are at risk for the onset of binge eating? A prospective study of adolescents and young adults. *Journal of Adolescent Health, 51,* 86-92. Doi: 10.1016/j.jadohealth.2011.11.001.

Gossens, L., Braet, C., & Decaluwé, V. (2007). Loss of control over eating in obese youngsters. *Behaviour Research and Therapy, 45*, 1-9. Doi: 10.1016/j.brat.2006.01.006.

Gossens, L., Braet, C., Bosmans, G., & Decaluwé, V. (2011). Loss of control over eating in pre-adolescent youth: the role of attachment and self-esteem. *Eating Behaviors, 12 (4)*, 289-295. Doi:10.1016/j.eatbeh.2011.07.005.

Gossens, L., Braet, C., Van Durme, K., Decaluwé, V., & Bosmans, G. (2012). The parent-child relationship as predictor of eating pathology and weight gain in preadolescents. *Journal of Clinical Child and Adolescent Psychology, 41 (*4), 445-457. Doi: 10.1080/15374416.2012.660690.

Gossens, L., Braet, X., Van Vlierberghe, L., & Mels, S. (2009). Loss of control over eating in overweight youngsters: The role of anxiety, depression and emotional eating. *European Eating Disorder Review, 17*, 68-78. Doi: 10.1002/erv.892

Granot, D., & Mayseless, O. (2001). Attachment security and adjustment to school in middle childhood. *International Journal of Behavioural Development, 25 (6*), 530-541.

Groh, A. M., Fearon, R. P., Bakermans-Kranenburg, M. J., van Ijzendoorn, M. H., Steele, R. D., & Roisman, G. I. (2014). The significance of attachment security for children's social competence with peers: a meta-analytic study. *Attachment and Human Development, 16 (2*), 103-136. Doi: 10.1080/14616734.2014.883636

Grossmann, K. E., Grossmann, K., & Waters, E. (2005). *Attachment from Infancy to Adulthood: The Major Longitudinal Studies.* The Guildford Press: New York, USA.

Haines, J., Gillman, M. W., Rifas-Shiman, S., Field, A. E., & Austin, S. B. (2010a). Family dinner and disordered eating behaviours in a large cohort of adolescents. *Eating Disorders, 18 (1)*, 10-24. Doi:10.1080/10640260903439516

Haines, J., Kleinman, K. P., Rifas-Shiman, S. L., Field, A. E., & Austin, S. B. (2010b). Examination of shared risk and protective factors for overweight and disordered eating among adolescents. *Archives of Pediatrics and Adolescent Medicine, 164(4)*, 336-343.

Harter, S. (2012). *Manual for the Self-Perception Profile for Children. Manual and Questionnaires.* University of Denver: Denver, USA.

Hartmann, A. S., Czaja, J., Rief, W., & Hilbert, A. (2012). Psychosocial risk factors of loss of control eating in primary school children: A retrospective case-control study. *International Journal of Eating Disorders, 45 (6)*, 751-758.

Henderson, M., & Freeman, C. P. (1987). A self-rating scale for Bulimia. The 'BITE'. *Journal of Psychiatry*, *150*, 18-24

REFERENCES

Hewitt, P. L., Flett, G. L., Sherry, S. B., Habke, M., Parkin, M., Lam, R., W., McMurtry, B., Ediger, E., Fairlie., P, & Stein, M.B. (2003). The interpersonal expression of perfection: Perfectionistic self-presentation and psychological distress. *Journal of Personality and Social Psychology, 84,* 1303-1325

Hilbert, A., Hartmann, A. S., & Czaja, J. (2008). Child eating disorder examination-questionnaire: Evaluation der deutschprachigen version dea essstorungsfragebogens. *Klinical Diagnostic Evaluation, 1,* 447-463

Hilbert, A., Hartmann, A. S., Czaja, J., & Schoebi, D. (2013). Natural course of preadolescent loss of control eating. *Journal of Abnormal Psychology, 122* (3), 684-693. Doi: 10.1037/a0033330.

Hilbert, A., Tuschen-Caffier, B., & Czaja, J. (2010). Eating behaviour and familial interactions of children with loss of control eating: a laboratory test meal study. *American Journal of Clinical Nursing, 91*, 510-518. Doi: 10.3945/acjn.2009.28843.

Hogen, P. D. (1988). The relationship between individual psychological characteristics and factors associated with family use of food as predictors of disturbed eating attitudes and behaviors in adolescents [doctoral dissertation]. University of Hartford, America

Huntsinger, E. T., & Luecken, L. J. (2004). Attachment relationships and health behaviour: the mediational role of self-esteem. *Psychology and Health, 19, (4)*, 515-526.

Johnson, W. G., Grieve, F. G., Adams, C. D., & Sandy, J. (1999). Measuring binge eating in adolescents: Adolescent and parent versions of the Questionnaire of Eating and Weight Patterns. International Journal of Eating Disorders, 26, 301-314.

Johnson, W. G., Kirk, A. A., & Reed, A. E. (2000). Adolescent version of the Questionnaire of Eating and Weight Patterns: Reliability and gender differences. *International Journal of Eating Disorders, 29,* 94-96.

Keel, P. K., Fulkerson, J. A., & Leon, G. R. (1997). Disordered eating precursors in pre- and early adolescent girls and boys. *Journal of Youth and Adolescence, 26 (2),* 203-216.

Kerns, K., Klepac, L., & Cole, A. (1996). Peer relationships and preadolescents' perceptions of security in the child-mother relationship. *Developmental Psychology, 32,* 457-466.

Klump, K. L., Burt, A., McGue, M., & Iacono, W. G. (2007). Changes in genetic and environmental influences on disordered eating across adolescence. A longitudinal twin study. *Archives of General Psychiatry, 64(12*), 1409-1415.

Kovacs, M. (1995). The Children's Depression Inventory (CDI). Psychopharmacology Bulletin, 21, 995-998.

Laible, D. J., Carlo, G., & Roesch, S. C. (2004). Pathways to self-esteem in late adolescence: The role of parent and peer attachment, empathy, and social behaviors. *Journal of Adolescence, 27 (6),* 703-716. Doi: 10.1016/j.adolescence.2004.05.005.

Lamerz, A., Kuepper-Nybelen, J., Bruning, N., Wehle, C., Trost-Brinkhues, G., Brenner, H., Hebebrand, J., & Herpertz-Dahlmann, B. (2005). Prevalence of obesity, binge eating, and night eating in cross-sectional field survey of 6-year-old children and their parents in a German urban population. *Journal of Child Psychology and Psychiatry, 46 (4),* 385-393. Doi: 10.1111/j.1469-7610.2004.00363.x

REFERENCES

Marcus, M. D., & Kalarchin, M. A. (2003). Binge eating in children and adolescents. *International Journal of Eating Disorders, 34*, S47-S57. Doi: 10.1002/eat.10205.

McKnight Investigators. (2003). Risk factors for the onset of eating disorders in adolescent girls results of the McKnight longitudinal risk factor study. *The American Journal of Psychiatry, 160,* 248-254

Morgan, C. M., Yanovski, S. Z., Nguyen, T. T., McDuffie, J., Sebring, N. G., Jorge, M. R., Keil, M., & Yanovski, J. A. (2002). Loss of control over eating, adiposity, and psychopathology in overweight children. *International Journal of Eating Disorders, 31*, 430-441. Doi: 10.1002/eat.10038.

Murray-Harvey, R. (2010). Relationship influences on students' academic achievement, psychological health and well-being at school. *Educational and Child Psychology, 27 (1)*, 104-115.

Nangle, D. W., Johnson, W. G., Carr-Nangle, R. E., & Engler, L. B. (1994) Binge eating disorder and the proposed DSM-IV criteria: Psychometric analysis of the QEWP. *International Journal of Eating Disorders, 16 (2),* 147-157.

Neumark-Sztainer, D., Story, M., Toporoff, E., Cassuto, N., Resnik, M. D., & Blum, R. W. (1996) Psychosocial predictors of binge eating and purging behaviors among adolescents with and without diabetes mellitus. *Journal of Adolescent Health, 19(4)*, 289-296.

Neumark-Sztainer, D., Wall, M., Story, M., Fulkerson, J. A. (2004) Are family meal patterns associated with disordered eating behaviors among adolescents? *Journal of Adolescent Health, 35 (5),* 350-359.

O'Connor, E, E., Dearing, E., & Collins, B. A. (2011). Teacher-child relationship and behaviour problem trajectories in elementary school. *American Educational Research Journal, 48 (1),* 120-162.

O'Connor, E. E., Collins, B. A., & Supplee, L. (2012). Behaviour problems in late childhood: the roles of early maternal attachment and teacher-child relationship trajectories. *Attachment and Human Development, 14 (3),* 265-288.

Olson, D. H., McCubbin, H. I., Barnes, H., Larsen, A., Muxen, M., & Wilson, M. (1986). *Family Inventories.* (pp. 1-40). Family Social Science: Minnesota, America

Olvera, N., Dempsey, A., Gonzalez, E., & Abrahamson, C. (2013). Weight-related teasing, emotional eating, and weight control behaviours in Hispanic and African American girls. *Eating Behaviors, 14,* 513-517.

Pace, U., Cacioppo, M., & Schimmenti, A. (2012). The moderating role of father's care on the onset of binge eating symptoms among female late adolescents with insecure attachment. *Child Psychiatry and Human Development, 43,* 282-292. Doi: 10.1007/s10578-011-0269-7.

Parker, C. G., Johnson-Sabine, E., Woods, K., Mann, A, H., & Wakeling, A. (1990). Abnormal eating attitudes in London Schoolgirls: Outcome at twelve month follow-up. *Psychological Medicine, 20*, 383-394

Paxton, S. J., Schutz, H. K., Wertheim, E. H., & Muir, S. L. (1999). Friendship clique and peer influences on body image concerns, dietary restraint, extreme weight-loss behaviors and binge eating in adolescent girls. *Journal of Abnormal Psychology, 108 (2),* 255-266.

REFERENCES

Pianta, R. C. (1992). *The Student Teacher Relationship Scale.* University of Virginia: Charlottesville, USA.

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments and Computers, 36 (4)*, 717-731.

Reddy, R., Rhodes, J. E., & Mulhall, P. (2003). The influence of teacher support on student adjustment in the middle school years: A latent growth curve study. *Development and Psychopathology, 15,* 119-138. Doi: 10.1017.s0954579403000075

Rome, E. S., Ammerman, S., Rosen, D. S., Keller, R. J., Lock, J., Mammel, K. A., O'Toole, J., Rees, J. M., Sanders, M. J., Sawyer, S. M., Schneider, M., Sigel, E., & Silber, T. J. (2003). Children and adolescents with eating disorders: The state of the art. *Pediatrics, 111*, e98-e108. Doi: 10.1542/peds.111.1.e98

Shanmugan, V., Jowett, S., & Meyer, C. (2012). Eating psychopathology amongst athletes: Links to current attachment styles. *Eating Behaviours, 13*, 5-12.

Shomaker, L. B., Tanofsky-Kraff, M., Elliott, C., Wolkoff, L. E., Columbo, K. M., Razenhofer, L. M., Roza, C. A., Yanovski, S. Z., & Yanovski, J. A. (2010) Salience of loss of control for pediatric binge episodes: Does size really matter? *International Journal of Eating Disorders, 43 (8),* 707-716. Doi: 10.1002/eat.20767.

Sierra-Baigrie, S., Lernos-Giralez, S., Fonseca- Pedero, E. (2009) Binge eating in adolescents: its relation to behavioural problems and family-meal patterns. *Eating Behaviours, 10 (1)*, 22-28.

Smith, M. C., & Thelen, M. H. (1984). Development and validation of a test for bulimia. *Journal of Consulting and Clinical Psychology, 52 (5),* 863-872. Doi: 10.1037/0022-006x.52.5.863

Spanos, A., Klump, K. L, Burt, S. A., McGue,M., & Iacono, W. G. (2010). A longitudinal investigation of the relationship between disordered eating attitudes and behaviors and parent-child conflict: A monozygotic twin differences design. *Journal of Abnormal Psychology, 119 (2)*, 293-299. Doi: 10.1037/a0019028

Sroufe, L. A., Egeland, B., Carlson, E. A., & Collins, W. A. (2005). *The Development of the Person.* The Guildford Press: New York, USA.

Stice, E., Presnell, K., & Spangler, D. (2002). Risk factors for binge eating onset in adolescent girls: A 2-year prospective investigation. *Health Psychology, 21 (2),* 131-138. Doi: 10.1037//0278-6133.21.2.131.

Striegel-Moore, R. (1995). Psychological factors in the etiology of binge eating. *Addictive Behaviors, 20 (6),* 713-723.

Striegel-Moore, R. H., Dohm, F., Kraemer, H. C., Schreiber, G. B., Taylor, C. B., & Daniels, S. R. (2007). Risk factors for Binge Eating Disorders: An exploratory study. *International Journal of Eating Disorders, 40 (6)*, 481-487. Doi: 10.1002/eat.

Sullivan, H. S. (1953). *The Interpersonal Theory of Psychiatry.* Norton: New York, USA.

Tanofsky-Kraff, M., Faden, D., Yanovski, S. Z., Wilfley, D. E., & Yanovski, J. A. (2005). The perceived onset of dieting and loss of control eating

behaviours in overweight children. *International Journal of Eating Disorders, 38(2)*, 112-122

Tanofsky-Kraff, M., Marcus, M. D., Yanovski, S. Z., & Yanovski, J. A. (2008). Loss of control eating disorder in children age 12y and younger: Proposed research criteria. *Eating Behaviours, 9 (3*), 360-365.

Tanofsky-Kraff, M., Wilfley, D. E., Young, J. F., Mufson, L., Yanovski, S. Z., Glasofer, D. R., & Salaita, C. G. (2007). Preventing excessive weight gain in adolescents: Interpersonal psychotherapy for binge eating. Obesity, 15 (6), 1345-1355

Tanofsky-Kraff, M., Yanovski, S. Z., Schvey, N. A., Olsen, C. O., Gustaffson, J., & Yanovski, J. A. (2009). A prospective study of loss of control eating for body weight gain in children at high risk for adult obesity. *International Journal of Eating Disorder, 42 (1),* 26-30. Doi: 10.1002/eat.20580.

Tanofsky-Kraff, M., Yanovski, S. Z., Wilfley, D. E., Marmarosh, C., Morgan, C. M., & Yanovski, J. A. (2004). Eating-disordered behaviors, body fat, and psychopathology in overweight and normal-weight children. *Journal of consulting and clinical psychology, 72*, 1, 53-61

Thelen, M. H., Farmer, J., Wonderlich, S., & Smith, M. (1991). A revision of the Bulimia test: The BULIT-R. *Psychological Assessment: Journal of Consulting and Clinical Psychology, 3 (1),* 119-124. Doi: 10.1037/1040-3590.3.1.119.

Tomori, M., & Rus-Makovec, M. (2000) Eating Behaviour, depression, and self-esteem in high school students. *Journal of Adolescent Health, 26 (5),* 361-367.

Unnewher, S., Schneider, S., & Margraf, J. (2008). *Kinder-DIPS- Diagnostic Interview Bei Psychischen Storungen im kindes- und jungendalter*. Gottigen: Hogrefe

Van Leeuwen, K. G. &, Vermulst, A. A (2004). Some psychometric properties of the Ghent Parental Behavior Scale. *European Journal of Psychological Assessment, 20*, 283-298

Vincent, M. A., & McCabe, M. P. (2000) Gender differences among adolescents in family, and peer influences on body dissatisfaction, weight loss and binge eating behaviors. *Journal of Youth and Adolescence, 29 (2)*, 205-221.

Waller, G., & Osamn, S. (1998). Emotional eating and eating psychopathology among non-eating-disordered women. *International Journal of Eating Disorders, 23* (4), 419-424

Ward, A., Ramsay, R., & Treasure, J. (2000). Attachment research in eating disorders. British Journal of Medical Psychology, 73 (1), 35-51. Doi: 10.1348/000711200160282

Ward, M. J. Lee, S. S., Polan, J. (2006). Attachment and psychopathology in a community sample. Attachment and Human Development, 8 (4), 327-340.

Waters, E., Merrick, S., Treboux, D., Cromwell, J., & Albersheim, L. (2000). Attachment security in infancy and early adulthood: A twenty year longitudinal study. *Child Development, 71(3),* 684-689.

REFERENCES

Wertheim, E. H., Paxton, S. J., Maude, D., Szmukler, G. I., Gibbons, K., Hiller, L. (1992) Psychosocial predictors of weight loss behaviors and binge eating in adolescent girls and boys. *International Journal of Eating Disorders, 12 (2),* 151-19

Wilfley, D. E., Agras, W. S., Telch, C. F., Rossiter, E. M., Schenider, J. A., Cole, A. G., Sifford,L., & Raeburn, S. D. (1993). Group cognitive-behavioral therapy and group interpersonal psychotherapy for the nonpurging bulimic individual. A controlled comparison. *Journal of Consulting and Clinical Psychology, 61* (2), 296-305.

Wilfley, D. E., Pike, K. M., & Striegel-Moore, R. H. (1997). Toward an integrated model of risk for binge eating disorder. *Journal of Gender, Culture, and Health, 2(1),* 1-32.

Wilfley, D. E., Welch, R., Stein, R. I., Spurrell, E. B., Cohen, L. R., Saelens, B. E., Dounchis, J. Z., Frank, M. A., Wiseman, C. V., & Matt, G. E. (2002). A randomized comparison of group cognitive-behavioral therapy and group interpersonal therapy for the treatment of overweight individuals with binge eating disorder. *Archives of General Psychiatry, 59*, 713-721.

Woolfolk, A., Hughes, M., & Walkup, V. (2008). *Psychology in Education*. Pearson: Essex, UK.