

The Relationship Between Sociocultural Influences and Disordered Eating Behaviours: Age-Related Differences in an Integrated Theoretical Model.

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The Relationship Between Sociocultural Influences and Disordered Eating Behaviours:
Age-Related Differences in an Integrated Theoretical Model.

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Submitted in fulfilment of the requirements of the degree of Doctor of Philosophy in
Clinical Psychology, February 2007.

Abstract

This thesis contributes to a growing body of research examining the relationship between sociocultural influences and disordered eating behaviour. The aim of the current research was to extend on previously developed theoretical models to more closely examine age-related differences in an integrated sociocultural model of disordered eating behaviour. The proposed model was informed by components of the dual-pathway model and the tripartite influence model. Nine-hundred and ninety-five women, from four different age groups (i.e., preadolescent, early adolescent, late adolescent and young adult), completed self-report measures of perceived pressure to be thin, modelling of disordered eating behaviour, media exposure, internalisation of the thin-ideal, social comparison, body dissatisfaction, body mass index, and disordered eating behaviour. Using structural equation modelling (SEM) techniques, a sociocultural model of disordered eating was tested and found to have good fit to the data. A number of age-related differences in the strength of the relationship between variables were found. Interestingly, modelling of disordered eating behaviour was a direct predictor of disordered eating behaviour regardless of age group. As expected internalisation of the thin-ideal mediated between perceived pressure to be thin and body dissatisfaction for all age groups. Surprisingly, media exposure had few effects on internalisation, but was more strongly related to social comparison for the late adolescent and young adult age groups. Social comparison played a less significant role in predicting body dissatisfaction in preadolescent girls. However, for all other participants, social comparison predicted internalisation of the thin-ideal, body dissatisfaction and disordered eating behaviour. As expected, BMI predicted body dissatisfaction, and body dissatisfaction predicted disordered eating behaviour. The models accounted for between 60-64% of the variance in disordered eating behaviour. Implications for prevention programs are discussed in light of these findings.

Declaration

This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, this thesis contains no material previously published or written by another person except where due reference is made in the thesis itself. The data for this research were collected and analysed by the principal researcher.

Lucy C. Coyne (Formerly Lucy C. Blowers)
Date: 28th February 2007

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CHAPTER ONE

Overview and Aims of the Thesis

Everybody feels like they are not good enough, not pretty enough, not skinny enough...every time you open a magazine you always see beautiful people...it is always blasted over TV about how...you have to look good to be a good person (an Australian adolescent girl, as quoted in Wertheim, Paxton, Schutz, & Muir, 1997, p. 350).

In Western societies great importance is placed on body shape and weight – especially for young women. Ironically, while the cultural “ideal” for body size has become thinner over the last 50 years, the average weight of women has steadily increased (Cameron et al., 2003; Wisemann, Gray, Mosimann, & Ahrens, 1992). Furthermore, the increased prevalence of overweight and obesity in young women and girls is now considered a major public health concern (World Health Organisation, 1999; Wyatt, Winters, & Dubbert, 2006). It is likely that this widening gap between the ideal and reality has contributed to the high rates of body dissatisfaction that many girls and young women experience, as well as high rates of dieting and in some cases more extreme weight control behaviours such as fasting, binge eating, purging, and overexercising¹ (Striegel-Moore, Silberstein, & Rodin, 1986; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). In recent times, the focus on thinness and dieting has extended from a predominantly adolescent population to preadolescent girls (Ricciardelli & McCabe, 2001; Shisslak et al., 1998). This is a particular cause for concern due to the detrimental health effects – on both physical and psychological development – of extreme weight control behaviours in prepubescence (Edmunds & Hill, 1999; McVey, Tweed, & Blackmore, 2004).

Regrettably, girls and young women who engage in these behaviours are at increased risk for the later development of a clinical or partial-syndrome eating disorder such as anorexia, bulimia nervosa, and/or binge eating disorder (Patton, Selzer, Coffey,

¹ Eating disorders and body dissatisfaction do occur in males, however given the disproportionate prevalence of these problems in women, the current research focused exclusively on a female population.

Carlin, & Wolfe, 1999; Ackard, Croll, & Kearney-Cook, 2002). These disorders have a number of well-documented physical and psychological complications that are often long standing, as well as difficult and expensive to treat (Agras, 2001; Herzog et al., 2000; Pike & Striegel-Moore, 1997). Thus, developing a better understanding of the risk factors associated with disordered eating has been an important focus for researchers in this field.

A multitude of psychological and biological risk factors are thought to play a role in the development of disordered eating and clinical eating disorders (e.g., Brownell & Fairburn, 1995; Bulik, 2004; Stice, 2002). In addition, sociocultural influences are considered to play a crucial role. It has been argued that the increased rates of body dissatisfaction and disordered eating in Western societies correspond with increased societal preoccupation with thinness (Thompson et al., 1999). In particular, contemporary media has played an influential role in communicating societal standards that emphasise thinness and beauty (Levine & Harrison, 2004). In addition to mass media, both families and peers may transmit sociocultural messages regarding the importance of thinness, either knowingly or unwittingly (Stice, 1994; Thompson & Heinberg, 1999). When these influences are combined with other individual differences (e.g., internalisation of the thin-ideal, higher body weight, social comparison tendencies), body dissatisfaction is more likely to develop and in some cases lead to disordered eating behaviours (Stice, 2001b; Thompson & Stice, 2001; Thompson et al., 1999). Furthermore, certain types of societal pressure (e.g., modelling of disordered eating behaviours) may directly predict disordered eating, without necessarily operating via other psychological variables (Stice, 1998).

Two influential theoretical models have been proposed in this area. The *dual-pathway model* (Stice, 1994; Stice, 2001a; Stice, Nemeroff, & Shaw, 1996; Stice, Shaw, & Nemeroff, 1998) is an integrative model that examines the mediating mechanisms

between sociocultural pressures and the expression of bulimia nervosa. The *tripartite influence model* (Keery, van den Berg, & Thompson, 2004; Thompson et al., 1999; van den Berg, Thompson, Obremski-Brandon, & Covert, 2002) examines the role of appearance comparison and internalisation of the thin-ideal as mediators of the relationship between multiple sociocultural influences and eating pathology/bulimia. Although these models have contributed significantly to the body of knowledge in this field, both have primarily focused on college-aged women or adolescent girls. Neither have examined younger preadolescent girls, or considered age-related difference across multiple age groups of young women. It has been recently recommended that risk and protective factor research should focus on the development of body dissatisfaction and weight concerns in younger children – before the development of more serious eating disturbances occurring in middle adolescence (Levine & Smolak, 2006).

Furthermore, past theoretical models have focused solely on the effects of perceived pressure to be thin on disordered eating behaviour. The current study will examine the additional impact of modelling of disordered eating and media exposure, on internalisation of the thin-ideal, social comparison, body dissatisfaction, and disordered eating behaviour.

Thus, the aim of the current research is to extend on previously developed theoretical models to more closely examine age-related differences in an integrated sociocultural model of disordered eating behaviour. Components of both the dual-pathway and tripartite influence models will be included in the current theoretical model. However, the model will be modified so it applies to younger preadolescent girls who are less likely to have developed a clinical eating disorder. The current research will add valuable information about the way in which sociocultural influences and other psychological variables (e.g., such as internalisation of the thin-ideal and social comparison) are related directly and indirectly to body dissatisfaction and disordered

eating behaviours in preadolescent, early adolescent, late adolescent and young adult women. Moreover, it is expected that information regarding age-related differences in the proposed sociocultural model will be useful in guiding the content and timing of eating disorder prevention programs.

CHAPTER TWO

Clinical Eating Disorders, Disordered Eating, and Body Dissatisfaction.

Eating disorders and related disordered eating behaviours are considered important public health concerns in the Western world. These disorders often follow a chronic course, are associated with high levels of psychiatric co-morbidity, and have very high costs associated with treatment (Agras, 2001). The mortality rates associated with Anorexia Nervosa are approximately 10% – higher than any other psychiatric disorder (Herzog et al., 2000; Sullivan, 1995). Eating disorders also have a negative impact on psychosocial functioning, and some of these difficulties are likely to persist even after remission of the disorder (Striegel-Moore, Seeley, & Lewinsohn, 2003). Therefore, it has been an important focus of researchers to better understand the etiology of these disorders in an effort to develop effective prevention and treatment programs. To date, universal prevention programs for eating disorders have generally been disappointing in terms of reducing weight control behaviours and body dissatisfaction, and in some cases counterproductive producing increased symptoms (see Levine & Smolak, 2001, for a review). In contrast, targeted interventions have recently achieved more successful outcomes (e.g., Taylor et al., 2006; see Stice and Shaw, 2006, for a review).

Chapter 2 aims to provide an overview of the spectrum of eating disturbance including clinical eating disorders, partial-syndrome eating disorders, disordered eating behaviours, and body dissatisfaction. The use of a continuum approach to the study of eating disorders will also be discussed.

Classification of Eating Disorders

Clinical eating disorders fall at the extreme end of the eating disorders continuum. The Diagnostic and Statistical Manual of Mental Disorders 4th Edition - Text Revision (DSM-IV-TR, American Psychiatric Association, 2000) identifies two

categories of eating disorders: Anorexia Nervosa (AN) and Bulimia Nervosa (BN).

Individuals with AN refuse to maintain a minimally normal body weight (i.e., they are less than 85% of expected weight for height and age), are intensely afraid of gaining weight, and exhibit a significant disturbance in their perception of shape and weight. In addition, postmenarcheal females are amenorrheic for at least 3 consecutive cycles. According to the DSM-IV-TR, individuals who do not binge-eat or purge are diagnosed with “restricting-type”, while those who do are diagnosed with “binge-eating/purging type” (p. 589).

BN is characterised by recurrent episodes of binge eating accompanied by a sense of loss of control over eating. Binges are followed by inappropriate compensatory methods to prevent weight gain such as self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; fasting; or excessive exercise. Binges and compensatory behaviour occurs on average twice weekly for a 3-month period. In addition the self-evaluation of individuals with BN is unduly influenced by body shape and weight.

Individuals who experience atypical variations of AN or BN, or who engage in disordered eating but not sufficient to meet diagnostic criteria, are diagnosed in the Eating Disorders Not Otherwise Specified (EDNOS) category. Cases that meet EDNOS criteria are often referred to as subthreshold or partial-syndrome eating disorders.

Examples of disordered eating behaviours include dieting, binge eating, purging, and excessive exercising. The term “dieting” has been used to describe a broad range of intentional behaviours that are used to create a negative energy balance between calorie intake and expenditure and result in subsequent weight loss or a change to body shape. This may include socially acceptable methods such as reducing overall food intake, eating less saturated fats, and engaging in more exercise; or more extreme methods that include fasting, restricting dairy foods and meat products, very low- calorie diets,

skipping meals, or eating only one type of food per day (Daee et al., 2002; Dahlkoetter, Callahan, & Linton, 1979; French & Jeffery, 1994).

Binge eating, defined as eating an excessive amount of food in a discrete time period, is also a maladaptive eating behaviour that is commonly reported by young women. Purging behaviours such as vomiting; use of laxatives, diuretics, and enemas; and use of diet pills; are commonly associated with binge eating and are generally used to rid the body of excess calories consumed during a binge (Smith, Marcus, & Eldridge, 1994). Similarly, engaging in excessive amounts of exercise to burn calories and lose weight is another strategy employed by some young women as a form of purging behaviour. Excessive exercising has long been thought to play a crucial role in the etiology of eating disorders with approximately 80% of anorexic patients and 55% of bulimic patients engaging in compulsive exercise (Davis et al., 1997).

Finally, high levels of body dissatisfaction are strongly related to disordered eating behaviour (Gowers & Shore, 2001; Stice & Shaw, 2002). Body dissatisfaction is the term most often used to describe a global measure of distress, based on subjective evaluation, regarding various aspects of body shape and weight (Thompson et al., 1999).

Prevalence Rates

Hoek and van Hoeken (2003) conducted a review of the prevalence and incidence rates of AN and BN using a two-stage screening approach (i.e., self-reports followed by a structured clinical interview). The average prevalence rate of AN was 0.3% with an incidence rate of 8 cases per 100 000, per year. The average prevalence and incidence rate for BN was higher at 1%, and 12 cases per 100, 000 per year, respectively. The incidence and prevalence rates for eating disorders were highest in adolescent girls aged 15-19, with around 40% of all identified cases occurring in this age group.

Partial-syndrome or subthreshold eating disorders occur in approximately 4-6% of the general population; approximately 5 times the rate of clinically diagnosed cases (Fairburn & Harrison, 2003; Herzog & Delinsky, 2001; Polivy & Herman, 2002).

Disordered eating behaviours occur at a much higher rate than clinical eating disorders, particular in adolescent girls and young women. Dieting behaviours are very common in Western society with point prevalence rates indicating that 30-40% of young Western women engage in dieting (Serdula et al., 1999). Rates of dieting in young Australian women are comparable to those reported in the US. For example, Kenardy, Brown and Vogt (2001) surveyed a large sample of Australian women (aged 18-23 years), and found that 47.8% had dieted to lose weight in the past year, and 12.2% had dieted to lose weight five times or more, in the last year. Although dieting was more frequent in those with a Body Mass Index (BMI) > 25 (i.e., overweight according to World Health Organisation standards), 21% of women who were underweight (BMI < 18.5), also reported dieting to lose weight. Dieting amongst adolescent and preadolescent girls is also common, with population surveys of dieting over the last 3 decades indicating that between a third and two-thirds of adolescent girls in Western society are dieting at any one time (Daee et al., 2002; McVey et al., 2004; Patton et al., 1997).

Whilst binge eating is widely reported in young women, the prevalence of clinically significant binge eating is relatively low (Crowther, Post, & Zaynor, 1985; Johnson, Rohan, & Kirk, 2002). For example, Johnson et al. assessed the prevalence of binge eating behaviours in 822 male and female adolescents from grades 6-12 using a broad assessment of clinical and non-clinical binge eating. The results indicated that 17.82% of white adolescent females and 16.67% of African American adolescent females reported engaging in binge eating behaviours and episodic overeating. However, only 1% of the sample could be diagnosed with full-syndrome Binge Eating Disorder (BED).

The prevalence rates of purging behaviours are considerably lower than the other weight control behaviours described above, however these practices are still employed by some young women. Croll, Neumark-Sztainer, Story and Ireland (2002) examined the disordered eating behaviour of a large sample ($n = 40,640$) of adolescent girls from grades 9-12. Over a 12-month period, 8.8% of the participants reported vomiting after eating, 9.4% had used diet pills, and 1.9% had used laxatives, all in an effort to lose weight. In an Australian sample of 869 adolescent females (aged 14-16 years), lower rates of monthly purging behaviours were found, with 5% of participants reporting laxative and slimming tablet use, 2% reporting diuretic use, and 12% using cigarettes, as a means to lose weight (Grigg, Bowman, & Redman, 1996).

To date, prevalence rates for overexercising have not been commonly reported. Excessive exercise is particularly difficult to monitor because exercise is generally encouraged and accepted as a health-promoting behaviour (Zmijewski & Howard, 2003). In one study of nearly 8,000 adolescent girls, 67.4% used exercise to “manage” their weight, followed by dieting (56.1%), fasting (18.8%), use of diet pills (10.9%), and vomiting or use of laxatives (7.5%) (Lowry, Galuska, Fulton, Wechsler, & Kann, 2002). However, considering that 25% of the participants were overweight, increasing exercise may have been an appropriate – or at least a less dangerous – method to lose weight.

Body dissatisfaction is so commonly reported by women in Western societies that authors have used the term “normative discontent” to describe the phenomenon (Striegel-Moore et al., 1986, *p.* 36). A large proportion of women are dissatisfied with their appearance, body shape, and weight, and the extent of this dissatisfaction appears to have increased over time (Cash, 1997; Cash & Henry, 1995). Cash (1997) found that between 1972 and 1996, overall appearance dissatisfaction increased in women from 23% to 56%. Women identified their stomach area (71%) and total body weight (66%), as their most disliked physical attributes. Body dissatisfaction is also commonly reported

in adolescent and preadolescent girls (Dohnt & Tiggemann, 2005; Maloney, McGuire, & Daniels, 1988; Paxton et al., 1991; Rolland, Farnill, & Griffiths, 1997). For example, Rolland et al. found that 50% of 8–13-year-old Australian girls reported concerns about their weight, and 40% had made efforts to lose weight.

Gender Differences

There are considerable gender differences in the prevalence rates of eating disorders, with women 10 times more likely to meet diagnostic criteria than men (Hoek & van Hoeken, 2003; Hsu, 1989; Lewinsohn, Seeley, Moerk, & Striegel-Moore, 2000). Furthermore, men have much lower rates of subthreshold disordered eating and report lower levels of body dissatisfaction. These gender differences become apparent early in primary school and are thought to be related to the greater emphasis on thinness as a over-valued ideal for women, more so than men (Smolak & Murnen, 2001)(See Chapter 3 for further discussion regarding gender differences).

Age Differences

Clinical eating disorders occur most commonly in adolescence and young adulthood. The rates of AN are highest for females aged 15-19 years of age (Lucas, Crowson, O'Fallon, & Melton, 1999). The age of onset for BN is higher than for AN, and BN is more likely to develop after leaving school, during the early years of university or commencement of work (Woodside & Garfinkel, 1992). Lucas et al. reported that those in the highest risk group for BN were between 20-24 years of age. Both AN and BN are rare in prepubertal children (Jaffe & Singer, 1989; Kent, Lacey, & McCluskey, 1992).

Similarly, disordered eating behaviours occur most frequently in adolescent girls and young women. However, reports of weight concerns and disordered eating behaviours are present for younger preadolescent girls. Body image concerns and dieting behaviours have been reported in girls aged 8 and 9 years, although the incidence rates

increase dramatically in early adolescence (Schur, Sanders, & Steiner, 2000). The increase in weight concerns for this age group appears to have coincided with increased rates of obesity in younger children, as well as corresponding societal pressure to maintain a thin or muscular figure (Herbozo, Tantleff-Dunn, Gokee-Larose, & Thompson, 2004; Hill, Oliver, & Rogers, 1992). From as early as 8 years-of-age, girls are able to identify that they prefer a thinner body shape, whereas boys prefer a broader, more muscular body shape (Ricciardelli & McCabe, 2001).

It should be noted that there may be some confusion regarding what children understand the term *dieting* to mean. Some studies (e.g., Schur et al., 2000) have shown that children consider dieting to mean making more healthy food choices and increasing exercise, which is a positive approach to weight management given the increasing rates of obesity in this population (World Health Organisation, 1999). For example, in one study of 523 elementary- and middle-school girls (aged 9-15 years), exercising more regularly, eating less sweets and fats, and restricting overall food intake, were the most popular techniques to lose weight (Shisslak et al., 1998). A smaller percentage of preadolescent girls also engage in more risky eating behaviours, similar to their adolescent counterparts, such as fasting, skipping meals, and engaging in self-induced vomiting (Hill & Robinson, 1991; Mellin, Irwin, & Scully, 1992; Shapiro, Newcomb, & Loeb, 1997; Shisslak et al., 1998).

Consequences of Clinical Eating Disorders, Disordered Eating Behaviours, and Body Dissatisfaction

The physical and psychological consequences of both AN and BN can be very severe (see Pike & Striegel-Moore, 1997, for a review). AN is particularly dangerous because of the medical complications associated with starvation. Some of the medical complications associated with AN and BN include hypotension, irritability, bradycardia, lanugo, dental enamel erosion, cardiac myopathy, electrolyte imbalance, and menstrual

irregularity (DSM-IV-TR: American Psychiatric Association, 2000; Pike & Striegel-Moore, 1997). Long term complications may include low weight, menstrual dysfunction, and infertility (Bulik et al., 1999; Franko et al., 1999). AN is associated with a high mortality rate with approximately 10% of those who develop the disorder dieing as a direct consequence (Herzog et al., 2000). Furthermore, there are very high costs associated with the treatment of these disorders, particularly for AN, which is as costly to treat as schizophrenia and obsessive-compulsive disorder (Agras, 2001).

Women with subthreshold or partial-syndrome eating disorders experience similar levels of distress and adverse outcomes to women diagnosed with a clinical eating disorder. The level of psychiatric impairment is similarly high, and there are also higher rates of psychiatric co-morbidity, suicide attempts, and depression, compared to non- eating disordered women (Lewinsohn, Striegel-Moore, & Seely, 2000; Stice, Killen, Hayward, & Taylor, 1998; Striegel-Moore et al., 2003).

Although the consequences of disordered eating are not as severe as those associated with AN or BN, there are still considerable risks associated with these behaviours. There has been much debate regarding the virtues and dangers of dieting (see Brownell & Rodin, 1994; Dae et al., 2002; Lowe & Timko, 2004; for reviews). There are very low success rates for the maintenance of weight loss through dieting and repeated failures may lead to psychological disturbances such as depression, anxiety, poor affect regulation, low self-esteem, and physiological disturbances such as a reduction in metabolic rate (Ackard et al., 2002; Bartlett, Wadden, & Vogt, 1996; Berg, 1998; Brownell, Greenwood, Stellar, & Shrager, 1986; Fabian & Thompson, 1989; Fisher, Schneider, Pegler, & Napolitano, 1991; Kenardy et al., 2001; Richards, Casper, & Larson, 1990; Rosen, Gross, & Vara, 1987). For preadolescent girls, restrictive dieting may be associated with nutritional deficiencies and decreased growth velocity, as young children require a high energy and nutrient uptake to support pubertal development

(Edmunds & Hill, 1999). Children who engage in dieting show similar characteristics to adult dieters, such as increased fatigue, poor concentration, excessive mood swings, and low self-esteem (Rosen, 1996). However, not all dieting has negative consequences for health. Hill and Robinson (1991) found that although 9-year-old restrained eaters had a lower energy intake than non-restrained controls, their overall indicators of diet quality were nutritionally adequate, with the exception of iron intake which was below the recommended daily amount. Moderate diets, such as those proposed by groups such as *Weight Watchers*, are considered a more healthy and balanced approach to dieting (Saxelby, 2001). Unfortunately, adolescent dieters engage in unhealthy dieting at a higher frequency than adult women, perhaps due to lack of education or a more chaotic lifestyle (Killen et al., 1996).

In addition, dieting – particularly when frequent and excessive – is a strong risk factor for the development of an eating disorder. Dieters have been shown to be at a much greater risk for the development of an eating disorder than non-dieters (Ackard et al., 2002; Drewnowski, Yee, Kurth, & Krahn, 1994; Patton et al., 1997; Patton et al., 1999). For example, Patton et al. (1999) examined the eating behaviours of nearly two thousand 14- and 15-year-old Australian girls and boys, over a 3-year period. Dieting level was categorised using a 9-item scale that measured calorie counting, reducing food quantities at meals, and skipping meals. Young women, whose dieting was rated as severe, were 18 times more likely than their non-dieting counterparts to develop an eating disorder within 6 months. Those who dieted at a moderate level were 5 times more likely to develop an eating disorder after 6 months, than non-dieters.

Dieting is also a risk factor for the development of binge eating, a behaviour that is strongly related to the development of BN. A causal analysis of dieting and bingeing found that dieting usually preceded binge eating behaviour (Polivy & Herman, 1985; Polivy & Herman, 2003). Dieting is thought to lead to binge eating because dietary

restraint is hard to maintain over the long term. Therefore, when dietary restraint is disrupted due to hunger or stress, disinhibition and overeating are likely to follow.

Finally, dieting may be related to the development of obesity as dieting behaviours predispose young people to binge eating and subsequent weight gain. Recently, Stice, Presnell, Shaw and Rohde (2005) found that self-reported dietary restraint, extreme weight control behaviours, depressive symptoms, and perceived parental obesity were predictive of obesity onset in adolescent girls over a 4-year period. Obesity in children and adolescents has a number of associated health risks including Type II diabetes, high blood pressure, and high cholesterol (Freedman, Dietz, Srinivasan, & Berensen, 1999; World Health Organisation, 1999).

There has been some debate as to whether binge eating alone should be considered an aberrant behaviour, especially since it has been reported to occur in up to 50% of non-eating disordered college women (Crowther et al., 1985; Greenfeld, Quinlan, Harding, Glass, & Bliss, 1987). However, in some instances binge eating has been found to be a precursor to dieting, which is an important risk factor for the development of eating disorders. For example, Brewerton, Dansky, Kilpatrick and O'Neal (2000) found that although in the majority of cases dieting preceded age of first binge (46%), for 37% of women their first episode of bingeing preceded their first episode of dieting. In these cases it is likely that the increased weight gain that accompanies binge eating leads to the exacerbation of concerns about weight and shape, and dieting commences in response to these concerns.

Purging behaviours such as fasting, skipping meals, using diet pills and laxatives, or self-induced vomiting, are considered more risky than dieting or binge eating. These behaviours are associated with an increased risk of developing a clinical eating disorder and can cause physical complications such as fatigue, irritability, insomnia, lack of

concentration and growth failure (French, Perry, Leon, & Fulkerson, 1995; Mallick, 1983).

In general, exercise appears to have a beneficial effect on physical and psychological well-being (Conboy, 1994; Scully, Reilly, & Clarke, 1998). However, some studies indicate that excessive exercise or exercise solely for the purpose of weight loss can have detrimental effects on body image and eating behaviours. Peñas-Lledó, Vaz Leal and Waller (2002) found that women who were regular exercisers scored significantly higher on the Eating Disorders Inventory (EDI: Garner, Olmstead & Polivy, 1983) scales of Drive for Thinness, Body Dissatisfaction and Interoceptive Awareness, than those who did not exercise on a regular basis. By way of contrast, some studies have shown that engaging in physical activity contributes to higher self-esteem. Furthermore, considering the very high rates of overweight and obesity in the general population, exercise has many health benefits. Sands, Tricker, Sherman, Armatas and Maschette (1997) found that in a sample of girls aged 10 and 11, *less* frequent participation in sport was related to lower self-esteem and higher body dissatisfaction. There appears to be both benefits and risks associated with exercise, depending on the type of exercise and the intent of the participant.

Reports of body dissatisfaction in adolescent girls are so prevalent that some researchers have suggested that body dissatisfaction should be considered a “normal” part of adolescent development (Beumont, Garner, & Touyz, 1994). Body dissatisfaction is not always deleterious and low levels may provide increased motivation to lose weight and/or increase exercise (Heinberg, Thompson, & Matzon, 2001). However, Thompson et al. (1999) warn that “normative should not be considered synonymous with benign”, and that there are a number of emotional and financial “costs” associated with body dissatisfaction, especially for those who fall at the higher end of the continuum of disturbance (*p.* 39). Body dissatisfaction can contribute to the development of

depression, clinical eating disorders, and body dysmorphic disorder (Rierdan, Koff, & Stubbs, 1989; Rosen, 1996; Stice & Bearman, 2001; Stice, Hayward, Cameron, Killen, & Taylor, 2000). Furthermore, body dissatisfaction is a strong and consistent predictor of subsequent eating pathology (Attie & Brooks-Gunn, 1989; Cattarin & Thompson, 1994; Killen et al., 1996; Patton et al., 1997; Patton et al., 1999; Stice & Agras, 1998; Stice & Hoffman, 2004; Stice & Shaw, 2002).

The Continuum Hypothesis

There is continued debate as to whether eating disorders represent discrete categories that are qualitatively different from other eating disturbances or whether they lie on a continuum with normal eating at one end of the spectrum and clinical eating disorders at the other (Shisslak, Crago, & Estes, 1995). The categorical approach to the investigation of eating disorders has been criticised for two reasons. First, many of the thresholds for key diagnostic criteria are arbitrary in nature with cut-off points differing across versions of the DSM. For example, Herzog and Delinsky (2001) note that the “significant weight loss” required for a DSM diagnosis of AN has changed from “25% below expected body weight” in DSM-III, to “15% less than expected body weight” in DSM-IV (*p.* 32). Similarly, although the DSM-IV and DSM-IV-TR require two or more binges per week to meet diagnostic criteria for BN, studies have found few differences to level of distress and impairment, between those women who binge twice or more a week and those with less than twice weekly binges. Second, diagnostic thresholds are considered too conservative, often excluding significant subthreshold cases and subsequently misclassifying these as non-symptomatic controls (Lewinsohn, Striegel-Moore et al., 2000; Mintz, O’Halloran, Mulholland, Schneider, & Paxton, 1997). As a result of these criticisms, a number of researchers have argued that a continuum approach, similar to that used with other psychological disorders such as depression and alcohol-related problems, is a more sensible approach to the study of eating disorders.

The existence of a continuum has important implications for prevention efforts. If eating disorders do occur along a continuum then interventions targeted at early points along the continuum (e.g., body dissatisfaction and dieting) should subsequently result in a decrease in the incidence and prevalence rates of clinical eating disorders (Levine & Smolak, 2006).

Nylander (1971) first proposed the continuum hypothesis, which argues that the difference between those who meet DSM-IV criteria for an eating disorder, and those with a milder form of eating disturbance, is a matter of degree and not kind. The continuum hypothesis suggests that individuals may differ in eating-related behaviours, but they all share similar underlying psychological characteristics (Scareno & Kalodner-Martin, 1994). Those who support the continuum hypothesis propose that many disorders (e.g., alcohol-related disorders) are continuously distributed in the general population (Krahn, Kurth, Gomberg, & Drownowski, 2005). Moreover, it has been argued that attending to all levels of eating disturbances may lead to a better understanding of the etiology, prevention, and treatment of both clinical and subclinical eating disorders (Scareno & Kalodner-Martin, 1994; Tylka & Subich, 1999).

In contrast, proponents of the discontinuity perspective have argued that individuals with eating disorders are categorically or qualitatively different from persons with subthreshold disorders or no eating problems, and have a number of predisposing characteristics such as depression and impulse control problems (Bruch, 1973; Bunnell, Shenker, Nussbaum, Jacobson, & Cooper, 1990; Crisp, 1980).

The Continuum Hypothesis and Bulimia Nervosa

Although there have been some studies to support the discontinuity/categorical model (e.g., Dykens & Gerrard, 1986; Gleaves, Lowe, Snow, Green, & Murphy-Eberenz, 2000; Katzman, Wolchik, & Braver, 1984; Ruderman & Besbeas, 1992), more studies have provided support for the continuity or continuum hypothesis, especially for

BN (e.g., Drevnowski, et al., 1994; Hay & Fairburn, 1998; Lowe et al, 1996; Mintz & Betz, 1988; Stein et al. 1997; Stice et al., 1998; Tylka & Subich, 1999; Vanderheyden & Boland, 1987). For example, Stice, Killen, et al. (1998) used discriminant analysis to predict group membership for bulimic, subthreshold bulimic, and control women on a number of variables including body mass, thin-ideal internalisation, body dissatisfaction, dietary restraint, depressive symptoms, anxiety symptoms and temperamental emotionality. Support for the continuum hypothesis was provided with a single dimension of eating-related pathology emerging that differentiated the three groups and accounted for 97% of the between-groups variance. Thus, the factors that discriminated bulimic women from subthreshold bulimic women were similar to those that discriminated between subthreshold bulimic women and non-eating disordered controls. Furthermore, measures of both weight concern and psychopathology contributed to this single function suggesting that variables from both of these domains conformed to the continuity hypothesis.

Tylka and Subich (2003) used taxometric analysis to determine if eating disorders best conform to a dimensional or categorical model. Taxometric analysis is a specific research methodology designed to study the latent structure of psychological disorders. Common psychological (i.e., body dissatisfaction, neuroticism, poor interoceptive awareness) and sociocultural (i.e, internalisation of the thin-ideal, perceived pressure to be thin) indicators of disordered eating were examined, using a sample of 532 college-aged women. The results were inconsistent with the presence of a latent taxon, providing evidence supporting the dimensionality of eating disorders. According to the authors their findings offered preliminary support for the dimensionality of eating disorders “suggesting that several salient indicators of eating disorders occur along a continuum of degree” (p. 283).

Providing further support for the continuum hypothesis, many studies have found that women with subthreshold eating often progress to develop a diagnosable eating disorder (Herzog & Delinsky, 2001; Stein et al., 1997). For example, Herzog, Hopkins, and Burns (1993) found that of the 386 women presenting for treatment of an eating disorder, 42% did not meet the diagnostic criteria at first presentation. However, in a subsample of women who were followed up two years later, 46% had progressed to developing an eating disorder that met diagnostic criteria. Similarly, studies have shown that restrictive dieting is a strong and consistent predictor of disordered eating behaviour (Patton et al., 1997; Patton, et al., 1999). Considering these findings, it seems that subthreshold symptoms, scores on self-report measures of weight concerns, and/or restrictive dieting may be useful proxy measures for women at risk of developing clinically significant eating disorders. Furthermore, these measures may be useful for identifying young women who may benefit from participation in targeted prevention programs. Levine and Smolak (2006) suggest that for developing children in particular, disordered eating behaviours may be worth targeting in prevention programs primarily because of their inherent health risks and “secondarily as a possible way of preventing eating disorders” (p. 98).

The Continuum Hypothesis and Anorexia Nervosa

There has been less research to support the continuum hypothesis for AN with mixed findings reported. For example, Garner, Olmstead and Garfinkel (1983) found that certain features of AN fell on a continuum while other traits tended to differentiate groups. Specifically, they found that dieting and attitudes about shape were similar for anorexic and weight-preoccupied women, however other features such as ineffectiveness, interoceptive awareness, and interpersonal distrust were much more common in the anorexic group. Gleaves, Lowe, Green, et al. (2000) found mixed support for the continuum hypothesis using taxometric analysis. In this study both purging and

non-purging types of bulimia were qualitatively different from normative eating behaviours, supporting the discontinuity model. However, there was some support for the continuity model with anorexia (binge-eating/purging type) falling on a continuum with BN (both purging and non-purging subtype), suggesting that these two types of BN differed in degree rather than in kind.

In sum, there is some support for the use of a continuum model to describe eating disorders, at least for binge eating/purging behaviours. More studies are needed to determine whether AN falls on an eating disorders continuum. According to the continuum hypothesis both body dissatisfaction and disordered eating behaviours fall somewhere in the middle of the continuum and are considered important precursors to the development of more serious eating disturbances. It has been suggested that it is important to examine those who may be on the “verge” of developing an eating disturbance to understand the mechanisms that may prevent the development of a more serious clinical eating disorder (Botta, 1999, *p.* 22). Given that clinical eating disorders are very rare in preadolescent girls, a better understanding of the etiology of disordered eating behaviour in this age group may be an important first step in the prevention of more serious eating disturbances in later adolescence.

Summary

It has been suggested that eating disorders may lie on a continuum with normal eating at one end of the spectrum and clinical eating disorders at the other. As young women progress along the eating disorder continuum, the negative impact on their physical and psychological health becomes more substantial. There have been numerous risk factors implicated in the etiology of eating disorders. In addition to biological and psychological risk factors, sociocultural influences have been identified as important risk factor for the development of eating disorders and disordered eating behaviour. These factors may also play a key role in the increasing rates of body dissatisfaction and

disordered eating behaviour that are occurring in younger preadolescent girls. The current study examines the importance of sociocultural pressures with a focus on age-related differences. Chapter 3 will provide an overview of a sociocultural model of eating disorders and review the most important transmitters of sociocultural pressure to be thin: family, peers and media.

CHAPTER THREE

Sociocultural Factors, Body Dissatisfaction, and Disordered Eating Behaviours

A wide range of biological and psychological factors have been implicated in the development of body dissatisfaction, disordered eating behaviours, and clinical eating disorders. In addition, sociocultural influences, particularly those portrayed by mainstream media, have received much attention as possible contributors to body image disturbance and disordered eating behaviours. According to a sociocultural model (e.g., Fallon, 1990; Thompson et al., 1999; Thompson & Heinberg, 1999), disordered eating and body dissatisfaction are partly a consequence of increased pressure for women to achieve an ultra-thin body and other unrealistic standards of beauty. It has been argued that increased rates of body dissatisfaction and disordered eating in Western society correspond with increased societal preoccupation with thinness. There is strong evidence to indicate that sociocultural pressure to meet a thin-ideal exists in our culture. This section will briefly review the evidence supporting a sociocultural theory of disordered eating.

Evidence for Sociocultural Theory

There are a number of key arguments that provide support for sociocultural theory (see Thompson et al., 1999; Stice, 1994; for in depth reviews).

Historical changes to the thin-ideal. There have been historical changes to the thin-ideal that reflect societal values regarding the importance of thinness. Over the last few decades, beauty ideals for women have become increasingly and unrealistically thin (Gilbert, Keery & Thompson, 2002). For example, the average weight of women, representative of cultural ideals of feminine beauty, decreased steadily from 1959-1978 (e.g., Garner, Garfinkel, Schwartz, & Thompson, 1980). In more recent times, the “ideal” weight for women plateaued at 13-19% below the population average (Wiseman et al.,

1992). In the last 5 years clinically underweight celebrities, such as Nicole Richie and Victoria Beckham, have been identified as “role models” by the internet’s pro-anorexia and pro-bulimia websites (Spicer, 2006, p. 30). In addition to being thin, women in today’s society are also pressured to achieve biologically contradictory appearance goals, such as low levels of body fat, large firm breasts, as well as firm, shapely (but not too large) muscles (Klassen, Jasper, & Schwartz, 1993; Striegel-Moore et al., 1986; Thompson & Tantleff, 1992). Not surprisingly the aesthetic ideal often clashes with what most women can achieve with a healthy diet and reasonable levels of physical activity (Brownell, 1991).

Increased societal attention to diet, exercise, and cosmetic surgery. In support of a sociocultural model, there has been increased societal attention to dieting, exercise, and cosmetic surgery (Brownell, 1991; Nemeroff, Stein, Diehl, & Smilack, 1994; Wisemann et al., 1992). Content analyses of women’s magazines demonstrate that the majority of advertisements are directed towards diet, food, body shape, and exercise. Furthermore, women’s magazines have a significantly higher proportion of messages about shape, weight and exercise, than men’s magazines (Anderson & DiDomenico, 1992; Morris, Cooper, & Cooper, 1989; Silverstein, Perdue, Peterson, & Kelly, 1986; Wisemann et al., 1992).

In more recent times, cosmetic surgery has become increasingly popular as a method to dramatically change body shape. In the USA and Australia, breast augmentation followed by liposuction, are the leading cosmetic surgical procedures for women, with Botox injections and chemical peels the most common non-surgical procedures (Health Care and Complaints Commission, 1999; Rohrich, 2003).

Increased stigmatisation associated with being overweight or obese.

Accompanying the above changes has been increased stigmatisation and denigration of people who are overweight or obese. While research indicates that thinness is esteemed

by our society, obesity – despite being on the rise – is seriously denigrated (Fallon, 1990; Thompson et al., 1999). Overweight and obese individuals are the target of stigmatisation and prejudice in social situations (Wadden, Womble, Stunkard, & Anderson, 2002) and in the workplace (Rothblum, 1994; Rothblum, Brand, Miller, & Oetjen, 1990). In television and print media very few overweight or obese individuals are shown, particularly in television programs directly targeted towards middle-school aged girls (Fouts & Burggraf, 1999; Levine & Smolak, 1996). Similarly, popular children's media depicts obesity in a negative manner (Herbozo et al., 2004). Furthermore, being overweight or obese is rated by adults and children in a negative manner, and is associated with behavioural characteristics such as laziness, unhappiness, self-indulgence, unattractiveness, lying, and cheating (Hill & Silver, 1995; Rothblum, 1994; Tiggemann & Rothblum, 1988).

Gender differences in a sociocultural model. As discussed previously in Chapter 2, clinical eating disorders and disordered eating behaviours occur far more frequently in women. Research indicates that women are more invested in attaining a thin body than men. In comparison, men often wish to improve their body shape by *increasing* weight or gaining muscle (Hsu, 1989; Leit, Gray, & Pope, 2000; Silberstein, Striegel-Moore, Timko, & Rodin, 1988). This gender difference is also evident in preadolescent (McCabe & Ricciardelli, 2005; Phares, Steinberg, & Thompson, 2004), and middle-adolescent girls and boys (Muris, Meesters, van de Blom, & Mayer, 2005). Girls are thought to be at a greater risk of developing an eating disorder than boys because they are exposed to factors which intensify the pursuit of thinness (Hsu, 1989; Murnen & Smolak, 1997). As girls progress through puberty they experience a change in body shape, including a significant increase in body fat, that makes them less like the societal ideal (McCabe, Ricciardelli, & Banfield, 2001). Feminist theorists propose that in Western societies women are highly valued for their physical appearance, body shape, and attractiveness

(Smolak, & Murnen, 2001). It has been argued that men are less vulnerable to societal pressures because attractiveness is less important for male societal success (Striegel-Moore et al., 1986). Rodin, Striegel-Moore and Silberstein (1990) emphasise that “appearance matters” for women because attractive women benefit in occupational, interpersonal and educational settings (*p.* 363). A number of studies demonstrate that attractive women are perceived to have many more positive social characteristics such as intelligence, academic success, self-esteem, popularity, and improved mental health, than their less attractive counterparts (Feingold, 1992; Wade & DiMaria, 2003).

Cross-cultural differences. Historically, eating disorders have been considered “culture-bound syndromes” (Nasser, 1988; Prince, 1985). Keel and Klump (2003) reviewed the evidence for both BN and AN as culture-bound syndromes using three methods: (1) a meta-analysis of the changes in incidence rates over time, (2) a qualitative summary of historical accounts of eating disorders before their formal recognition, and (3) an evaluation of the presence of these disorders in non-Western societies. The results of this study found that for AN there was not sufficient evidence to support a culture-bound syndrome. First, the literature indicated that the incidence rates of AN had remained steady over time, with the exception of some modest increases in the mid 1980’s which were likely due to increased recognition and reporting of the disorder. Next, cases of anorexia have been reported throughout history since the 1800’s and are very similar in presentation to the cases seen in modern times. Finally, cases of AN have been observed in many non-western countries that have not been influenced by Western ideals including Nigeria, Egypt, United Arab Emirates, India, and Malaysia. The incidence rates of AN in these countries is similar to the rates reported in Western countries which provides support for a strong biological aetiology. In contrast, the results for BN indicated that cultural factors play a key role. First, the incidence rates for BN have increased over time and have coincided with increased societal pressure towards a

thin-ideal. This is the case even when stringent DSM-IV criteria are employed. Next, BN appears to be a new syndrome that has only emerged in the latter half of the 20th century. There are no accounts of BN in earlier historical periods although there are accounts of what would appear to be Binge Eating Disorder and AN (Binge-Purge subtype). Finally, there is no evidence to indicate that BN occurs in cultures without the presence of Western influences. Therefore, there is a growing body of evidence to support a sociocultural theory for BN.

Fewer studies are available to determine if cross-cultural differences occur in the prevalence rates of body dissatisfaction and disordered eating behaviours (Anderson-Fye & Becker, 2004). In a recent study Shaw, Ramirez, Trost, Randall and Stice (2004), examined key symptoms and risk factors of body dissatisfaction and disordered eating across four different ethnic groups of adolescent and adult women (i.e., Asian, Black, Hispanic, and White). Interestingly, only one measure differed significantly across groups. Self-reports of *internalisation of the thin-ideal* were significantly lower in Black and Hispanic women, compared to White and Asian women. This study suggests that ethnic groups are relatively similar on the majority of indicators of disordered eating and that cultural pressures are so widespread that they are now affecting all ethnic groups in a similar manner. However, it should be noted that this study was not a true assessment of cross-cultural differences as the women were all from the US and thus exposed to similar societal pressures.

Subcultures. Finally, in support of a sociocultural model there are increased rates of eating disorders and disordered eating behaviours in subcultures where a thin body or low body weight is idealized (e.g., ballet dancers, models, gymnasts, athletes) (Garner, Garfinkel, Rokert, & Olmstead, 1987; Ravaldi et al., 2003). This is possibly exacerbated by the personality characteristics associated with these athletes (such as perfectionism and competitiveness), as well as the emphasis on a lean body shape and low body weight

for success in elite competition. The rates of eating disturbances in these populations are significantly higher than those occurring in the general population, indicating that participation in these subcultures may increase the risk of disordered eating behaviours (Stice, 1994). Although eating disorders occur more commonly in subcultures that embrace a thin-ideal, it remains unclear whether participation in these subcultures leads to the development of eating disorders or whether people who are already predisposed to eating disorders may select careers or sports that are preoccupied with body appearance (Stice, 1994).

Summary of Evidence for a Sociocultural Model

In summary, there is a wealth of evidence to support a sociocultural model of eating disorders. The ideal body size has become increasingly thin over the past 50 years, while the actual weight of women has increased. This has coincided with an increased emphasis, particularly by mass media, on diet, exercise, and cosmetic surgery. Corresponding to this heightened interest in the pursuit of thinness has been increased negativity towards overweight and obese people. Other evidence for a sociocultural model is provided by research examining gender differences, cross-cultural rates of eating disorders, and increased rates of eating disorders in subcultures where a thin body is considered important.

Despite much qualitative evidence to suggest that disordered eating behaviours and body dissatisfaction are related to increased sociocultural pressures to be thin, these types of studies do not tell us whether sociocultural factors play a direct role in creating negative body image, drive for thinness, and disordered eating behaviours. In the next section the relationship between sociocultural pressures and disordered eating will be examined.

Transmitters of Sociocultural Pressure

According to Stice (1994) family, peers, and mass media, all play an important role in the transmission of sociocultural pressure to be thin. Of these three sources, the media has received the most critical attention and is purported to have a powerful influence in promoting the thin-ideal. Mass media generate messages designed for very large, heterogeneous, anonymous audiences, with the goal of maximising profit (Harris, 1994; Levine and Smolak, 1996). In particular, the media has been criticised for presenting a barrage of unrealistic images of women, and in some cases directly teaching women how to attain an ideal body through dieting and other disregulatory behaviours (Striegel-Moore et al., 1986). It is clear that unrealistic messages about body image may be present for children from a very early age (Herbozo et al., 2004; Norton, Olds, Olive & Dank, 1996). In adolescence, the thin-promoting messages of the media may become particularly important to young women who are seeking outside information to form a sense of their self-identity (Botta, 1999; Strasburger, 1995). It has been argued that today's visual media differs from the visual arts of the past (Freedman, 1986). For example, today's electronic media uses advanced technology to airbrush, computer enhance, and edit images in magazines, resulting in a blurring between reality and what is artificially produced (Freedman, 1986; Thompson & Heinberg, 1999). Despite this, it should be noted that not all women who are exposed to media messages promoting the thin-ideal, develop disordered eating behaviours. Furthermore, many women actively participate in and enjoy exposure to mass media with a high proportion of thin-ideal messages (e.g., buying and reading women's fashion magazines) (Polivy & Herman, 2004).

In addition to the media, there are more immediate sub-cultural influences, such as family and peers that may transmit sociocultural messages regarding the importance of thinness, either knowingly or unwittingly (Benedikt, Wertheim, & Love, 1998;

Thompson et al., 1999). In particular, family influences are considered important as family are seen as a more intimate and personal source of influence (Irving, 1990). This may be more apparent for younger girls with one study reporting that preadolescent girls heard most frequent about dieting from a family member (84%), followed by the media (48%), and then peers (29%) (Schur et al., 2000). Smolak, Levine and Hayden (1994) suggest that individuals who receive pressure from all three sources are more vulnerable to internalising societal messages about the importance of thinness. These influences may lead to a schematic set of beliefs about the importance of thinness and beauty for success in a woman's life (Smolak, Levine, & Gralen, 1993). Peers also play a very important role in transmitting messages about thinness. As girls become older they spend more time with peers and value the opinions of close friends, more so than parents (Berndt, 1996).

Although many researchers have examined the relationship between sociocultural pressure to be thin, body dissatisfaction, and disordered eating, there has been some confusion in the literature due to an overlap between the terms used to describe different types of sociocultural pressure. Researchers have used such terms as “pressure”, “comment”, “criticism”, “attitude”, “encouragement”, “modelling”, and “reinforcement”. According to Kandel's socialization theory there are two processes by which socialization agents (i.e., families, peer or media) may promote behaviour: (a) social reinforcement, and (b) modelling (Kandel & Davies, 1992). Social reinforcement, referred to in the current literature as *perceived pressure to be thin*, is defined as comments or action by others that may serve to perpetuate the thin-ideal (e.g., critical comments about weight or encouragement to diet). *Modelling* refers to the process of directly copying a behaviour performed by others, such as dieting or binge eating

(Bandura, 1969). Finally, researchers have identified *exposure*² to media images containing a high content of idealised images, as another important source of sociocultural pressure (Stice, 1994).

The relationship between mass media influences, body dissatisfaction, and disordered eating. The mass media has received the most attention as a transmitter of sociocultural messages regarding thinness and beauty (see Levine & Harrison, 2004, for a review). Young women have high rates of exposure to media influences such as fashion magazines, television, and the internet. Young women also believe that magazines are a good source of information about beauty and fitness. In a study of Australian high school girls, participants reported that magazines (40.6%), followed by parents (29.2%), school (14%), television (12.6%), and finally friends (3.6%), were the most important sources of information about diet and health (Paxton et al., 1991). Television also has a powerful influence in the majority of households (Tiggemann & Pickering, 1996). On average, adolescent girls view approximately 4 hours of television per day, while in the average home the television is on for approximately 6-7 hours per day (Harris, 1994; Singer & Singer, 2001). Indeed, it has been reported that adolescents spend more time engaging in passive television watching than any other activity, except sleeping (Levine & Smolak, 1996).

Studies examining media influences fall into three categories: qualitative, correlational, and experimental. Table 1 provides a summary of studies examining the relationship between media influences, body dissatisfaction, and disordered eating. Qualitative research suggests that adolescent girls and young women are very much aware of cultural ideals regarding thinness and also report that exposure to these influences can deflate their self-esteem and mood, as well as contribute to body image disturbance and disordered eating behaviours (Field, Carmargo, et al., 1999; Pinhas,

² Stice suggests that media exposure is a component of perceived pressure to be-thin, however in this study we were interested in examining the effects of different types of societal pressure and therefore measured this variable separately.

Toner, Ali, Garfinkel, & Stuckless, 1999). For example, Wertheim et al. (1997) surveyed Grade 10 girls about their reasons for weight loss attempts with a specific focus on sociocultural influences. The potential social influences included magazines, television, advertising, fashion, peers, and family. Magazines and television were reported to be the most important sources of sociocultural pressure to be thin. Furthermore, there was a significant correlation between dieting behaviour and reports that magazines and television were important sources of sociocultural pressure to be thin ($r = .42$).

Correlational studies provide further support for a relationship between media pressure to be thin, body dissatisfaction, and disordered eating. For example, Field, Cheung, et al. (1999) found a significant relationship between magazine exposure and weight concerns in 548 girls from grades 5-12. Participants were classified according to their frequency of fashion magazine reading. High-frequency readers reported “twice weekly” or “daily” use, moderate-frequency readers reported use “2-5 times a month”, and those reporting use as “never” or “once a month”, were classified as infrequent users. Logistic regression analysis controlling for weight status, school level, and race, found that girls who were frequent readers of magazines were two to three times more likely than infrequent readers to diet to lose weight because of a magazine article, exercise to lose weight because of a magazine article, and feel that magazines influenced beliefs about ideal body shape. The girls classified as moderate frequency readers were significantly more likely than infrequent readers to increase exercise because of a magazine article and feel that magazines influenced beliefs about ideal body shape.

Table 1.

Summary of Studies Examining the Relationship Between Media Influences, Body Dissatisfaction, and Disordered Eating

Authors	Study Design	Sample	Type of media measure	Results
Becker, Burwell, Gilman, Herzog, and Hamburg, (2002)	Naturalistic experiment	65 Fijian girls	Examined eating attitudes and behaviours before and after the introduction of TV, over a 3-year period.	Following the introduction of TV, scores on the EAT in the clinical range ↑ from 12.7% to 29.2%. Total % of self-induced vomiting ↑ from 0% in 1995 to 11.3% in 1998. 83% of the participants reported that TV had influenced them to feel differently about or change their weight and shape.
Borzekowski, Robinson, and Killen (2000)	Correlational	837 ninth-grade girls	Television exposure	Total media use <u>not</u> related to weight concerns or perceived importance of appearance. When media use categorised only media exposure to <u>music videos</u> + correlated with weight concerns and perceived importance of appearance.
Botta (1999)	Correlational	214 high school girls (M age = 15 years)	TV viewing and exposure to thin TV dramas	<u>Neither</u> total TV exposure or exposure to “thin” TV dramas with predominantly thin central characters was predictive of endorsing a thin-ideal, BD, DT, or bulimic tendencies.
Champion and Furnham (1999)	Experimental	203 girls aged 12-16	Media exposure to thin models, overweight/obese women or neutral pictures.	<u>No sig.</u> differences found on measures of body image satisfaction and attractiveness between groups exposed to experimental conditions vs control group.
Cusumano and Thompson (1997)	Correlational	175 undergraduate women	Magazine Exposure	Mag. exposure did not significantly predict BD, self-esteem or eating disturbances. Both awareness and internalisation of the thin-ideal explained sig. variance associated with the criterion variables. Internalisation of the thin-ideal accounted for sig. variance beyond that explained by awareness.
Durkin and Paxton (2002)	Experimental	116 grade 7 girls (M age = 12.9) and 125 grade 10 girls (M age = 15.5)	Exposure to idealized images of slim women vs exposure to images of inanimate objects	Sig. ↓ in state BS and ↑ in state depression following exposure to thin images but not neutral images. For the younger girls ↓ in state BS were predicted by stable BD and BMI, for older girls ↓ in state BS were predicted by internalisation of the thin-ideal, appearance comparison and BD.
Field, Cheung, et al. (1999)	Correlational	548 girls grades 5-12	Frequency of Mag. exposure	“Frequent” readers 2-3X more likely than “infrequent” readers to diet and exercise to lose weight & report Mags influence beliefs about ideal body shape. “Moderate” readers sig. more likely to exercise and reports Mags influenced beliefs about ideal body shape.

(con'd) Grosz, Levine, and Murnen. (2002)	Meta-Analysis	Preadolescent to college women	Examined data from 25 experimental studies of media exposure.	Body satisfaction sig. ↓ following exposure to thin images than after exposure to average size models or inanimate objects. Small to medium effect size of -0.31 Those with pre-existing body image problems more adversely affected by media images of thin-ideal. Those less than 19 years of age more adversely affected.
Harrison (2000)	Experimental	366 adolescents	TV and Mag exposure	Exposure to thin-ideal TV content did <u>not</u> predict disordered eating. Mag exposure predicted AN symptoms (all females) and BN symptoms (grades 9 & 12 girls only). Exposure to sports mags + predicted BD in 12 th grade girls.
Harrison and Cantor (1997)	Correlational	232 female undergraduates	Self-reported media exposure to popular TV shows and magazines representing a range of body images.	Total media consumption sig. predicted disordered eating, anorexia symptoms, bulimia symptoms, BD and DT. Overall mag reading (but not TV viewing) unique predictor of disordered eating scores. TV viewing sig. + predictor of BD.
Heinberg and Thompson, (1995)	Experimental	139 college women	Exposure to TV commercials (appearance- related or non-appearance related).	Participants exposed to appearance related commercials with pre-existing body image disturbance and thin-ideal awareness & internalisation had ↑ levels of BD, depression and anger, post exposure. Participants' exposure to non-appearance related TV commercials had ↓ levels of depression and ↑ BS.
Levine et al. (1994)	Correlational	385 girls (aged 10- 14 years)	Magazine and media influence. Also peer and family influence	Mag information (35%), followed by family teasing (8%) and peer dieting (3%) accounted for sig. amount of variance in scores of eating disturbance as measured by the ChEAT.
Ogden and Mundray (1996)	Experimental	40 undergraduate men and women	Exposure to pictures of thin models and overweight people.	Exposure to thin picture produced ↓ feelings of BS whereas exposure to fat pictures ↑ BS.
Posavac, Posavac, and Posavac (1998)	Experimental	136 undergraduate women	Exposure to fashion models or neutral images.	No sig. effect for exposure however there was a sig. interaction between condition and BD. Exposure to thin images increased BD but only in women with initial elevations in BD.

(con'd) Stice, Schupak-Neuberg, Shaw, and Stein (1994)	Correlational	238 female undergraduates	Media exposure (magazine and TV)	Media exposure to idealized images from mag. and TV significantly and directly predicted eating disorder symptomatology (See Figure 1.)
Stice and Shaw (1994)	Experimental	157 undergraduate females	Exposure to thin-ideal models vs average weight models vs neutral pictures.	Exposure to thin-ideal model (compared to average-sized models or no models) produced sig. increased negative feelings (i.e., guilt, depression, shame, stress and insecurity) and increased BD.
Stice, Spangler, and Agras (2001)	Experimental	219 adolescent girls	15-month subscription to a fashion magazine vs no subscription	No main effect for the experimental condition (i.e. exposure). Girls with higher initial elevation in perceived pressure to be thin and BD and deficits in social support more adversely affected by exposure to magazines.
Tiggemann and Pickering (1996)	Correlational	94 adolescent girls	TV exposure over one week	Total TV viewing <u>not</u> related to BD or DT. Watching soap operas, serials and movies sig. + correlated with BD, and sig. negatively correlated with watching sport. Watching music videos sig. + correlated with DT.
Wertheim et al. (1997)	Descriptive	30 adolescent girls (M age=15)	Detailed interviews about sociocultural pressures	Participants identified media as strongest source of pressure fostering body concerns.

TV=Television, Mags = Magazines, EAT=Eating Attitudes Test, ChEAT= Children's Eating Attitudes Test, BD=Body Dissatisfaction, DT=Drive for Thinness, BS=Body Satisfaction.

One criticism of correlational studies is that it is not possible to infer the direction of causality from the results. It may be that adolescent girls with a high drive for thinness seek magazines to confirm their beliefs, or alternatively that magazines produce a sense of body dissatisfaction in girls who are seeking information about current standards of attractiveness.

Other investigations have attempted to untangle the direction of the relationship between media exposure and disordered eating by using theoretical models with more sophisticated research methods. In a frequently cited study, Stice et al. (1994) used structural equation modelling to evaluate the role of media exposure on eating disturbances, in a sample of college women ($n = 238$). This study also examined the mediating effects of gender-role endorsement, ideal-body stereotype internalisation, and body dissatisfaction. Media exposure was measured using a 6-item measure which asked participants to report the number of health and fitness, beauty and fashion, entertainment, arts, and gossip magazines, they had looked at over the past month, as well as the number of hours of comedy, drama, and game shows watched on television over the last month. This measure was intended to sample use of media with a high proportion of ideal body images. A direct relationship was found between media exposure and eating disorder symptomatology and media exposure and gender-role endorsement (See Figure 1). The results indicated that media exposure led to greater endorsement of stereotypical gender roles, which led to internalisation of the thin-ideal body shape, then body dissatisfaction, and finally eating disorder symptoms. Interestingly, and contrary to other research finding there was not a direct relationship between media exposure and internalisation of the thin-ideal. The direct and indirect relationship between media exposure and body dissatisfaction accounted for 43.5% of the variance in eating disorder symptomatology and 13.3% of the variance in ideal body stereotype internalisation.

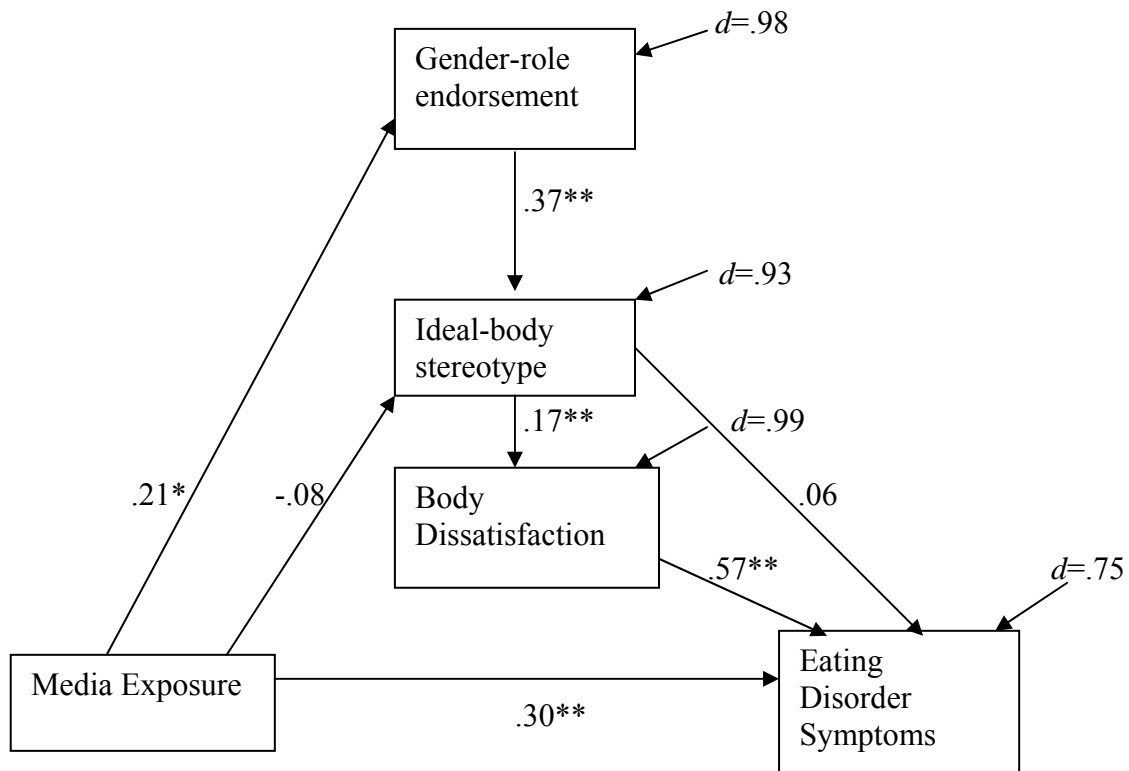


Figure 1. Relation of Media Exposure to Eating Disorder Symptomatology in a Test of Mediating Mechanisms (* $p < .05$, ** $p < .001$). From “Relation of Media Exposure to Eating Disorder Symptomatology: An Examination of Mediating Mechanisms”, by E. Stice, E. Schupak-Neuburg, H. E., Shaw and R. I., Stein, 1994, *Journal of Abnormal Psychology*, 103, p. 838. Copyright 1994 by the American Psychological Association. Reprinted with permission from publisher.

Despite the above findings, not all studies have found support for a direct relationship between media exposure and disordered eating behaviour (Champion & Furnham, 1999; Cusumano & Thompson 1997; Harrison, 2000; Harrison & Cantor; 1997). For example, Cusumano and Thompson (1997) failed to find a relationship between media exposure to fashion magazines and measures of body image, eating dysfunction, and self-esteem, in a sample of 175 college women. Instead, both *internalisation* (i.e., endorsement of societal attitudes towards thinness) and *awareness* (i.e., acknowledgement that societal attitudes towards thinness exist) of body shape ideals significantly predicted body dissatisfaction, eating disturbance, and low self-esteem.

Others have found that the *type* of media may be important with exposure to certain categories of television programs, such as music videos and soap operas, predicting body dissatisfaction and disordered eating, whereas exposure to sports programs predicted improved body satisfaction (e.g., Borzekowski et al., 2000; Tiggemann & Pickering, 1996; Hofschire & Greenberg, 2004).

In an effort to test causal hypotheses regarding exposure effects and disordered eating a number of researchers have examined the immediate effects of media exposure on body image using experimental designs (Champion & Furnham, 1999; Durkin & Paxton, 2002; Martin & Kennedy, 1993; Ogden & Munday 1996; Richins, 1991; Shaw, 1995; Stice & Shaw 1994; Stice et al., 2001; Tiggemann & McGill, 2004). In these experiments participants are typically exposed to images of thin female models in magazines or commercials. The control condition consists of exposure to either images of average weight models, attractive non-models, larger size models, or inanimate objects. Some studies have also classified participants according to prior level of body image disturbance to determine if pre-existing personality variables make some women more vulnerable to media messages that idealise a thin-ideal (Hamilton & Waller, 1993; Heinberg & Thompson, 1995; Irving, 1990). The results of these studies have generally been mixed (See Table 1). Some experiments have demonstrated that women who view thin-media images experience higher levels of body dissatisfaction post-exposure, than women who view images of normal weight women or overweight women (e.g., Stice and Shaw, 1994; Ogden & Munday, 1996). However, other studies have found no effect on body image or disordered eating following media exposure to thin-ideal images (e.g., Botta, 1999; Harrison, 2000).

In response to these contradictory results and methodologies Groesz, Levine and Murnen (2002) conducted a meta-analysis of 25 studies examining the effect of experimental presentation of thin-media images on body dissatisfaction. There was a

small but significant effect size of -0.31 . As hypothesised, the body image of women and girls worsened after viewing images of thin media models as opposed to viewing average size models, plus size models, or inanimate objects such as cars or houses. Also, as expected, samples that had pre-existing dissatisfaction with their body image were more adversely affected by exposure to thin images, compared to participants without such concerns. Interestingly, the study demonstrated that women not yet in college (<19 years of age) were more adversely affected by the presentation of thin media images indicating that this age group is particularly vulnerable to the “glorification of slenderness omnipresent in magazines targeting young adolescent girls” (Groesz et al., 2002, *p.* 12).

In sum, there is evidence to support a relationship between media influences and disordered eating behaviour; however this relationship is not a simple one. Qualitative research studies indicate that adolescent girls believe that media plays an important role in promoting a thin-ideal and they report learning weight control methods from media sources. The results of correlational research are somewhat mixed. Some studies have found support for media exposure predicting body dissatisfaction and disordered eating, and others have found no relationship. Finally, experimental studies provide support for the immediate negative impact of media exposure on body dissatisfaction and negative affect, but less so for disordered eating behaviour. Despite this evidence, it is important to note that although the majority of Western women are exposed to the thin-ideal via the media, the majority do not develop subsequent eating disturbances (King, Touyz, & Charles, 2000). Thus, it is reasonable to propose that the relationship between media and disordered eating is complex, bi-directional, and multiply determined (Thompson et al., 1999). Furthermore, a number of factors may moderate or buffer against the negative effects of exposure to the thin-ideal via the media.

The relationship between family influence, body dissatisfaction, and disordered eating. Families also play an important role in transmitting sociocultural messages regarding the importance of appearance. These pressures may occur either through reinforcement and encouragement to diet resulting in a *perceived pressure to be thin*, or through *modelling of disordered eating behaviours*. A home environment that places importance on physical attractiveness and thinness, and encourages behaviours such as dieting and exercise to attain an ideal body shape, is known to contribute to increased body dissatisfaction, dieting, disordered eating, and bulimic symptomatology (Davis, Shuster, Blackmore, & Fox, 2004).

In general, studies have found that the parents of eating disordered girls are more conscious of their own weight and appearance. In particular, a mother's own investment in thinness and appearance is a significant and consistent predictor of dieting behaviours in adolescent girls (Francis & Birch, 2005; Hill, Weaver, & Blundell, 1990; Paxton et al., 1991; Phares et al., 2004; Pike & Rodin, 1991). It is thought that mothers may act as "society's messengers" by directly or indirectly pressuring their daughters to achieve the cultural ideal (Pike & Rodin, 1991, *p.* 198). The contribution of male family members is also important. Paternal investment in thinness and paternal weight loss attempts, have also been found to influence daughters' body dissatisfaction and weight loss attempts (e.g., Smolak, Levine, & Schermer, 1999; Taylor et al., 1998). Siblings are also an important source of influence and have been found to show similar levels of sociocultural awareness and internalisation of the thin-ideal (Tsiantas & King, 2001). Table 2 provides an overview of the results of studies examining the relationship between family influences, body dissatisfaction, and disordered eating. The majority of studies examining family influences have used a correlational design and studies have included preadolescent girls (e.g. Smolak et al., 1999), older adolescent girls (e.g., Pike & Rodin, 1991), and adult women (e.g., Schwartz, Phares, Tantleff-Dunn & Thompson,

1999). One well-designed study examined the relationship between parental comments about children's weight and modelling of weight concerns in over five hundred 9- and 10-year-old boys and girls (Smolak et al., 1999). Measures of body esteem, number of weight loss efforts, and concern with body weight, were obtained. Parents were asked to report on their own attitude towards weight and shape, as well as their attitude towards their child's shape and weight. Regression analyses indicated that the frequency of parental weight loss attempts, maternal comment on daughters' weight, fathers' belief in calorie-restrictive dieting, and fathers' complaints about own weight, accounted for 41% of the variance in girls' weight loss attempts. In addition, mothers' comments on daughters' weight and fathers' belief in dieting were significant predictors of daughters' concerns about "being too fat". The results of the study indicate that for prepubescent girls, both mothers and fathers make an independent and influential contribution to their daughter's weight concerns and weight loss efforts.

There is some evidence that parental influences may play a stronger role in preadolescence. This is understandable as the family is the primary social-modelling components in a child's early life until early adolescence when peer influences begin to significantly impact on attitudes and behaviours (Berndt, 1996). Schur et al. (2000) found that sixth-grade boys and girls reported that they heard about dieting most often from a parent, followed by media, and then peers. There is some support for the impact of direct parental modelling of disordered eating on daughters' disturbed eating. Recently, Francis and Birch (2005) conducted longitudinal research on mother-daughter dyads (when daughters were aged 5, 7, 9 and 11 years). The study found that over time, maternal preoccupation with weight and eating predicted maternal restriction of daughters' access to high calorie snack foods, and maternal encouragement of daughters'

Table 2.

Summary of Studies Examining the Relationship Between Family Influences, Body Dissatisfaction, and Disordered Eating

Authors	Study Design	Sample	Type of Family Influence measured	Results
Attie and Brooks-Gunn (1989)	Longitudinal	193 adolescent girls (<i>M</i> age= 13. 93 years) and their mothers	<i>M</i> 's eating behaviours and attitudes	<i>M</i> 's disordered eating behaviours as measured by the EAT did not predict daughters' disordered eating behaviours, two years later.
Byely, Archibald, Graber, and Brooks-Gunn (2000)	Cross sectional and Longitudinal	77 girls and mothers	Perceptions of family and social influences	<i>M</i> 's modelling of disordered eating behaviour and <i>M</i> body image was not predictive of daughters' dieting or body dissatisfaction either concurrently or longitudinally.
Davis et al. (2004)	Correlational	158 women	Role of <i>Ps</i> weight preoccupation in combination with daughter's vulnerability to neuroticism	Family focus on appearance <u>only</u> sig. related to weight preoccupation in young women with relatively high scores on a measure of neuroticism. Suggests vulnerability factor interacts with sociocultural pressures
Edmunds and Hill (1999)	Correlational	402 twelve-year-old girls and boys	Child's reports of parental control over eating	Highly restrained children reported that <i>Ps</i> ' discouraged eating between meals, eating too much, and eating sweets or confectionary. Being female, higher <i>BD</i> and parental control of overeating sig. + predictors of dietary restraint.
Francis and Birch (2005)	Correlational & Longitudinal	173 mother-daughter dyads. Assessed when <i>Ds</i> aged 5, 7, 9, and 11 years of age.	<i>M</i> 's preoccupation with weight and eating	<i>Ms</i> with weight preoccupation and disordered eating reported higher restriction of daughters' intake of energy-dense snack food ($r = .24, p < .01$) and encouraging daughters' to lose weight ($r = .32, p < .001$). Daughter's perception of maternal pressure to lose weight mediated between Maternal restriction and encouragement to lose weight and daughters' restrained eating.
Hill et al. (1990)	Correlational	52 ten-year-old girls and their mothers	Dietary restraint of mothers and daughters	<i>Ms</i> of <i>Ds</i> with high restraint scores also highly restrained themselves. Strong correlation between degree of dietary restraint expressed by <i>Ds</i> and their <i>Ms</i> ($r = .68$).

(con't)					
McCabe and Ricciardelli (2005a)	Longitudinal	443 girls and boys from 8-12 years	Perceived pressure from mother, father, best friend and media to lose weight	Perceived messages to lose weight from best friends and Ms sig. predicted BD Perceived messages from Ms to lose weight sig. predicted increased use of strategies to lose weight among girls.	
Ogden and Steward (2000)	Correlational	30 Ms and Ds (aged 16-19).	Weight concerns, restrained eating and body dissatisfaction	<u>No</u> relationship found between Ms' and Ds' weight concerns.	
Phares et al., (2004)	Correlational	141 elementary school girls and boys (aged 8-11)	Examined family history of eating and perceptions of teasing	Girl's BD, bulimic symptoms, and DT sig. correlated with higher levels of family history of eating concerns, peer influences, and perceptions of teasing.	
Pike and Rodin (1991)	Correlational	77 mothers and their high-school daughters (<i>M</i> age = 16). Daughters classified as disordered eaters or non-eating disordered according to the EDI.	Mothers' eating disordered behaviours and beliefs about daughters attractiveness	Ms of Ds classified as eating disordered sig. more eating disordered than comparison mothers. Ms of disordered eating girls thought Ds should lose significantly more weight than mothers of non-eating disordered girls. Ms of disordered eating Ds rated Ds as significantly less attractive than mothers of comparison group.	
Schur et al., (2000)	Qualitative	62 third and fourth-grade boys and girls	Sources of information about dieting	84% of girls heard about dieting from a family member (usually mother or father)	
Schwartz et al. (1999)	Correlational	139 female undergraduates	Retrospective reports of parental appearance-related commentary (teasing)	Ds' received significantly more appearance related feedback from F's. Feedback was related to higher BD in Ds. Both Fs' and Ms' feedback was predictive of Ds' negative body image and poor psychological functioning.	
Smolak et al. (1999)	Correlational	131 Ms and 89 Fs of 4 th and 5 th grade girls and boys.	Parental dieting attempts, concerns and complaints about weight, belief in dieting, comments about child's weight	Frequency of weight loss attempts, M comment on D's weight, F's belief in calorie-restrictive dieting, and F's complaints about own weight accounted for 41% of the variance in D's weight loss attempts. M comment and F's belief in dieting significantly predicted D's concerns about being "too fat".	

(con't)					
Tsiantas and King (2001)	Correlational	41 closest- in age sisters <i>M</i> age younger sisters (18.59) <i>M</i> age older sisters (20.73)	Body image, social comparison and internalisation of the thin-ideal	Moderate correlations between sisters on measures of eating pathology, body dissatisfaction, internalisation and awareness of thin-ideal (low correlations between youngest sibs and unrelated females).	
Vincent and McCabe (2000)	Correlational	306 girls aged 11-16	Parental modelling and encouragement of weight concerns, and discussions about weight	BMI, maternal modelling, and peer discussion about weight accounted for 21% of the variance in dietary restraint. Maternal and peer discussion about weight accounted for 36% of the variance in diet and exercise. Maternal and peer encouragement to diet, parental teasing, and discussion with peers accounted for 37% variance in bulimic symptoms.	

M= Mother/s, D= Daughter/s, P=Parent/s, F=Father/s, BD=Body Dissatisfaction, DT=Drive for Thinness, BMI=Body Mass Index, EAT= Eating Attitudes Test.

to lose weight. Mothers' encouragement of daughters' weight loss was partially mediated by daughters' perceptions of maternal pressure to lose weight. This model accounted for 43% of the variance in daughters' restrained eating behaviours. Not all studies have found a significant relationship between family pressure and body image concerns. Attie and Brooks-Gunn (1989) in a two-year-longitudinal study of 193 middle school girls (*M* age = 13.93 years), found that mothers' body image and compulsive eating behaviours did not significantly predict daughters' disordered eating behaviours. Similarly, Byely et al. (2000) conducted a longitudinal study of early adolescent girls' (*M* age = 12.3 years) perceptions of family and peer pressure to diet. In this study mothers' dieting behaviours and body image did not predict daughters' dieting and body dissatisfaction, either concurrently or longitudinally over 12-months.

One methodological problem evident in many of the studies that examine the relationship between parental pressure and disordered eating is the failure to control for actual body weight. This variable is considered important because parental pressure is likely to be strongly related to daughters' weight status. Children who are overweight or obese are more likely to receive pressure to diet due to increasing societal concerns about childhood obesity, general health, and other sociocultural pressures. Despite this possible confound, the studies that have controlled for actual body weight have still found a relationship between parental pressure to be thin and abnormal eating behaviour and weight concerns in daughters (e.g., Paxton et al. 1991; Pike & Rodin, 1991). For example, Paxton et al. (1991) in an Australian study of 563 girls and boys, aged 11 to 18 years, found that girls who reported that their parents encouraged them to diet, were more likely to diet, regardless of BMI.

In sum, it appears the families play an important role in transmitting sociocultural pressure to be thin to daughters. It has been found that perceived pressure to be thin from family members leads to internalisation of the thin-ideal and subsequent eating pathology (e.g., Stice, Nemeroff et al., 1996). Furthermore, there is some support for a direct relationship

between parental modelling of disordered eating behaviours and daughters' maladaptive eating.

The relationship between peer influences, body dissatisfaction, and disordered eating.

In addition to media and family, friends or peers are another important source of sociocultural influence. As with families, peers may act as vehicles for transmitting societal pressure to be thin. Furthermore a young woman's attitude towards weight might be influenced by the extent to which her friends emphasise the importance of thinness (i.e., perceived pressure to be thin) or via modelling of peers' disordered eating behaviours.

Research has found that peers play an important role in the socialization process of adolescents. In early adolescence peer relationships become increasingly intimate (Crockett, Losoff, & Peterson, 1984) and are characterized by increased preoccupation with image and social acceptance (Harter, 1999). Adolescent friends tend to resemble one another on a wide range of characteristics, behaviours, and attitudes; especially health-risk related behaviours such as cigarette smoking, sexual behaviour, and drug use (Aloise-Young, Graham, & Hansen, 1994; Bailey & Hubbard, 1991; Moore & Rosenthal, 1994). Talking about weight and dieting may even serve as a means of bonding, or a form of competition, among some adolescent girls (Striegel-Moore et al., 1986). It has been suggested that university environments are "breeding grounds" for binge eating and purging behaviours as the semi-closed environment may intensify sociocultural pressures to be thin (Crandall, 1988, p. 596). Although there is no doubt that peers are important during adolescent development, the relationship between peer influences, body image concerns, and disordered eating, has received little empirical attention. However, there is some evidence that peers may reinforce or directly model negative eating attitudes and behaviours (See Table 3 for a summary of studies examining the relationship between peer influences, body dissatisfaction, and disordered eating).

Table 3.

Summary of Studies Examining the Relationship Between Peer Influences, Body Dissatisfaction, and Disordered Eating.

Authors	Study Design	Sample	Type of Peer Influence Measured	Results
Crandall (1988)	Correlational	2 College sororities (163 college women)	Binge eating behaviour modelled in college sororities over one academic year.	Sorority member's binge eating could be predicted from binge eating level of friends and other sorority members ($r = .31$). This became stronger as friendships became more cohesive ($r = .35$).
Dohnt and Tiggemann (2005)	Descriptive	81 girls (aged 5-8 years)	Interviews about body dissatisfaction, dieting awareness, and peer influence.	Sig. relationship between peers' BD and own BD. Around 60% of girls believed that being thin improved likeability. Relatively infrequent rates of peer discussion (i.e. fat talk) about bodies.
Eisenberg, Neumark-Sztainer, Story and Perry, (2005)	Correlational	2,337 high school girls	Examined effect of friends' influence on unhealthy weight control behaviours	Friends' dieting behaviour sig. predicted unhealthy weight control behaviours in normal weight and moderately overweight girls.
Krones, Stice, Batres, and Orjida (2005)	Experimental	119 undergraduate women	Exposure to either a thin-ideal peer confederate or a peer confederate with average body dimensions (controlling for attractiveness).	Exposure to thin-ideal peer resulted in significant \uparrow in BD, compared to the control condition. Initial elevations in BD, thin-ideal internalisation and perceived sociocultural pressure did <u>not</u> moderate these effects.

(con'td) Levine et al. (1994)	Correlational	385 girls aged 10-14	Peer dieting and peer teasing	Peer teasing and peer dieting made small but sig. contributions accounting for 1-4% of the variance of the criterion variables (i.e., investment in thinness, eating disturbances, weight management, and BD) Peer teasing accounted for 24% of the variance in body dissatisfaction.
Lieberman, Gauvin, Bukowski, and White (2001)	Correlational	876 girls (<i>M</i> age = 14.08)	Examined peer reinforcement and modelling on dietary restraint, bulimic symptoms and body image.	Peer modelling (but not social reinforcement) sig. + predictor of dieting. Both peer modelling and social reinforcement sig. + predictors of bulimic behaviour and negative body esteem. After controlling for other variables peer pressure only added 1-5% of additional variance.
Paxton, Schutz, Wertheim, and Muir (1999)	Correlational	523 adolescent girls from 79 friendship cliques	Examined relationship between friendship variables and body image/disordered eating.	Girls in the same friendship groups shared similar levels of BID, dietary restraint and extreme weight-loss behaviours. BMI, friends as a source of influence, friend talk, and body comparison all make significant and unique contributions to the variance in individual girls' body image concerns, dietary restraint, extreme weight-loss behaviours and bulimic symptoms.
Stice, Maxfield, and Wells (2003)	Experimental	120 Undergraduate women	Experimental: Exposure to a thin-attractive confederate who complained about weight and discussed body shape issues. Control: exposure to thin-attractive confederate who discussed a neutral topic	BD ↑ in experimental group after exposure but did not increase in control group. No effect on negative affect following exposure. Pre-existing thin-ideal internalisation and/or body dissatisfaction did not moderate effects.

(con'd) Taylor et al. (1998)	Correlational	78 elementary and 333 middle school girls	Assessed importance peers placed on weight and other peer influences (e.g., teasing)	For elementary school girls the importance peers placed on weight and eating accounted for 34% of variance in weight concerns. For middle school girls importance peers placed on weight accounted for 33% of the variance in weight concerns. Both BMI and "trying to looks like girls in mags and on TV also sig. predictors.
Vander Wal and Thelen (2000)	Correlational	100 girls from grade 3,4 and 5 (<i>M</i> age= 10.4)	Peer investment and influence on dieting	Both peer investment in dieting and peer teasing accounted for 42% of the variance in body image dissatisfaction.
Vincent and McCabe (2000)	Correlational	306 girls aged 11-17	Examined influence peers and family on BD and disordered eating.	Peer discussions about weight, and BMI sig. predicted BD and binge eating. Maternal modelling, peer discussion about weight, and BMI predictive of restraint and exercise. Maternal and peer encouragement to lose weight and discussion with peers about weight sig. predicted bulimic symptomatology.

BD=Body Dissatisfaction, BID= Body image disturbance, ChEAT=Children's Eating Attitudes Test, BMI=Body Mass Index.

Adolescent girls spend a significant amount of time talking about issues related to body shape and weight management (Nichter, 2000). In addition to talking about these issues, the importance peers place on weight may be related to disordered eating behaviours. For example, Taylor et al. (1998) found that for both elementary- and middle-school girls, the importance peers placed on weight and eating was most strongly related to the development of their own excessive weight concerns. Specifically, the importance peers placed on weight accounted for 34% and 33% of the variance in weight concerns among elementary, and middle school girls, respectively.

In one important study Paxton et al. (1999) examined 523 grade-10 girls from 79 different friendship cliques, to determine the influence of friendships on body image and eating behaviours. Peer pressure was measured using the 5-item Friends As A Source Of Social Influence Scale (FSIS), which asked participants to rate the importance of friends in influencing their ideals about weight, shape, and diet. The frequency with which friends talked about weight was also measured, and participants were asked to rate how often they compared their body with friends. The results suggested that girls from the same friendship cliques shared similar levels of body image concern, dietary restraint, and use of extreme weight loss methods. In multiple regression analyses, even when individual and psychological factors were accounted for, friends as a source of influence, frequency of talking with friends about weight loss, and body comparison, were all unique and significant predictors of body image, dietary restraint, and binge eating. Paxton et al. provides three possible explanations for why body image attitudes and dieting behaviours are shared by female friendship groups. First, girls may model the behaviours of their friends and adopt normative attitudes regarding weight, shape, and dieting. Alternatively, girls may select friendship groups with similar levels of body image concerns and weight loss behaviours. Finally, social comparison may motivate a girl to change her behaviour or guide her choice of friends with similar attributes. Longitudinal research is required to

determine the relative contribution of friendship selection and influence on disordered eating behaviour.

Additionally, direct peer modelling appears to be related to disordered eating behaviours. For example, Lieberman et al. (2001), in a sample of 876 adolescent girls, found that peer modelling of disordered eating behaviour was a significant predictor of dieting behaviour, however social reinforcement was not. For bulimic symptoms, both peer modelling and social reinforcement were significant predictors. However, in this study peer effects only accounted for an additional 1-5% of the variance in dieting behaviour and bulimic symptoms, after other effects were accounted for (i.e., social, relational factors, and bio-maturational factors).

In a recent experimental study Stice et al. (2003) found exposure to peer pressure to be thin resulted in immediate body dissatisfaction. In this study 120 undergraduate women were assigned to either an experimental condition where a thin model complained about her weight and voiced intentions to diet, or a control condition where another female confederate (of similar appearance) discussed a neutral topic. Participants completed both pre- and post- measures of body dissatisfaction, negative affect, thin-ideal internalisation, and social support. For the participants in the experimental condition, but not the control condition, body dissatisfaction significantly increased from pre- to post-exposure. Contrary to the findings of previous studies (e.g., Heinberg & Thompson 1995; Stice et al., 2001), the hypotheses that the adverse effects of social pressure might be more pronounced for participants with initial elevations of thin-ideal internalisation and body dissatisfaction and initial deficits in social support, were not supported in this study.

It appears that peer pressure and peer modelling both play an important role in the prediction of body dissatisfaction and disordered eating behaviour. In some studies peer influences have been very important in predicting disordered eating behaviour (e.g.,

Taylor et al. 1998), but in other studies their role has been less important (e.g., Lieberman et al., 2001).

Summary

Research supports the relationship between sociocultural influences from multiple sources and disordered eating behaviour. Although in some cases sociocultural pressure may lead directly to disordered eating behaviour (e.g., particularly in the case of direct modelling of disordered eating behaviour), it is likely that other important variables may make women more vulnerable to the effects of societal pressure to be thin. In recent years a number of theoretical models have been proposed and tested using more sophisticated research designs. These studies explain more clearly how certain sociocultural and psychological variables combine with one another to produce eating disorder symptomatology. Franko and Orosan-Weine (1998) suggest that those most at risk by sociocultural influences are those young women with a certain constellation of personality, behavioural, or familial factors” (p. 463). Recent research in this field has attempted to understand more about individual differences that may moderate the complex relationship between sociocultural influences and disordered eating. A number of theoretical models have been proposed and tested and these will be reviewed in Chapter 4.

CHAPTER FOUR

Theoretical Models

In recent years a number of theoretical models have been developed to test the specific mechanisms by which sociocultural influences play a role in the development and maintenance of disordered eating behaviour (Thompson & Heinberg, 1999). These theoretical models are useful in highlighting important risk factors that could potentially be addressed in prevention and treatment programs for eating disorders. There have been two important models that have been developed and tested in this field. The first, the *dual-pathway model*, developed and modified by Stice and colleagues (Stice, 1994; Stice, Nemeroff et al., 1996; Stice, Ziemba et al., 1996b; Stice et al., 1998; Stice, 2001), is an integrative model that examines the mediating mechanisms between sociocultural pressures and the expression of BN. The second, the *tripartite influence model*, proposed by Thompson and colleagues (Keery, van den Berg, & Thompson, 2004; Thompson et al., 1999; van den Berg et al., 2002), examines the role of appearance comparison and internalisation of the thin-ideal as mediators of the relationship between multiple sociocultural influences and eating pathology/bulimia. Both of these models have influenced the current research.

The Dual-Pathway Model.

The core proposition of the dual-pathway model is that body dissatisfaction promotes both dietary restraint and negative affect, and these, individually or in combination, lead to the development of BN and bulimic symptomatology (Stice, Nemeroff et al., 1996). The model is called the dual-pathway model because it posits that the pathway to bulimic symptomatology from body dissatisfaction occurs either via negative affect or through dietary restraint (See Figure 2). Stice's model is considered a synthesis of the sociocultural, dietary restraint, and affect regulation models.

Key components of the dual-pathway model. According to the model, elevated body mass increases social pressure to attain a thin body and is also directly related to increased body dissatisfaction. As noted in Chapter 2, women with elevated body mass are likely to experience amplified pressure to achieve the thin-ideal from various sources, including family, peers, and mass media. There is also a wealth of evidence to show that body mass is positively correlated with body dissatisfaction (e.g., Attie & Brooks-Gunn, 1989; Paxton et al., 1991; Stice & Shaw, 1994; Stice & Whitenton, 2002; Thelen & Cormier, 1995), with one of the primary mechanisms underlying this dissatisfaction related to the deviation from the current thin-ideal (Graber, Brooks-Gunn, Paikoff, & Warren, 1994). The dual-pathway model proposes that families, peers, dating partners, and mass media, all play an important role in transmitting sociocultural pressure to women. Perceived pressure to be thin occurs via comments or actions by others that reflect or reinforce a thin-ideal.

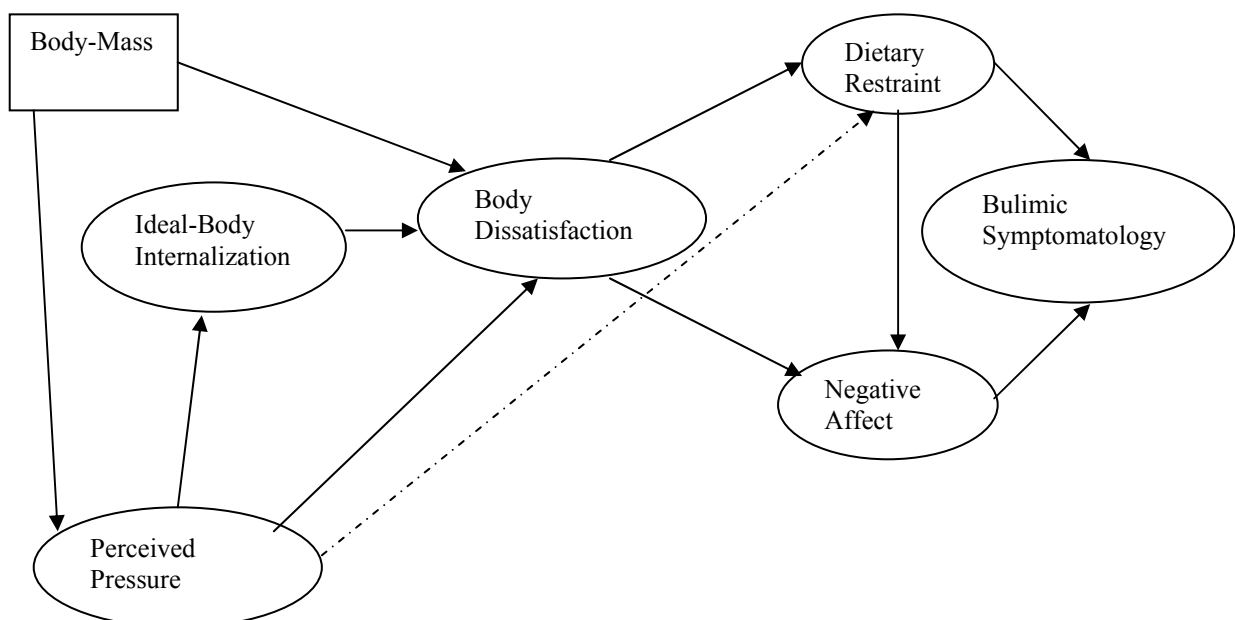


Figure 2. Dual-Pathway Model of Bulimia Nervosa. From “The Dual-Pathway Model Differentiates Between Bulimics, Subclinical Bulimics, and Controls: Testing the Continuity Hypothesis”, by E. Stice, C. Ziemba, J. Marjolis, and P. Flick, 1996, *Behavior Therapy*, 27, p. 533. Copyright 1996 by the Association for Advancement of Behavior Therapy. Reprinted with permission from the publisher.

There is strong evidence supporting a relationship between sociocultural pressure to be thin (from families, peers, and media) and disturbances in body image and eating. For example Levine et al. (1994) found that the combined pressure of media, family and peers to have a thin body, accounted for extremely high scores on measures of dysfunctional eating attitudes and behaviours (see Chapter 2 for a comprehensive review).

These pressures, individually or in combination, are associated with an internalisation of societal messages about thinness and the development of beliefs about the importance of thinness and beauty for success in a woman's life (Stice, 1994; Stice et al., 1998). Although thin-ideal internalisation has been identified as a key mediator of the relationship between societal pressure and body dissatisfaction, an understanding of how it develops, and at what age, is still unclear. The role of internalisation of the thin-ideal will be discussed in more depth later in this chapter.

According to the model, perceived pressure may directly contribute to body dissatisfaction, without necessarily operating via ideal-body internalisation. Repeated messages implying that one should have a particular body shape and size are likely to produce discontent with a physical appearance that deviates from this ideal (Stice & Whitenton, 2002). This may occur even in women who have made a conscious effort to reject societal ideals regarding thinness.

Finally, perceived pressure is thought to directly contribute to dietary restraint, over and above its indirect effects via ideal-body internalisation and body dissatisfaction. According to the model, ideal-body internalisation is thought to contribute to increased levels of body dissatisfaction because the ideal-body stereotype is an unrealistic goal that is unachievable for the majority of women. Ideal-body internalisation has been found to positively correlate with body dissatisfaction (Heinberg, Thompson, & Stormer, 1995; Stice, Nemeroff, et al., 1996) and also mediate the relationship between perceived pressure to be thin and body dissatisfaction (Stice, Nemeroff, et al., 1996).

In the next part of the model, body dissatisfaction leads to dietary restraint as restraint is employed by women with body image concerns as a weight control strategy. Body dissatisfaction has also been shown to be associated with negative affect (Beebe, 1994; Stice & Shaw, 1994). Studies indicate that in an effort to regulate negative affect many women resort to binge eating, a strong predictor of the onset of bulimia (Schupak-Neuberg & Nemeroff, 1993). Additionally, dietary restraint is thought to contribute directly to negative affect as a result of both the failures associated with dietary effort, and from calorie deprivation.

Empirical support for the dual-pathway model. The dual-pathway model has been empirically tested and modified using both cross sectional (Stice, Nemeroff, et al., 1996; Stice et al. 1996b) and longitudinal research (Stice, 2001; Stice, Shaw, et al., 1998). Stice et al. (1996a) initially tested the model on 257 undergraduate women. Participants completed a range of measures assessing body mass, perceived sociocultural pressure (from family, friends, and dating partners), ideal-body internalisation, body dissatisfaction, dietary restraint, negative affect and bulimic symptomatology. In this study the role of media pressure to be thin was not assessed. Structural equation modelling was used to confirm the measurement model and then test the model fit. The model was found to be a good fit to the observed data (i.e., Comparative Fit Index (CFI) and Incremental Fit Index (IFI) > .95), and also accounted for 71% of the variance in bulimic symptomatology. As hypothesised, body mass predicted perceived pressure and body dissatisfaction. Perceived pressure was significantly related to body dissatisfaction both directly and via internalisation. There were significant paths between body dissatisfaction to bulimic symptomatology, through dietary restraint and negative affect. Furthermore, dietary restraint predicted negative affect. As expected the relationship between body dissatisfaction and bulimic behaviour was completely mediated through dietary restraint and negative affect. Finally, although not hypothesised in the original model, perceived

pressure was directly and strongly related to restraint (see Figure 2). This unexpected finding highlights the importance of social pressures that appear to play a role in the development of dietary restraint, even in the absence of body dissatisfaction and internalisation of the thin-ideal.

In another cross-sectional study, Stice et al. (1996b) tested whether the dual-pathway model was supported when considering differing severity of bulimic symptoms. High school and college women were classified as either bulimic, subclinical, or controls, based on a self-report measure that assessed symptoms of BN (i.e., BULIT-R; Thelen, Farmer, Wonderlich, & Smith, 1991). Participants completed measures of the variables included in the dual-pathway model. As expected, participants in the bulimic and sub-bulimic groups had higher scores than the controls on all of the variables in the dual-pathway model, with the exception of body mass. The results showed that a single discriminant function differentiated controls, subclinical bulimics, and bulimics on all of the variables in the model, except body mass. According to the authors the fact that the three groups differed along only one function suggested that they were quantitatively, rather than qualitatively different, providing support for the continuity hypothesis as opposed to the discontinuity hypothesis.

Longitudinal studies also provide support for the dual-pathway model. Stice et al. (1998) tested the model using 218 high school girls aged from 16 to 18. Participants completed the same range of measures (as in Stice, Nemeroff, et al., 1996) on two occasions, with a nine-month interval between measurements. Again, both the CFI and IFI values were above .90 indicating good model fit. As hypothesised, perceived pressure to be thin was related to ideal-body internalisation, body dissatisfaction and dietary restraint, and ideal-body internalisation predicted body dissatisfaction. Body mass was related to body dissatisfaction, but did not predict perceived pressure to be thin. Both dietary restraint and negative affect mediated the relationship between body dissatisfaction and

bulimic symptomatology. Also, as expected dietary restraint was related to negative affect. Therefore, all of the hypothesised pathways were significant, with the exception of the path from body mass to perceived pressure. In total the model accounted for 33.3% of the variance in bulimic symptomatology over time.

More recently, Stice (2001) conducted another longitudinal study of the dual-pathway model of bulimia with a sample of 231 adolescent girls from grades 9 and 10. Measures were completed at baseline, 10 months after baseline and 20 months after baseline. As predicted, initial pressure to be thin and thin-ideal internalisation significantly predicted subsequent increases in body dissatisfaction over the 2-year study period. Initial body dissatisfaction also predicted subsequent increases in negative affect and dieting. Both dieting and negative affect were significant predictors of the development of bulimic symptoms, but dieting was only marginally related to subsequent increases in negative affect. The model accounted for 23% of the variance in the development of DSM-IV symptoms of BN over a 2-year time period.

Limitations of the dual-pathway model. As noted above, there is strong empirical support for the dual-pathway model. However, there are a number of limitations that could be addressed in future research. First, the model has predominantly been tested on adolescent girls and university-aged women. In a review paper, Stice (2001) highlights the problems associated with using a sample of adult women when the peak risk of onset for eating pathology occurs prior to this developmental period, possibly between 16 and 18 years of age. This explains the inclusion of high school girls in more recent tests of the dual-pathway model (e.g., Stice, 2001). However, the model has not been tested with pre- and early adolescent girls and age-related differences in the strength of the proposed paths in the model have not been compared across different age groups. Recently, research has highlighted that disordered eating behaviours are becoming increasingly common among preadolescent and early adolescent girls (see Chapter 2). Whether these samples should be

included in studies testing the validity of etiological models of eating pathology is a question of some debate. For example, Stice (2001) argues that the inclusion of these groups in etiologic studies is unfounded, as there is little evidence of eating pathology prior to age 12. It is certainly the case that BN and AN are very rare in preadolescent girls (See Chapter 2). However, many studies demonstrate that disordered eating behaviours and body dissatisfaction *do* occur in younger age groups and they are clear risk factors for the future development of more severe eating pathology (e.g., Davison, Markey, & Birch, 2003; Ohring, Graber, & Brooks-Gunn, 2002). In a recent review of prevention programs for eating disorders, Levine and Smolak (2006) recommend that risk and protective factor research focus on younger children in order to understand the “roots of body dissatisfaction and weight concerns” that by later adolescence are strong predictors of clinical eating disorders (p. 106). In accordance with this argument it would be beneficial to test a modified sociocultural model of disordered eating behaviour with the inclusion of younger preadolescent girls. However, given the lower rates of eating disorders in preadolescent girls it would be more appropriate to use a broader measure of disordered eating behaviour rather than a specific measure of bulimic symptomatology. Scores on self-report measures of weight concerns and dieting are considered useful proxy measures for women at risk of developing clinically significant eating disorders (Mazzeo, 1999; O’Halloran & Mintz, 1997). It is likely that a modified sociocultural model with components of the dual-pathway model will be supported in a younger age cohort even in the absence of more severe eating pathology.

A second limitation relates to the measurement of sociocultural pressure. Tests of the dual-pathway model have measured perceived pressure to be thin as a combined variable that assesses societal pressure from multiple sources (i.e., family, peers, media, and dating partners). The measurement of this variable has included critical comments regarding weight and encouragement to diet from family, peers and dating partners, as

well as self-reported exposure to media images of the thin-ideal. Because the measurement of this variable has been combined it is not clear how different types of societal pressure relate to disordered eating behaviour. It would be useful to clarify whether there are differences in the strength of these pressures and their relationship to internalisation of the thin-ideal, body dissatisfaction, and disordered eating. It may also be interesting to determine if the magnitude of these pressures differs across age groups. Although the role of perceived pressure to be thin has been well supported in the dual-pathway model, little is known about the influence of other types of societal pressure such as modelling and media exposure. Direct modelling of disordered eating is a more overt form of societal pressure and therefore may directly predict disordered eating, rather than operating via internalisation and body dissatisfaction. To date, the role of modelling of disordered eating behaviour has not been tested as separate component of the dual-pathway model, although Stice (1998b) found that self-reported modelling of disordered eating by peers and family members predicted bulimic symptomatology in high school girls, over a 9-month period. Furthermore, media exposure has not been examined as a component of a sociocultural model of disordered eating. Media exposure to thin-ideal images has been frequently associated with body dissatisfaction (e.g., Groesz et al., 2001), and in some instances, disordered eating behaviour (e.g., Stice et al., 1994).

Finally, the dual-pathway model only accounts for less than one-third of the variance in the growth of bulimic symptomatology, indicating that there are other additional risk factors that could be considered in future theoretical models. Individual differences – such as the extent to which an individual compares her body shape and weight to others (i.e., social comparison) – have been identified as important contributors to body dissatisfaction and disordered eating. For example, Thompson et al. (1999) propose a theoretical model in which the relationship between sociocultural pressure (from family, peers, and media) and disordered eating is mediated by both social comparison and

internalisation of the thin-ideal. Whether these factors are important mediators for younger girls has yet to be tested in an integrated sociocultural model of disordered eating behaviour.

The Tripartite Influence Model

The tripartite influence model has evolved from a series of studies by Thompson and colleagues and examines the role of individual differences that are thought to mediate the relationship between sociocultural pressure to be thin from multiple sources (i.e., parents, peers, and media), and eating dysfunction (Keery et al., 2004; Shroff & Thompson, 2006; Thompson et al., 1999; van den Berg et al., 2002). The model integrates sociocultural factors with proximal individual differences in an effort to clarify why some women are more vulnerable to the development of eating disturbances than others.

Thompson and colleagues have focused on the development of body dissatisfaction and disordered eating behaviours, as well as clinical eating disorders such as BN, because they argue that body image problems have significant clinical effects, even when diagnostic criteria are not met.

Key components of the tripartite influence model. According to the model (see Figure 3) (Thompson et al., 1999, p. 320), sociocultural pressures are transmitted via three primary sources of influence: parents, peers, and media. Each sociocultural influence is considered as a multidimensional construct consisting of several subcomponents that assess criticism or teasing, modelling of dieting or body image concerns, investment in thinness, and information about appearance norms and dieting practices. These three sources of pressure are thought to foster an internalisation of the thin-ideal and well as increased social comparison. According to the model, both internalisation of the thin-ideal

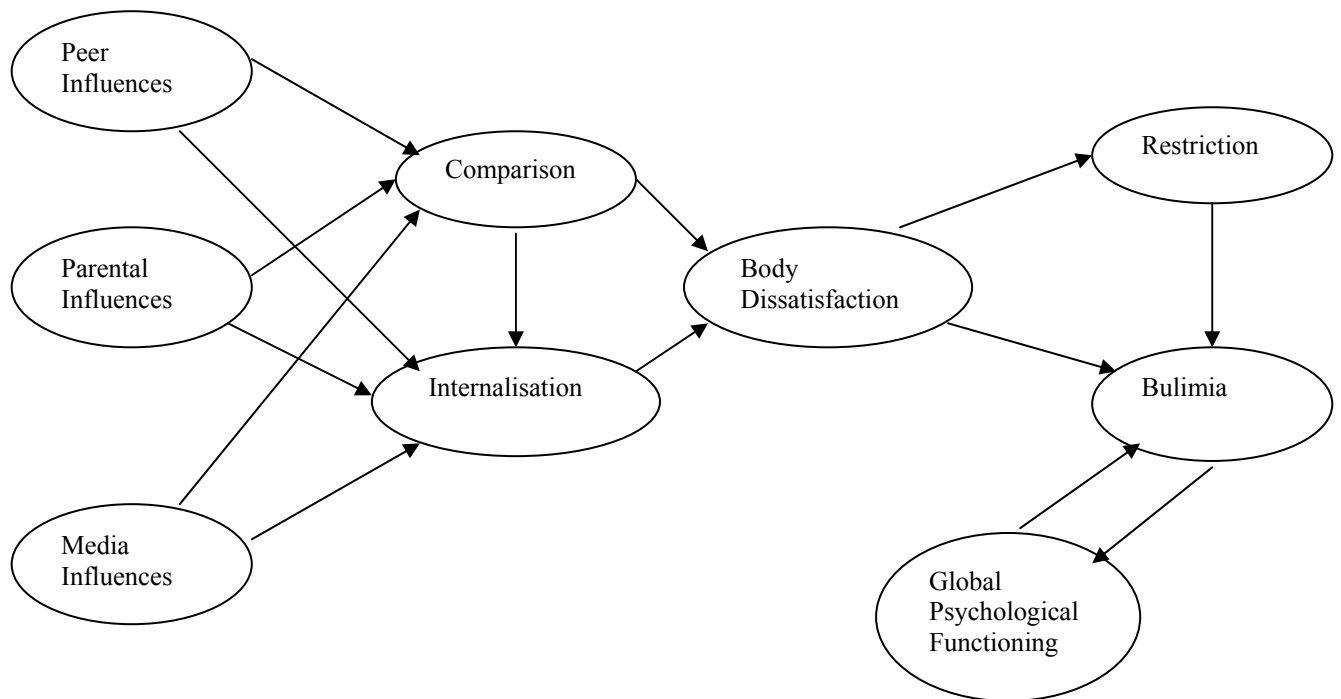


Figure 3. Tripartite Influence Model A. From “Exacting Beauty: Theory, Assessment, and Treatment of Body Image Disturbance”, by J. K. Thompson, L. J. Heinberg, M. Altabe, and S. Tantleff-Dunn, 1999, *p.* 320, Washington DC: American Psychological Association. Reprinted with permission of the publisher.

and social comparison, play a mediational role between the three societal influences and body dissatisfaction. Both internalisation of the thin-ideal and social comparison, particularly size/weight comparison, have been found to be consistent predictors of body dissatisfaction (Cattarin, Thompson, Thomas & Williams, 2000; Heinberg & Thompson, 1992; Heinberg & Thompson, 1995; Heinberg et al., 1995; Thompson & Heinberg, 1993). In addition, internalisation of the thin-ideal is also indirectly affected by social comparison. That is, engagement in social comparison processes – particularly with unrealistic targets – is likely to increase internalisation of the thin-ideal. The relationship between social comparison and internalisation of the thin-ideal has received only minimal research attention. Blowers, Grady-Flessler, Loxton, Occhipinti and Dawe (2003) found that social comparison acted as a partial mediator between internalisation of the thin-ideal and body dissatisfaction in a sample of preadolescent girls. In this study, participants who had internalised the thin-ideal were more likely to engage in social comparison, which in

turn produced higher levels of body dissatisfaction. Research supporting the role of internalisation of the thin-ideal and social comparison tendencies, will be expanded later in Chapter 4.

Next, according to the tripartite model, body dissatisfaction leads to restrictive eating or bulimic symptoms. Body dissatisfaction is a well known predictor of eating disturbance (e.g., Attie & Brooks-Gunn, 1989; Stice, 1998). Specifically, restrictive eating is thought to occur in response to body dissatisfaction, in an effort to reduce or change body shape and weight. Restriction is thought to lead to bulimic symptoms due to the increased risk of binge eating behaviour (Polivy & Herman, 2003). Finally, the role of global psychological functioning (GPF) is thought to have a reciprocal relationship with bulimia. Indices of GPF such as self-esteem, depression, and negative affect have all been found to correlate with eating disturbances and bulimic symptomatology (Stice & Shaw, 1994; Thompson et al., 1999).

Empirical support for the tripartite model of influence. To date, only certain components of the tripartite model have been tested in cross-sectional research. One study tested a portion of the model with an additional variable added (van den Berg et al., 2002). This study focused on investigating the role of appearance comparison as a potential mediator between multiple sociocultural influences and bulimic behaviours. Perfectionism was also hypothesised to play a key role in predicting body dissatisfaction. Participants were 196 undergraduate women, ranging in age from 18-22, who completed a variety of measures designed to assess perceptions of teasing, feedback on physical appearance, perceived sociocultural pressure (from family, peers, and media), body dissatisfaction, self-esteem and bulimic behaviours. Although three competing theoretical models were proposed and tested, only one model, with post hoc modifications, had adequate fit to the data (CFI = .90).

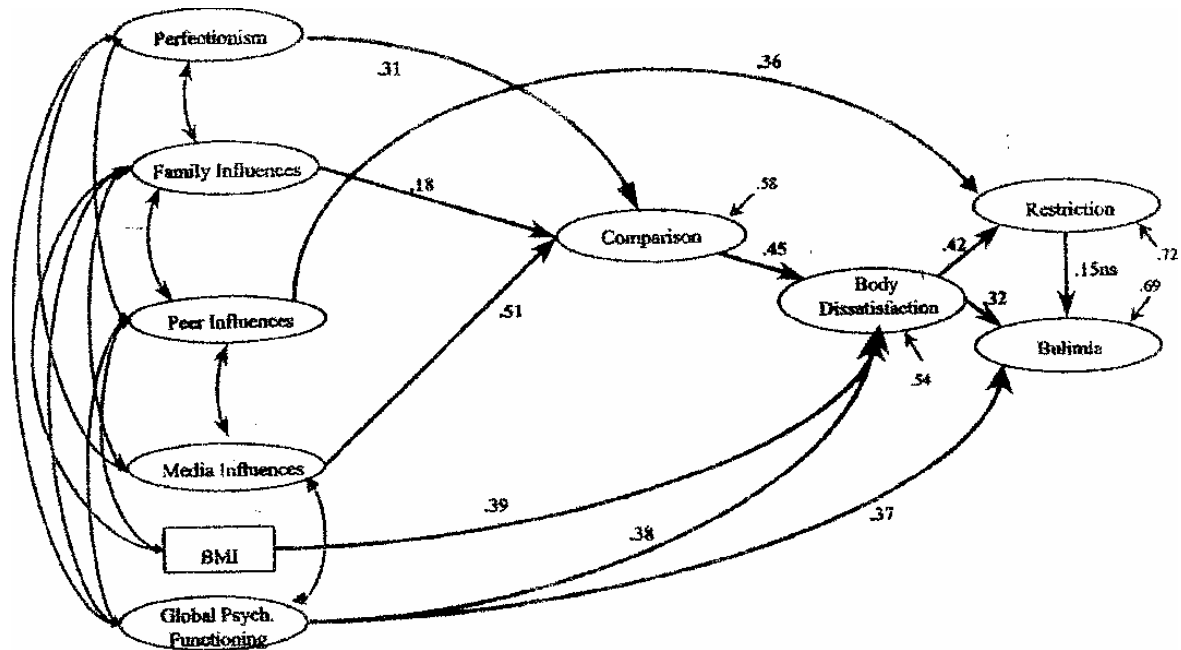


Figure 4. Final Tripartite Model with Standardised Path Coefficients, Structural Paths Only. From “The Tripartite Influence Model of Body Image and Eating Disturbance: A Covariance Structure Modelling Investigation Testing the Mediation Role of Appearance Comparison”, by P. van den Berg, J. K. Thompson, K. Obremski-Brandon, and M. Covert, 2002, *Journal of Psychosomatic Research*, 53, p.1017. Copyright 2002 by Elsevier. Reprinted with permission of the publishers.

The final model (see Figure 4) supported the role of appearance comparison as an important mediator between perfectionism, family, and media influences (but not peer influence), and body dissatisfaction. Interestingly, peer influences had a direct relationship to restrictive dieting. As expected BMI was related to body dissatisfaction and GPF predicted both body dissatisfaction and bulimia. Body dissatisfaction predicted both restriction and bulimia, however the path from restriction to bulimia was nonsignificant.

More recently, Keery et al. (2004) tested the tripartite model using a sample of 325 adolescent girls aged 11-15 years. A number of competing models were hypothesised to potentially fit the data. These models were based on the original tripartite model (See Figure 3), but with slight variations including a pathway from sociocultural influence to

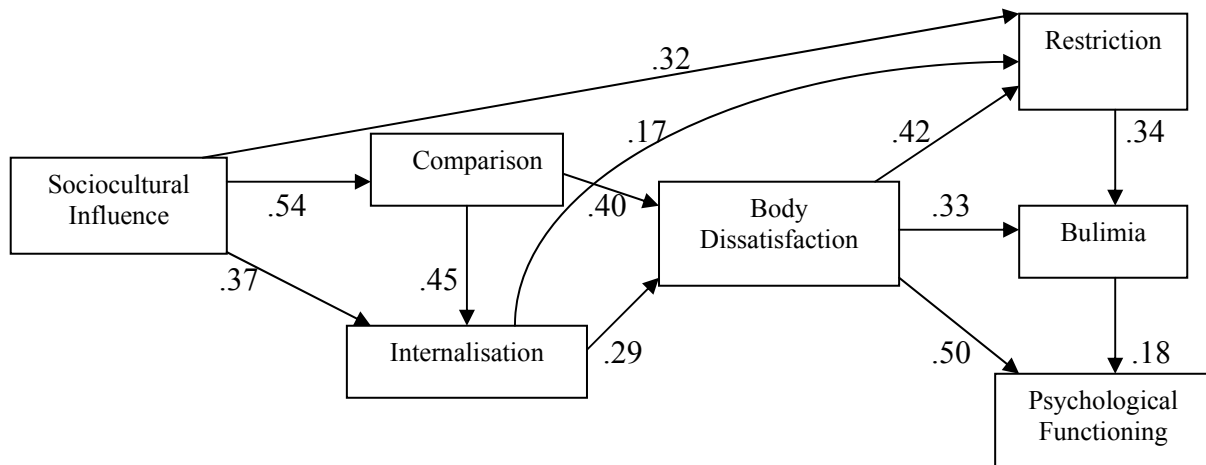


Figure 5. Final Tripartite Model with Standardised Path Coefficients. From “An Evaluation of the Tripartite Influence Model of Body Dissatisfaction and Eating Disturbance with Adolescent Girls”, by H. Keery, P. van den Berg, and J. K. Thompson, 2004, *Body Image*, 1, p. 248. Copyright 2004 by Elsevier. Reprinted with permission of Elsevier.

body dissatisfaction, GPF as a mediator between sociocultural influence and internalisation and social comparison, and with GPF as an additional formative influence on comparison and internalisation, occurring alongside sociocultural influences. The original model had the best fit but required some post hoc modifications including freeing the pathways from sociocultural influence to restriction, and from internalisation to restriction, and adding a path from body dissatisfaction to GPF. The final model with standardised path coefficients is presented in Figure 5.

Thus, according to the final model, sociocultural influences (from family, peers, and media) predicted comparison and internalisation. An additional path from sociocultural influence to restriction was included in the model suggesting that these influences may have both direct and indirect effects on dieting behaviours. As hypothesised, comparison predicted internalisation and both internalisation and social comparison mediated between sociocultural influences and body dissatisfaction. A path between internalisation and restriction was also added. As expected, body dissatisfaction

led to bulimia symptoms either directly or via restriction. Finally, body dissatisfaction and bulimia predicted GPF.

In the most recent test of the tripartite influence model, Shroff and Thompson (2006) replicated the model with 391 adolescent girls with a stronger focus on evaluating the measurement of peer, parental, and media influences. Generally good support was found for the validity of the tripartite influence model, however more support was found for the negative effects of peer and media, as opposed to family influences.

Limitations of the tripartite influence model. Cross sectional research provides good support for the validity of the tripartite influence model. To date, no studies have examined the model prospectively and therefore it is difficult to draw conclusions regarding the development of disordered eating over time. A number of limitations are outlined below.

A number of modifications to the model have made it difficult to make comparisons across studies. For example, van den Berg et al. (2002) examined the additional role of perfectionism in the model but excluded the variable internalisation of the thin-ideal, even though this variable has been consistently identified as a key risk factor for body dissatisfaction. In contrast, Keery et al. (2004) included the variable internalisation of the thin-ideal, but did not examine the variable of perfectionism which was included in the previous test of the tripartite model.

Next, the measurement of sociocultural influence has included aspects of teasing, modelling, general attitudes regarding weight and appearance, and perceived pressure to meet the thin-ideal (van den Berg et al., 2002). For example, in Keery et al.'s (2004) study each source of societal influence is measured in multiple ways including components of criticism and teasing, modelling, and investment in thinness as well as information from media about norms. As discussed earlier, separating the influence of different types of

societal pressure may be important in informing the development and content of appropriate prevention and early intervention programs.

As with the dual-pathway model, the tripartite influence model has primarily been tested in adult and adolescent samples. Furthermore, the model has not been examined across multiple age groups of women. It has been suggested that testing the tripartite influence model and competing models with preadolescent participants, would provide “fruitful information regarding the role of important potential intervention targets” (Shroff and Thompson, 2004, *p.* 22). Furthermore, the focus of this model has been on the prediction of bulimic symptoms that occur more commonly in older girls. A modified model may consider focusing on predictors of disordered eating behaviours, which occur at a greater frequency in younger adolescent and preadolescent girls, and may possibly help to identify those at risk of developing clinical eating disturbances in later adolescence.

Finally, Keery et al. (2004) highlight that BMI has not been consistently included as a factor in the tripartite influence model. BMI has been found to have a strong relationship with body dissatisfaction and perceived sociocultural pressure to be thin. As a result, it has been suggested that BMI be included in future versions of the tripartite influence model as an exogenous predictor of body dissatisfaction (Keery et al., 2004, *p.* 249).

Summary

There have been two theoretical models in this field that have contributed to furthering our understanding of the complex relationship between sociocultural pressure to be thin and eating pathology. There are a number of variables that are consistently included in these models that are thought to play a key role in understanding the relationship between sociocultural pressure to be thin and eating pathology. These

variables will be further discussed in the following section with supporting research summaries including research that has considered developmental differences.

Sociocultural Influences: Family, Peers, and Media

As discussed extensively in Chapter 3, sociocultural influences have been found to play an important role in the development of body dissatisfaction and disordered eating behaviours. Sociocultural influences are transmitted by family, peers or media, either through the process of perceived pressure to be thin, modelling of disordered eating, or through exposure from media sources such as magazines and television.

Sociocultural pressures from multiple sources are thought to lead to an internalisation of the thin-ideal (Stice, 1994). Additionally, certain types of sociocultural pressure may have a direct effect on disordered eating behaviour, without necessarily operating via internalisation of the thin-ideal. In particular, direct modelling of disordered eating behaviours is thought to be a particularly negative form of societal pressure and may lead directly to disordered eating without operating indirectly through other variables. However, to date modelling of disordered eating by family, peers, and media has not been included in a sociocultural model investigating the predictors of disordered eating behaviour. In addition to perceived pressure to be thin, the current study will attempt to further understand the impact of modelling and media exposure as predictors of disordered eating behaviour (See Figure 6).

The Role of Internalisation of the Thin-Ideal

Recent research has confirmed that the tendency to internalise or accept societal messages regarding the importance of thinness is an important mediator of the relationship between exposure to these messages and the development of shape and eating-related disturbances (Thompson & Stice, 2001). Internalisation of the thin-ideal has been investigated in the dual-pathway model and the tripartite influence model³.

³ The term ideal-body internalisation is used in the dual-pathway model.

A number of measures have been developed to assess internalisation of the thin-ideal. Heinberg, Thompson and Stormer (1995) developed the Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ) – a measure designed to assess an individual’s recognition and awareness of societal influences, as well as their level of endorsement or acceptance of the prevailing standards. The SATAQ consists of two scales: *internalisation*, which measures the level of endorsement or acceptance of media and societally based pressures regarding thinness; and *awareness*, which measures the level of acknowledgement that these pressures exist (See Chapter 5, for a review of validity and reliability data). Stice et al. (1994) have also used a measure of internalisation called “thin-ideal internalisation”, which is a key feature of the dual-pathway model. This 10-item measure was designed to assess agreement with socioculturally endorsed views of the ideal women and has good reliability and validity data.

Repeated messages about the importance of having a thin body by family, peers, and the media, are thought to promote thin-ideal internalisation, which then produces body dissatisfaction and subsequent bulimic symptoms. Specifically, internalisation acts as a mediator between perceived sociocultural pressures (from family, peers, and media) and body dissatisfaction. This finding has now been replicated in a number of studies with undergraduate women (Stice, Nemeroff, et al., 1996; Stice et al., 1998; Twamley & Davis, 1999; Tylka & Subich, 2003) and preadolescent girls (Blowers et al., 2003).

Experimental studies provide further support for the mediating role of internalisation of the thin-ideal. Heinberg and Thompson (1995) exposed 138 undergraduate students to 10 mins of commercials that either contained women who epitomised the societal ideal of thinness and attractiveness, or neutral non-appearance related stimuli. Participants were required, pre- and post-exposure, to complete measures of cognitive distortions related to physical appearance, sociocultural attitudes towards appearance, as well as visual analogue scales designed to measure state changes in body

satisfaction and mood. Before analysis, the participants were categorised into high and low levels of disturbance, according to the results from the SATAQ. Women who scored highly on the SATAQ, who were exposed to the appearance commercials, experienced significant increases in depression, anger, and body dissatisfaction, from pre to post exposure. Interestingly, when these same women viewed the non-appearance related advertisements their levels of depression, body dissatisfaction, and anger significantly decreased from pre to post.

Stice and colleagues have provided some support for the proposition that societal pressures to be thin may precede internalisation of the thin-ideal. In a longitudinal study, Stice et al. (1998) found that perceived sociocultural pressure from family, peers, media, and dating partners, predicted thin-ideal internalisation, body dissatisfaction, and bulimic symptoms in college women after a 9-month time lag. Since these behaviours occurred among initially non-eating disordered women the results provided some support that social influences occurred prior to internalisation of the thin-ideal and subsequent eating pathology.

In the current study, internalisation of the thin-ideal is hypothesised to mediate between perceived pressure to be thin and body dissatisfaction and media exposure are body dissatisfaction (See Figure 6).

Developmental Differences: Internalisation of the Thin-Ideal

Despite the fact that societal standards regarding thinness are thought to be internalised from an early age, very few studies have investigated the occurrence of internalisation of the thin-ideal in preadolescent samples. Younger girls are aware of cultural ideals regarding thinness and may internalise these beliefs well before the onset of puberty. For example, in one study over 75% of 10-year-old-girls reported that they were aware of the media's influence on people's thoughts and behaviours and up to 30% of these girls had a high level of internalisation of the thin-ideal, including a belief that they

should try to look like women in the media (Sherwood & Neumark-Sztainer, 2001)

Smolak, Levine and Thompson (2001) examined the psychometric properties of the SATAQ in middle-school aged girls and boys. Two subscales, identical to those found in college-aged women emerged: awareness and internalisation of the thin-ideal. Also, corresponding to the findings with adult women, after controlling for BMI, internalisation of the thin-ideal was the strongest predictor of weight control techniques.

In another study, Cusumano and Thompson (2001) found that for 8–11-year-old children, both internalisation and awareness of the thin-ideal were correlated with body dissatisfaction. Sands and Wardle (2003) found that internalisation of the thin-ideal mediated between awareness of societal standards regarding thinness and body dissatisfaction in 9–12-year-old girls. Similarly, Blowers et al. (2003) found that internalisation of the thin-ideal fully mediated between media reinforcement and body dissatisfaction in a sample of 10–13-year old girls.

In sum, it appears that internalisation is an important mediator between sociocultural pressures and body dissatisfaction. Of the few studies that have examined internalisation of the thin-ideal in younger participants, the findings are consistent with research using cohorts of older adolescent and young adult women.

The Role of Social Comparison

In recent years, the tendency for an individual to engage in social comparison has been identified as a key contributor to body dissatisfaction and eating pathology. The process of evaluating one's self in comparison to others is the basis of Festinger's social comparison theory (1954). According to this theory, all humans compare themselves with others to reflect on their self-characteristics, strengths, liabilities, and capabilities. However, if objective standards are not available, people may then rely on their relative standing in their social environment to define themselves. Although the vast majority of people choose to compare themselves with those who have similar attributes, individuals

who choose inappropriate comparison targets (e.g., models from magazines) are more vulnerable to sociocultural appearance pressures (Thompson et al., 1999). The choice of comparison is also affected by the target's relative standing on a particular attribute. Wood (1989) distinguishes between upward and downward comparisons. *Upward comparison* occurs when comparisons are made against someone with desirable or superior attributes, whereas *downward comparison* consists of comparisons against others who have less desired or inferior attributes. Media exposure is thought to produce a process of upward comparison because the representation of women in the media is heavily skewed towards thin, attractive, beautiful women. Women who choose superior targets, such as fashion models (i.e., upward comparison), are more likely to feel badly about their own appearance and experience increased body dissatisfaction. This resulting body dissatisfaction may motivate some women to engage in disordered eating behaviours as a way to decrease this perceived discrepancy (Wood, 1989). On the other hand, downward comparison is thought to have the opposite effect and can act as a mechanism of self-enhancement. Comparing oneself to someone who is "worse off" may lead to increasing one's own standing and can be used as a means of coping. For example Martin and Gentry (1997) have demonstrated that when participants used self-improvement and self-enhancement as motives for social comparison, self-perceptions of physical attractiveness temporarily improved.

Thompson et al. (1999) suggest that individual differences in the tendency to compare oneself with others and the choice of inappropriate comparison targets may lead to certain individuals becoming more vulnerable to sociocultural appearance pressures. The results of both correlational and experimental studies provide some support for this.

Correlational studies have consistently shown an association between social comparison tendencies and body dissatisfaction, eating disturbances, and low self-esteem (Muris et al., 2005; Thompson & Heinberg, 1993; Thompson, Heinberg, & Tantleff,

1999). In particular, women who compare themselves with idealised images of models and celebrities presented in the media (i.e., upward comparison) experience greater levels of body dissatisfaction and engage in higher levels of disordered eating behaviour (Botta, 1999; Heinberg et al., 1995; Morrison, Kalin, & Morrison, 2004; Stormer & Thompson 1996; Thompson, Heinberg, & Tantleff, 1991).

The tripartite influence model (discussed above) proposes that appearance comparison mediates between sociocultural influences from multiple sources and body dissatisfaction. For example, Keery et al. (2004) found that sociocultural pressure led to comparison and subsequent body dissatisfaction. Comparison also predicted internalisation of the thin-ideal. Similarly, van den Berg et al. (2002) found that comparison mediated between family influences and media influences, and body dissatisfaction.

Studies have also shown that social comparison is a strong predictor of disordered eating behaviours. Stormer and Thompson (1996) found that the frequency of appearance comparison predicted both drive for thinness and bulimic behaviours and provided more unique variance than maturational status, teasing history, and internalisation of the thin-ideal. Thompson, Coovert and Stormer (1999) also found that social comparison mediated between teasing related to body image and eating pathology, in undergraduate women.

A number of studies have used controlled experimental designs to manipulate social comparison and its impact on body image. The results of experimental studies are generally mixed. Tiggeman and McGill (2004) recently examined the role of social comparison in women's responses to images of idealised female beauty. One-hundred and twenty-six women viewed magazine advertisements (full body, body part, or product) and were assigned to either a control conditions or two experimental conditions (appearance focus vs. social comparison). Those in the social comparison conditions were instructed to compare themselves to the images presented while those in the appearance focus

conditions were instructed to pay attention to the model's appearance without specifically encouraging self-to-model comparison. The effect of image type on mood and body dissatisfaction was found to be partially mediated by the amount of social comparison reported. Not surprisingly, a natural trait tendency to make comparisons (i.e., a global tendency to make global and specific comparisons) was the strongest predictor of all outcome variables. This study provides further support for the importance of social comparison, and suggests that both the process of making comparisons and the predisposition to engage in social comparison play important roles in understanding the relationship between the media promotions of the thin-ideal and body dissatisfaction in young women.

Finally, there is evidence that social comparison processes may be strongly related to internalisation of the thin-ideal. Thompson et al. (1999) propose that social comparison leads to internalisation of the thin-ideal because comparison, particularly with upward targets, increases internalisation. There is some support for this proposition in tests of the tripartite model, however this relationship has yet to be investigated with younger preadolescent girls.

Developmental Differences: Social Comparison

A number of studies have investigated social comparison and disordered eating behaviours in children. Social comparison processes have been found in children as young as young as 7 years, however, comparison appears to increase as children move into adolescence (Martin & Gentry, 1997). Paxton et al. (1997) in a self-report survey of grade-10 girls found that after controlling for BMI, psychological factors, and family factors, body comparison was the strongest predictor of body image dissatisfaction, dietary restraint, and extreme weight loss behaviours. Similarly, Martin and Kennedy (1993) found that the tendency for female preadolescents and adolescents girls to compare their physical attractiveness with models in advertisements, increased with age. Specifically,

they found a significant increase in the rate of comparison from 4th-grade to 8th-grade, but not from 8th-grade to 12th-grade. Holt and Riccardelli (2002) examined social comparison and negative affect using a sample of 236 girls and boys in grades 3 and 4. The Body Comparison Scale and the Social Comparison Questionnaire were used to determine the frequency of appearance comparison with other children, teenagers, and adults of the same sex. The study found that girls who engaged in social comparison processes with adults were more likely to experience increased dieting and muscle preoccupation as measured by the Children's Eating Attitudes Test (ChEAT).

Fewer studies have examined body comparison across multiple age groups of girls. Martin and Gentry (1997) used a number of different experimental conditions to determine if comparison motive affected self-perceptions of body image in 4th-, 6th-, and 8th-grade girls. For the 6th grade girls (*M* age = 11.9 years) but not the other age groups, self-perceptions of body image were significantly lowered in the self-evaluation condition. In this condition participants were asked to explicitly compare themselves to models in advertisements. Martin and Gentry suggest that there is a critical period between grades 4 and 8 where social comparison seems to start to play an important role as a predictor of body dissatisfaction. Schutz, Paxton and Wertheim (2002) examined body comparison in girls from grades 7, 8, and 10. Appearance comparisons increased with age as expected. More specifically 38%, 53%, and 72% of girls in Grade 7, 8, and 10 respectively, reported that they compared their body with others either sometimes or frequently. The grade 10 girls' reports of comparison were significantly higher than the grade 7 and 8 girls, who did not differ from one another. In regression analyses the importance of thinness accounted for 47% of the variance in body comparison. Other significant predictors included sociocultural internalisation, friend concern with weight, and body instability. Similarly, the importance of thinness accounted for 61% of the variance in dieting in response to

comparison. Other significant predictors were body dissatisfaction, friend concern with weight, BMI, sociocultural internalisation, and body anxiety.

In sum, body comparison is an important predictor of body dissatisfaction and disordered eating in younger adolescents and adult women. Few studies have examined body comparison as part of a sociocultural model of disordered eating. Furthermore, few studies have made age-related comparisons to determine if differences occur in the importance of body comparison across age groups. In the current research social comparison is hypothesised to mediate between perceived pressure to be thin, and body dissatisfaction, and exposure and body dissatisfaction. Social comparison is also expected to predict internalisation of the thin-ideal, and disordered eating behaviour.

The Role of Body Mass

Elevated adiposity has been identified as key risk factor for the development of body dissatisfaction, perceived pressure to be thin, and dieting behaviours (Stice, 2002). This is presumably because body dissatisfaction increases in women as their weight moves further away from the thin-ideal. According to Cattarin and Thompson (1994), elevated adiposity fosters social pressure to be thin, body dissatisfaction, dieting, and negative affect. Higher BMI has been found to predict weight-related teasing and body dissatisfaction (Cattarin & Thompson, 1994) as well as bulimic pathology, binge eating, and disordered eating (Keel, Fulkerson, & Leon, 1997; Killen et al., 1996; Muris et al., 2005). Body mass has been found to be correlated with pressure from parents to lose weight (e.g., Thelen & Cormier, 1995) as well as with perceived pressure from family, peers, and dating partners to be thin (Stice, Nemeroff, et al., 1996). In a recent longitudinal study of adolescent girls, Stice (2001) found that initial elevation in adiposity, perceived pressure to be thin, thin-ideal internalisation and deficits in social support predicted subsequent increases in body dissatisfaction. Young women with a higher body weight and higher levels of body fat, exhibit more body dissatisfaction and eating disorder

symptoms than their peers (Blowers et al. 2003; Killen et al., 1996; McCabe & Ricciardell, 2005a; Shisslak et al., 1998). For example Paxton et al. (1991) found that BMI was significantly correlated with measures of body dissatisfaction and drive for thinness in a sample of 563 boys and girls aged 11-18 years.

In the current research BMI is hypothesised to predict increased body dissatisfaction.

Developmental Differences: Body Mass

There is some evidence to suggest that elevated body mass is a more important predictor of body dissatisfaction in younger age groups, in particular during early and preadolescence. Attie and Brooks-Gunn (1989) suggest that dieting concerns increase in early adolescence when girls begin to gain body weight and fat associated with the onset of puberty. In a longitudinal study they found that increased weight associated with puberty was the strongest predictor of body dissatisfaction in early adolescent girls. For older girls developmental factors were less important and negative body image and psychopathology were the strongest predictors of disordered eating.

Similarly, Ohring et al. (2002) found in a longitudinal study of 120 adolescent girls, that young adolescent girls with body dissatisfaction had significantly higher BMIs than girls with no body dissatisfaction. This pattern was repeated in the middle adolescent age group. However for the late adolescent group only prior body dissatisfaction was a significant predictor of body dissatisfaction.

The Role of Body Dissatisfaction

Finally, body dissatisfaction is thought to act as an important mediator of the relationship between internalisation of the thin-ideal and disordered eating behaviour. Body dissatisfaction is thought to lead to increased dieting because the more dissatisfied a woman is with her body the more likely she is to engage in efforts to lose weight, which may result in more drastic disordered eating behaviours (Stice & Agras, 1998). Body

dissatisfaction has been consistently found to predict disordered eating in longitudinal research with preadolescent, adolescent, and adult women (Attie & Brooks-Gunn, 1989; Davison et al., 2003; Killen et al., 1996; Leon, Fulkerson, Perry, & Cudeck, 1993). Stice (2001) in a prospective study, found that body dissatisfaction also predicted subsequent dieting. For younger girls, cross sectional and longitudinal research indicates that body dissatisfaction is related to increased disordered eating attitudes and behaviours (e.g., Davison et al., 2003; Kelly, Ricciardelli & Clarke, 1999; Thelen et al., 1992).

Furthermore, studies have found that body dissatisfaction mediates between internalisation of the thin-ideal and disordered eating (Keery et al., 2004; Stice et al., 1994; Stice & Shaw, 1994). In the current research it is expected that body dissatisfaction will predict disordered eating behaviour.

Developmental Differences: Body Dissatisfaction

Body dissatisfaction has been shown to increase as girls move into the early stages of adolescence. For example, Maloney et al. (1989) found that while 40% of girls in grade 3 wanted to be thinner, this increased to 79% in grade 6. Clearly, body dissatisfaction evident at an early age is a strong risk factor for the latter development of weight concerns, maladaptive eating attitudes, and dieting (Davison et al., 2003; Ohring et al., 2002).

However, body dissatisfaction may combine with other risk factors depending on age. For example, body dissatisfaction in preadolescent girls is strongly related to actual body mass. Attie and Brooks-Gunn (1989) proposed that physical factors such as the body weight associated with the onset of puberty are strong risk factors for the development of body dissatisfaction in early adolescence, but in middle and late adolescence personality variables take on a more important role in predicting risk. Perhaps, women become more satisfied or at least more accepting of body shape as they move into early adulthood.

Heatherton, Mahameddi, Striepe, Field, and Keel (1997) found that over a 10- year period women actually become more satisfied with bodies while men become less satisfied. The

authors suggest that maturation into adulthood may help women to move away from societal pressure and “escape from chronic dieting and abnormal eating” (*p.* 123).

Another variable that may play an important role in predicting body dissatisfaction is social comparison. Studies have shown that social comparison is a stronger predictor of body dissatisfaction in older adolescent girls, but may be less important in preadolescent girls who engage in lower levels of social comparison.

In summary, body dissatisfaction has been found to consistently predict subsequent disordered eating behaviour and mediate between internalisation of the thin-ideal and disordered eating behaviour. This finding is consistent in younger adolescents as well as adult women however it is unclear whether other variables such as BMI and social comparison interact with body dissatisfaction differently in younger adolescent girls.

The final model and all proposed paths are presented in Chapter 5, which outlines the aims and hypotheses of the current research.

CHAPTER FIVE

Aims and Hypotheses of the Current Research

The aim of the current study was to examine age-related differences in an integrated sociocultural model of disordered eating. The proposed model and hypothesised pathways are presented in Figure 6. There are three types of societal pressure presented in the model: perceived pressure to be thin, modelling of disordered eating behaviour, and media exposure. Perceived pressure to be thin is defined as comments or action by others that may serve to perpetuate the thin-ideal (e.g., critical comments about weight, encouragement to diet) and can be transmitted by family, peers, and media. Modelling of disordered eating refers to the process of directly copying behaviours performed by others and is also transmitted either through family, peers, and media. Media exposure is defined as exposure to either television or magazines containing a high content of thin-ideal images. According to the model, it is predicted that perceived pressure to be thin leads to an increased internalisation of the thin-ideal. Similarly, it is predicted that perceived pressure to be thin leads to increased social comparison. According to the model, both internalisation and social comparison lead to body dissatisfaction. In accordance with the tripartite model, it is also predicted that social comparison leads to increased internalisation of the thin-ideal. In the current study, modelling of disordered eating behaviour is hypothesised to have a direct relationship to disordered eating behaviour. To date, no theoretical models have tested the relationship between modelling of disordered eating and disordered eating behaviour. Given that direct modelling is a more overt form of societal pressure (compared to perceived pressure to be thin), it was predicted that it would have a direct influence on disordered eating, rather than operating via internalisation, social comparison, or body dissatisfaction. Next, social comparison was predicted to lead to body dissatisfaction and also directly to disordered eating behaviour.

In addition, it was hypothesised that BMI would predict body dissatisfaction. Finally, body dissatisfaction was expected to predict disordered eating behaviours.

The second aim of the current research was to test if the hypothesised theoretical model was invariant (i.e., equivalent) across age groups from preadolescence to adulthood. Given the paucity of research examining age-related differences in a sociocultural model of disordered eating, an exploratory approach was used to test if the model fit differed significantly across age groups.

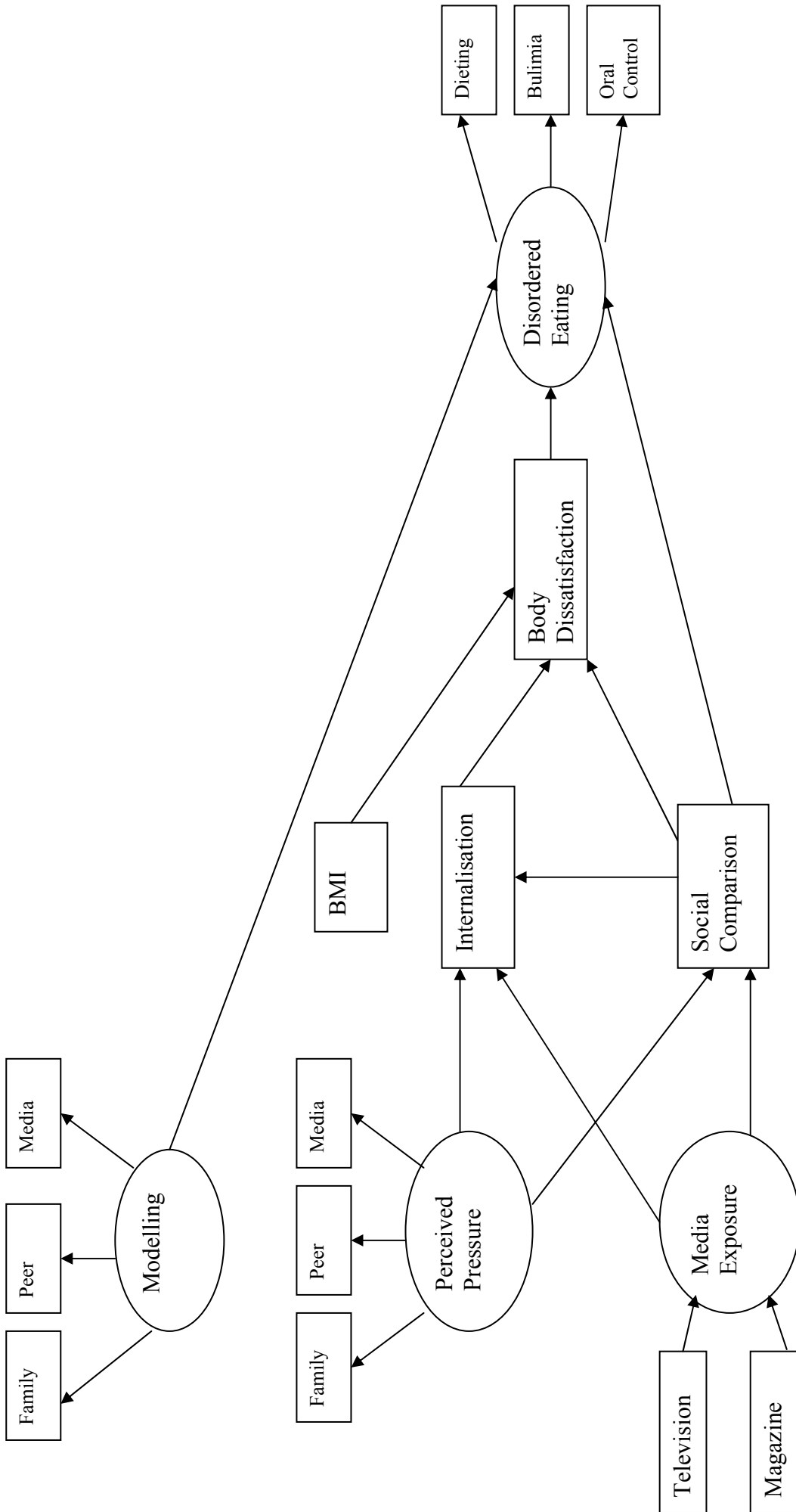


Figure 6. Proposed Sociocultural Model and Structural Paths.

Method

Participants

The data for this study were collected from schools and universities in the Brisbane metropolitan area and the Sunshine Coast, in the state of Queensland, Australia. Both primary school and high school students from a total of 16 schools participated in the research. The school-aged participants were from a number of different types of schools including Catholic coeducational schools (37.5%), State schools (25%), Catholic all-girls schools (12.5%), and Private non-denominational schools (25%). According to the Australian Standard Geographical Classification (ASGC) system, schools were located in either Inner-Regional areas (67.5%) or Major Cities (37.5%). The two university samples were from areas classified as Major Cities according to the ASGC (Australian Bureau of Statistics, 2006a). The preadolescent sample consisted of girls in grades 5, 6, and 7, with a mean age of 10.28 ($SD = .74$). The early adolescent group consisted of girls in grades 8 and 9, with a mean age of 13.22 ($SD = .69$). Participants in the late adolescent group were girls from grades 11 and 12, with a mean age of 16.18 ($SD = .69$). The data for the young adult participants were collected from undergraduate women studying psychology, behavioural science, and social science, in two large universities in the Brisbane metropolitan area. The mean age for the young adult group was 23.77 ($SD = 7.84$). Participants from the young adult group received course credit for their involvement.

A total of 1015 participants completed the survey for the current study. Of these 1015 participants 995 completed the questionnaires appropriately and had enough data to be included in the subsequent analyses. Participants with more than 10% missing data were excluded from further analysis.

Measures

The measures used in this study assessed: 1) perceived sociocultural pressure to be thin by family, peers, and media; 2) modelling of disordered eating behaviours by

family, peers, and media; 3) media exposure via television and magazines; 4) social comparison; 5) internalisation of the thin-ideal; 6) body mass index; 7) body dissatisfaction; and 8) disordered eating behaviour. As some of the participants in the preadolescent⁴ group were very young, the measures were slightly modified. For reliability purposes all the participants completed the same modified measures regardless of age group. All the measures are described below and presented in Appendix A.

Perceived sociocultural pressure to be thin. Three measures were constructed in the current study to measure perceived sociocultural pressure to be thin from family, peers, and media. The family and peer scales consisted of 5-items designed to measure perceived sociocultural pressure to have a thin body. The scale assessing media pressure to be thin consisted of 3-items. An example of an item from this scale is "I've noticed a strong message from my family to have a thin body". Participants responded on a 5-point likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Stice (1998) used a similar 2-item measure and reported internal consistencies of .91, .75 and .89 for the family, peer and, media scales, respectively. Cronbach's alphas for the current study were .83, .81, and .75 for perceived family, peer, and media pressure, respectively.

Modelling of disordered eating behaviours. Three measures were constructed for the current study to measure family, peer, and media modelling of disordered eating behaviours. Each scale consisted of 5-items. An example of an item from the peer modelling scale is "One or more of my friends have dieted to lose weight". The scales were scored using a 5-point likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Stice (1998b) used a similar 5-item measure and reported acceptable test-retest reliability and internal consistencies of .78 for the family modelling scale, .85 for the peer modelling scale, and .88 for the media modelling scale. Cronbach's alphas for the current study were .76, .85, and .75 for family, peer, and media modelling, respectively.

⁴ In Australia primary school consists of grades 1-7 (ages 6-12) and high school consists of grades 8-12 (ages 13-17).

Media exposure measures: Television and magazine exposure. Participants were asked to complete two measures of media exposure. The first measure included a list of current television programs that showed a high proportion of idealized body images. There were four categories of these programs: drama, comedy, soap operas, and music videos. A similar measure was used by Stice et al. (1994) and Blowers et al. (2003). Participants indicated how often they watched the listed television programs on a three point scale ranging from 2 (*regularly*) to 0 (*never*). Responses were then totalled for each category of television exposure and for total television exposure.

The second measure assessed how often participants read popular women's and youth magazines with a high content of idealized body images (e.g., *Cosmopolitan*, *Dolly*). This measure has been used in previous research with preadolescent and adolescent girls (Blowers et al., 2003). The 15 highest selling women's magazines and the four highest selling youth magazines in 2002 were included in the measure (Magazine Publishers of Australia, 2003). Participants reported whether they read or looked at these magazines on a scale from 2 (*regularly*) to 0 (*never*). The responses were totalled to obtain a total magazine exposure score.

Internalisation of the thin-ideal. The Sociocultural Attitudes Towards Appearance Questionnaire – Internalisation scale (SATAQ; Heinberg, Thompson, & Stormer, 1995) was used in the current study to measure internalisation of the thin-ideal. The SATAQ is a 14- item measure that is designed to assess an individual's recognition/awareness of societal influences on body image and appearance as well as their level of endorsement or acceptance of these messages. This questionnaire is rated using a 5-point Likert scale ranging from 1 (*completely disagree*) to 5 (*completely agree*).

The SATAQ has good reliability and validity (Cusumano & Thompson, 1997; Heinberg et al., 1995). The development and validation of this questionnaire was conducted using factor analysis with 150 female undergraduate students. Two factors

were found: *internalisation* and *awareness*. Cronbach's coefficient alphas for the 8-item internalisation scale and the 6-item awareness scale were .88 and .71, respectively. Sands and Wardle (2003) found that a modified SATAQ used with girls aged 9-12 had adequate internal consistency for both the internalisation ($\alpha = .80$) and awareness ($\alpha = .75$) subscales.

Concurrent validity has also been demonstrated with the SATAQ significantly correlating with other widely used measures of body image and eating disturbance (e.g., Eating Disorders Inventory and Body Avoidance Questionnaire)(Heinberg et al., 1999). The results of regression analyses have consistently found that internalisation accounted for a significant amount of the variance on measures of body image and disturbed eating, beyond that explained by awareness scores (Cashel, Cunningham, Landeros, Cokley, & Muhammad, 2003; Cusumano & Thompson, 1997; Heinberg et al., 1995). The validity of the SATAQ has also been demonstrated with primary school-aged children (Smolak, Levine, & Thompson, 2001).

For the current study the SATAQ was slightly adapted so that it could be understood by the younger participants and so they could relate to the questions presented. For example, items in the survey that referred to "women" were changed to "girls/women" (e.g., "Photographs of thin girls/women make me wish I were thinner"). Also, to avoid confusion by the young participants, negatively worded items were replaced with positive worded items. Previous studies have demonstrated that preadolescent children can experience difficulties in responding to negatively worded items as these items require the application of a higher level of verbal reasoning than that required for positively worded items (Benson & Hocevar, 1985; March 1986). For example item 10, "Most people do not believe that the thinner you are, the better you look", was changed to, "Most people think that the thinner you are, the better you look".

For the current study Cronbach's alphas for the SATAQ-Total was .92 and for the SATAQ-I was .92. Only the SATAQ-I was used in the current study.

Social comparison. The Physical Appearance Comparison Scale (PACS; Heinberg & Thompson, 1995) was used in the current research to assess participants' tendency to compare their physical appearance with the appearance of others. The PACS is a 5-item measure that is scored on a 5-point likert scale with responses ranging from 1 (*never*) to 5 (*always*). Thompson et al. (1999) reported internal consistency of .78 and test-retest reliability of .72, for the PACS. The Cronbach's alpha for the current study was .86. Similar to the SATAQ-I, for the current study, negatively worded items were replaced with positive worded items

Body mass index (BMI). Body Mass Index (BMI) was calculated for each participant using the formula $\text{weight (kg)}/\text{height}^2 \text{ (m}^2\text{)}$ (Keys, Fidanza, Karvonen, Kimura & Taylor, 1972). This index is used because it eliminates the dependency of weight on height. The BMI is a preferred index of relative body weight as an estimate of adiposity (Killen et al., 1996). In Australia BMI is now used to assess weight status for both men and women and the following cutoffs have been adopted: underweight BMI <18.5; normal weight BMI >18.5 - 24.99; overweight BMI >25 – 29.99; and Obese > 30 (World Health Organisation, 1999).

There has been some concern regarding the use of BMI for children less than 18 years of age because the proportion of body fat differs between children and adults. However, some studies of children have reported BMI norms for their samples (Cole, Bellizzi, Flegal & Dietz, 2000; Harvey & Althaus, 1993) and BMI was used in the current study as an estimate of relative weight, rather than for risk status.

Body dissatisfaction. The 9-item body dissatisfaction subscale from the Eating Disorders Inventory 2 (EDI: Garner, 1991) was used to assess body dissatisfaction/satisfaction with various body parts including stomach, thighs, buttocks,

hips, and overall body shape. Each item on the EDI-BD scale is scored on a six-point forced choice Likert scale ranging from 6 (*always*) to 1 (*never*). The most symptomatic response is assigned a score of three, the second most symptomatic a score of two, and the third most symptomatic a score of one. The three least symptomatic responses are all scored 0. Items 3, 4, 5, 7 and 9 are reverse scored. Thus, the highest possible score is 27.

The EDI has good internal consistency (alphas ranging from .80-.92) and adequate test-retest reliability ($r = .72$ over a 12-month period) (Garner, 1991). The EDI-BD scale, used with samples of children, has good internal consistency with studies reporting alphas ranging from .73 -.95 and good test-retest reliability ($r = .79$) (Shore & Porter, 1990; Wood, Becker, & Thompson, 1996). Convergent validity is also supported with the EDI-BD scale correlating significantly with measures of children's self esteem and depression (Wood et al., 1996). The Cronbach's alpha for the current study for the EDI-BD scale was .91.

Disordered eating behaviour. The Children's Eating Attitudes Test (ChEAT; Maloney, McGuire, & Daniel, 1988) was used in the current study to measure disordered eating behaviour. The ChEAT, which is a modified version of the Eating Attitudes Test (EAT-26; Garner et al. 1982), is a 26-item standardised measure that is used to assess eating disturbances in children. Although the EAT was originally developed with a clinical sample, recent evidence indicates that it can be used as a continuous measure of eating disturbances in non-eating disordered samples of women (e.g., Mazzeo, 1999; O'Halloran & Mintz, 1997).

The ChEAT has three subscales: (1) dieting, (2) bulimia and food occupation, and (3) oral control. Each item is scored on a six-point forced choice Likert scale ranging from 6 (*always*) to 1 (*never*). The most symptomatic response is assigned a score of three, the second most symptomatic a score of two, and the third most symptomatic a score of one. The three least symptomatic responses are all scored 0. The possible range

of scores is 0 to 78 with a score of 20 or above indicative, although not necessarily diagnostic, of an eating disorder (Maloney et al., 1988).

The ChEAT has been shown to have adequate reliability with a test-retest reliability coefficient between the EAT and the ChEAT of .81 (Maloney et al., 1988). Previous research indicates that the ChEAT has good internal consistency with alpha's ranging from .76 - .88 (Kelly et al., 1999; Maloney et al., 1988; Smolak & Levine, 1994)

In further support of its validity the ChEAT has a similar factor structure to the EAT. Smolak and Levine (1994) found similar factor structures for the dieting, bulimia and food preoccupation, and oral control subscales, but also reported an additional factor that appeared to represent restrictive eating and purging. Kelly et al. (1999), using a sample of Australian children, found four factors that corresponded to those reported by Smolak and Levine (i.e., dieting, food preoccupation, social pressure to eat, and restriction and purging). Support for concurrent validity has been found with the ChEAT significantly correlating with weight management and body dissatisfaction (Smolak & Levine, 1994) and body esteem (Kelly et al., 1999).

For the current study the Cronbach's alphas for the ChEAT-Total, ChEAT-Dieting, ChEAT-Bulimia and Food preoccupation, and ChEAT-Oral Control were .88, .88, .72, and .62, respectively.

Procedure

Participation in the survey was voluntary. In accordance with the ethical guidelines of Griffith University, the survey forms were anonymous and confidentiality was assured. For the school-aged participants the survey was conducted during class time and took approximately one class lesson (i.e., 50 mins) to complete. All participants who were in the school-aged samples required parental consent to participate in the research.

A week prior to conducting the survey, school-aged participants were asked to take an information sheet and a consent form home for their parents/guardian to read and

sign. Participants were asked to return consent forms prior to the date scheduled to conduct the survey. Copies of the consent form and information sheet can be found in Appendix B and C.

Participants were given the survey in class groups comprising of up to 30 individuals. The participants were encouraged to answer all the questions as honestly and accurately as possible. The survey was administered in a “test” like condition so that answers could not be seen or shared between participants. The order of the questionnaires was personal particulars, student consent, family pressure to be thin, family modelling, peer pressure to be thin, peer modelling, media pressure to be thin, media modelling, SATAQ, PACS, EDI-BD, ChEAT, television and magazine exposure.

Following completion of the questionnaires, height and weight were measured by the researcher on an individual voluntary basis in a discrete corner of the classroom. Upon completion of the survey students were given the opportunity to ask questions. Students were also advised (with permission from each school) that they could speak to their school’s guidance officer, youth worker, psychologist, chaplain, or school-based youth health nurse, if they had any concerns about their eating behaviours that were raised by completing the survey. Each school was provided with a summary report of the research findings.

The testing conditions were similar for the undergraduate university students. Students were informed about the study during lectures and via advertisements posted around the university. Unlike the school-aged participants, the undergraduate participants were asked to estimate their height and weight. Self-reports of weight in adult women have been found to correlate highly (.96 -.99) with actual weight (e.g., Attie & Brooks Gunn, 1989; Goodman, Hinden, & Khandelwal, 2000).

Results

Data Analysis

To test for differences across the age groups in the level of perceived pressure to be thin, modelling of disordered eating, and media exposure, one-way ANOVAs were conducted with group as the IV and perceived pressure to be thin, modelling of disordered eating, and media exposure as the DVs. Due to the number of tests conducted an alpha level of .01 was set to indicate significant differences between groups.

Multigroup SEM analysis was conducted using AMOS 5.0 (SPSS Inc., 2002) to test the hypothesised relationships between the predictor variables and disordered eating behaviour (See Figure 6), and to determine if components of the structural model were invariant (i.e., equivalent) across the four age groups. The approach to conducting the multi-group analysis was as follows. First, separate group analyses were conducted for each group to establish baseline models, as recommended by Byrne (2001) and Tabachnick and Fidell (2001). It was expected that the baseline models would not vary greatly across the groups, but there would be differences in the strengths of the relationships between variables across each age group. The model fit for each age group was then examined and modifications were made if necessary. Second, the model with all parameters freed was run for the four age groups simultaneously and modifications were made if appropriate. Third, the structural paths in the model were constrained equal across the four age groups. The unconstrained and constrained models were compared to determine if group differences were present. Finally, the sources of these group differences were investigated and identified and the final models for each age group presented.

The maximum-likelihood estimation (ML) method using the covariance matrix as input was used in all analyses. There is some debate regarding the appropriateness of transforming data when using SEM. The use of nonnormal data and small sample sizes

are thought to inflate χ^2 values, underestimate fit indices, and lead to improper solutions. The effect of nonnormal data on structural equation modelling is dependent on the extent of the nonnormality and the source (e.g., outliers) (West, Finch, & Curran, 1995). In practice, most data in social sciences is unlikely to meet the assumption of multivariate normality (West et al., 1995). Recent research indicates the ML method performs well, even under less-than-optimal analytic conditions (e.g., extreme kurtosis or small sample size) (Abraham & Russell, 2004; Hoyle, 1995). Given that nontransformed data was used, the results are a more robust indicator of the validity of the test of model fit. In the current research, to reduce the number of parameters to be estimated, scales (as opposed to individual items) were used. For the SEM analysis untransformed data were used.

Model fit was examined using a number of methods. First, the significance of the parameter estimates was examined with the test statistic of $>\pm 1.96$ used to determine if the model paths were significant. Next, the overall fit of the hypothesised model was considered by examining the significance of the maximum likelihood chi-square test. However, as noted by Joreskog (1993), this index is extremely sensitive to sample size therefore the chi-square/degrees of freedom ratio was also considered. Scores less than 3 are indicative of good fit while scores below 1 are indicative of overfit (Kline, 1998). A number of other indices were examined to determine model fit. These indices are briefly described below. The comparative fit index (CFI) compares the hypothesized model against an independence model (Bentler, 1990). The Tucker-Lewis index (TLI) is an incremental fit index similar to the CFI that corrects for model complexity (Tucker & Lewis, 1973). Both these indices range in values from zero to 1.00 with values $>.90$ indicative of good fit and values $>.95$ indicative of superior fit. Steiger and Lind's (1980) root-mean square error of approximation (RMSEA) estimates the difference between model implied and actual variances and covariances. A better fitting model is

represented by smaller values preferably less than .05 but not more than .08 (Byrne, 2001).

Finally, areas of model misfit were identified by examining the standardised residuals and the modification indices. Standardised residuals greater than 2.58 indicate that a particular covariance is not well represented in the model, in that there is less than a .01 probability that the residual is zero in the population (Joreskog & Sorbom, 1988). Modification indices provide information about whether paths are better fixed to zero rather than freed. In particular, correlated errors can occur when there is a high degree of overlap between item content. For example, when an item is worded differently, but is essentially asking the same question (Byrne, 2001).

Data Preparation. Data were entered and analysed using the SPSS statistical program version 12.0 (SPSS Inc., 2002). Prior to the main analysis, data were screened for missing values, outliers, skewness, and kurtosis. An examination of the data showed that out of a total of 1015 participants surveyed, 17 participants (1.7%) were missing more than 10% of data on two or more questionnaires. These participants were removed from the sample leaving a total of 995 participants. Less than 2% of participants were missing data on single questionnaire items. According to Shafer and Graham (2001), when the level of missing data is less than 5% the various approaches to address missing data yield similar results. For participants in the current study, pro-rated scores based on existing data were calculated by age group and then substituted for the missing items on each questionnaire.

As is often the case with clinical measures used with community samples, the majority of the measures were positively skewed and showed kurtosis. The extent of skewness ranged from mild to severe with the greatest skewness found on the ChEAT, EDI-BD scale, and for Body Mass Index (BMI). The skewed scores for the ChEAT and the EDI-BD scales are exacerbated by the scoring system for these measures, which

collapses the three lowest non-symptomatic scores to zero. To rectify this problem, Schoemaker, van Strien and van der Staak (1994) suggest the use of the original six-point scores instead of the collapsed scale, as this increases the sensitivity of the items in a non-clinical population. Use of the original six-point scoring for the EDI-BD and the ChEAT greatly improved the normality of these measures. Therefore, for both the EDI-BD and ChEAT, scores based on the original six-point scale are reported for all SEM analyses.

Additionally, there was evidence of positive skew for the measures of perceived pressure to be thin, modelling of disordered eating, and media exposure. Transformations were used to improve normality. ANOVAs were run with transformed and untransformed data and the overall results were not significantly different. Thus, untransformed data is reported here.

Outliers are likely to affect the results of SEM even when the remaining data is normally distributed (West, Finch, & Curran, 1995). SEM analysis is sensitive to the presence of multivariate outliers and their presence can have a dramatic effect on fit indices, parameter estimates and standard errors, collectively resulting in improper solutions (West, Finch & Curran, 1995). In the present research, multivariate outliers were identified using the AMOS program and were removed from subsequent analyses. In total 4% of cases were identified as multivariate outliers and were excluded from further analysis.

Descriptive Information

Demographic information for the 995 remaining participants is presented in Table 4. Parental occupation was coded using broad categories from the Australian Standard Classification of Occupations (Australian Bureau of Statistics, 1997). The demographic information across the four different age groups showed a similar pattern with the majority of participants born in Australia and living with both parents. The

participants' parents worked predominantly as professionals (38.3%) followed by clerical/sales positions (18.2%) (see appendix D for further details).

Table 4

Demographic Details of Participants – Country of Birth, Living Situation, and Parental Occupation

<i>Participants' Country of Birth</i>	<i>Percentage (%)</i>
Australia	87.4
South East Asia	2.5
New Zealand	3.0
UK	2.6
Other	4.3
Missing Data	0.2
<i>Living Situation</i>	
With both Parents	66.9
With Mother	14.6
With Father	2.3
With Grandparents	0.6
Outside of Home	10.9
Other	3.6
Missing Data	1.0
<i>Parental Occupation</i>	
Professionals	38.3
Associate Professionals	9.2
Tradespersons	11.7
Clerical and Sales	18.2
Home Duties	9.7
Labourers and related workers	5.7
Other	7.2

A total of 145 participants (13.4%) scored at or above the clinical cut-off score of 20 on the ChEAT (See Table 5). The means and standard deviations for the EDI-BD scale are also presented in Table 5. The means are similar to those reported in research with samples of preadolescent girls (Thurfjell et al., 2004) adolescent girls (Rosen, Silberg, & Gross, 1988; Shore & Porter, 1990) and undergraduate women (Wicks, Siegert, & Walkey, 2004). Mean BMI values and weight classification percentages are

presented in Table 6. Just over 11% of all the participants had a BMI above 25 (i.e., overweight), 3% had a BMI over 30 (i.e., obese).

Table 5

Sample Characteristics on Measures of Disordered Eating (ChEAT) and Body Dissatisfaction (EDI-BD)

	<i>ChEAT</i>		<i>% above clinical cutoff</i>	<i>EDI-BD</i>	
	<i>M</i>	<i>SD</i>		<i>M</i>	<i>SD</i>
Preadolescent	9.15	9.97	12.2%	7.04	7.16
Early adolescent	9.78	10.01	12.3%	9.13	7.36
Late adolescent	11.18	10.21	15.8%	10.79	7.47
Young Adult	10.59	9.28	12.8%	10.55	7.80

Table 6

Means and (Standard Deviations) for BMI and Weight Classifications by Age Group

<i>BMI for Group</i>	<i>M</i>	<i>(SD)</i>	<i>Overweight %</i>	<i>Obese %</i>	<i>Under-weight² %</i>	<i>Normal %</i>
Pre Adolescent ¹	18.70	3.12	14.3	3	2.5	80.2
Early Adolescent ¹	20.23	3.49	19.5	2.3	2.7	75.5
Late Adolescent ¹	21.58	3.84	12.5	2.1	5.4	80
Young Adults ³	22.55	4.59	12.1	7.4	2.7	77.8
Total	20.79	4.07	16.5	3.0	14	66.5

¹ cutoffs based on those reported by Cole, Bellizzi, Flegal, and Dietz (2000).

² Underweight based on BMI for age percentiles

³ Based on standard WHO guidelines for adults

The rates of overweight and obesity in the pre, early and late adolescent age groups were similar to those reported by Booth et al. (2001) and Magarey, Daniels and Boulton (2001).

The means and standard deviations for the family, peer, and media pressure to be thin and modelling scales are presented in Table 10 (*p.* 100). The mean scores for family, peer, and media pressure to be thin and modelling scales are similar to those reported by Stice (1998) who used similar measures with undergraduate and senior high school students. In all four age groups, perceived pressure to be thin from media, followed by peer and family pressure, was reported as the strongest influence. A similar pattern was displayed for modelling with the early adolescent, late adolescent and adult groups all reporting the greatest amount of modelling from media, followed by peer and family. The one exception to this was in the preadolescent group; this group reported the most pressure from media followed by family and peer pressure.

The means and standard deviations for the television exposure measure are presented in Table 7. The late adolescent group reported the highest total television exposure. Demographic information regarding magazine exposure is presented in Table 8. The most regularly read women's magazine was *Cosmopolitan* and the most regularly read youth magazine was *Dolly*.

The means and standard deviations for the SATAQ-I and the PACS are shown in Table 9. The mean scores for participants on internalisation scale were similar to those reported in an undergraduate sample (Griffiths et al., 1999) and in a preadolescent sample (Sand & Wardle, 2003). The means and standard deviations for the PACS were similar to those reported by in a sample of undergraduate women (Thompson, Heinberg, & Tantleff, 1991).

Table 7

Mean and (Standard Deviations) for Television Exposure by Age Group

<i>Idealized Television Exposure</i>	<i>Pre Adolescent</i>	<i>Early Adolescent</i>	<i>Late Adolescent</i>	<i>Young Adult</i>
Total TV	34.80 (17.65)	39.22 (20.18)	40.95 (18.52)	36.71 (17.25)
Drama	10.41 (7.00)	12.27 (8.26)	14.16 (8.27)	13.07 (6.71)
Comedy	11.94 (6.19)	12.77 (7.20)	12.93 (6.71)	12.90 (7.10)
Music Video	5.90 (3.28)	5.86 (3.35)	5.25 (3.36)	3.63 (3.12)
Soap Opera	6.54 (4.66)	8.32 (5.82)	8.60 (5.54)	7.12 (5.27)

Total TV scores ranged from 0-138, Drama scores ranged from 0-52, Comedy/Sitcom scores ranged from 0-36, Music/Video scores ranged from 0-12, and Soap Operas shows scores ranged from 0-38.

Table 8

Magazine Exposure by Age Group

<i>Magazines</i>	<i>% Regularly</i>	<i>% Sometimes</i>	<i>% Never</i>
<i>Women's Magazines</i>			
AWW	5.1	47.0	47.9
Cleo	11.8	35.7	52.5
Cosmopolitan	14.3	33.2	52.5
Elle	2.0	13.4	84.6
For Me	0.6	9.5	89.9
Marie Claire	3.6	23.0	73.4
New Idea	7.4	43.9	48.7
New Weekly	6.2	31.3	62.5
New Woman	3.0	16.9	80.1
She	2.7	16.6	80.7
That's Life	4.7	17.1	78.2
TV Weekly	7.5	26.8	65.7
Who Weekly	5.9	26.4	67.7
Woman's Day	10.7	44.8	44.5
<i>Youth Magazines</i>			
Dolly	30.1	34.2	35.7
Girlfriend	28.1	33.2	38.7
Smash Hits	9.4	26.8	63.8
TV Hits	10.7	27.8	61.5

Table 9

Sample Characteristics on Measures of Internalisation of the Thin-Ideal (SATAQ) and Social Comparison (PACS)

	<i>Pre Adolescent</i>	<i>Early Adolescent</i>	<i>Late Adolescent</i>	<i>Young Adult</i>
SATAQ-I	20.96 (9.24)	24.17 (9.22)	26.91 (8.55)	26.32 (7.51)
PACS	11.67 (5.04)	13.88 (4.77)	14.87 (4.54)	15.50 (4.17)

SATAQ-I = Sociocultural Attitudes Towards Appearance Questionnaire – Internalisation Scale, PACS= Physical Appearance Comparison Scale.

Age Differences in Level of Sociocultural Pressure

To examine group differences in the level of reported sociocultural pressure from each societal source, one-way ANOVAs were conducted. For perceived pressure to be thin, there were significant group differences on both family pressure to be thin and media pressure to be thin, but not peer pressure to be thin. As shown in Table 10 the pre- and early adolescent groups reported significantly less perceived pressure to be thin from family than the late adolescent and young adult groups. For media pressure to be thin there were significant group differences between all groups with the youngest age group reporting the least amount of perceived pressure by media. This increased in a linear fashion with significant differences between each group, with the young adult group reporting the highest amount of media pressure.

There were significant group differences for family, peer, and media modelling of disordered eating, across all groups. The pre and early adolescent groups reported significantly less family modelling of disordered eating behaviour than the late adolescent and adult groups. The preadolescent group reported significantly less peer modelling of disordered eating than the early adolescent group. Similarly, the early adolescent age group reported significantly less peer modelling than the late adolescent

age group. The late adolescent age group and the undergraduate age ⁵groups did not differ from each other in the amount of peer modelling reported. For media, the preadolescent group reported significantly less media modelling than the early adolescent age group. Both the early adolescent and late adolescent groups did not differ from one another in the amount of media modelling reported but reported significantly less media modelling than the undergraduate group.

For exposure there were significant group differences for both television and magazine exposure. For television exposure the preadolescent and the undergraduate participants reported significantly lower rates of television exposure to idealized images than the early adolescent and late adolescent age groups, who did not differ from one another in reported TV exposure. For magazine exposure the late adolescent group reported significantly more magazine exposure than the other three groups who did not differ significantly from each other.

⁵ Although the moderate correlations between the dependent variables suggest that a MANOVA would be an appropriate statistical technique the covariance between the dependent variables was not of interest in the current study and therefore univariate ANOVAs were used.

Table 10

Group Comparisons of Sociocultural Pressures from Family, Peers, and Media

<i>Group</i>	<i>Preadolescent</i> <i>n = 237</i> <i>M (SD)</i>	<i>Early adolescent</i> <i>n = 261</i> <i>M (SD)</i>	<i>Late adolescent</i> <i>n = 240</i> <i>M (SD)</i>	<i>Young adult</i> <i>n = 257</i> <i>M (SD)</i>	<i>Univariate</i> <i>F</i>	<i>Group Differences</i>
<i>Perceived Pressure</i>						
Family	1.85 (.81)	1.82 (.78)	2.09 (.89)	2.21 (1.05)	11.57**	(PA=EA)<(LA=A)
Peer	2.12 (.92)	2.24 (.87)	2.29 (.84)	2.30 (.81)	2.25 ns.	ns
Media	2.95 (1.05)	3.62 (.99)	3.87 (.84)	4.10 (.72)	73.32**	PA<EA<LA<A
<i>Modelling</i>						
Family	2.16 (.73)	2.33 (.74)	2.55 (.78)	2.65 (.82)	20.17**	(PA=EA)<(LA=A)
Peer	1.89 (.73)	2.40 (.85)	2.96 (.84)	3.06 (.84)	107.47**	PA<EA<(LA=A)
Media	2.80 (.81)	3.14 (.79)	3.27 (.74)	3.39 (.70)	27.39**	PA<(EA=LA)<A
<i>Exposure</i>						
Television	34.80 (17.64)	39.22 (20.18)	40.95 (18.52)	36.71 (17.25)	5.19**	(PA=A)<(EA=LA)
Magazine	8.02 (5.48)	8.53 (5.32)	9.34 (5.46)	7.51 (5.19)	5.21**	(PA=EA=A) <LA

NB. For the perceived pressure and modelling scales an average score was calculated (rather than a total score) to permit interpretation of means and allow comparison across scales. Post hoc analysis was performed using Dunnett's T3 which accounts for unequal variance across groups, ** = (p < .01).

SEM Analysis: Preadolescent Group

The bivariate correlation matrix, means, and standard deviations for the preadolescent group are presented in Table 11. To assess for multicollinearity the pattern of relationships between all indicators was checked to ensure that no excessive correlations were present. In SEM analysis it is recommended that indicators of separate latent variables are not highly correlated ($r < .90$; Tabachnick & Fidell, 2001).

Next, the model fit between the estimated model and the observed data was evaluated. The model (Model 1_{pre} $\chi^2(80, n = 227) = 185.15, p < .001$) was significant indicating a lack of fit to the data. However, as noted above, a significant chi-square is not unexpected when using larger sample sizes and nonnormal data (Byrne, 2001). Further examination of the results, according to the relevant fit indices suggests that the model represents a good fit to the data (see Table 12 for fit indices). The ratio of the estimate to its degrees of freedom was < 3 , suggesting acceptable fit. Both the CFI and the TLI were above .9 indicating good fit. The RMSEA was below .08 suggesting only a small difference between the variances of the sample and the estimated population. Less than 3% of the standardised residual were greater than the 2.58, the cutoff recommended by Byrne (2001). Based on a probability level of .05 and using the test statistic cutoff of $> \pm 1.96$, three of the hypothesised paths were nonsignificant in the model. These were the paths between exposure and internalisation ($\beta = .09, t = .12, p > .05$), social comparison and body dissatisfaction ($\beta = .06, t = .42, p > .05$), and social comparison and eating pathology ($\beta = .10, t = .23, p > .05$). However, at this stage to allow for testing invariance across age groups, these paths were not deleted from the model. Inspection of the modification indices indicated the error variances of family pressure and family modelling, and family pressure and peer pressure, should be allowed to covary (see Appendix E). These correlated error variances may be related to a degree of overlap in the content of items from these measures.

Table 11

Bivariate Correlations, Means, and Standard Deviations for the Pre-Adolescent Age Group

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. BMI	--														
2. ChEAT-Bul ^a	.12	--													
3. ChEAT-OC ^a	-.08	.30**	--												
4. ChEAT-D ^a	.29**	.48**	.46**	--											
5. EDI-BD ^a	.43**	.38**	.43**	.69**	--										
6. Total Mag	.01	.22**	.18**	.14*	.15*	--									
7. Total TV	-.05	.13	.13*	.12	.10	.55**	--								
8. PP-Fam	.45*	.29**	.18**	.39**	.26**	-.03	.01	--							
9. Mod- Fam	.28**	.35**	.27**	.55**	.42**	.08	.10	.46**	--						
10. PP-Peer	.09	.31**	.31**	.49**	.37**	.09	.11	.45**	.34**	--					
11. Mod-Peer	.16	.36**	.29**	.47**	.40**	.12	.17**	.22**	.49**	.46**	--				
12. PP-Media	.22**	.26**	.36**	.57**	.50**	.07	.18**	.34**	.44**	.55**	.49**	--			
13. Mod-Med	.15*	.26**	.30**	.42**	.29**	.11	.13*	.23**	.37**	.40**	.43**	.50**	--		
14. PACS	.15*	.38**	.43**	.62**	.52**	.25**	.28**	.31**	.52**	.59**	.53**	.59**	.44**	--	
15. SATAQ-I	.29**	.38**	.44**	.71**	.66**	.26**	.17**	.42**	.54**	.54**	.50**	.69**	.43**	.76**	--
<i>M</i>	18.51	9.12	19.71	29.96	27.4	27.74	33.93	1.83	2.13	2.12	1.87	2.94	2.77	11.38	20.54
<i>SD</i>	2.77	3.03	4.24	10.83	11.27	5.25	16.24	.79	.70	.92	.71	1.03	.81	4.81	9.01

a = based on raw scores totals, BMI= Body Mass Index, ChEAT= Children's Eating Attitudes Test, Bul= Bulimia, OC= Oral Control, D= Diet, EDI-BD= Eating Disorders Inventory- Body Dissatisfaction, Total Mag= Total Magazine Exposure, Total TV= Total Television Exposure, PP= Perceived Pressure, Fam= Family, Mod= Modelling, PACS=Physical Appearance Comparison Scale, SATAQ-I= Sociocultural Attitudes Towards Appearance Questionnaire - Internalisation Scale.

Table 12

Fit Indices – Preadolescent Group

<i>Goodness-of-fit Measure</i>	<i>Model 1_{Pre}</i>	<i>Model 2_{Pre}</i>
Chi-Square Value	185.15	155.36
df	80	78
χ^2 /df	2.31	1.9
CFI	.93	.95
TLI	.91	.93
RMSEA	.076	.066

df= degrees of freedom, χ^2 /df= chi-square divided by degrees of freedom, CFI = Comparative Fit Index, TLI = Tucker Lewis Index, RMSEA = Root Mean Square Error of Approximation.

The model was tested again with these modifications (now called model 2_{Pre}). The results indicated that Model 2_{pre} was a better fit to the data (see Table 12 for fit indices). The model (Model 2_{pre} χ^2 (78, $n = 227$) = 155.36, $p < .001$) was significant, however the ratio of the estimate to its degrees of freedom was < 2 . The CFI and the TLI were approaching .95, which is indicative of superior fit. The RMSEA was less than .07. Less than 3% of the standardised residuals were greater than 2.58. As expected the same paths as reported in Model 1_{pre} remained nonsignificant in Model 2_{pre} however the path from social comparison to internalisation became nonsignificant in Model 2_{pre} ($\beta = .19$, $t = .05$, $p > .05$). The model fit was compared to the fit of the previous model using the chi-square difference test and the result indicated that there was a significant improvement in fit between Model 1_{pre} and Model 2_{pre}, $\chi^2_{\text{Comparison}}$ (1, $n = 227$) = 29.8, $p < .05$. Thus model 2_{pre} was retained as the final baseline model for the preadolescent age group (see Figure 7). The model accounted for 61.7% of the variance in disordered eating.

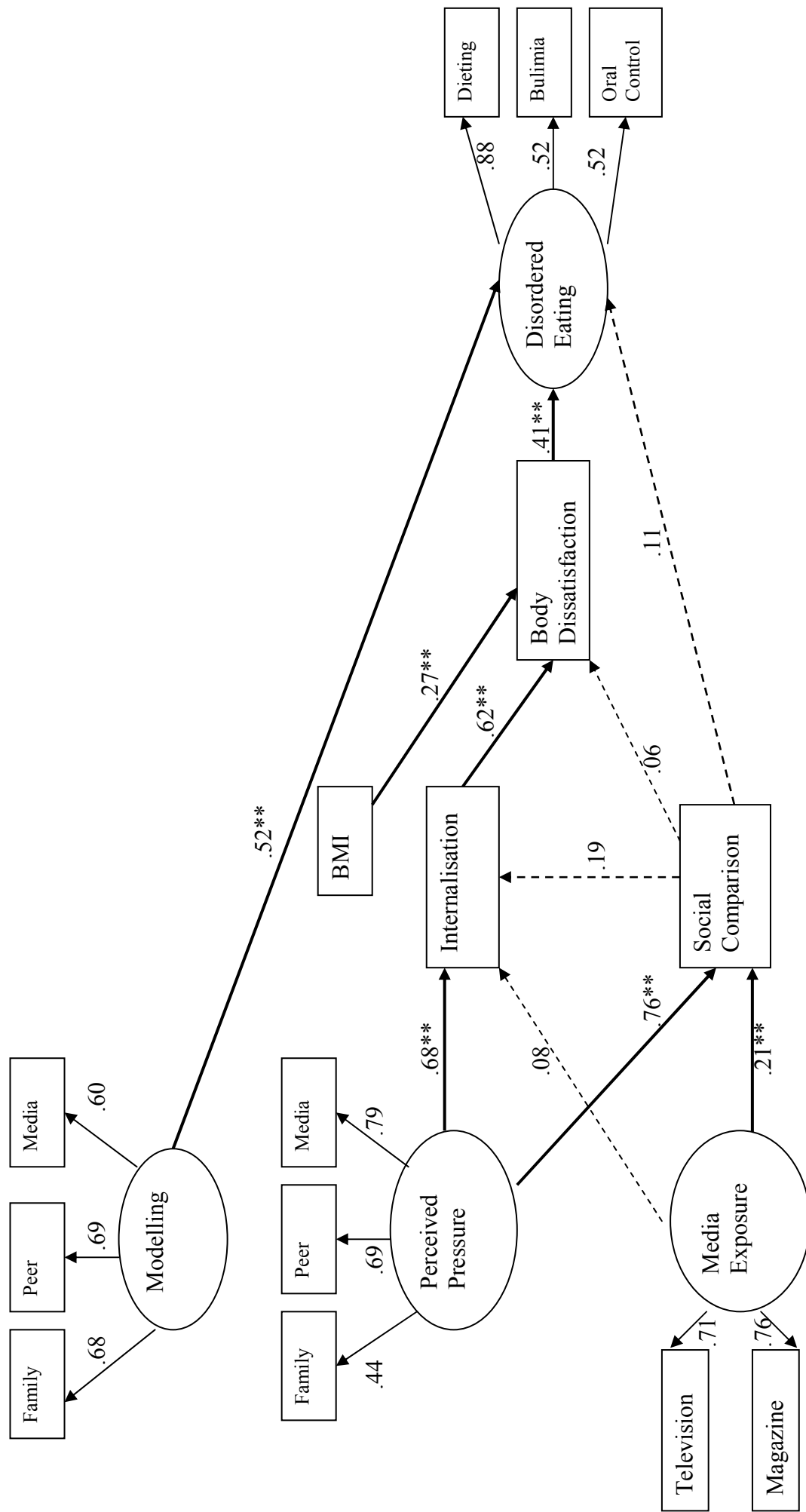


Figure 7. Preadolescent Model 2 with Standardised Path Coefficients. NB. For clarity correlations between exogenous variables and error variances are not displayed in this figure. Bold arrows indicate significant paths. Dashed lines indicate nonsignificant paths. * = $p < .05$, ** = $p < .01$.

Early Adolescent Group

The bivariate correlation matrix, means, and standard deviations for the early adolescent group are presented in Table 13. Examination of the correlation matrix indicated no excessively high correlations between indicators (i.e., $>.90$).

Next, the model fit between the estimated model and the observed data was evaluated. The model (Model 1_{early} $\chi^2(80, n = 251) = 200.61, p < .001$) was significant indicating a lack of fit to the data. However, further examination of the results according to the relevant fit indices suggests that the model represents a good fit to the data (see Table 14 for fit indices). The ratio of the estimate to its degrees of freedom was < 3 , suggesting acceptable fit. Both the CFI and the TLI were above .9 indicating good fit. The RMSEA was below .08 suggesting only a small difference between the variances of the sample and the estimated population. Less than 3% of the standardised residuals were greater than the 2.58, the cutoff recommended by Byrne (2001). Based on a probability level of .05 and using the test statistic cutoff of $\geq \pm 1.96$, two of the hypothesised paths were nonsignificant. These were the paths between exposure and social comparison ($\beta = .04, t = .46, p > .05$), and exposure and internalisation ($\beta = .09, t = .05, p > .05$). These paths were retained in the model for later examination of group differences. Inspection of the modification indices indicated that additional paths should be freed between the error variances of family pressure and family modelling, and media pressure and media modelling (see Appendix F). Again, this suggests some item overlap on items of these particular measures. The error variances were allowed to correlate for the revised Model 2_{early}.

The model was tested again with these modifications (now called model 2_{early}). The results indicated that Model 2_{early} was a better fit to the data. The model, $\chi^2(78, n = 251) = 168.97, p < .001$, was significant. Further examination of the relevant fit indices suggests that the model represents a good fit to the data (see Table 14 for fit indices).

Table 13

Bivariate Correlations, Means, and Standard Deviations for the Early Adolescent Age Group

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. BMI	--														
2. ChEAT-Bul ^a	.15*	--													
3. ChEAT-OC ^a	-.01	.35**	--												
4. ChEAT-D ^a	.32**	.52**	.42**	--											
5. EDI-BD ^a	.43**	.40**	.37**	.69**	--										
6. Total Mag	.16*	.12	.15*	.22**	.14*	--									
7. Total TV	.08	.04	.04	.08	.10	.54**	--								
8. PP-Fam	.24**	.35**	.16*	.44**	.35**	.13*	.10	--							
9. Mod-Fam	.32**	.42**	.24**	.58**	.45**	.17**	.11	.52**	--						
10. PP-Peer	.14*	.37**	.29**	.48**	.38**	.13*	.10	.48**	.37**	--					
11. Mod-Peer	.14*	.42**	.29**	.51**	.42**	.22*	.16*	.30**	.45**	.52**	--				
12. PP-Med	.28**	.27**	.30**	.51**	.45**	.11	-.03	.38**	.36**	.48**	.45**	--			
13. Mod-Med	.17**	.29**	.29**	.41**	.37**	.18**	.15*	.30**	.36**	.37**	.48**	.51**	--		
14. PACS	.15*	.43**	.38**	.66**	.61**	.16**	.10	.40**	.42**	.49**	.42**	.50**	.37**	--	
15. SATAQ-I	.25**	.39**	.36**	.25**	.74**	.23**	.12	.46**	.51**	.44**	.47**	.60**	.41**	.76**	--
<i>M</i>	20.07	10.78	20.23	30.77	30.97	8.50	38.46	1.81	2.30	2.22	2.37	3.60	3.14	13.71	23.88
<i>SD</i>	3.09	3.47	3.81	11.68	11.22	5.22	19.21	.76	.73	.85	.89	.97	.76	4.63	9.12

a = based on raw scores totals, BMI= Body Mass Index, ChEAT= Children's Eating Attitudes Test, Bul= Bulimia, OC= Oral Control, D= Diet, EDI-BD= Eating Disorders Inventory- Body Dissatisfaction, Total Mag= Total Magazine Exposure, Total TV= Total Television Exposure, PP= Perceived Pressure, Fam= Family, Mod= Modelling, PACS=Physical Appearance Comparison Scale, SATAQ-I= Sociocultural Attitudes Towards Appearance Questionnaire - Internalisation Scale

Table 14
Fit Indices – Early Adolescent Group

<i>Goodness-of-fit Measure</i>	<i>Model 1_{early}</i>	<i>Model2_{early}</i>
Chi-Square Value	200.61	168.97
df	80	78
χ^2 /df	2.5	2.2
CFI	.93	.95
TLI	.90	.93
RMSEA	.078	.068

df = degrees of freedom, χ^2 /df = chi-square divided by degrees of freedom, CFI = Comparative Fit Index, TLI = Tucker Lewis Index, RMSEA = Root Mean Square Error of Approximation

The ratio of the estimate to its degrees of freedom was < 3 , suggesting acceptable fit.

Both the CFI and TLI were approaching .95 and the RMSEA was below .07, indicating good fit. As expected, the same paths as in Model 1_{early} were nonsignificant in Model 2_{early} but were not deleted from the final model. The model fit was compared to the fit of the previous model and the result indicated that that there was a significant improvement in fit between Model 1_{early} and Model 2_{early}, χ^2 Comparison (1, $n = 251$) = 31.6 $p < .05$. Thus, Model 2_{early} was accepted as the final baseline model for the early adolescent group (See Figure 8). The model accounted for 60.9% of the variance in disordered eating.

Late Adolescent Group

The bivariate correlation matrix, means, and standard deviations, for the late adolescent group are presented in Table 15. Examination of the correlations matrix indicated no excessively high correlations between indicators.

Next, the model fit between the estimated model and the observed data was evaluated. The model (Model 1_{late} χ^2 (80, $n = 235$) = 178.61, $p < .001$) was significant indicating a lack of fit to the data. However, further examination of the results according

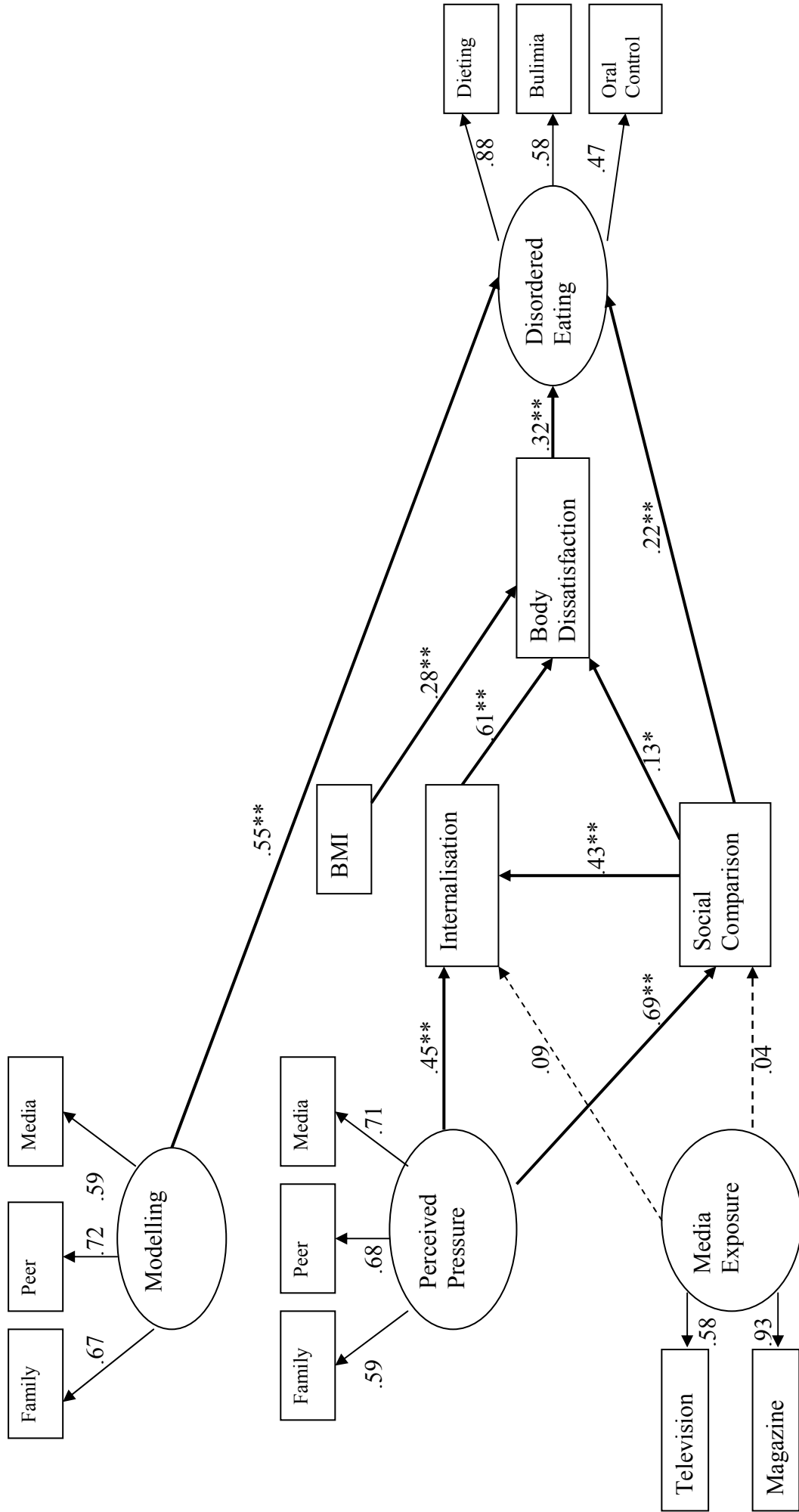


Figure 8. Early Adolescent Model 2 with Standardised Path Coefficients. NB. For clarity correlations between exogenous variables and error variances are not displayed in this figure. Bold arrows indicate significant paths. * = $p < .05$, ** = $p < .01$.

Table 15
Bivariate Correlations, Means, and Standard Deviations for the Late Adolescent Age Group

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. BMI	--														
2. ChEAT-Bul ^a	.11	--													
3. ChEAT-OC ^a	-.30**	.16*	--												
4. ChEAT-D ^a	.19**	.55**	.30**	--											
5. EDI-BD ^a	.44**	.33**	-.05	.54**	--										
6. Total Mag	.02	.04	.03	.11	.07	--									
7. Total TV	.12	.10	.02	.09	.17**	.45**	--								
8. PP-Fam	.20**	.23**	.03	.19**	.23**	-.06	-.08	--							
9. Mod-Fam	.29**	.30**	.10	.41**	.32**	.06	.15*	.45**	--						
10. PP-Peer	.09	.32**	.15*	.33**	.30**	.11	.13*	.51**	.31**	--					
11. Mod-Peer	.13*	.44**	.13*	.53**	.33**	.13*	.17**	.31**	.49**	.43**	--				
12. PP-Med	.18**	.32**	.10	.48**	.37**	.05	.01	.30**	.35**	.33**	.38**	--			
13. Mod-Med	.10	.26**	.09	.27**	.17**	.14*	.04	.15*	.29**	.09	.43**	.30**	--		
14. PACS	.01	.44**	.24**	.54**	.34**	.28**	.15*	.25**	.38**	.37**	.46**	.39**	.26**	--	
15. SATAQ-I	.01	.32**	.24**	.56**	.48**	.22**	.15*	.23**	.30**	.38**	.40**	.52**	.22**	.66**	--
<i>M</i>	22.33	11.70	15.84	33.75	34.96	7.49	36.67	2.16	2.64	2.27	3.05	4.14	3.38	15.53	26.44
<i>SD</i>	4.15	4.03	4.60	11.03	10.34	4.98	17.05	0.99	0.79	0.79	0.82	0.66	0.70	4.05	7.27

a = based on raw scores totals, BMI= Body Mass Index, ChEAT= Children's Eating Attitudes Test, Bul= Bulimia, OC= Oral Control, D= Diet, EDI-BD= Eating Disorders Inventory- Body Dissatisfaction, Total Mag= Total Magazine Exposure, Total TV= Total Television Exposure, PP= Perceived Pressure, Fam= Family, Mod= Modelling, PACS=Physical Appearance Comparison Scale, SATAQ-I= Sociocultural Attitudes Towards Appearance Questionnaire - Internalisation Scale.

to the relevant fit indices suggests that the model represents a good fit to the data (see Table 16 for fit indices). The ratio of the estimate to its degrees of freedom was < 3 suggesting good fit. Both the CFI and the TLI were above .9 indicating acceptable fit. The RMSEA was below .08 suggesting only a small difference between the variances of the sample and the estimated population. Less than 5% of the standardised residuals were greater than 2.58. The path between exposure and internalisation was nonsignificant ($\beta = .11, t = .06, p > .05$). Inspection of the modification indices suggested that additional paths should be freed between the error variances of family reinforcement and family modelling and family reinforcement and peer modelling (see Appendix G). Consistent with the above findings it appears that these measures have some error overlap. These error variances were allowed to correlate for the revised model (Model 2_{late}).

Table 16

Fit Indices – Late Adolescent Age Group

<i>Goodness-of-fit Measure</i>	<i>Model 1Late</i>	<i>Model 2Late</i>
Chi-Square Value	178.61	152.05
df	80	78
χ^2 /df	2.2	1.95
CFI	.92	.94
TLI	.90	.92
RMSEA	.073	.064

df = degrees of freedom, χ^2 /df = chi-square divided by degrees of freedom, CFI = Comparative Fit Index, TLI = Tucker Lewis Index, RMSEA = Root Mean Square Error of Approximation

The model was tested again with these modifications (now called model 2_{late}). The results indicated that Model 2_{late} was a better fit to the data (see Table 16 for fit indices). The model (Model 2_{late} $\chi^2 (78, n = 235) = 152.05, p < .001$) was significant. However, the ratio of the estimate to its degrees of freedom was less < 2 . The CFI was .94 and the TLI was above .9, which is indicative of good fit. The RMSEA was $< .06$.

Less than 3% of the standardised residuals were greater than 2.58. All of the paths in this model were significant. The model fit was compared to the fit of the previous model using the chi-square difference test and the results indicated that there was a significant improvement in fit between Model 1_{late} and Model 2_{late}, $\chi^2_{\text{Comparison}}(1, n = 235) = 26.5, p < .05$. Thus, model 2_{late} was retained as the final baseline model for the late adolescent age group (see Figure 9). The model accounted for 64.4% of the variance in disordered eating.

Young Adult Group

The bivariate correlation matrix, means, and standard deviations for the adult group are presented in Table 18. As with the previous groups the hypothesized model (Model 1_{adult}) was significant $\chi^2(80, n = 245) = 233.11, p < .001$. The ratio of the estimate to its degrees of freedom was just below .3. Further examination of the results according to the relevant fit indices (see Table 17) suggests that the model represents only a mediocre fit to the data. Both the CFI and TLI were below .9. The RMSEA was just below .08. More than 5% (but less than 10%) of the standardised residual were greater than the 2.58, the cutoff recommended by Byrne (2001). Two of the hypothesised paths were nonsignificant in the model. These were the paths between exposure and internalisation ($\beta = .10, t = .09, p > .05$), and body dissatisfaction and social comparison ($\beta = .05, t = .40, p > .05$). However, at this stage these paths were not deleted from the model to test invariance across age groups. Examination of the modification indices suggested that additional paths should be freed between the error of family reinforcement and family modelling, family reinforcement and peer modelling, and body mass index and oral control (see Appendix H). The revised model (Model 2_{adult}) was tested with these modifications.

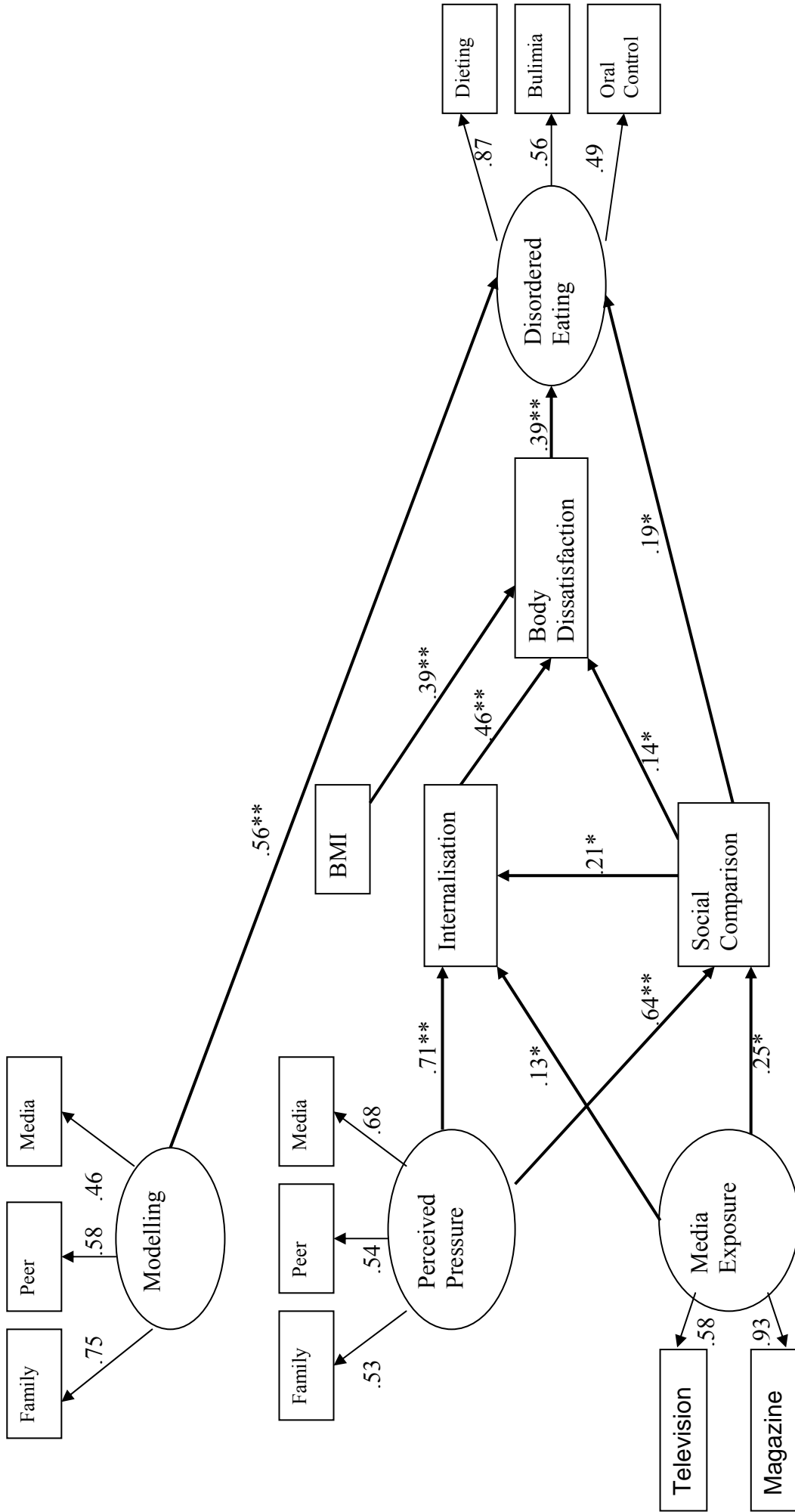


Figure 9. Late Adolescent Model 2 with Standardised Path Coefficients. NB. For clarity correlations between exogenous variables and error variances are not displayed in this figure. Bold arrows indicate significant paths. * = $p < .05$, ** = $p < .01$

Table 17

Fit Indices – Adult Age Group

<i>Goodness-of-fit Measure</i>	Model 1 _{adult}	Model 2 _{adult}
Chi-Square Value	233.11	167.88
df	80	77
χ^2 /df	2.9	2.18
CFI	.86	.91
TLI	.81	.88
RMSEA	.089	.07

df = degrees of freedom, χ^2 /df = chi-square divided by degrees of freedom, CFI = Comparative Fit Index, TLI = Tucker Lewis Index, RMSEA = Root Mean Square Error of Approximation

The model was tested again with these modifications (now called model 2_{adult}). The results indicated that Model 2_{adult} was a better fit to the data (see Table 17 for fit indices). The model (Model 2_{adult} χ^2 (77, $n = 235$) = 167.88, $p < .001$) was significant. However the ratio of the estimate to its degrees of freedom was < 3 and the CFI was above .9. Furthermore the RMSEA was .07, which represents adequate model fit. Less than 5% of the standardised residuals were greater than 2.58. As expected the same paths as reported in Model 1_{adult} remained nonsignificant in Model 2_{adult}. The model fit was compared to the fit of the previous model using the chi square difference test and the result indicated that that there was a significant improvement in fit between Model 1_{adult} and 2_{adult}, χ^2 Comparison (1, $n = 245$) = 65.2, $p < .05$. Thus model 2_{adult} was retained as the final baseline model for the adult age group (see Figure 10). The model accounted for 60.5% of the variance in disordered eating.

Table 18

Bivariate Correlations, Means, and Standard Deviations for the Adult Age Group

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. BMI	--														
2. ChEAT-Bul ^a	.05	--													
3. ChEAT-OC ^a	.03	.23**	--												
4. ChEAT-D ^a	.34**	.51**	.43**	--											
5. EDI-BD ^a	.47**	.37**	.41**	.66**	--										
6. Total Mag	.01	.06	.09	.17**	.10	--									
7. Total TV	.05	.01	.03	.07	.05	.60**	--								
8. PP-Fam	.14*	.28**	.20**	.43**	.32**	.02	-.03	--							
9. Mod-Fam	.36**	.39**	.32**	.59**	.48**	.10	.07	.49**	--						
10. PP-Peer	.04	.31**	.27**	.43**	.30**	.09	.03	.45**	.29**	--					
11. Mod-Peer	.13*	.31**	.29**	.38**	.30**	.10	.12	.23**	.42**	.33**	--				
12. PP-Med	.19**	.22**	.24**	.45**	.31**	-.06	-.04	.39**	.38**	.34**	.20**	--			
13. Mod-Med	.13	.23**	.23**	.25**	.21**	.12	.13	.16*	.32**	.19**	.40**	.31**	--		
14. PACS	.01	.41**	.31**	.56**	.47**	.26**	.16*	.38**	.38**	.41**	.34**	.40**	.22**	--	
15. SATAQ-I	.22**	.42**	.34**	.67**	.62**	.20*	.10	.44**	.53**	.45**	.37**	.59**	.59**	.71**	--
<i>M</i>	21.38	12.20	20.17	33.62	34.42	9.23	40.81	2.09	2.55	2.29	2.96	3.88	3.26	14.94	26.92
<i>SD</i>	3.36	4.67	3.36	12.19	10.47	5.36	18.58	.89	.78	.84	.84	.83	.74	4.51	8.58

a = based on raw scores totals, BMI= Body Mass Index, ChEAT= Children's Eating Attitudes Test, Bul= Bulimia, OC= Oral Control, D= Diet, EDI-BD= Eating Disorders Inventory- Body Dissatisfaction, Total Mag= Total Magazine Exposure, Total TV= Total Television Exposure, PP= Perceived Pressure, Fam= Family, Mod= Modelling, PACS=Physical Appearance Comparison Scale, SATAQ-I= Sociocultural Attitudes Towards Appearance Questionnaire - Internalisation Scale.

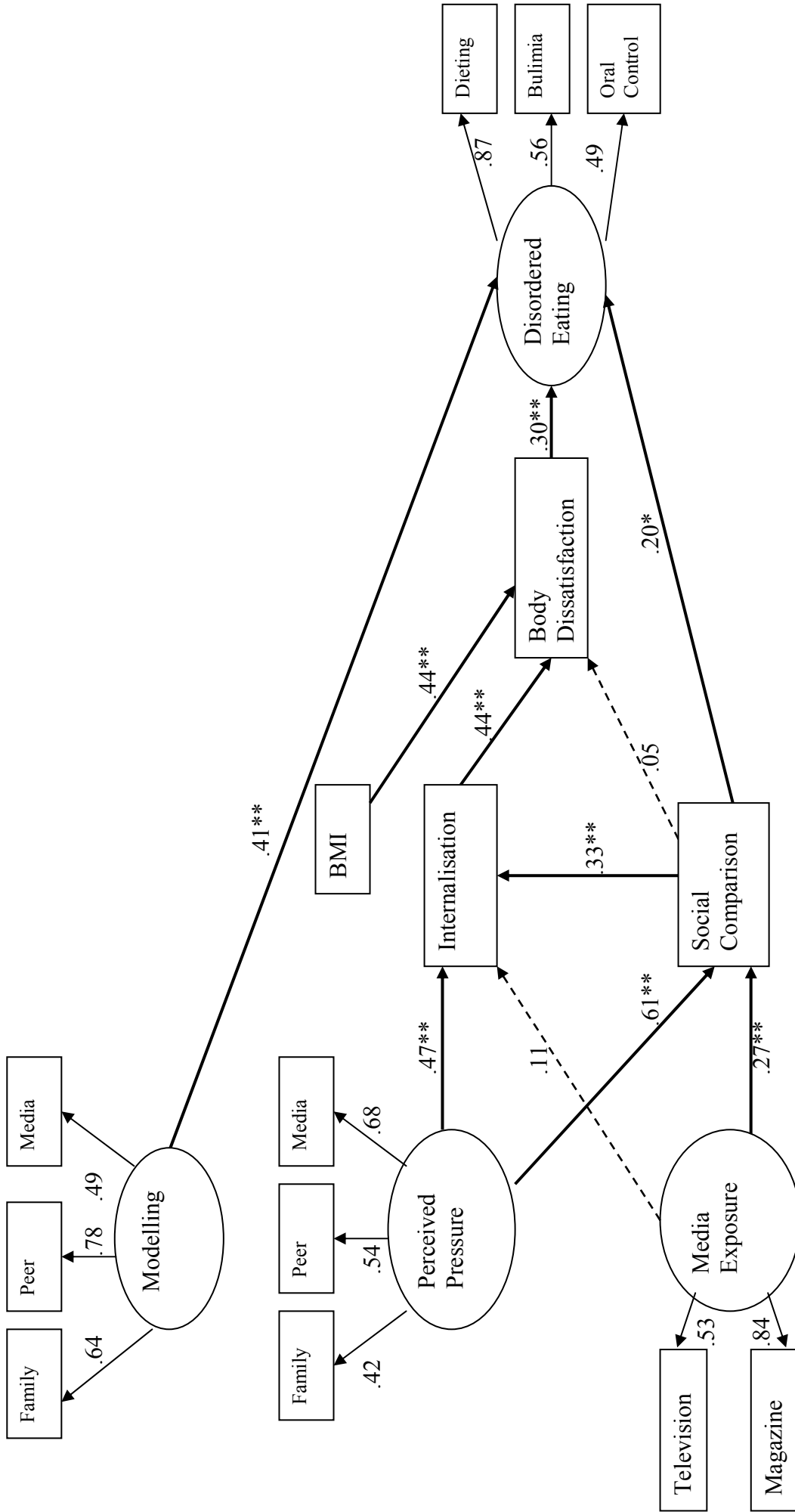


Figure 10. Young Adult Model 2 with Standardised Path Coefficients. NB. For clarity correlations between exogenous variables and error variances are not displayed in this figure. Bold arrows indicate significant paths. * = $p < .05$, ** = $p < .01$.

Baseline Model for All Groups

Next, the model was tested using the data for all age groups. Byrne (2001) recommends that baseline models for each group are analysed separately and then simultaneously to obtain efficient estimates. Initially, the model with all the data and no equality of constraints imposed was tested. The bivariate correlation matrix, means, and standard deviations for all participants are presented in Table 19. The pattern of relationships between all indicators was checked to ensure that no excessive correlations ($r > .90$; Kline, 1998) were present.

The model fit between the estimated model and the observed data was evaluated. The hypothesized model (Model 1_{allgroups}) was significant $\chi^2(320, N = 957) = 802.09, p < .001$, indicating poor fit to the data. However the ratio of the estimate to its degrees of freedom was < 3 . Further examination of the results according to the relevant fit indices (see Table 20) suggests that the model represented an adequate fit to the data. The CFI was above .9 and the RMSEA was less than .05. The TLI was just below the acceptable cutoff of .9. Based on a probability level of .05 and using the test statistic cutoff of $> \pm 1.96$, three of the hypothesised paths were nonsignificant in the model. These were the paths between exposure and internalisation ($\beta = .09, t = .13, p > .05$), social comparison and body dissatisfaction ($\beta = .06, t = .42, p > .05$), and social comparison and eating pathology ($\beta = .09, t = .36, p > .05$). Inspection of the modification indices indicated that the error variances of family pressure and family modelling, and family pressure and peer pressure, should be allowed to covary.

Table 19

Bivariate Correlations, Means, and Standard Deviations for All Groups

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. BMI	--														
2. ChEAT-Bul ^a	.12**	--													
3. ChEAT-OC ^a	-.16**	.18**	--												
4. ChEAT-D ^a	.24**	.50**	.40**	--											
5. EDI-BD ^a	.45**	.33**	.06	.62**	--										
6. Total Mag	.07*	.05	.03	.16**	.11**	--									
7. Total TV	.06*	.07*	.10	.11**	.12**	.54**	--								
8. PP-Fam	.24**	.19**	.04	.32**	.32**	.02	.03	--							
9. Mod-Fam	.38**	.25**	.09**	.52**	.45**	.12**	.12**	.49**	--						
10. PP-Peer	.10**	.20**	.11**	.36**	.33**	.10**	.11**	.47**	.33**	--					
11. Mod-Peer	.26**	.30**	.03	.46**	.41**	.14**	.17**	.30**	.50**	.42**	--				
12. PP-Med	.30**	.20**	-.01	.42**	.43**	.06	.05	.34**	.44**	.41**	.49**	--			
13. Mod-Med	.18**	.20**	.10**	.32**	.27**	.14**	.16**	.29**	.36**	.29**	.49**	.47**	--		
14. PACS	.17**	.31**	.12**	.56**	.50**	.22**	.19**	.35**	.45**	.47**	.50**	.54**	.39**	--	
15. SATAQ-I	.23**	.25**	.07*	.60**	.63**	.23**	.15**	.38**	.50**	.45**	.49**	.64**	.38**	.74**	--
<i>M</i>	20.60	10.97	18.97	32.04	28.66	8.24	37.51	1.99	2.42	2.24	2.59	3.65	3.15	14.02	24.60
<i>SD</i>	3.68	4.01	4.43	11.55	3.76	5.24	17.98	.90	.79	.86	.94	.99	.79	4.84	8.92

a = based on raw scores totals, BMI=Body Mass Index ChEAT-Bul =Bulimia, OC = Oral Control, D= Diet, EDI-BD- Eating Disorders Inventory, Body dissatisfaction, Total Mag =Total Magazine Exposure, Total TV= Total Television Exposure, PP- Family, Peers, Media = Perceived Pressure by Family, Peers and Media. Mod - Family, Peer, Media = Modelling by Family, Peers and Media, PACS – Physical Appearance Comparison Scale, SATAQ-I Sociocultural Attitudes Towards Appearance Questionnaire – Internalisation Scale.

Table 20

Fit Indices – All Groups

<i>Goodness-of-fit Measure</i>	Model 1 _{all groups}	Model 2 _{all groups}
Chi-Square Value	802.98	634.96
df	320	308
χ^2 /df	2.5	2.1
CFI	.90	.93
TLI	.87	.91
RMSEA	.04	.03

df = degrees of freedom, χ^2 /df = chi-square divided by degrees of freedom, CFI = Comparative Fit Index, TLI = Tucker Lewis Index, RMSEA = Root Mean Square Error of Approximation

The model was tested again with these modifications (now called model 2_{all groups}). The results indicated that Model 2_{all groups} was a better fit to the data (see Table 20 for fit indices). The model (Model 2_{all groups} χ^2 (308, $N = 957$) = 634.96, $p < .001$) was significant. However the ratio of the estimate to its degrees of freedom was < 2 , and both the CFI and TLI were above .9 indicating good fit. The RMSEA was less than .05, which provides further support for good model fit. Less than 5% of the standardised residuals were greater than 2.58. As expected the same paths as reported in Model 1_{all groups} remained nonsignificant in Model 2_{all groups}. The model fit was compared to the fit of the previous model and the result indicated that that there was a significant improvement in fit between Model 1_{all groups} and 2_{all groups}, χ^2 Comparison (1, $n = 957$) = 168, $p < .01$. Thus model 2_{all groups} was retained as the final baseline model all age groups.

To determine if group differences in the structural model were present, the paths in the model were constrained equal across all groups. To test for invariance the χ^2 value of the unconstrained model was compared with the constrained model. There was a significant difference between the constrained and unconstrained models (χ^2 Comparison (1, $n = 957$) = 68, $p < .05$). This significant difference indicates that there are age group differences between structural paths in the hypothesised model.

To identify which paths were significantly different across age groups the significance of each parameter estimate was compared using the test cut off of ± 1.96 . The paths from perceived pressure to internalisation, perceived pressure to social comparison, modelling to eating pathology, internalisation to body dissatisfaction, BMI to body dissatisfaction and body dissatisfaction to eating pathology, were significant for all age groups. Table 21 outlines which paths significantly differed across age groups. Only paths where group differences were detected are reported here (see Appendix I for the results for all paths). The path from exposure to internalisation was significant only for the late adolescent age group. The path from exposure to social comparison was significant for all age groups with the exception of the early adolescent group. The pathway from social comparison to body dissatisfaction was significant for the early and late adolescent age groups, but not significant for the preadolescent and young adult groups. Finally, the pathway from social comparison to eating pathology was significant for all groups with the exception of the preadolescent groups. The final visual representations of the models with nonsignificant paths deleted are presented in Figures 11-14.

Table 21.

Unstandardised and Standardised Estimates for Structural Paths Which Significantly Differed Across Age Group.

Group	Preadolescent			Early adolescent			Late adolescent			Young adult						
	Unstandardised	Std	CR	Unstandardised	Std	CR	Unstandardised	Std	CR	Unstandardised	Std	CR				
Path	E	SE	E	E	SE	E	E	SE	E	E	SE	E				
MEXP→INT	.69	.52	1.32	.08	.79	.41	1.93	.09	.22	.11	2.03	.13	.08	.051	1.72	.11
MEXP→SC	1.02	.29	3.5	.21	.19	.27	.72	.04	.28	.07	3.07	.25	.12	.03	3.53	.26
SC→BD	.13	.16	.81	.06	.31	.14	2.14	.13	.305	.151	2.03	.14	.14	.17	.84	.05
SC→DE	.037	.028	1.31	.11	.49	.14	3.55	.22	.43	.15	2.96	.19	.020	.006	3.05	.20

MEXP = Media Exposure, INT = Internalisation of the thin-ideal, SC = Social Comparison, BD = Body Dissatisfaction, DE = Disordered Eating, Std = Standardised, E = Estimate, SE = Standardised Estimate, CR = Critical Ratio.

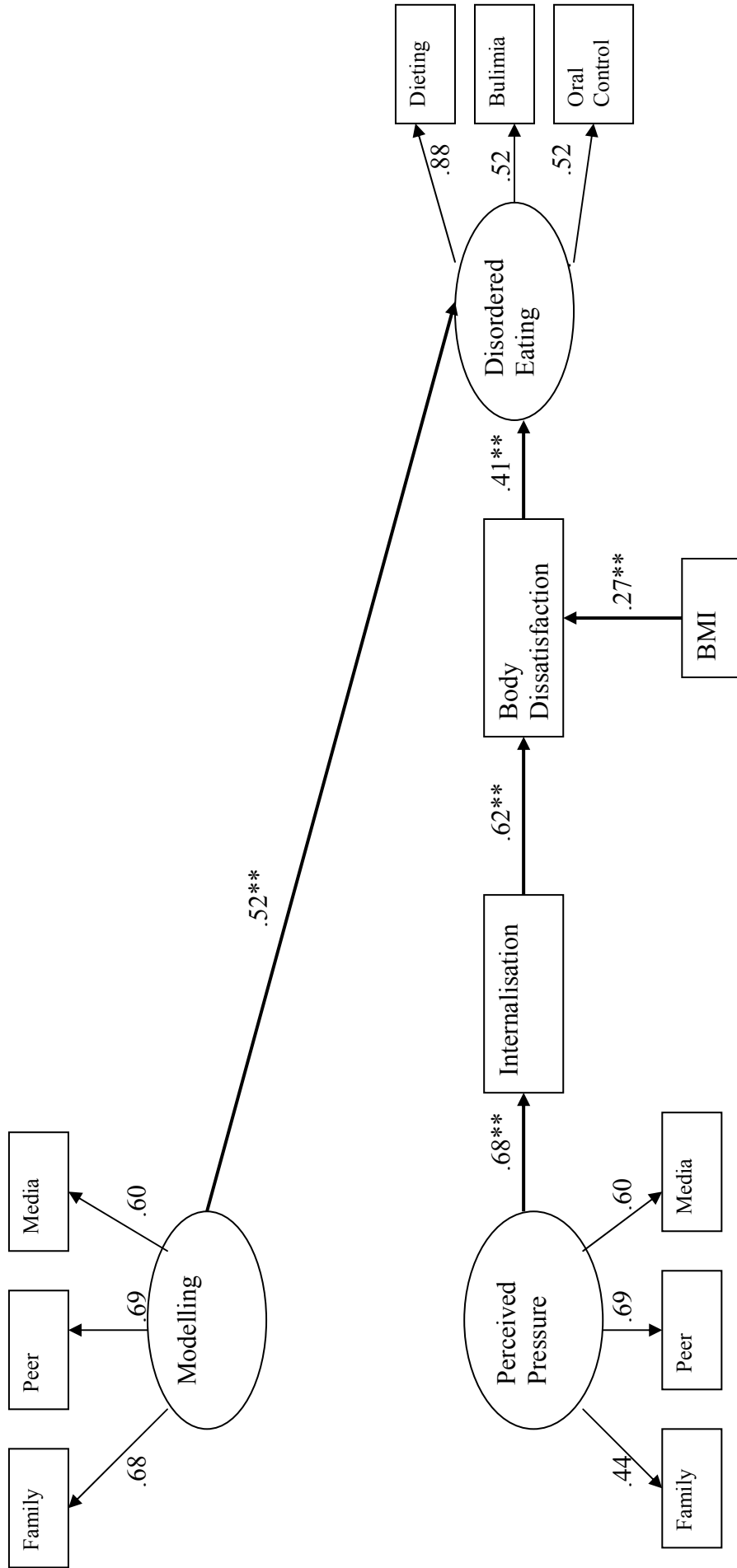


Figure 11. Final Preadolescent Model with Standardised Path Coefficients and Nonsignificant Paths Deleted.
 NB. For clarity correlations between exogenous variables and error variances are not displayed in figure. Bold arrows indicate significant paths. Dashed lines indicate nonsignificant paths. * = $p < .05$, ** = $p < .01$

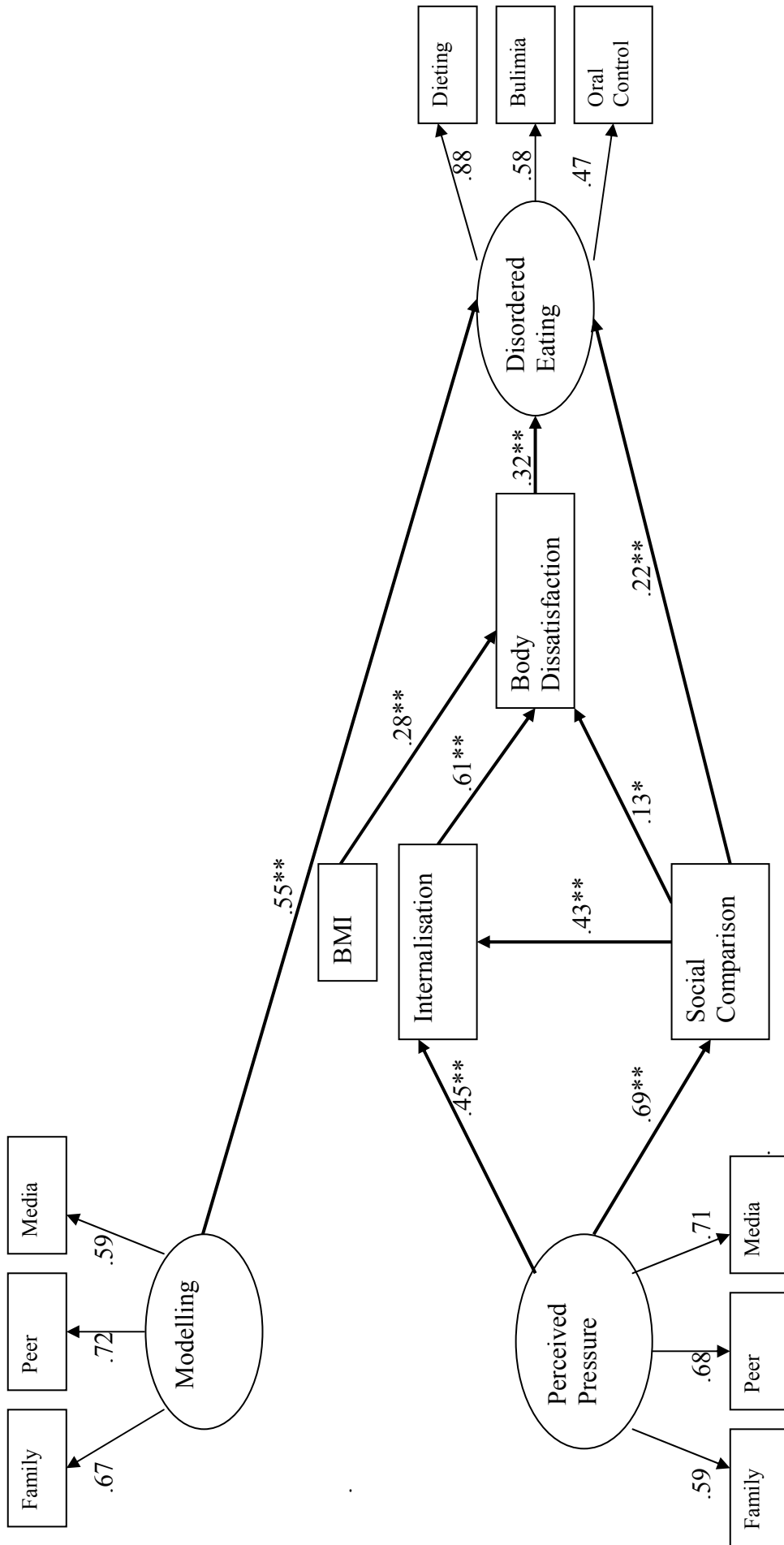


Figure 12. Final Early Adolescent Model with Standardised Path Coefficients and Nonsignificant Paths Deleted.
 NB For clarity correlations between exogenous variables and error variances are not displayed in figure. Dashed lines indicate nonsignificant paths. * = $p < .05$, ** $p < .01$

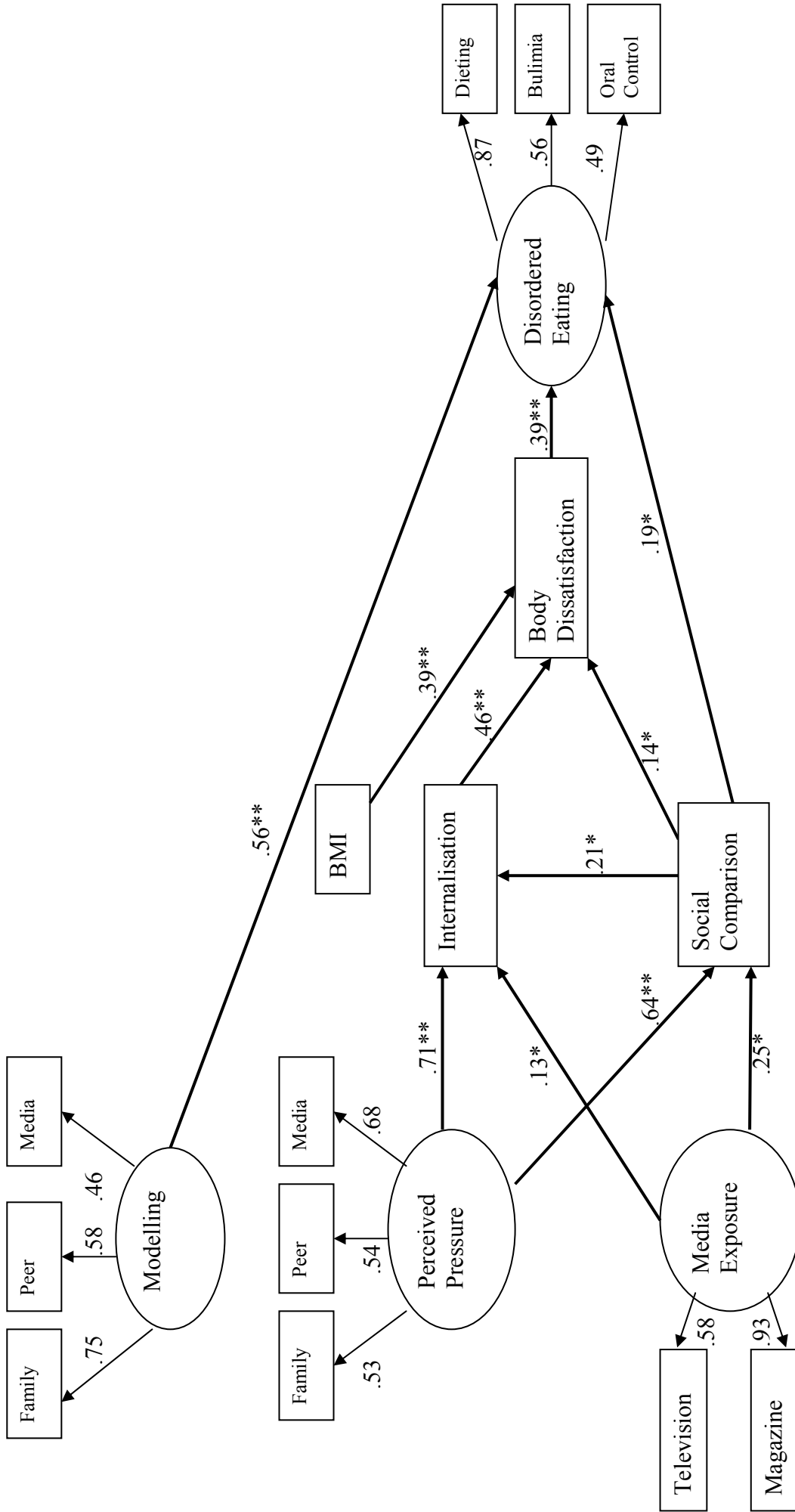


Figure 13. Final Late Adolescent Model with Standardised Path Coefficients and Nonsignificant Paths Deleted
 NB. For clarity correlations between exogenous variables and error variances are not displayed in figure. Bold arrows indicate significant paths. * = $p < .05$, ** = $p < .01$

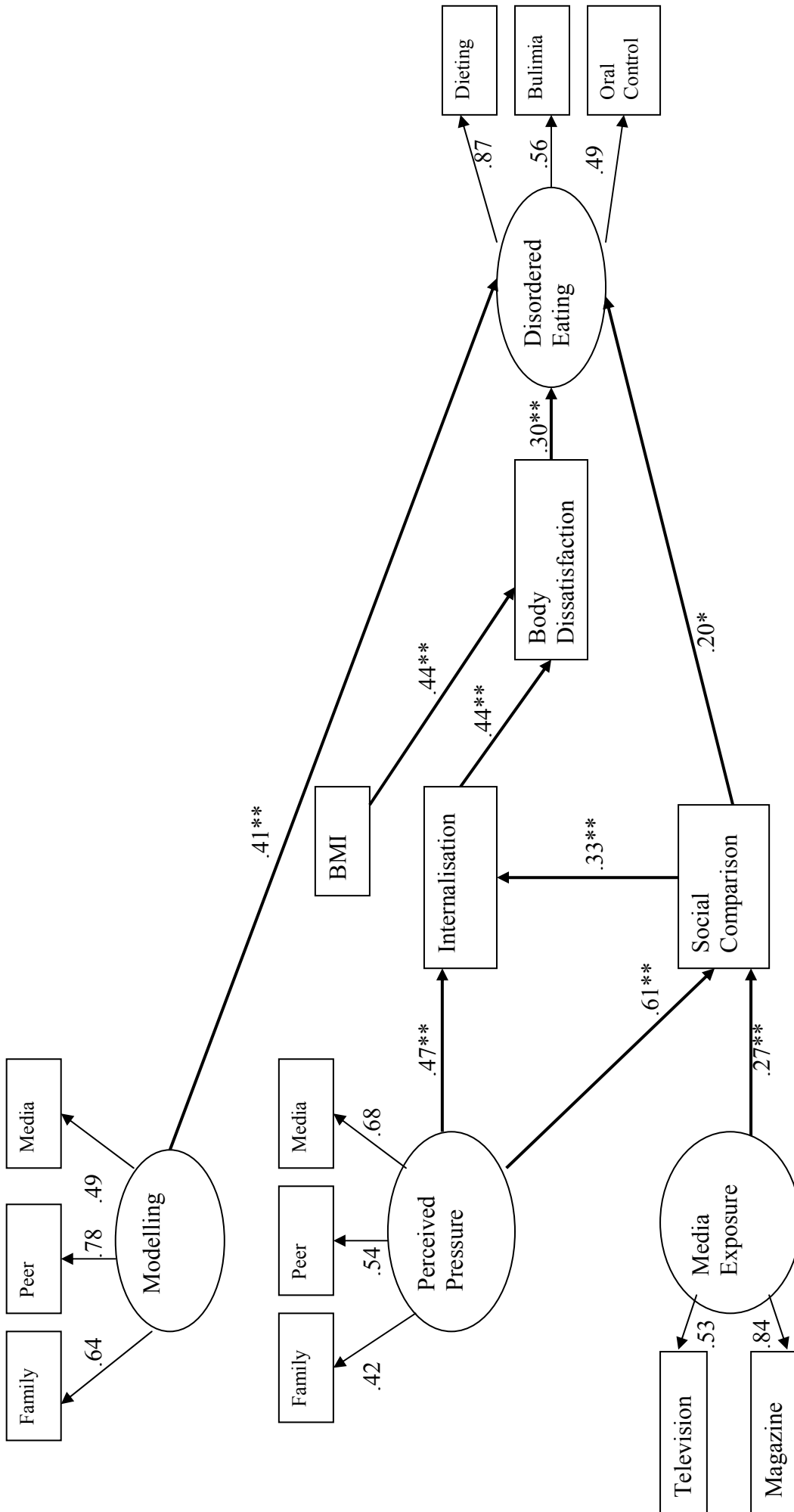


Figure 10. Final Young Adult Model with Standardised Path Coefficients and Nonsignificant Paths Deleted.
 NB For clarity correlations between exogenous variables and error variances are not displayed in figure 10. * = $p < .05$, ** = $p < .01$.

CHAPTER SIX

Discussion

The current research examined age-related differences in an integrated sociocultural model of disordered eating behaviour. This is the first study that has tested a sociocultural model of disordered eating across young women ranging in age from preadolescence through to young adulthood. The results of this research provide strong support for the hypothesised model of disordered eating behaviour, with the model representing a good fit to the data, for all age groups. As hypothesised, self-reported modelling of disordered eating behaviour from family, peers, and media, was a direct predictor of disordered eating behaviour for all age groups. Internalisation of the thin-ideal mediated between perceived pressure to be thin and body dissatisfaction for all age groups. There were also significant age-related differences in the strength of some of the proposed pathways in the model. Surprisingly, media exposure had few effects on internalisation – with the exception of the late adolescent age group – but was more strongly predictive of social comparison for the late adolescent and young adult age groups. Social comparison did not predict internalisation of the thin-ideal or body dissatisfaction for the preadolescent age group. However, for the early adolescent and late adolescent age groups social comparison predicted internalisation of the thin-ideal, body dissatisfaction, and disordered eating behaviours. Interestingly, for the young adult group, social comparison did not predict body dissatisfaction but was directly related to disordered eating behaviour. As expected BMI predicted body dissatisfaction and body dissatisfaction predicted disordered eating behaviour.

Each of the major findings will be discussed in turn below. The limitations of the current research will then be addressed, followed by implications for prevention, and future directions for research in this field.

Prevalence of Body Dissatisfaction and Disordered Eating

Before discussing the theoretical model and findings, it is important to comment on the prevalence rates of disordered eating, body dissatisfaction, overweight, and obesity in the current sample. Approximately 12% of participants from the preadolescent, early adolescent, and young adult age groups had scores that placed them in the clinical range on a measure sensitive to the presence of disordered eating attitudes and behaviours. The late adolescent group had a slightly higher percentage of participants falling in the clinical range (i.e., 15.8%). These figures are consistent with those reported by Garfinkel and Newman (2001) who reported that approximately 10-15% of adolescent girls scored above the clinical cutoff on the ChEAT. It is not surprising to find slightly higher rates of disordered eating in the late adolescent group (M age = 16.18), as this is the peak age of onset for the development of a clinical eating disorder (Lucas et al., 1999).

The rates of body dissatisfaction, according to the EDI-BD subscale, were comparable to results reported in past studies using samples of preadolescent, adolescent, and young adult women (Rosen et al., 1988; Thurfjell et al., 2004; Wicks et al., 2004). Likewise, the rates of being overweight for the three adolescent groups were similar to those reported in recent Australian epidemiological research, although the rates of obesity were slightly lower (Booth et al., 2001; Magarey et al., 2001). The rates of obesity in the young adult age group were similar to figures reported in a recent National Health Survey of Australian women aged 18-24 years. However, in the current research, the rates of being overweight were slightly lower (i.e., 12% compared to 17.5%) (Australian Bureau of Statistics, 2006b). This is probably due to sampling differences, with the current university sample drawn from an educated and predominantly middle class sector of Australian society. The relatively high rates of overweight participants in the preadolescent and early adolescent groups (14.3% and 19.5%, respectively) are certainly cause for concern and suggest that this is a significant and serious public health issue for young Australian girls.

The percentage of underweight participants was highest in the late adolescent sample (5.4%) and is likely to be related to the higher rates of clinical eating disturbances and restrictive dieting behaviours that occur more frequently amongst this age group.

Overall Model Fit

The current research examined the validity of the proposed sociocultural model using SEM techniques. A key strength of the current findings was that it was not necessary to make major modifications to the proposed model to ensure adequate model fit. One of the difficulties faced by researchers in this field is that poor model fit has often led to a model-generating approach, which generally lacks a strong theoretical basis (Byrne, 2001). For each group, model fit ranged from acceptable to very good according to a number of commonly used fit indices. A number of strong relationships between variables were consistently supported by the proposed model, regardless of age. However, the significance of a number of paths in the model differed, dependent on the age of the participants. Further examination indicated that the proposed model was not the same (i.e., equivalent) across age groups. This finding alone is one of central importance as it adds empirical support to a view expressed by many different researchers (e.g., Levine & Smolak, 2006) that it is important to consider developmental differences when examining the relationship between sociocultural influences and disordered eating behaviours. In the following sections the relationship between variables in the proposed model will be discussed in turn.

Modelling

An interesting finding was the direct and robust path between self-reported modelling of disordered eating by family, peers, and media, and disordered eating behaviour. This relationship was consistently strong regardless of age group. Notably, the effects of modelling were not mediated through internalisation of the thin-ideal or body dissatisfaction, as was the case with perceived pressure to be thin. This suggests that girls and young women may not need to have internalised the thin-ideal to be negatively affected

by modelling pressure from family, peers, and media. The strength of this relationship is somewhat surprising given the inconsistent findings of past studies examining this variable. In a review of risk factors associated with eating pathology, support for the relationship between direct modelling and eating disturbances was mixed (Stice, 2002). For example, one study (Byely et al., 2000) found that parental modelling of body image concerns and eating pathology was not predictive of increases in body dissatisfaction or dieting, over 12 months. However, Stice (1998) found that modelling of disordered eating by family and peers predicted bulimic symptomatology – concurrently and longitudinally over a 9-month period – although no support was found for the role of media modelling. It is important to note that to date modelling of disordered eating has not been specifically examined as a part of an integrated sociocultural model. In fact, very few studies have purposely examined the effects of direct modelling by family, peers, and media, on disordered eating behaviour (Stice, 2002). The current study extends previous research that has predominantly used high school and university samples, to demonstrate that younger girls are similarly affected by the modelling of unhealthy weight control behaviours on actual disordered eating behaviour. Furthermore, as discussed in Chapter 4, modelling has previously been included in the measurement of another construct – perceived pressure to be thin. In the current study modelling was examined separately, based on the hypothesis that this type of pressure may be more overt and potent, compared to perceived pressure which may be a more covert and subtle form of pressure. The results of the current study provide some support for this hypothesis. Unfortunately, given the measurement of modelling as a latent variable in the model, it is not possible to determine whether any particular source of modelling pressure played a more significant role in predicting disordered eating behaviour. It is interesting to note that according to the descriptive results, media was reported as the strongest source of modelling pressure for all age groups (See Table 10). This corresponds with findings by Stice et al. (1996, 1998) who also found that participants generally reported higher mean

levels of modelling from media, than from family, peers, and dating partners. Although this does not necessarily mean that media modelling is the strongest predictor of disordered eating, it may be useful in future studies to investigate which particular source of modelling pressure is more strongly predictive of disordered eating behaviour and whether this differs across age groups. For example, if it is the case that modelling by family members is more strongly related to disordered eating behaviour for preadolescent girls, then efforts to counteract this may need to be addressed in prevention programs.

It is also interesting to consider why the path between modelling and disordered eating was not mediated through internalisation of the thin-ideal and body dissatisfaction⁶. Perhaps disordered eating behaviours are so pervasive that young women see these behaviours as normal, or even glamorous, and directly copy these behaviours, without necessarily feeling any dissatisfaction with their own bodies (Levine & Harrison, 2004). For example, if a mother is on a diet, daughters may model this behaviour, regardless of whether they feel any discontent with their own body shape or weight. They may then internalise the thin-ideal some time later in their development.

In accordance with these findings and given that few studies have examined the effects of modelling, it is tentatively suggested that this variable may be an important predictor of eating pathology in young women and would benefit from more thorough investigation, using more sophisticated measurement that examines individual, parental, and peer perceptions of modelling behaviours.

Perceived Pressure to be Thin

As hypothesised, perceived pressure to be thin by family, peers, and media, positively predicted internalisation of the thin-ideal, which subsequently predicted body dissatisfaction and disordered eating. This path was consistently strong across all age groups and accounted for a substantial portion of the variance (i.e., between 18-22%) in disordered

⁶ Although this pathway was not proposed in the hypothesised model it was also not identified as an indicated pathway according to the modification indices.

eating behaviours. This pathway is a key component of the dual-pathway model and the tripartite influence model, and has now been supported by a number of cross sectional and longitudinal studies (e.g., Stice, Nemeroff, et al., 1996; Stice et al., 1998; Keery et al., 2004). As with modelling, the current study did not focus on identifying which source of pressure (i.e., family, peer, or media) was most strongly associated with internalisation of the thin-ideal. However, the combined influence of all three sources of pressure is clearly an important indirect predictor of disordered eating behaviour. As was the case with modelling, all participants' reported media as the strongest source of perceived pressure to be thin (see Table 10). This is consistent with the findings of Dunkley, Wertheim and Paxton (2001) who also found that adolescent girls rated media, followed by peers and family, as the strongest source of pressure for a thin body. It is not surprising that media is most often reported as the strongest source of both modelling and perceived pressure to be thin, given that this source of pressure is most commonly publicised as the key promoter of a thin-ideal for women.

As expected, internalisation of the thin-ideal mediated between perceived pressure to be thin and body dissatisfaction. Thus, according to the model, girls and young women who are exposed to societal pressure to be thin do not necessarily experience body dissatisfaction unless they have developed a belief or schema about the importance of thinness/attractive. This relationship has been consistently reported in college-aged women (e.g., Stice, Nemeroff, et al., 1996), high school girls (e.g. Stice, 2001), and has now been demonstrated in preadolescent girls (see also Blowers et al., 2003). Finally, internalisation of the thin-ideal produced increased levels of body dissatisfaction presumably because of the difficulty in meeting the ideal societal standards of thinness. Interestingly, the relationship between internalisation of thin-ideal and body dissatisfaction was much stronger than that reported in past research (e.g., Stice, Nemeroff, et al., 1996; Stice et al., 1998). However, this may be due to differences in measurement with the SATAQ used in the current study, as opposed to

the Ideal-Body Internalisation scale, which has been used in tests of the dual-pathway model.

This research provides support to the growing body of evidence (e.g., Thompson & Stice, 2001) establishing internalisation of the thin-ideal as an important risk factor for body dissatisfaction, even in preadolescent girls. In fact, it has been suggested that internalisation of the thin-ideal may occur from a very early age and therefore be deeply ingrained by later adolescence (Sands & Wardle, 2003). Although this factor has been targeted in intervention programs with older girls, it may be necessary to modify the content of these programs in an effort to counteract the negative impact of internalisation of the thin-ideal in younger girls.

In contrast to past research (e.g., Stice et al., 1994; Keery et al., 2004), a direct path between perceived pressure to be thin and disordered eating was not indicated in the current model. This may be due to the inclusion of modelling as a separate variable, whereas in previous research modelling has been included as a component in the measurement of perceived pressure to be thin. Furthermore, the current study's measurement of restraint (i.e., dieting) was included in a global measure of disordered eating which included subscales for dieting, bulimic behaviours, and oral control. Thus, the current research is less supportive of a direct relationship between perceived pressure to be thin and disordered eating behaviour. However, some caution should be exercised when interpreting this finding given the inconsistency with the results of previous tests of the dual-pathway model and differences in the type of measurement used.

The relationship between social comparison and other variables in the model was more complex and a number of age-related differences were found. First, as hypothesised, perceived pressure strongly predicted social comparison across all groups⁷. This is consistent with previous tests of the tripartite model (e.g., Keery et al., 2004; van den Berg et al., 2002). Interestingly, for the preadolescent group, although perceived pressure to be

⁷ For the preadolescent group see Figure 7 for model with all paths present (*p.* 104).

thin significantly predicted increased social comparison, social comparison did *not* go on to predict any of the other important variables in the model, including internalisation of the thin-ideal, body dissatisfaction or disordered eating behaviour (see Figure 7). For preadolescent girls in the current study, it seems that social comparison is not a particularly important predictor of body image dissatisfaction or eating pathology. This contrasts to the findings of Shroff and Thompson (2006) who found support for the mediating role of social comparison in a test of the tripartite influence model with a sample of 11–15-year-old girls. However, the participants who represented the preadolescent sample in the current research were younger (M age = 10.28) and were also an Australian sample. It is not completely clear why the path through social comparison to internalisation of the thin-ideal and body dissatisfaction was not significant for the preadolescent girls but reached significance for the three older age cohorts. Younger girls do engage in social comparison processes. However, perhaps they do so less frequently, and may be less likely to use social comparison for self-evaluation, thus, limiting their experience of the adverse effects of body dissatisfaction (Martin & Kennedy, 1993). Notably, social comparison assumes increasing importance as children grow older and there is a stabilisation of their self-image in different domains (Durkin & Paxton, 2002; Martin & Kennedy, 1993; Schutz et al., 2002). For example, Schutz et al. found that Grade 10 girls had significantly higher scores when describing frequency of body comparison, compared to Grade 7 and 8 girls. Similarly, self-reports of body comparison leading to dieting were significantly greater in Grade 10 girls, than Grade 7 and Grade 8 girls. From a developmental perspective, a growing psychological sophistication combined with increased size, relative to the thin-ideal, may make the “self-ideal” disparity and related social comparison tendencies more important in early and middle adolescence, than during preadolescence (Levine & Harrison, 2004; Schutz et al., 2002). Given that social comparison becomes increasingly important during early and late adolescences this may provide some guidance regarding the timing of specific interventions

that address this factor. It seems that the transition from primary school to high school is a particularly vulnerable time for girls in respect to the emerging relationship between social comparison and body dissatisfaction, and interventions in late childhood or early adolescence may more suitable than during middle adolescences (Shutz et al., 2002). Although this suggestion is supported by the results of the current research, prospective research is required to further understand the development of social comparison in early adolescence and its relationship to body dissatisfaction.

As expected, social comparison mediated between perceived pressure to be thin and body dissatisfaction for the early and late adolescent girls and was also directly related to disordered eating behaviour in these groups. As highlighted by Thompson et al. (1999), engaging in social comparison with others makes girls more vulnerable to the effects of perceived pressure to be thin, and resultant body dissatisfaction. Furthermore, social comparison was also directly related to disordered eating behaviour. Although this path has not been tested in previous tests of tripartite model, appearance comparison has been strongly related to disordered eating behaviour in a number of other studies. For example, Stormer and Thompson (1996) found that appearance comparison provided unique variance in the prediction of drive for thinness and bulimic behaviours in a sample of undergraduate students. Similarly, Morrison et al. (2004) found that universalistic comparison (i.e., comparison with distant sources of influence such as mass media) predicted negative body image and was correlated to dieting and pathogenic weight control in high school girls. The results of the current study are also supportive of this relationship for girls in early adolescence. Finally, of note for the young adult age group, social comparison did not directly predict body dissatisfaction, but mediated between perceived pressure to be thin and disordered eating behaviour. For these young adult women social comparison was directly related to disordered eating, without operating via body dissatisfaction. However, why this was only the case in the young adult group is not entirely clear. It may be that by this age

social comparison processes are so normative that body dissatisfaction plays less of a mediating role. Perhaps, in similar ways to the variable modelling, social comparison processes can bypass body dissatisfaction and directly relate to disordered eating behaviour. More research is required to understand the relationship between social comparison, body dissatisfaction, and disordered eating behaviour.

In accordance with the tripartite influence model, social comparison also predicted internalisation of the thin-ideal for the early, late, and young adult age groups. Social comparison is thought to lead to increased internalisation of the thin-ideal because social comparison resulting in negative feedback is thought to exacerbate appearance concerns, which leads to a deepening of the acceptance and internalisation of sociocultural ideals (Keery et al., 2004). Although this relationship was supported by the current model, it is perhaps important to note that the converse relationship (i.e., that internalisation predicts social comparison) also makes theoretical sense (Keery et al., 2004). Thus, women who have internalised the thin-ideal may be more likely to increase comparison with others to determine their relative standing to others and to see if they measure up. Some authors have speculated that this relationship is circular with internalisation giving rise to and also further perpetuating ongoing social comparisons (Keery et al. 2004; Schutz et al., 2002). There still remains some theoretical and methodological overlap between social comparison and internalisation that has yet to be resolved. One potential contributor to this problem is the conceptual and content similarity between some of the items used to measure both social comparison *and* internalisation of the thin-ideal. Clearly, both factors are important contributors to body dissatisfaction and disordered eating behaviour. However, more prospective and experimental research is required to develop a better understanding of the relationship between social comparison and internalisation of the thin-ideal and also to determine how these concepts are interconnected. It is interesting to note that social comparison predicted body dissatisfaction and disordered eating in the aforementioned

groups despite the measurement being a broad assessment of general comparison tendencies rather than specifically examining upward comparison. This contrasts to the findings of Thompson and Heinberg (1993) who reported that the importance of comparison target, rather than general comparison tendency, was more strongly related to body image disturbance. Although it may be useful to further examine the type of comparison that young women engage in, it is evident from the current research that general comparison tendencies are related to increased body dissatisfaction and disordered eating behaviour in adolescent girls and young women.

Media Exposure

Finally, the role of media exposure seemed to play a less important role in the proposed model as a predictor of internalisation of the thin-ideal. Media exposure to television and magazines with a high content of idealised thin-ideal images predicted internalisation of the thin-ideal in only one age group (i.e., late adolescent). This suggests that girls in late adolescence who have internalised the thin-ideal are more vulnerable to the negative effects of media exposure on body dissatisfaction. However, this interpretation is given cautiously as the relationship only just reached significance and could be related to the overall higher rates of rates of reported media exposure reported by this age group (See Table 10).

The finding that media exposure only played a limited role in predicting disordered eating behaviour was not completely unexpected. Generally, there have been very inconsistent findings regarding the importance of media influences on disordered eating, particularly in studies using self-reports of media exposure (see Chapter 2). For example, although Stice et al. (1994) found a direct relationship between media exposure and disordered eating behaviour, another study (i.e., Cusumano & Thompson, 1997) found no support for the direct effects of media exposure. Given these inconsistencies, the current model hypothesised that media exposure may influence disordered eating indirectly via

internalisation and body dissatisfaction. A number of other researchers have argued that it is not media exposure *per se* that produces body dissatisfaction and disordered eating, but rather other influences, such as the levels of internalisation of the thin-ideal, that make girls more vulnerable to the negative effects of media exposure (Heinberg & Thompson, 1995). However, in the current study this hypothesis was not supported. With the exception of the late adolescent group, internalisation of the thin-ideal did not mediate between media exposure and body dissatisfaction. One potential explanation may be that the negative impact of media exposure has been overstated. For example, Stice et al. (2001) suggest that the adverse effects of media exposure may be “short lived” and that messages from more proximal and intimate social influences such as family and peers may actually be more important factors than media exposure, in perpetuating the thin-ideal and producing subsequent body dissatisfaction (p. 284). However, media pressure was assessed as a component of another construct in the proposed model (i.e., perceived pressure to be thin by media) and *was* a significant predictor of internalisation of the thin-ideal. Another explanation may lie with the measurement of media exposure used in the current study. This rather blunt measurement of exposure may not be sensitive enough to detect the negative effects of media exposure, although this explanation does not account for the results of previous research that have found support for the adverse impact of media exposure on disordered eating using a similar measure (e.g., Stice et al., 1994).

Interestingly, in the current study media exposure was more strongly related to social comparison. Theoretically, media exposure is thought to activate a process of social comparison with models and TV personalities (Martin & Kennedy, 1994). Because of the unrealistic representations of women in the media this process is more likely to induce upward comparisons, which are strongly related to body image disturbances. In the current study, media exposure predicted social comparison in all age groups with the exception of the early adolescent age group. As discussed earlier, although media exposure predicted

social comparison in the preadolescent age group, social comparison did not predict any subsequent variables in the model. However, a slightly different pattern emerged for the older two age groups (i.e., late adolescent and young adult). For the late adolescent group social comparison mediated between media exposure and both body dissatisfaction and disordered eating. However, for the young adult group, social comparison only mediated between media exposure and disordered eating behaviour. Perhaps there is something about the nature of media exposure and the interpretation of this exposure in these older age groups that makes them more vulnerable to the negative effects of social comparison. Paxton et al. (1991) reported that older girls were more likely to report that they commenced dieting in response to social comparison pressures. Again the higher rates of television viewing and exposure in these age groups may play a role. Durkin and Paxton (2002) suggest that perhaps younger girls use media images to inform themselves about expectations of the world. As they get older their failure, or perceived failure, to meet these expectations becomes more salient, possibly via social comparison processes. These findings are similar to van den Berg et al. (2002) who found that appearance comparison mediated between media influences (including exposure) and body dissatisfaction in a college sample. However, the current study provides more support for a relationship to disordered eating behaviour rather than body dissatisfaction in a similar sample of young adult women.

BMI

As in previous studies, BMI was a strong and consistent predictor of body dissatisfaction across all age groups. Regardless of other factors, having a higher BMI places young women at risk for increased levels of body dissatisfaction. This result is consistent with a number of studies that demonstrate that body mass is a risk factor for body dissatisfaction (e.g., see Stice, 2002, for a review). Of note, not all prospective studies have found BMI to be a consistent predictor of eating pathology over time (e.g., Keel et al., 1997;

Killen et al., 1986). Interestingly, although BMI was a significant predictor of body dissatisfaction for all age groups, the strength of this relationship was greatest in the young adult group and lowest in the preadolescent age group. This contrasts to past research suggesting that biological factors such as BMI are more strongly related to body dissatisfaction for younger girls, than for older adolescents (e.g. Attie & Brooks-Gunn, 1989). It is difficult to explain this finding, especially given that the percentage rates of participants being overweight or obese were fairly similar across the age groups. Perhaps the relationship between BMI and body dissatisfaction becomes more salient as women become older and are increasingly aware of weight issues and the difficulties controlling these. Although this hypothesis was not tested in the current model this could be a useful question to consider in future research. What can be concluded is that higher body weight has been consistently found to be related to body dissatisfaction. The current study supports the inclusion of BMI as an exogenous predictor of body dissatisfaction in any revised versions of the tripartite influence model. Given the increasing rates of obesity and overweight, it is likely that this risk factor will continue to make young women vulnerable to the negative effects of body dissatisfaction.

Body Dissatisfaction

As expected, body dissatisfaction positively predicted disordered eating behaviours in all age groups. Body dissatisfaction has been found to consistently predict dieting behaviours, both concurrently and longitudinally, and continues to be a very strong risk factor for the development of eating disturbances (e.g., Graber et al., 1994; Stice, 2001; Wertheim, Koerner, & Paxton, 2001). Despite this, in the current model the path between body dissatisfaction and disordered eating, whilst significant, was not overly strong, accounting for only 5 - 6 % of the variance in disordered eating behaviour. It is likely that other mediating variables, such as dietary restraint and negative affect, play an important role in understanding the pathways from body dissatisfaction to disordered eating behaviour

and more significant eating pathology. These variables were not included in the current model for a number of practical reasons as well as the intent to examine disordered eating rather than clinical eating disorders, which occur rarely in preadolescent populations. It is important to better understand the mediating pathways between body dissatisfaction and disordered eating in younger adolescent girls. However, attempts to do this will require very large sample sizes given the low rates of disordered eating behaviour and clinically significant eating disorders in younger girls.

Limitations of the Current Research

There are several limitations in the current research. A key limitation of the current research is the cross-sectional design. Although this study provides strong support for the proposed theoretical model, cross-sectional research is limited, as it does not provide information about developmental changes over time and precludes determining the directionality of effects. Longitudinal research already provides some support for the pathways in the proposed model, with perceived pressure to be thin and thin-ideal internalisation predicting subsequent body dissatisfaction over a 3-year period (Stice, Shaw, et al., 1998, Stice, 2001). However, other pathways have not received such attention. For example, feeling dissatisfied with body shape and weight (i.e., body dissatisfaction) may contribute to increased levels of social comparison with others to determine one's social standing in relation to others. Alternatively, success at meeting the thin-ideal through disordered eating behaviours such as restrictive dieting may reinforce and further increase internalisation of the thin-ideal. Thus, prospective research is required to further understand how sociocultural influences and other factors contribute to disordered eating behaviour over time. Risk factors are likely to change over time and what is a risk factor in early adolescence may not be so in late adolescence (e.g., Attie & Brooks-Gunn, 1989). To date, there have been a number of efforts to use longitudinal research to test the pathways between sociocultural pressure and BN (e.g., Stice, 2001, Stice, Nemeroff, et al., 1996).

However, these studies have focused on adolescent and young adult cohorts. Understanding the developmental trajectory of disordered eating is vital, especially in determining the content of prevention and treatment programs. The most valuable prospective research would examine risk factors for disordered eating behaviours in girls from preadolescence through to adulthood.

In addition to the cross-sectional design, the sampling technique used in the current research has some limitations. Although the school-aged sample were recruited from a range of different schools from both inner-regional and metropolitan areas, a non-probability sampling method was used and participants were not matched across age groups. Furthermore, participants located in remote and rural areas were not recruited for the current study which may affect the representativeness of the sample. Similarly, university students are unlikely to be entirely representative of young women in the general population due to differences in socioeconomic status and educational background. Thus, differences in the sample source, such as socioeconomic status, might have explained some of the differences found between the groups, rather than age alone. Future research may consider including participants from more diverse backgrounds as well as examining socioeconomic status to ensure that groups do not differ on this variable. This would give strength to the argument that the age differences found in the sociocultural model were not confounded by socioeconomic status.

A third limitation in this study was the use of self-report measures only. Although a confidential procedure was employed in the collection of data for this study, self-report measures are still susceptible to the effects of bias and social desirability. In particular, given the sensitive nature of some of the questionnaire items relating to peer and family pressures and modelling of disorders eating, it possible that participants may have underreported certain attitudes and behaviours. Furthermore, and in particular for the younger participants, the influence of family, peer, and media pressures to be thin may be so subtle that

participants are not consciously aware of them and consequently do not report them. Future studies may consider the inclusion of multiple rater reports, by peers and family, to reduce the possibility of reporter bias and improve reliability. However, in support of young person self-report measures some researchers (e.g., Baker, Whisman, & Brownell, 2000) have found that among young adults, perceptions of parental behaviour have stronger associations with attitudes and behaviours regarding eating and weight loss, than parents' own self reports.

The real world practicalities of conducting large scale studies within single class room periods required some compromises to be made in terms of the number of measures used. In the current study, this resulted in the use of single measures as indicators of latent variables. Those questionnaires that were used were carefully selected and had sufficient psychometric data to give confidence that the constructs under investigation were measured adequately. However, future research would be improved with the inclusion of multiple measures of constructs.

Third, the current model specifically focused on the prediction of disordered eating behaviours rather than clinical eating disorders. The possible pathways from body dissatisfaction to disordered eating via negative affect and dietary restraint were not examined in the current model. Thus, the results of this study are unlikely to generalise to those young women diagnosed with a clinical eating disorder. It could be argued that disordered eating behaviours are relatively benign and do not always predict the progression to more serious eating disturbances. However, disordered eating behaviours do have negative consequences for health and increase the risk of the development of a clinical eating disorder. The identification of those young women engaging in disordered eating behaviour may be useful in selecting who to include in targeted prevention programs. Future theoretical models in this area should consider examining more specific pathways from body dissatisfaction to eating disorders, via the pathways of negative affect and dietary restraint,

using younger participants. However, as mentioned earlier, very large sample sizes would be required given that clinical eating disorders are rare in this age group.

Fourth, the current study did not address other key variables associated with disordered eating. As discussed above, both negative affect and dietary restraint were not included in the current model. Appearance-related feedback (i.e., teasing) and perfectionism are two other risk factors highlighted in recent tests of the tripartite influence model. Similarly, although BMI was included as an exogenous predictor of body dissatisfaction, it has also been shown to play an important predictive role in fostering social pressure to be thin (Stice, Nemeroff, et al, 1996). It is likely that the relationship of BMI to body dissatisfaction and disordered eating is more complicated than that tested in the current model. For example, BMI was found to moderate the relationship between internalisation of the thin-ideal and body image concerns in a sample of college women (Low et al., 2003). Despite these limitations, the current research would support the added inclusion of BMI as an exogenous predictor of body dissatisfaction in future revisions of the tripartite influence model.

Finally, the specific influence of each source of sociocultural pressure (i.e., peer, family and media) on disordered eating behaviour was not examined in the current model. Although this was of interest to the researcher, to maintain parsimony in the proposed model the three sources of pressure were used as indicators of latent variables. Other researchers have found that the combined influence of these three agents has been better in predicting body dissatisfaction and dietary restraint than any one agent individually (Dunkley et al., 2001). The results of the current research are supportive of the idea that dieting and weight concerns emerge in a “subculture” of weight consciousness in which a variety of societal pressure exert influence. On the other hand, for the purposes of prevention programs, it may be useful to have a clearer understanding of how different pressures exert their influence on certain age groups. For example, Blowers et al. (2003), using a sample of preadolescent

girls, found that media reinforcement was the only sociocultural influence that significantly predicted internalisation of the thin-ideal. Similarly, Shroff and Thompson (2006) recently found that peer and media influences played a significant role in a test of the tripartite influence model, but parental influences had no association with the mediating or outcome variables. Future research may consider prospectively examining the role of individual sources of pressure to determine if their importance changes across developmental stages.

Implications for Prevention Research

It is important to consider the implications of the current research for informing both universal and targeted prevention programs for eating disorders. The current study provides further support for the key role of perceived pressure to be thin, internalisation of the thin-ideal, social comparison, body dissatisfaction, and BMI as important predictors of disordered eating behaviour and as potentially modifiable risk factors in prevention programs. In addition, the importance of self-reported modelling of disordered eating by family, peers, and media, for all age groups, was highlighted in the current study as a variable that may be important but has received limited research in this field. In terms of developmental differences, a number of key findings emerged that may be useful in informing the content and timing of prevention programs. Specifically, the most pronounced age-related differences in the proposed sociocultural model occurred in the pathways between the preadolescent and early adolescent age groups. As can be seen in Figure 11, the relationship between sociocultural influences and disordered eating for preadolescent girls is relatively straightforward with neither media exposure or social comparison playing a significant role in predicting disordered eating behaviour. Instead, modelling, internalisation of the thin-ideal, body dissatisfaction and BMI were significant predictors of disordered eating behaviours. From a developmental perspective these girls are still living in a “child’s world”, they still have strong ties to parents, have yet to make the transition to high school, and for the majority have yet to experience the onset of puberty (Attie & Brooks-Gunn,

1992, Smolak & Levine, 1996). This is a time when young girls are still developing their self-concept as well as attitudes, beliefs, and expectations about weight, appearance and gender roles. Therefore, this may well be an optimal time to target interventions aimed at counteracting the negative effects of sociocultural influences. Levine and Smolak (2006) argue that prevention efforts aimed at children have a greater chance of influencing attitudes and beliefs about body shape and weight while they are still forming, rather than during later adolescence when these beliefs are more firmly entrenched. There also appeared to be some distinct differences between the two younger age groups (i.e., preadolescent and early adolescent) and the two older age groups (i.e., late adolescent and young adult) in regards to media exposure and social comparison, with both playing a more important role in predicting disordered eating behaviour for older groups. Thus, these risk factors may need to be addressed in prevention programs targeted towards middle and late adolescent girls. Based on these broad findings a number of specific suggestions for future prevention programs are proposed.

First, it is imperative that programs aimed at preventing eating disorders and disordered eating behaviour recognise that there are multiple sources and types of societal pressures that serve to reinforce the thin-ideal. As discussed in Chapter 1, the causes of eating disorders and eating pathology are multidimensional and therefore a multi-faceted approach to prevention is required. Prevention programs should be designed to address both risk and protective factors using a developmental and ecological framework. There are now a large number of studies supporting the effectiveness of media literacy programs that aim to teach skills to critically analyse and challenge media messages about gender, appearance, weight, and shape (Levine & Smolak, 2006). Although a number of these programs have been effective in reducing thin-ideal internalisation (e.g., Neumark-Sztainer, Sherwood, Collier, & Hannan, 2000; Irving, DuPen, & Berel, 1998), others have had no effect on reducing body dissatisfaction or eating disorder symptoms (e.g., Irving & Berel, 2001;

Wade, Davison, & O’Dea, 2003). One limitation of media literacy programs is that they fail to take into consideration the equally important influence of family and peers, as well as other sources of pressure such as dating partners, school teachers, and broader communities. In the current research, perceived pressure to be thin and modelling by family, peers, and media predicted disordered eating behaviour indirectly and directly. Thus, family and peer pressures are equally important areas to target in prevention programs.

In the field of substance misuse prevention programs that have targeted multiple social contexts have had better success than those only focused on one individual factor (e.g., Hawkins, Catalano, & Arthur, 2002). Similarly, in the field of depression prevention research, interventions that have solely focused on a young person without simultaneously addressing other risk factors within the home, school, and social environments, have had little impact on reducing symptoms of depression and emotional well-being over time (Sheffield et al., 2006). The same is likely to be true when considering how to prevent the development of disordered eating, particularly for girls who are immersed in a “subculture of dieting” (Levine et al., 1994, *p.* 475). Parents and teachers, as well as peer groups within schools, need to be educated about the potentially devastating effects of inappropriate weight-related comments as well as direct modelling of weight concerns and disordered eating behaviours. Prevention programs in schools should attempt to build a culture that provides a balance between healthy eating and activity with acceptance of different body shapes and sizes. Examples of strategies that engage parents include information and interactive discussion forums, homework assignments requiring collaboration between students and parents, and involvement in community education campaigns about the negative impact of weight and shape-related reinforcement and modelling. Examples of strategies targeting peers include a no tolerance policy on weight-related teasing and implementing strategies to encourage the acceptance of diversity in weight and shape (Levine & Smolak, 2006).

Second, interventions for younger girls need to be different from those designed for girls in late adolescence and early adulthood, not just in terms of developmentally appropriate content, but also in terms of their focus. Furthermore, it is imperative that prevention programs directed at younger girls do not inadvertently teach the very behaviours that they are trying to prevent occurring. Some authors have suggested that interventions with younger populations should focus on general, non-specific environment factors such as building up resilience and self-esteem, whereas more specific symptom-specific factors such as body dissatisfaction can be addressed in later adolescence (e.g., Felner and Felner, 1989; Shisslak, Crago, Renger, & Clark-Wagner, 1998). Although intuitively this argument makes sense, universal prevention programs addressing these factors have had mixed success (See Stice and Shaw, 2004, for a review). In contrast, secondary interventions, focusing on one or two risk factors and targeting *high-risk individuals* (e.g., women with pre-existing body dissatisfaction or high levels of internalisation of the thin-ideal), have generally had more promising results (Stice & Shaw, 2006). The results of the current research provide some support for the importance of targeting social comparison and internalisation of the thin-ideal, possibly in younger adolescent girls, prior to their progression to middle adolescence. Given the cross sectional nature of the current research, this proposition must be made tentatively, however others have highlighted that social comparison appears to become more important between early and middle adolescence (e.g., Schutz et al., 2002). Therefore, this may be an optimal time to consider helping girls to use social comparison in a constructive manner. Efforts to prevent social comparison from occurring are unrealistic and unwarranted as this is a process that occurs naturally in all individuals. However, young girls could be taught to use social comparison in ways that help improve self-worth. For example, Martin and Gentry (1993) found that when social comparison was used for self-enhancement or self-improvement (rather than self-evaluation) it was associated with more positive body-esteem. In this experimental study, girls who were instructed to either find ways to discount

the attractiveness of models in advertisements or avoid making a comparisons about their own attractiveness with that of the models, reported significantly higher body-esteem than those girls who were instructed to explicitly compare their attractiveness to that of the models. The authors concluded that children and adolescents may be able to use social comparison to their advantage to temporarily enhance self-worth, although how to encourage this over the long term is not yet clear. Similarly, internalisation of the thin-ideal could be considered the target of interventions for younger preadolescent girls. Programs targeting internalisation of the thin-ideal have had some success in older adolescent girls and young adult women. Stice, Mazotti, Weibal and Agras (2000) have had some success with their dissonance-based prevention program in college women. In this program women are encouraged to develop verbal, written, and behavioural exercises in which they challenge the thin-ideal. The results of this approach are also mixed with the original study finding a reduction in thin-ideal internalisation, negative affect, and bulimic symptoms at one-month follow-up, but a second study finding no reduction in body dissatisfaction or dieting efforts at 6-month follow-up (Stice, Trost, & Chase, 2003). Efforts to counteract the negative impact of internalisation of the thin-ideal may be highly suitable for this age group because programs may not need to specifically focus on body weight and eating issues which may be counterproductive and potentially dangerous in this age group. Instead they could focus developing self esteem and promoting diversity in weight and shape, as well as teaching ways to counteract the negative impact of media messages about thinness. Interventions aimed at reducing internalisation and challenging girls to resist comparisons to others may also help disrupt the development of body image and eating disturbances (Stice & Hoffman, 2004).

For the older age groups efforts to counteract modelling, media exposure and social comparison are also important. How to address these factors in a university population, when participation in prevention programs relies heavily on volunteers, will be a difficult

challenge. A broader community approach is needed to promote healthy body image and diversity. Mass media may be able to play an influential role in spreading messages about body acceptance. For example, one international company has recently attempted to address the unrealistic overrepresentation of thin models in the media by launching the *Campaign for Real Beauty* (www.campaignforrealbeauty.com.au). Dove® –which sells beauty products for women including soaps and body creams – have promoted their products using women who are not professional models, range in age from 18-62 and in size from 8-16, and who are reportedly not airbrushed or computer enhanced in advertisements. The campaign also supports an online discussion forum and provides funding support for school programs that attempt to improve self-confidence and body satisfaction in young women. While essentially still promoting a beauty product, campaigns such as these acknowledge that the media should accept some responsibility for the role they play in promoting unrealistic standards of beauty for women. Furthermore, the messages of this campaign are more likely to reach a wider audience – and potentially have more impact – than many of the health promotion programs currently available, which often lack adequate funding. Whether campaigns such as these have any impact on reducing thin-ideal internalisation, body dissatisfaction, and disordered eating behaviours has yet to be determined. It is unlikely that a series of advertisements promoting shape diversity is going to make a substantial difference, given that the vast majority of models used in advertisements still meet the thin-ideal standards. Recent attempts to change some of the standards set for models by the fashion industry may have a greater long-term impact. For example, in 2006, promoters of the Milan Fashion Week banned the inclusion of models with a BMI below 18, in an effort to encourage a healthier body standard for women (Morago, 2007). Although this strategy has been criticised for being overly simplistic, it is encouraging to note that the fashion industry is at least considering eating disorders and their consequences as an important issue facing women in the Western world.

Finally, prevention programs need to take into account the full spectrum of eating disturbances, including binge eating and obesity, which are mounting concerns in the Australian population, and worldwide. As highlighted by the current research, body weight is strongly related to body dissatisfaction and having a body weight in the normal range is a protective factor for body dissatisfaction. Although the topic of childhood obesity has received much attention of late, it has been argued that many of the goals of prevention programs for eating disorders *and* prevention programs for obesity are interconnected (Irving & Neumark-Sztainer, 2003). Therefore, prevention programs need to consider an integrated approach that addresses the importance of a healthy approach to eating and to exercise. There is considerable overlap in the goals of both eating disorder and obesity prevention programs. For example, development of a healthy body image, an active lifestyle, good eating habits, and developing life skills to cope with stress, have been targeted in both types of programs. To date, obesity prevention programs –similar to eating disorder prevention programs – have achieved minimal success in changing eating attitudes and behaviours. Akin to eating disorder prevention programs, obesity prevention programs are likely to be ineffective if a multi-systemic approach to treatment is not adopted. For example, it is unrealistic to expect that a classroom approach to developing a healthy lifestyle will be successful if a child returns home to an environment where a high proportion of unhealthy food is consumed. Recent attempts to address this issue have met with some success. For instance, an entire community in Colac, Victoria, were supported to adopt a healthy lifestyle approach, which has provided the first encouraging results for an obesity prevention program. The *Be Active Eat Well* program, targeted multiple systems in the community including schools, playgroups, supermarkets, restaurants and sporting facilities, and encouraged healthy eating, reducing the consumption of sugary foods, and increasing exercise. To date, the program has achieved some promising results. Compared with a control group of children, the study's participants experienced a small reduction in

weight and waist measurements as well as significant improvements to healthy behaviours including a 68% increase in after-school exercise, a 68% reduction in the consumption of sugary drinks, and a 21% decrease in television viewing (Pike, 2006). The preliminary findings of this program provide support for the importance of a “whole of community” approach to the issue of healthy body image and weight management. Programs such as these may also be useful in improving body satisfaction, and reducing the rates of disordered eating behaviours and clinical eating disorders.

Future Research

There are a number of areas that would benefit from further research. Beyond the time constraints of a PhD, prospective research is required to more rigorously test an integrated sociocultural model of disordered eating behaviour over time. Ideally, these studies would use large sample sizes, multiple measures for each construct, and would utilise multiple assessment methods rather than relying on self-report measures. Prospective research is crucial for improving our understanding of the risk factors for disordered eating and will help to further elucidate which factors should be targeted in prevention programs for different age groups of adolescent girls and young women. This type of large-scale research requires government funding and widespread support in both school systems and the wider community. Currently, a key public health concern of the Australian government is the prevention of childhood obesity, however eating disorders have a similarly high cost associated with treatment and can have significant and serious consequences for health. As discussed earlier, it may be more useful to consider eating behaviours on a spectrum of disturbances with issues of weight control behaviours, body dissatisfaction and obesity all interconnected.

Although our understanding about the role of sociocultural factors and disordered eating behaviours has increased substantially over the last 20 years, there is still much work to be done – particularly in regards to how sociocultural factors interact together to produce

disordered eating behaviour. Further research is required to examine how sociocultural factors operate together to produce eating pathology, including mediation and moderational relationships. For example, BMI has consistently been associated with body dissatisfaction. However, this relationship may be moderated by internalisation of the thin-ideal. For example, Low et al. (2003) found that body mass moderated effects of internalisation with women higher in body weight and with internalisation of the thin-ideal having the greatest body image concerns. It is also important to continue to uncover new risk factors that may play a significant role in the etiology of disordered eating behaviour because current risk factors models have only accounted for a relatively small portion of the variance in eating pathology.

Experimental research is also important to assess the nature of relationships between variables in a sociocultural model. In particular, experimental studies may provide valuable information about the processes involved in understanding how girls use social comparison in relation to media exposure. Experimental studies will also be helpful in determining the complex relationship between social comparison and internalisation of the thin-ideal. This type of research, using women and girls from different age groups, will be invaluable in determining the impact of sociocultural factors on disordered eating behaviour. In addition to experimental research, more qualitative research is required to develop a better understanding of the influence of family, peers and media. Qualitative research provides rich and valuable information about how family, peer and media sources exert their influence.

In terms of prevention research more work is needed to determine which sociocultural factors addressed in prevention programs have the most impact and for what ages. Currently, many programs attempt to address all the factors known to influence body dissatisfaction and disordered eating. This over-inclusive approach can make it difficult to determine which components work the most effectively and what actually contributes to changes over time. Two components that have been found to be importance in the current

research and that have received minimal attention in prevention programs to date, are modelling of disordered eating behaviour and social comparison tendencies.

Finally, protective factor research continues to be a neglected area of research in the eating disorders field. It is critically important to understand more about those factors that protect some young women from developing body image disturbances and related disordered eating behaviours. A clearer understanding of these protective factors will also help guide the content of prevention and intervention programs for those young women who are at a greater risk for the future development of an eating disorder.

Final Conclusions

Eating disorders, disordered eating behaviours, body image disturbance, and obesity continue to be important and complex issues facing young women today. These problems are likely to worsen in Western societies where – despite the importance of a thin-ideal – the prevalence of overweight and obesity continue to be on the rise. The current research provides further support for the relationship between sociocultural factors and disordered eating behaviour. The findings also indicate that a number of variables are important to target in prevention and intervention programs for eating disturbances. Modelling of disordered eating and internalisation of the thin-ideal are particularly important factors, even for preadolescent girls. Social comparison is also an important mediating factor for older adolescent girls and young women. Given these findings, prevention programs may need to commence earlier and target not only individuals but also systems such as families, schools, communities, and mass media. Theoretical models that attempt to understand the importance of sociocultural factors and disordered eating remain important. Longitudinal research will further develop our understanding of these factors from preadolescence through to adulthood and experimental studies will help determine a better understanding of how particular factors operate and interact together.

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APPENDIX A

Demographic Information

Name:

(To be coded to ensure confidentiality)

Date of Birth:

____/____/____

Current Age:

In which country were you born?:

In which country was your mother born?:

In which country was your father born?:

Where do you currently live? (**please circle one answer only**)

- A) With both your parents
- B) With your mother
- C) With your father
- D) With your grandparents
- E) Outside of home
- F) Other

What is your mother's occupation?

What is your father's occupation?

Have you started your period?

YES/NO (Circle one)

If YES when did it start? (year, month)

(office use only DO NOT COMPLETE)

Student Code no. _____

Actual weight: _____

Actual height: _____

BMI: _____

About my Family

Using the following scale, please circle the response that applies most to you.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	2	3	4	5

1. I've felt pressure from my family to lose weight 1 2 3 4 5

2. I've noticed a strong message from my family 1 2 3 4 5
to have a thin body.

3. It is important to my family that I am thin 1 2 3 4 5

4. My family would be unhappy with me if I were 1 2 3 4 5
overweight

5. My family believe that thin girls/women are more 1 2 3 4 5
attractive than fat girls/women

Using the following scale, please circle the response that applies most to you.

Never	Rarely	Sometimes	Often	Always
1	2	3	4	5

- | | | | | | |
|--|---|---|---|---|---|
| 1. One or more of my family members have dieted to lose weight | 1 | 2 | 3 | 4 | 5 |
| 2. One or more of my family members have complained about their body shape/weight | 1 | 2 | 3 | 4 | 5 |
| 3. One of more members of my family have shown me ways to control my weight | 1 | 2 | 3 | 4 | 5 |
| 4. One or more of my family members have skipped meals or exercised a lot to lose weight | 1 | 2 | 3 | 4 | 5 |
| 5. One or more of my family members have used laxatives, diets pills or vomited to lose weight | 1 | 2 | 3 | 4 | 5 |

About my friends

Using the following scale, please circle the response that applies most to you.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	2	3	4	5

1. I've felt pressure from my friends to lose weight 1 2 3 4 5
2. I've noticed a strong message from my friends to have a thin body 1 2 3 4 5
3. It is important to my friends that I am thin 1 2 3 4 5
4. My friends would not like me as much if I were overweight 1 2 3 4 5
5. My friends believe that thin girls/women are more attractive than fat girls/women 1 2 3 4 5

Using the following scale, please circle the response that applies most to you.

Never	Rarely	Sometimes	Often	Always
1	2	3	4	5

1. One or more of my friends have dieted to lose weight 1 2 3 4 5
2. One or more of my friends have complained about their body shape/weight 1 2 3 4 5
3. One or more of my friends have shown me ways to control my weight 1 2 3 4 5
4. One or more of my friends have skipped meals or exercised a lot to lose weight 1 2 3 4 5
5. One or more of my friends have used laxatives, diets pills or vomited to lose weight 1 2 3 4 5

Media pressure and me

Using the following scale, please circle the response that applies best to you.

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	2	3	4	5

1. After reading magazines and watching television I've felt pressure to lose weight 1 2 3 4 5
2. I've noticed a strong message from magazines and television to have a thin body 1 2 3 4 5
3. Television and magazines promote the message that thin girls/women are more attractive than fat/girls or women. 1 2 3 4 5

Using the following scale, please circle the response that applies most to you.

Never	Rarely	Sometimes	Often	Always
1	2	3	4	5

- | | | | | | |
|---|---|---|---|---|---|
| 1. I've seen people in magazines and on TV diet to lose weight | 1 | 2 | 3 | 4 | 5 |
| 2. I've seen people in magazines and on TV complain about their shape/weight | 1 | 2 | 3 | 4 | 5 |
| 3. I've learnt ways to control my weight from information in magazines and on television programs | 1 | 2 | 3 | 4 | 5 |
| 4. I've seen people in magazines and on TV skip meals or exercise a lot to lose weight | 1 | 2 | 3 | 4 | 5 |
| 5. I've seen people in magazines and on TV use laxatives, diets pills or vomit to lose weight | 1 | 2 | 3 | 4 | 5 |

Attitudes towards girls/women

Please read each of the following items, and circle the number that best applies to you

Completely disagree		Neither agree nor disagree		Completely agree
1	2	3	4	5

- | | | | | | |
|--|---|---|---|---|---|
| 1. I would like my body to look like the girls/
women who appear in TV shows and movies | 1 | 2 | 3 | 4 | 5 |
| 2. I believe that clothes look better on thin
models | 1 | 2 | 3 | 4 | 5 |
| 3. Music videos that show thin girls/
women make me wish that I were thinner | 1 | 2 | 3 | 4 | 5 |
| 4. I wish I looked like the female models
who appear in magazines | 1 | 2 | 3 | 4 | 5 |
| 5. I tend to compare my body to people
in magazines and on TV | 1 | 2 | 3 | 4 | 5 |
| 6. In our society, fat people are thought
of as unattractive | 1 | 2 | 3 | 4 | 5 |
| 7. Photographs of thin girls/women make
me wish that I were thinner | 1 | 2 | 3 | 4 | 5 |
| 8. Attractiveness is very important if you want
to get ahead in our society | 1 | 2 | 3 | 4 | 5 |

- | | | | | | |
|---|---|---|---|---|---|
| 9. It's important for people to work hard on their body if they want to succeed in today's society | 1 | 2 | 3 | 4 | 5 |
| 10. Most people believe that the thinner you are, the better you look | 1 | 2 | 3 | 4 | 5 |
| 11. People think that the thinner you are, the better you look in clothes | 1 | 2 | 3 | 4 | 5 |
| 12. In today's society, it is important to always look attractive | 1 | 2 | 3 | 4 | 5 |
| 13. I wish I looked like a swimsuit model | 1 | 2 | 3 | 4 | 5 |
| 14. I often read magazines like <i>Dolly</i> , <i>Girlfriend</i> and <i>Smash Hits</i> and compare my appearance to the models or pop stars | 1 | 2 | 3 | 4 | 5 |

*this includes other popular magazines like Cleo, Cosmopolitan, She etc.

How I feel around other people

Using the following scale rate the statements below

Never 1	Hardly ever 2	Sometimes 3	Often 4	Always 5
------------	------------------	----------------	------------	-------------

- | | | | | | |
|---|---|---|---|---|---|
| 1. At parties and other social occasions I compare my physical appearance to the physical appearance of others | 1 | 2 | 3 | 4 | 5 |
| 2. The best way for people to know if they are overweight or underweight is to compare their body to the body of others | 1 | 2 | 3 | 4 | 5 |
| 3. At parties or other social event, I compare how I am dressed to how other people are dressed | 1 | 2 | 3 | 4 | 5 |
| 4. Comparing your “looks” to the ‘looks” of others is a good way to determine if you are attractive or unattractive | 1 | 2 | 3 | 4 | 5 |
| 5. In social situations I sometimes compare my figure to the figure of other people | 1 | 2 | 3 | 4 | 5 |

How I feel about my body

Read each question carefully and circle the answer you think best applies to you. Answer the questions based on how you feel right now.

	Always	Usually	Often	Some times	Rarely	Never
1. I think my stomach is too big						
2. I think that my thighs are too large						
3. I think my stomach is just the right size						
4. I feel satisfied with the shape of my body						
5. I like the shape of my buttocks/bottom						
6. I think my hips are too big						
7. I think my thighs are just the right size						
8. I think that my buttocks/bottom are too large						
9. I think that my hips are just the right size.						

Eating attitudes and behaviors

Please place an X in the column which applies best to each of the numbered statements.

	Always	Very Often	Often	Some times	Rarely	Never
1. I am scared about being overweight						
2. I stay away from eating when I am hungry						
3. I think about food a lot of the time						
4. I have gone on eating binges where I feel I might not be able to stop						
5. I cut my food into small pieces						
6. I am aware of the energy/ Calorie content in foods.						
7. I try to stay away from foods such as bread, potatoes and rice.						
8. I feel that others would like me to eat more						
9. I vomit after I have eaten						
10. I feel guilty after eating						
11. I think a lot about wanting to be thinner						
12. I think about burning up energy when I exercise						

	Always	Very Often	Often	Some times	Rarely	Never
13. Other people think I am too thin						
14. I think a lot about having fat on my body						
15. I take longer than others to eat my meals						
16. I stay away from foods with sugar or fat in them						
17. I eat diet foods						
18. I think that food controls my life						
19. I can show self-control around food						
20. I feel that others pressure me to eat						
21. I give too much time and thought to food						
22. I feel uncomfortable after after eating sweets						
23. I have been dieting						
24. I like my stomach to be empty.						
25. I enjoy trying new rich foods.						
26. I have the urge to vomit after eating						

The following list is a list of the top women's and youth magazines in Australia. Please circle the answer that matches best how often you read or look at the following magazines.

Women's Magazines	Never	Sometimes	Regularly
Australian Woman's Weekly	0	1	2
Cleo	0	1	2
Cosmopolitan	0	1	2
Elle	0	1	2
For Me	0	1	2
Marie Claire	0	1	2
New Idea	0	1	2
New Weekly	0	1	2
New Woman	0	1	2
She	0	1	2
That's Life	0	1	2
TV Weekly	0	1	2
Who Weekly	0	1	2
Woman's Day	0	1	2
Australian Youth Magazines			
Dolly	0	1	2
Girlfriend	0	1	2
Smash Hits	0	1	2
TV Hits	0	1	2

Please circle the number that corresponds best to how often you watch the listed television programs **Regularly (2)**, **Sometimes (1)**, or **Never (0)**. If the television program is currently not screening please indicate whether you would usually watch it Regularly, Sometimes or Never when it is screening.

	Regularly	Some times	Never		Regularly	Some times	Never
<i>Drama</i>							
ER	2	1	0	JAG	2	1	0
The Practice	2	1	0	The Guardian	2	1	0
Always Greener	2	1	0	Ally McBeal	2	1	0
Charmed	2	1	0	Buffy	2	1	0
All Saints	2	1	0	Blue Heelers	2	1	0
Secret Life of Us	2	1	0	Neighbours	2	1	0
Home & Away	2	1	0	Law & Order	2	1	0
Heartbeat	2	1	0	McCleod's Daughters	2	1	0
Felicity	2	1	0	Providence	2	1	0
Ed	2	1	0	Dawson's Creek	2	1	0
Stingers	2	1	0	Gilmore Girls	2	1	0
2000 Acres of Sky	2	1	0	Alias	2	1	0
The Mole	2	1	0	Third Watch	2	1	0
<i>Comedy/Sitcom</i>							
Friends	2	1	0	Sex & the City	2	1	0
Sabrina Teen Witch	2	1	0	Spin City	2	1	0
Malcolm in the Middle	2	1	0	Everybody loves			
The Simpsons	2	1	0	Raymond	2	1	0
Drew Carey Show	2	1	0	Seinfeld	2	1	0
Just Shoot me	2	1	0	Australia's Funniest video's	2	1	0
Absolutely Fabulous	2	1	0	South Park	2	1	0
Will and Grace	2	1	0	Dharma & Greg	2	1	0
Becker	2	1	0	The Panel	2	1	0
Rove Live	2	1	0				
<i>Music Shows</i>							
All Music Video	2	1	0	Rage	2	1	0
The Cool Room Top 20	2	1	0	Video Hits	2	1	0
Video Hits	2	1	0	Pepsi Live	2	1	0
<i>Soap Operas/Talk Show</i>							
Oprah Winfrey Show	2	1	0	Ricki Lake	2	1	0
Jerry Springer	2	1	0	Beauty & The Beast	2	1	0
Days of our Lives	2	1	0	Bold and the Beautiful	2	1	0
Judge Judy	2	1	0	Entertainment Tonight	2	1	0
Pacific Drive	2	1	0	Passions	2	1	0
The Cool Room	2	1	0	Changing Rooms	2	1	0
Popstars	2	1	0	Search for a Super Model	2	1	0
Single Girls	2	1	0	Body + Soul	2	1	0
The Young and the Restless	2	1	0	Temptation Island	2	1	0
				Big Brother	2	1	0

APPENDIX B
Information Sheet

Research Team

Dr. Sharon Dawe: Phone (07) 3875-3371
Ms. Lucy Blowers: Phone (07) 3875-3303

Many young women are concerned about their body shape and weight. Sometimes these concerns lead some young women to engage in risky eating behaviours. At Griffith University we are trying to understand the pressures that some young women feel to be a certain body shape from sources such as friends, the media and family members.

The following set of questionnaires have been put together to help us gather information about how risky eating behaviours and body dissatisfaction develop in young women. We would like you to complete the questionnaires and ask for your permission to use the information you provide to help us with our research.

We guarantee that all information you provide will be kept confidential (or private). Your completed consent form will be kept separately from the questionnaires and no names will be permanently written on the questionnaire sheets. If you have any further questions or concerns, please feel free to contact one of us on the telephone numbers above.

Thank you for your time and co-operation in helping us.

Yours sincerely

Dr Sharon Dawe
Senior Lecturer
3875-3371

Ms. Lucy Blowers
PhD student
3875-3303

APPENDIX C

Consent form

I have read the information above and give my consent to participate in this survey.

I understand that participation in this project is voluntary and that I can withdraw from the project at any time.

I understand that all information is obtained in the strictest confidence

On the basis of the above understanding, I give my permission to participate in this survey.

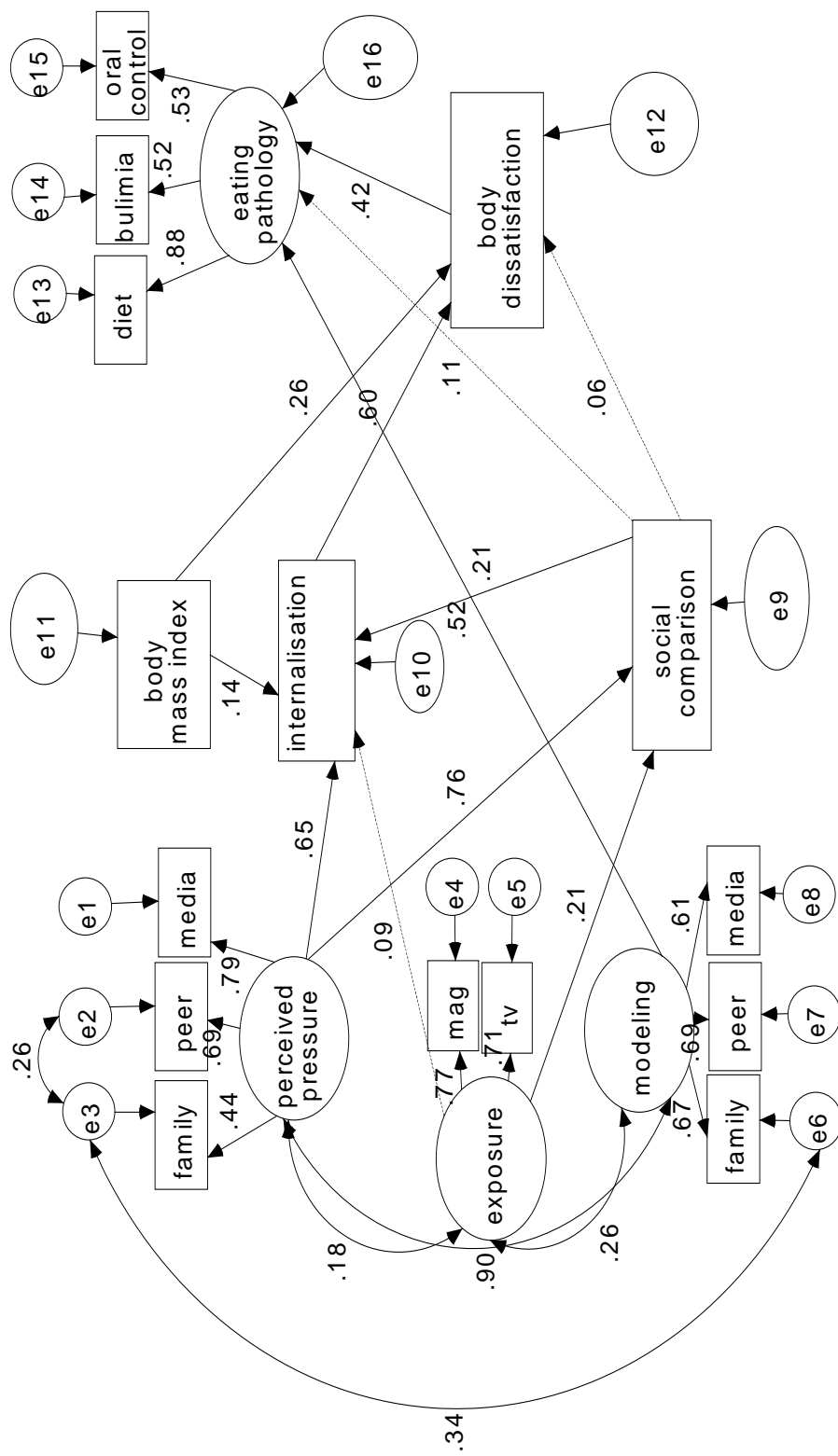
Name: _____

Signature: _____

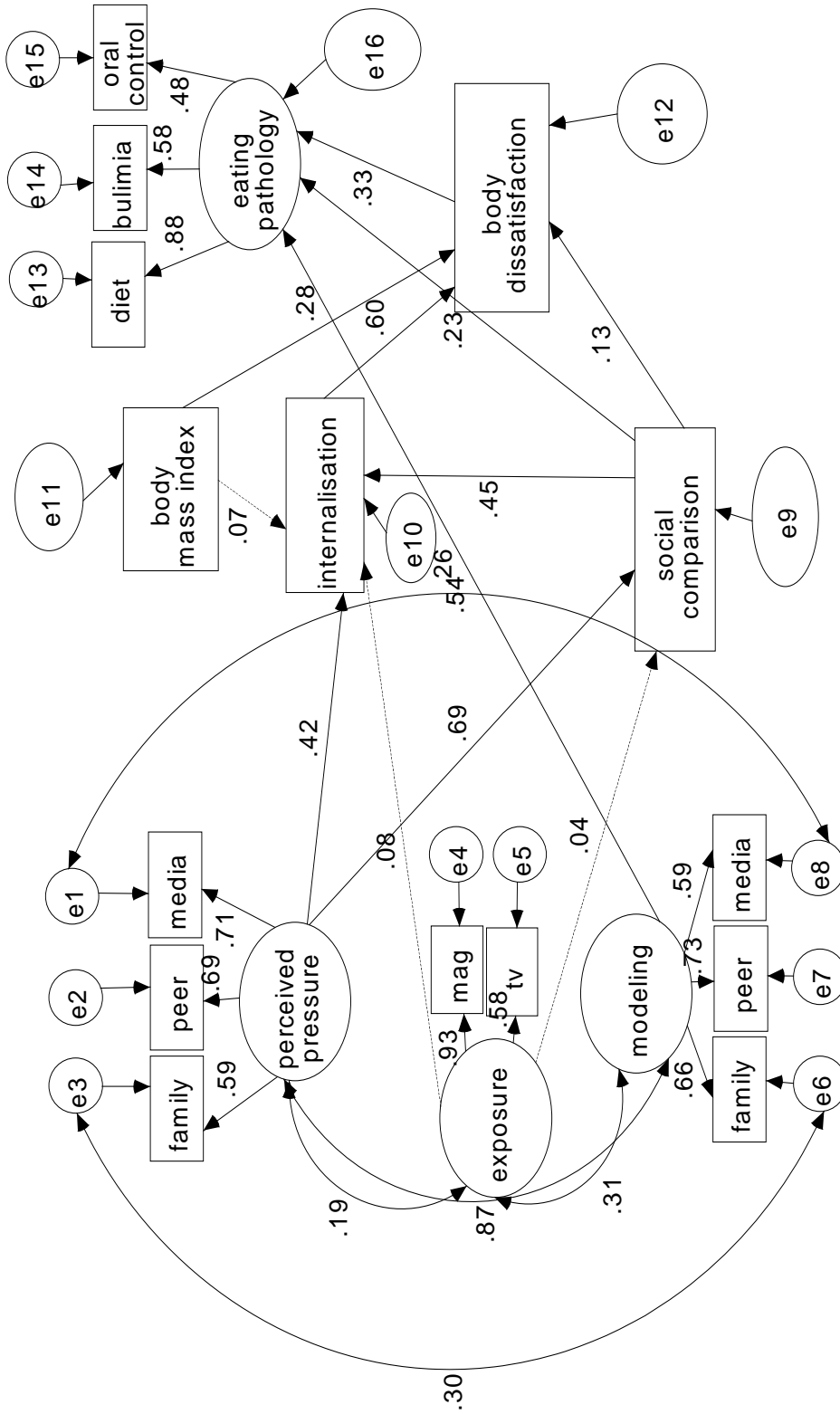
APPENDIX D

Parents' occupational status.

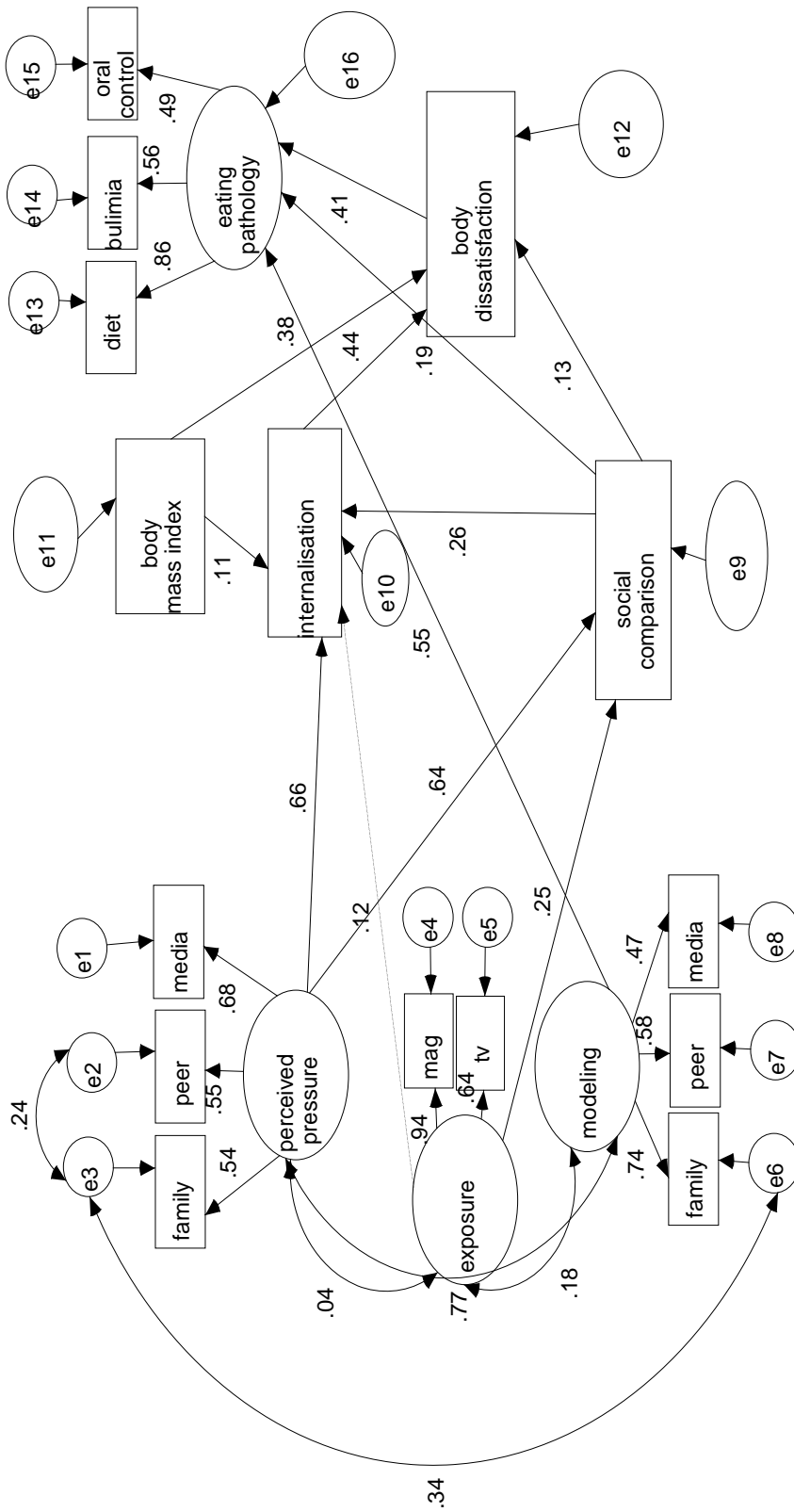
Occupational Category	No. of Mothers	%	No. of Fathers	%
Managers and Administrators	59	5.9	151	15.2
Professionals	273	27.4	246	24.7
Associate Professionals	68	6.8	106	10.7
Tradesperson	20	2.0	201	20.2
Advanced Clerical, Sales and Service	79	7.9	30	3.0
Intermediate Clerical, Sales and Service	155	15.6	27	2.7
Intermediate Production and Transport	5	0.5	29	2.9
Elementary Sales, Clerical and Service	19	1.9	33	3.3
Labourers and Related Workers	39	3.9	36	3.6
Home Duties	182	18.3	6	0.6
Volunteer Work	6	0.6	0	0
Student	20	2.0	4	0.4
Unemployed	9	0.9	11	1.1
Retired/Pension	25	2.5	42	4.2
Deceased	5	0.5	11	1.1
Missing Data	31	3.1	62	6.2



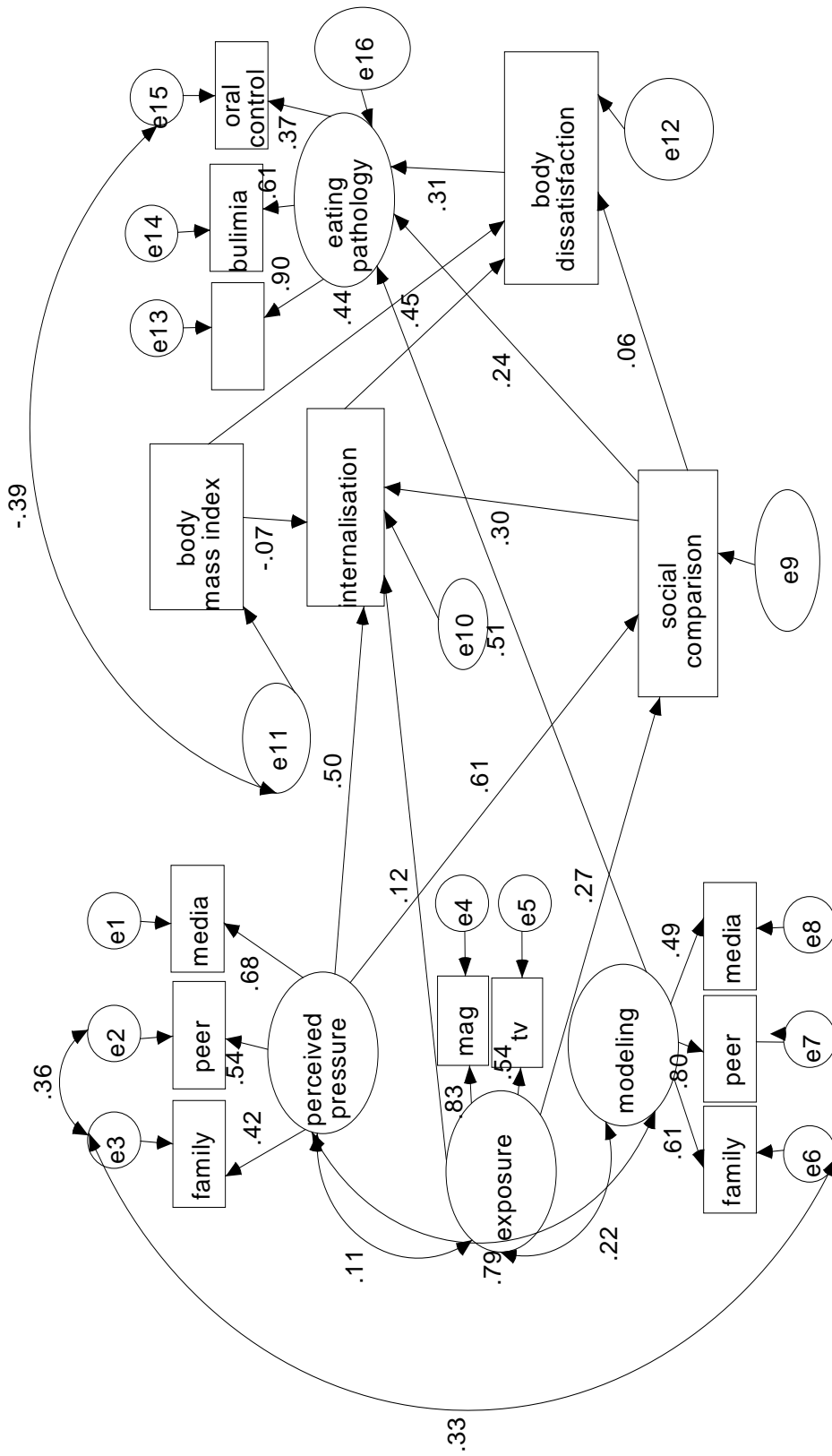
APPENDIX E



APPENDIX F



APPENDIX G



APPENDIX H

APPENDIX I.

Unstandardised and Standardised Estimates for all Structural Paths by Age Group

Path	Preadolescent						Early adolescent						Late adolescent						Adult						
	Unstd'sed			Std'sed			Unstd'sed			Std'sed			Unstd'sed			Std'sed			Unstd'sed			Std'sed			
	Estimate	SE	CR	Estimate	SE	CR	Estimate	SE	CR	Estimate	SE	CR	Estimate	SE	CR	Estimate	SE	CR	Estimate	SE	CR	Estimate	SE	CR	
SC←EXP	1.025	.29	3.5	.21	.19	.27	.72	.04	.227	.074	3.07	.25	.118	.034	3.53	.26									
SC←PP	10.23	1.62	6.3	.76	7.18	.90	7.94	.69	6.016	.925	6.51	.64	5.86	1.12	5.25	.61									
INT←PP	17.23	3.51	4.9	.68	9.16	1.66	5.51	.45	12.732	2.14	5.93	.71	.809	1.95	4.14	.47									
INT←SC	.35	.18	1.93	.18	.85	.12	6.88	.43	.408	.153	2.67	.21	.584	.143	4.09	.32									
INT←EXP	.69	.52	1.32	.08	.79	.41	1.93	.09	.217	.107	2.03	.13	.088	.051	1.72	.11									
BD←INT	.74	.08	8.71	.62	.71	.073	9.73	.61	.537	.079	6.79	.46	.622	.092	6.73	.44									
BD←BMI	1.03	.18	5.76	.27	.98	.14	6.97	.28	1.166	.143	8.16	.39	1.08	.122	8.91	.44									
BD←SC	.13	.16	.81	.06	.31	.14	2.14	.13	.305	.151	2.03	.14	.139	.166	.84	.05									
DE←BD	.06	.011	5.56	.41	.30	.051	6.04	.32	.401	.055	7.29	.39	.011	.002	5.52	.30									
DE←MOD	1.69	.40	4.21	.52	12.21	1.93	6.32	.55	.16.62	3.91	5.21	.55	.463	.103	4.48	.41									
DE←SC	.037	.028	1.31	.11	.49	.138	3.55	.22	.433	.15	2.96	.19	.020	.006	3.05	.20									

SC=Social comparison, EXP= Exposure, PP=Perceived pressure, INT=Internalisation of the thin-ideal, BD= Body Dissatisfaction, BMI= Body Mass Index, DE= Disordered Eating.