

**Attachment Anxiety is Associated with Restrictive Eating via Low Global Self-Esteem and  
Appearance Overvaluation**

by

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### **Abstract**

This research explored the relationship between attachment, appearance overvaluation, global self-esteem, and restrictive eating in a secondary analysis of a community sample of undergraduate women. Participants ( $N = 527$ ) completed the Experiences in Close Relationships questionnaire (Lafontaine et al., 2016), Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965), Beliefs About Appearance Scale (Spangler & Stice, 2001), and the restriction subscale of the Eating Disorders Examination-Questionnaire (EDE-Q; Fairburn & Beglin, 1994). A serial mediation analysis was conducted to examine associations between these variables. Women higher in attachment anxiety reported greater appearance overvaluation, via lower global self-esteem, and reported more restrictive eating through lower global self-esteem and higher appearance overvaluation. Attachment avoidance was not related to appearance overvaluation or restrictive eating but was associated with lower global self-esteem. These results may inform prevention efforts, by identifying individuals with attachment anxiety, who may be more vulnerable to low global self-esteem, appearance overvaluation, and restrictive eating.

*Keywords:* Attachment styles, disordered eating, overvalued ideation, self-concept

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**Attachment Anxiety is Associated with Restrictive Eating Behaviours  
via Low Global Self-Esteem and Appearance Overvaluation**

Disordered eating is an insidious and pervasive problem in North America, and around the world (e.g., Stice, 2002). Increasingly prevalent (e.g., Hesse-Biber et al., 2006), disordered eating is associated with a vast range of adverse physical (e.g., cardiac complications, gastrointestinal issues) and psychological (e.g., depression, anxiety) consequences (e.g., Brown & Mehler, 2013; Fairweather et al., 2015; Kärkkäinen et al., 2017; McBride et al., 2013; Wade et al., 2012). In the transdiagnostic cognitive-behavioural theory of eating disorders (see Fairburn, 2008), the extent to which people overvalue the importance of appearance in the self-concept and thus self-worth is the core psychopathology underlying eating disorders. The self-concept comprises cognitive structures, including ideas, attitudes, and evaluative judgments, that help us make sense of the world, direct attention towards personally meaningful goals, and protect our sense of worth (Oyserman & Markus, 1998; Oyserman et al., 2012). People with an eating disorder over-emphasize the importance of appearance in their self-concept and thus for judging self-worth. Although the consequences of appearance overvaluation are palpable, little is known about its antecedents. Indeed, successful treatments for disordered eating remain elusive, and researchers and clinicians alike continue to explore possible areas for intervention (Murray, 2019).

In my thesis, I examined attachment styles as a possible antecedent factor of appearance overvaluation. Attachment styles are patterns of behaviour (in interpersonal relationships) and expectations (of self and others) rooted in our early interactions with primary caregivers, that influence our experiences (of the world, ourselves, and others), self-regulation (emotion regulation) strategies, and coping mechanisms (Bowlby, 1988; Siegel, 1999). A secure

attachment style may lay the foundation for identity formation in the self-concept (Amianto et al., 2016; Mikulincer & Shaver, 2012), whereas an insecure attachment style may help explain appearance overvaluation and engagement in disordered eating. Attachment anxiety may promote low global self-esteem, a known risk factor for appearance overvaluation and disordered eating.

### **Disordered Eating and Overvaluation of Appearance**

Eating disorders (EDs) are a category of psychiatric disorders outlined in the Diagnostic and Statistical Manual of Mental Disorders fifth edition (DSM-5; American Psychiatric Association, 2013) distinguished by marked eating disturbances that result in impaired physical and psychosocial functioning. There are four primary types of EDs classified in DSM-5 (American Psychiatric Association, 2013): Anorexia Nervosa (AN), Bulimia Nervosa (BN), Binge Eating Disorder (BED), and Other Specified Feeding or Eating Disorder (OSFED), known in previous versions of the DSM as Eating Disorder Not Otherwise Specified (EDNOS; American Psychiatric Association, 2013). AN is characterized by restricted caloric intake to impede weight gain, resulting in a dangerously low body weight, a distorted perception of and preoccupation with one's weight or body shape, and the inability to recognize the health risks associated with these behaviours (American Psychiatric Association, 2013). In the DSM-5, there are two subtypes of AN: a restricting subtype (AN-R), where dieting, fasting, and excessive exercise are used as means to lose and maintain a low body weight; and a binge-eating/purging subtype (AN-BP), where the individual engages in compensatory behaviours such as self-induced vomiting and the use of laxatives, diuretics, or enemas in response to binge eating episodes, with the intent to maintain a low body weight (American Psychiatric Association, 2013). BN is defined by recurring episodes of binge eating, where an excessive amount of food

is consumed in a short period of time. It is accompanied by a feeling of a lack of control, and followed by compensatory behaviours (e.g., self-induced vomiting, laxative use, excessive exercise) in an attempt to prevent weight gain (American Psychiatric Association, 2013). BED is marked by repeated episodes of binge eating that are accompanied by feelings of shame or distress. Unlike BN, compensatory behaviours are not present in BED (American Psychiatric Association, 2013). The OSFED diagnostic category is used to identify atypical or partial presentation of a feeding or eating disorder, where the full criteria are not met or when the cluster of symptoms do not fit neatly into AN, BN, or BED.

Eating disorders comprise the deadliest category of psychiatric disorders; AN being associated with the highest mortality rate of all mental illnesses, with a crude mortality rate (CMR) of about 5% per decade (American Psychiatric Association, 2013; Fichter & Quadflieg, 2016; Smink et al., 2012). Medical complications of ED symptoms can affect nearly every organ system in the body (Brown & Mehler, 2013). In addition to a range of potential physical complications, including impaired cardiovascular, gastrointestinal, neurological, and endocrine functioning, EDs are also associated with significant psychological, social, financial, economic and community strain (Brown & Mehler, 2013; Hay & Mond, 2005; Mond et al., 2005; Rome & Ammerman, 2003). Individuals with EDs are more likely than the general population to experience greater psychological distress and impaired mental functioning (Darby et al., 2007; Mond et al., 2004) and to score low on measures of quality of life (Hay & Mond, 2005; Mond et al., 2005). Additionally, people with EDs are at an increased risk for other psychiatric illnesses – particularly depression and anxiety (e.g., Eisenberg et al., 2011; Godart et al., 2003), and are more likely to engage in non-suicidal self-injury and to attempt and commit suicide (Sansone & Levitt, 2002). Despite the gravity of these conditions, the vast majority of individuals with EDs

do not seek formal treatment, and many never receive a formal diagnosis (Hart et al., 2011, Murray, 2019). Eating disorders are also pervasive and long lasting. For instance, Eddy and colleagues (2017) showed that most women diagnosed with BN at study intake recovered after 10 years (i.e., 52 weeks of no symptoms), whereas most women diagnosed with AN recovered after almost 20 years.

The lifetime prevalence of having a diagnosed ED in Canada is between two and three percent, such that approximately one million Canadians meet the criteria for an ED (Statistics Canada, 2016). Additionally, women are more likely than men to have an ED, especially AN and BN, for which they are at 10-times greater risk (Campbell & Peebles, 2014). This suggests that EDs are rare in the general population, and that women are more likely than men to have an ED. Importantly, however, many members of the general population engage in disordered eating without meeting diagnostic criteria for an ED (e.g., Fairweather-Schmidt et al., 2015; Loth et al., 2015; McBride et al., 2013; Neumark-Sztainer et al., 2011; Solmi et al., 2014; Wade et al., 2012). Although not as severe as EDs, disordered eating is nonetheless associated with various adverse mental and physical health outcomes. Cross-sectional population studies indicate that disordered eating behaviours are linked to increased risk for comorbid mental health conditions, such as anxiety, mood, or substance use disorders, post-traumatic stress disorder, and personality disorders (e.g., McBride et al., 2013; Solmi et al., 2014). Furthermore, using longitudinal designs, researchers have prospectively demonstrated long-term consequences of disordered eating, including decreased physical and psychological well-being, and increased psychological distress (Fairweather et al., 2015; Kärkkäinen et al., 2017; Wade et al., 2012).

One sub-population in which subclinical EDs are particularly prevalent is women in college and university (e.g., Berg et al., 2009; Eisenberg et al., 2011; Fitzsimmons-Craft, 2011;

Jones et al., 2012; Luce et al., 2008; Schwitzer et al., 2001). Disordered eating behaviours and attitudes are common among undergraduate women in general (e.g., Klemchuk et al., 1990), as well as more specific among groups, like female athletes and sorority members (e.g., Hoerr et al., 2002; Schulken et al., 2010). Prevalence estimates of disordered eating among undergraduates range from 8% to 17% (Eisenberg et al., 2011; Hoerr et al., 2002; Kirk et al., 2001; Prouty et al., 2002; Reinking & Alexander, 2005). In their study, Eisenberg and colleagues (2011) discovered disordered eating amongst 9% to 13% of female students, and 3% to 4% of male students. In a study conducted by Berg, Frazier, and Sherr (2009), nearly half (49%) of the undergraduate women ( $N = 186$ ) in the sample reported engaging in binge eating or employing weight-control behaviours at least once per week, indicating a significant scourge of disordered eating on college campuses.

According to the transdiagnostic cognitive-behavioural theory of EDs (Fairburn et al., 2003), the extent to which people overvalue the importance of appearance in their self-concept underlies disordered eating behaviours. An individual's self-concept consists of a collection of beliefs that help answer the question "who am I?" (Oyserman et al., 2012). In terms of content, the self-concept includes ideas about who one is (the actual self), who one wants to become (the ideal self), and evaluative judgments about one's self that inform self-worth. Most individuals have a varied self-concept that involves drawing meaning and worth from a variety of life domains (e.g., interpersonal relationships, work, health, appearance, financial success). In contrast, some individuals overemphasize the importance of a particular domain with which they excessively identify in their self-concept, such that it comes to define (or becomes a central part of) the identity of the individual (Veale, 2002).

The self-concept of individuals with EDs is largely or exclusively based on their appearance in terms of their body shape and weight, and their ability to control them (Fairburn et al., 2003). Individuals with EDs struggle to attain a stable, coherent, and differentiated identity; they often fail to view themselves as competent or adequate, and have difficulty recognizing their personal value outside of the overvalued appearance domain (Cozzi & Ostuzzi, 2007). An illustration of the diversified self-concept of an individual without an ED is provided in Figure 1. Figure 2 provides an illustration of appearance overvaluation in the self-concept of an individual with an ED. Individuals who overvalue appearance become increasingly focused on managing their body shape and weight, with daily activities revolving around dietary control and weight-loss efforts. In this way, appearance overvaluation serves as the driving force that maintains ED attitudes, symptoms, and behaviours.

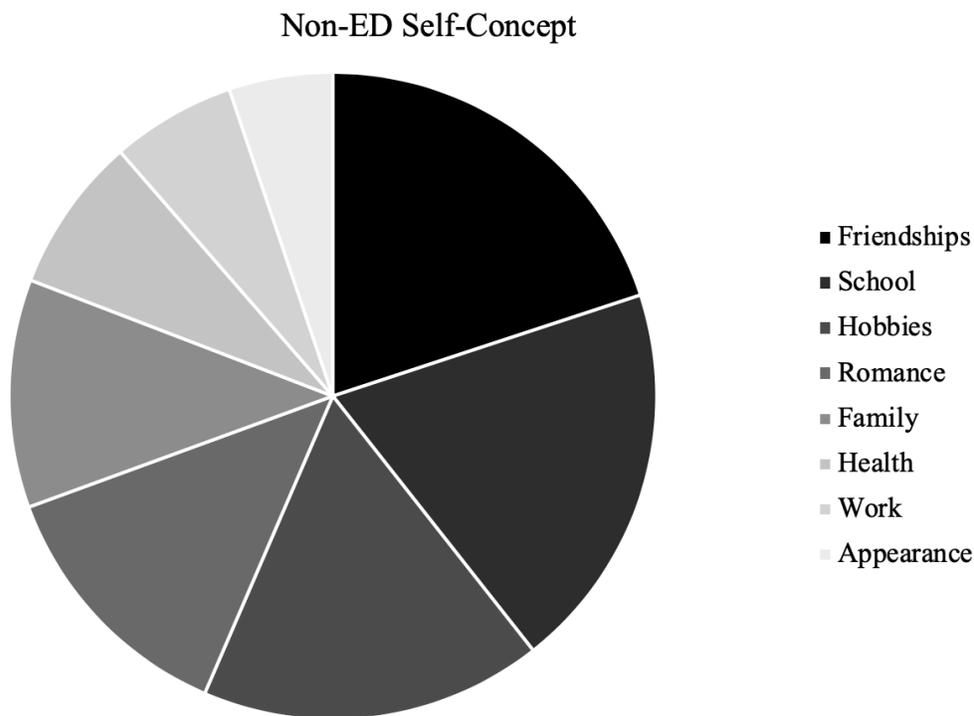
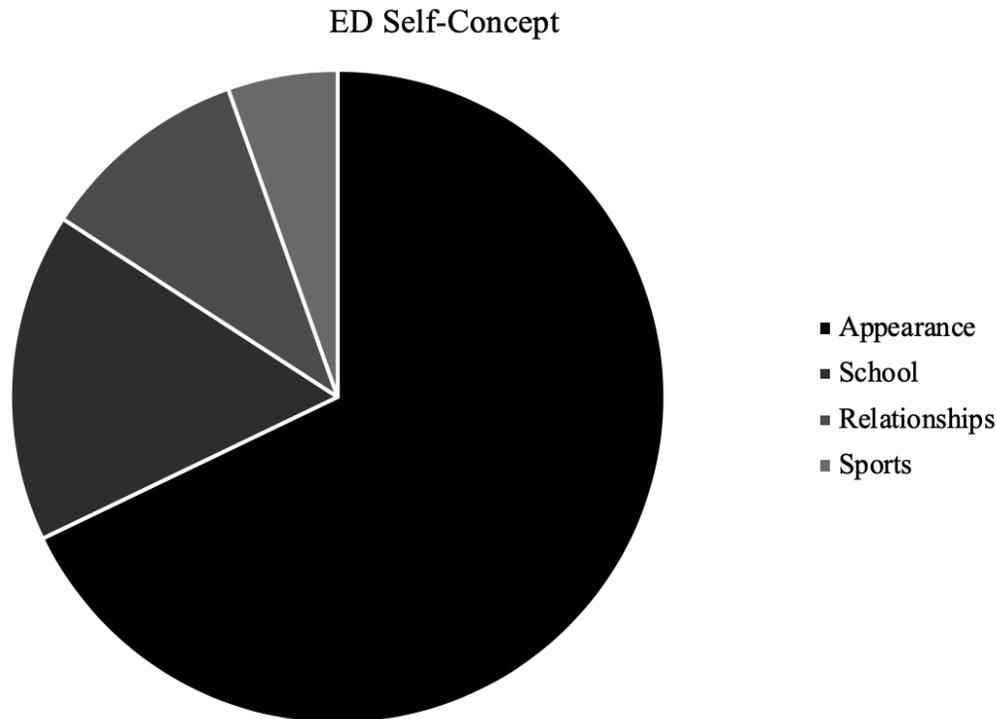


Figure 1. Example of the diversified self-concept of someone without an ED.



*Figure 2.* Example of appearance overvaluation in the self-concept of someone with an ED.

The manner in which appearance overvaluation maintains EDs is complex. The overvaluation of appearance serves as the motivating force that spurs engagement in maladaptive non-compensatory weight-control behaviours (e.g., restrictive eating, engagement in excessive exercise, self-induced vomiting or ‘purging’, the abuse of laxatives or diuretics; Fairburn et al., 1993; Fairburn et al., 2003; Grilo et al., 2013; Halmi et al., 2002; Keel et al., 2005; Liebman et al., 1974; Tabri et al., 2015). These behaviours are non-compensatory in that they are compulsive and are performed independent of the amount of food intake or binge eating episodes (Fairburn et al., 2008). Continued engagement in these non-compensatory behaviours can lead to low weight, binge eating episodes, or both. Those who maintain a low weight, eventually binge eat due to physiological hunger. Critically, following a binge-eating episode, many engage in compensatory purging behaviours (e.g., vomiting, using laxatives) to make up for having eaten

and consumed calories. Engaging in both compensatory and non-compensatory behaviours perpetuate appearance overvaluation, by mutually reinforcing one another in a reciprocal fashion. For instance, in a sample of women diagnosed with AN or BN, Tabri and colleagues (2015) showed that appearance overvaluation and engagement in maladaptive weight-control behaviours (e.g., restrictive eating) mutually reinforce each other on a week-to-week basis over a period of two years. They found that levels of non-compensatory weight-control behaviours during a given week were positively associated with overvaluation of body shape and weight the following week. Furthermore, overvaluation of shape and weight was positively associated with subsequent engagement in non-compensatory weight-control behaviours over time. In sum, there is evidence that appearance overvaluation proliferates and maintains engagement in disordered eating.

In practice, cognitive-behavioural therapy (CBT) for EDs directly addresses appearance overvaluation (Fairburn, 2008) – the core psychopathology of EDs (Fairburn et al., 2003). CBT is a widely investigated (e.g., Linardon, et al., 2017), and commonly recommended treatment for EDs (National Institute of Health and Care Excellence, 2017). Although CBT is consistently more effective compared to control treatments (both active – any other psychotherapy approach – and inactive control conditions) at reducing symptoms, rates of success are modest, and relapse is common (Halmi et al., 2002; Linardon et al., 2017; Poulsen et al., 2014; Thompson-Brenner, 2002). In a meta-analysis conducted by Thompson-Brenner (2002), 48% of individuals (with BN) achieved recovery (defined as cessation of bingeing and purging behaviours following treatment) after receiving CBT treatment. Similarly, a more recent study showed recovery rates of 42% and 44% (for individuals with BN) following 5 months and 2 years of CBT treatment, respectively (Poulsen et al., 2014).

In addition, research suggests that many of those who do recover will experience relapse, further eroding the lasting effects of treatment (Murray, 2019). According to a study by Halmi and colleagues (2002), four months after successfully completing CBT treatment (abstaining from bingeing and purging behaviours), 44% of BN patients had relapsed and returned to old habits. As such, the odds of success for the recommended treatment for eating disorders are comparable to the flip of a coin. Prominent conceptualizations of EDs are dominated by a focus on cognitive and behavioural features, but often fail to consider important issues related to the self-concept, as well as interpersonal style and affect regulation (Tasca, 2019). For this reason, some researchers have turned to attachment theory (Bowlby, 1988), to provide a developmentally informed perspective that may fill gaps remaining in existing models of EDs. Indeed, an important ongoing target pertains to garnering a more comprehensive understanding of etiological and maintaining factors that operate in a transdiagnostic array of disordered eating behaviours.

### **Attachment**

Attachment is a well-researched psychological construct that reflects early family experiences, contributes to the development of the self-concept, and may help explain appearance overvaluation and disordered eating. Attachment theory is an evidence-based model of development that posits early interactions with primary caregivers form the basis of our representations of self and others, which guide our functioning across the lifespan. Over the course of the last 40 years, attachment theory has evolved from its origins in child development and adaptation (Ainsworth et al., 1978; Bowlby, 1980) to become one of the most insightful frameworks for interpreting relationship functioning, emotion regulation, and identity (Mikulincer & Shaver, 2007).

Bowlby (1982) hypothesized that humans are born with an innate psychobiological system (attachment behavioural system) that initially motivates infants to seek proximity, safety, and closeness to primary caregivers through the use of a series of (attachment) behaviours (e.g., crying, following, gazing, grasping) in times of need (Tasca & Balfour, 2014; Tasca et al., 2011). Repeated interactions with said caregivers throughout infancy and childhood are encoded in the implicit memory system, and eventually develop into internal working models (of attachment), that guide future relationships (Amini et al., 1996; Bowlby, 1982; Bowlby, 1988). These internal working models, or affective-cognitive schemas of expectations of care, sensitivity, and responsiveness, then guide how we interact with the world, experience ourselves and others, regulate our emotions, and cope with distress (Bowlby, 1988; Siegel, 1999). Over time, systematic patterns in interpersonal interactions develop from one's attachment history – what Hazan and Shaver (1987) called *attachment styles*.

Attachment styles are conceptualized as varying along two dimensions: attachment anxiety and attachment avoidance (Brennan et al., 1998). The attachment anxiety dimension refers to the degree to which an individual worries that a partner will not be available and responsive in times of need, whereas the attachment avoidance dimension indicates the extent to which an individual distrusts a partner's intentions, and strives to maintain behavioural independence, self-reliance, and emotional distance (Mukulincer & Shaver, 2012). Based on their interpersonal attachment patterns, individuals may be categorized as having either a secure or insecure attachment style – classifications that remain remarkably stable across the lifespan (Pinquart et al., 2013). Although initially conceptualized based on the child-caregiver relationship, Hazan and Shaver (1987) demonstrated that adults in close relationships displayed similar attachment patterns to those observed in children. Individuals who score low on both

dimensions (attachment anxiety and avoidance) are classified as being securely attached.

Conversely, individuals who score high on one or both dimensions are classified as being insecurely attached. There are three types of insecure attachment: anxious (high anxiety, low avoidance), avoidant (low anxiety, high avoidance), and fearful (high anxiety, high avoidance).

Securely attached adult relationships are characterized by heightened levels of intimacy, closeness, and trust, and accompanied by expectations of the availability of others in times of need (Hazan & Shaver, 1987; Mikulincer et al., 1993). Securely attached people have low levels of attachment anxiety and avoidance, and have an internalized view of the self as worthy and others as dependable (Mikulincer & Shaver, 2007). A secure attachment style emerges as a result of repeated interactions with warm, sensitive, and attentive caregivers who are available in times of need, and responsive to proximity- and support-seeking behaviours (Bowlby, 1982; Mikulincer & Shaver, 2012). Securely attached individuals report positive perceptions of early family relationships (Feeney & Noller, 1990), and describe their parents as being benevolent and not punitive (Levy et al., 1998). These individuals do not feel easily threatened, and tend to employ healthy, constructive, and effective affect-regulation strategies (Fuendeling, 1998). They comfortably and adaptively seek support from others in times of need, and actively desire intimacy and closeness with others in general (Mallinckrodt, 2000; Park et al., 2004). Securely attached individuals can identify their own feelings; consider potential reactions, feelings, and needs of others; and reason cause and effect (Tasca et al., 2011). Securely attached people are more confident and assertive in social situations (Collins & Read, 1990), and are more likely to self-disclose, which fosters mutually fulfilling relationships (Mikulincer & Nachshon, 1991).

Insecurely attached individuals may be classified as having one of three attachment styles based on how they vary on the two attachment dimensions. Individuals high in attachment

anxiety and low in attachment avoidance are characterized as having an anxious attachment style. Anxiously attached individuals hold a negative view of the self, and an idealized view of others (Mikulincer & Shaver, 2007). This attachment style stems from interactions with inconsistent caregivers who were both benevolent and punitive (Levy et al., 1998). Anxious attachment is marked by emotional dysregulation, hypervigilance, fear of abandonment and rejection, jealousy in relationships, and an inclination to interpret situations as threatening (Hazan & Shaver, 1987). Anxiously attached individuals simultaneously crave closeness and intimacy with partners, yet worry their feelings will not be reciprocated (Feeney & Noller, 1990). Anxiously attached individuals utilize hyperactivating emotion regulation strategies (e.g., rumination on painful attachment-related memories) that upregulate the emotional system, thereby promoting hypervigilance regarding relationship losses (Mikulincer, 1995; Tasca et al., 2011). Anxious attachment is an overly dependent style, that seeks personal validation through gaining the acceptance and approval of others (Bartholomew, 1990). Anxiously attached individuals doubt their worth and value, and so turn to others for positive feedback and reassurance (Brennan & Bosson, 1998; Mikulincer, 1998a). As such, their self-esteem tends to fluctuate dramatically in response to perceived rejection or disapproval (Collins & Read, 1990), and they have an insatiable desire to pursue and achieve standards of value, in order to gain the approval of others (Bartholomew, 1990).

Conversely, individuals high in attachment avoidance and low in attachment anxiety are characterized as having an avoidant attachment style. Individuals with an avoidant attachment style hold inflated positive views of the self, and negative views of others (Mikulincer & Shaver, 2007). Avoidant attachment results from having unreliable, unresponsive, punitive, and malevolent caregivers (Levy et al., 1998). Avoidant attachment is distinguished by a fear of

intimacy and difficulty depending on and trusting others, which translates to increased self-reliance (Hazan & Shaver, 1987; Shaver & Mikulincer, 2002). Avoidant attachment is a defensive style, that employs emotional distancing strategies that deactivate or downregulate emotions, and limits accessibility to painful or traumatic memories (Fraley & Shaver, 2000; Tasca et al., 2011). Avoidantly attached individuals often struggle to identify emotions in themselves and others, and may become angry when overwhelmed (Crittenden, 2006; Siegel, 1999). They perceive the world as a dangerous place, and are wary of others, whom they view as mistrustful and potentially harmful (Tasca et al., 2011). Avoidantly attached people tend not to be particularly warm, intimate, or emotionally expressive, but are rather hostile, cold, and competitive (Bartholomew, 1990; Bartholomew & Horowitz, 1991; Horowitz et al., 1993; Mikulincer 1998b), which serves to further distance them from others.

Lastly, individuals high in both attachment anxiety and avoidance are considered to have a fearful attachment style. Fearfully attached individuals hold both a negative model of self and a negative model of others (Mikulincer & Shaver, 2007). A fearful attachment style arises from having caregivers who were perceived as rejecting, punitive, and malevolent (Levy et al., 1998). It may also result from confusing, frightening, or abusive parenting, or when there is a loss of an attachment figure (Tasca et al., 2011). Fearful attachment is marked by a simultaneous desire for closeness and fear of rejection, fueled by a deep-seated sense of being unlovable and unworthy, and a mistrust of others and belief that they are generally uncaring and rejecting (Bartholomew & Horowitz, 1991; Park et al., 2004). Fearfully attached individuals may react to distress haphazardly, with seemingly incompatible or inappropriate behaviours (Lyons-Ruth & Jacobovitz, 1999), and may struggle with emotional and cognitive disturbances, such as absorption, guilt, and dissociation (Steele et al., 2009).

In sum, theory and research suggest that a secure attachment style may lay the foundation for identity formation in the self-concept (Amianto et al., 2016; Mikulincer & Shaver, 2012), and so an insecure attachment style may help explain appearance overvaluation and engagement in disordered eating.

### **Attachment and Disordered Eating**

Research has consistently demonstrated an association between insecure attachment and mental illnesses, including EDs (Cortés-García et al., 2019; Dakanalis et al., 2016; Kuipers & Bekker, 2012; Kuipers et al., 2016; O’Kearney, 1996; Monteleone et al., 2017; O’Shaughnessy & Dallos, 2009; Tasca & Balfour, 2014; Troisi et al., 2005; Ward et al., 2000; Zachrisson & Skårderud, 2010). It is generally accepted that individuals with EDs have a higher prevalence of insecure attachment than their non-ED counterparts, as confirmed in numerous reviews (e.g., O’Kearney, 1996; O’Shaughnessy & Dallos, 2009; Tasca & Balfour, 2014; Ward et al., 2000; Zachrisson & Skårderud, 2010). In fact, a recent meta-analysis by Caglar-Nazali and colleagues (2014) demonstrated a large effect of insecure attachment (collapsed across attachment anxiety and avoidance;  $d = 1.31$ ) among individuals with EDs compared to individuals without EDs. Furthermore, insecure attachment also appears to be a risk-factor for disordered eating in non-clinical populations (Bamford & Halliwell, 2009; Eggert et al., 2007; Elgin & Pritchard, 2006; Faber et al., 2018; Jewell et al., 2016; Kiang & Harter, 2006; Koskina & Giovazolias, 2010; Ramacciotti et al., 2001). Studies involving community samples demonstrate positive associations between insecure attachment and greater weight concerns (Sharpe et al., 1998), body dissatisfaction (Lev-Ari et al., 2014), restrictive eating (Goossens et al., 2012), and binge eating (Boone, 2013).

Examining the dimensions of insecure attachment (i.e., attachment anxiety and avoidance) in relation to disordered eating reveals a similar pattern of results to when the composite variables is used. Indeed, studies based on clinical (Abbate-Daga et al., 2010; Grenon et al., 2016; Monteleone et al., 2017; Tasca et al., 2009; Troisi et al., 2006) and non-clinical (Bamford & Halliwell, 2009; Han & Kahn, 2017; Pepping et al., 2015; Pidgeon & Grainger, 2013; Shanmugam et al., 2012; Ty & Francis, 2013) samples alike show associations between disordered eating symptoms and higher levels of both attachment anxiety and avoidance. Additionally, in a meta-analysis of 70 studies, Faber and colleagues (2018) noted a similar sized correlation between greater attachment insecurity ( $r = .266$ ), anxiety ( $r = .271$ ), avoidance ( $r = .119$ ), and fearfulness ( $r = .184$ ) on the one hand, and unhealthy eating behaviours (e.g., binge eating, purging, dieting, emotional eating, etc.) on the other hand. Therefore, it appears that both attachment anxiety and avoidance are related to disordered eating outcomes.

Despite the zero-order correlations found suggesting that both attachment anxiety and avoidance are related to disordered eating outcomes, the results pertaining to the unique relationship (i.e., when controlling for the other) are less clear. On the one hand, some researchers find that only attachment anxiety is related to disordered eating outcomes when controlling for attachment avoidance. For example, in a clinical sample, Illing and colleagues (2010) found that higher attachment anxiety was significantly related to greater ED symptom severity and poorer treatment outcomes across women with AN-R, AN-B, and BN, controlling for ED diagnosis. This finding did not hold for attachment avoidance, as it was not uniquely related to ED outcomes when controlling for attachment anxiety. Similarly, in a non-clinical sample, Suldo and Sandberg (2000) revealed positive partial associations between anxious attachment and disordered eating psychopathology (bulimia, drive for thinness), but only noted a

negative partial association between avoidant attachment and body dissatisfaction. Furthermore, in research that examined mean differences in attachment styles, Troisi and colleagues (2006) revealed women with EDs (AN, BN, EDNOS) scored higher on measures of anxious, but not avoidant attachment (compared with women with no current or past ED).

In contrast, some researchers have shown that both attachment anxiety and avoidance are uniquely related to eating disorder outcomes. In a non-clinical study, Pepping and colleagues (2015) found that both attachment anxiety and avoidance were each uniquely associated with eating psychopathology (e.g., drive for thinness, body dissatisfaction, bulimia) in a sample of undergraduate women. Similarly, in another non-clinical study, Shanmugam and colleagues (2012) found both attachment anxiety and avoidance were each uniquely associated with eating psychopathology, although the relationship was stronger for attachment anxiety. Therefore, in clinical and non-clinical samples, it appears that the unique contribution of attachment anxiety and avoidance to disordered eating outcomes is mixed and requires further elucidation.

Furthermore, adding complexity to the interpretation of these mixed results, when attachment avoidance and anxiety are examined simultaneously in mediation models (while controlling for the effect of the other), researchers find that attachment avoidance is more often (than attachment anxiety) uniquely and directly related to disordered eating outcomes, whereas attachment anxiety is usually indirectly related to disordered eating outcomes. For example, in a clinical sample, Tasca and colleagues (2009) found a direct association between attachment avoidance and disordered eating symptoms, whereas attachment anxiety was only indirectly related to ED symptoms via emotional reactivity (hyperactive affect regulation). In another clinical study, Dakanalis and colleagues (2014) revealed a direct association from attachment avoidance to disordered eating symptoms, whereas attachment anxiety was only indirectly

related to ED symptoms via maladaptive perfectionism. Attachment avoidance was also indirectly related to ED symptoms via maladaptive perfectionism (Dakanalis et al., 2014). Similarly, but in a non-clinical sample, Bamford and Halliwell (2009) showed a direct association between attachment avoidance and ED psychopathology, but only an indirect association between attachment anxiety and ED psychopathology, via social comparison. In another non-clinical study, Pidgeon and Grainger (2013) discovered direct associations between both attachment anxiety and attachment avoidance and ED psychopathology (in a hierarchical regression model), though these associations were both rendered not statistically significant with the addition of mindfulness in the analysis. Likewise, Ty and Francis (2013) also found direct associations between both attachment anxiety and avoidance and ED psychopathology in a community sample of women. However, these direct associations were no longer statistically significant when the mediating variables – social comparison and emotion dysregulation – were included in the analysis. Instead, there were indirect associations for anxious and avoidance attachment styles. As such, in clinical and community samples, it seems attachment anxiety and avoidance are both consistently indirectly related to disordered eating through the influence of various mediators; however, attachment avoidance may also be directly related to disordered eating.

Although I am unaware of research explicitly linking attachment with appearance overvaluation, past research and theoretical foundations suggest the possibility of a link. Indeed, early family dynamics and experiences have long been implicated in the etiology of EDs. In her seminal contributions to the ED literature, Hilde Bruch (1978, 1981) depicts AN as a manifestation of an incomplete self-concept (lack of identity awareness) and pervasive sense of ineffectiveness. According to Bruch, disturbances in the development of the self arise as

products of extremely controlling and exacting parenting, whereby the child's wishes, needs, and emotions are disregarded, thus limiting their opportunities to establish a coherent and elaborate identity. Children raised in such restrictive and dismissing environments experience a deep sense of ineffectiveness, as their parents' desires take precedence over their own. In turn, these children resort to using their bodies and appearance as means of control and sources of self-definition in adolescence, a time of great change and uncertainty. The frantic preoccupation with appearance emerges as an attempt to compensate for deficits in self-awareness, and associated feelings of helplessness and incompetence. This maladaptive response occurs because individuals reared by controlling and perfectionistic parents fail to identify their own internal states. Instead, they adopt passive roles in their lives, acting only in response to the demands of others, and subsequently do not achieve self-reliance. When confronted with the challenges of pubescence, the child adopts the societally endorsed thin ideal, and therein resorts to dieting as a mechanism to acquire control, identity, and status. As such, Bruch's psychodynamic explanation of disordered eating as a proxy for an underdeveloped self-concept dovetails with the cognitive-behavioural explanation of EDs (i.e., appearance overvaluation). Another factor implicated in the transdiagnostic cognitive-behavioural theory of EDs and appearance overvaluation, that also relates to attachment, is global self-esteem.

### **Global Self-Esteem**

Self-esteem generally refers to the evaluative component of the self-concept (Marsh & Shavelson, 1985) or an attitude about the self, stemming from self-appraisals (Baumeister et al., 1989). Therefore, self-esteem represents the extent to which an individual evaluates themselves positively or negatively. These evaluations may be domain-specific (e.g., academics, appearance, athletics) or global (e.g., an overall or average self-assessment reflecting self-evaluations

summed across a variety of contexts and domains). Psychological research has predominantly focused on global self-esteem, exploring individuals' positive or negative attitudes toward the self as a whole (Rosenberg et al., 1995).

The aspects of oneself that contribute to global self-esteem are complex; some facets of the self may be central to feelings of self-worth (i.e., how much a person values themselves), whereas others may be peripheral (Rosenberg et al., 1995; Rosenberg & Pearlin, 1978). The impact of a given component of one's self-concept (e.g., dispositions and social identity elements) on global feelings of self-esteem is contingent upon the awareness, importance, and centrality of that aspect to the individual and their cognitive structure (Rosenberg & Pearlin, 1978). A contingency of self-worth refers to a domain or set of outcomes upon which a person has staked their self-worth, such that the individual's self-conceptualization of their value depends on their perceived successes or failures to meet self-imposed standards in that domain (Crocker & Wolfe, 2001).

Crucially, people differ in the contingencies on which they base their self-worth; people may hold multiple contingencies of self-worth, and to varying degrees. Contingencies of self-worth are organized hierarchically, with broad superordinate contingencies (e.g., appearance) containing various pertinent specific or subordinate contingencies (e.g., weight, hair, makeup, style). The more emphasis placed on a particular contingency in an individual's self-concept, the more readily and chronically accessible and easily activated that contingency will likely be (Crocker & Wolfe, 2001). How we interpret various events and circumstances, and their subsequent impact on our self-worth, depends on their perceived importance to our valued contingencies of self-worth – a notion first proposed by William James (1890).

Contingencies of self-worth develop over time in response to numerous forms of socialization and social influence, drawing from caregiver-child or parent-child interactions (e.g., Bartholomew, 1990), cultural values and norms (e.g., Solomon et al., 1991), and observational learning (e.g., Bandura, 1991). As such, contingencies of self-worth are relatively stable, but not unchangeable (Crocker & Wolfe, 2001). In addition to their role in forming the basis of self-esteem, attributes underlying contingencies of self-worth may be personally important or relevant for a variety of reasons including cultural significance, as a means to a desired end or instrumental purpose, or because they are valued by friends or family (Deci & Ryan, 1991; Marsh, 1986). Individuals may gradually revise their contingencies of self-worth across their lifespan, as changes in local environments or one's abilities make it difficult to satisfy existing contingencies of self-worth. Importantly, it is easier to laterally shift from one subordinate contingency of self-worth to another, than it is to substitute one superordinate contingency for another.

In their development of the Contingencies of Self-Worth Scale (Crocker et al., 2003), Crocker and colleagues identified seven theoretically meaningful domains upon which people base their self-worth: approval, appearance, God's love, family support, school competency, competition, and virtue. In general, contingencies of self-worth that hinge on the approval, attitudes, or behaviour of others – rather than one's own efforts and accomplishments – should theoretically be more challenging to satisfy, because they are further outside one's control, and therefore associated with lower average levels of global self-esteem (Crocker & Wolfe, 2001). In their sample of over 1,300 college students, Crocker and colleagues (Crocker et al., 2003) found that basing self-worth on more external sources (e.g., appearance and others' approval) was moderately and negatively correlated with global self-esteem. This finding is not surprising, in

light of the transdiagnostic cognitive-behavioural theory of EDs (Fairburn et al., 2003), which highlights core low global self-esteem as one of four maintaining processes of the core ED psychopathology (overvaluation of eating, shape and weight, and their control) to impede change.

In their transdiagnostic cognitive behavioural theory of EDs, Fairburn and colleagues (2003) identified core low global self-esteem as a factor contributing to adverse outcomes for certain individuals with EDs. Although most people with EDs are self-critical of their inability to control their eating, shape and weight, a subgroup of individuals with EDs hold an unconditional and pervasive sense of low global self-esteem, such that their negative view of themselves is conceptualized as part of their permanent identity (Fairburn et al., 2003). The negative self-judgments they make are autonomous and largely independent of performance, and therefore are less affected by changes in the state of the ED. This core low global self-esteem often hinders change in general and does so through two main mechanisms. First, core low global self-esteem generates hopelessness in individuals with EDs about their capacity to change, thereby undermining their adherence to and motivation for treatment. Second, core low global self-esteem contributes to the determined pursuit of achievement in domains of personal importance in individuals with EDs, thereby fuelling appearance overvaluation, and dissuading recovery (Fairburn et al., 2003). In a study exploring the predictive significance of overvaluation of shape/weight for individuals with BED, Grilo and colleagues (2013) found overvaluation was associated with significantly greater ED psychopathology (e.g., binge eating frequency) and lower global self-esteem. Core low global self-esteem also seems to be self-perpetuating, due to predominant cognitive biases coupled with over-generalization, which result in perceived

failures being interpreted as confirmatory evidence of themselves as overall failures, reaffirming global negative self-views.

Given global self-esteem's implications for the development of one's self-concept via contingencies of self-worth, it is perhaps prudent to consider how it may relate to attachment styles; one's ability to develop a coherent identity may be linked to early attachment experiences with primary caregivers (Jacobs et al., 2003). In fact, Hazan and Shaver (1994) specifically identified global self-esteem as being – in part – a product of the caregiving environment, as characterized by attachment styles. Consistent with the internal working models of the self, research indicates that the quality of an individual's attachment model of the self (positive or negative) is highly related to the quality of their self-concept (e.g., Griffin & Bartholomew, 1994). For instance, Bartholomew and Horowitz (1991) discovered higher levels of global self-esteem in individuals who were securely or avoidantly attached (i.e., positive models of the self) than those who were anxiously or fearfully attached (i.e., negative models of the self). In a more recent study, Bylsma, Cozzarelli, and Sumer (1997) replicated the pattern of attachment style differences in global self-esteem evident in past research: respondents with a positive attachment model of the self (securely or avoidantly attached individuals) reported higher global self-esteem than those with a negative attachment model of the self (anxiously or fearfully attached individuals). The same study also explored attachment differences regarding competence within specific domains, including the domain of attractiveness/physical appearance. Securely and avoidantly attached individuals scored the highest (significantly greater than anxious or fearfully attached individuals), whereas anxiously attached individuals reported significantly lower levels of competence in the attractiveness domain than any other group (Bylsma et al., 1997). Notably, the mean level of competence in the attractiveness domain for anxiously attached individuals

was the lowest average level of competence observed in the study (Bylsma et al., 1997). In a study by Park, Crocker, and Mickelson (2004) investigating attachment styles and contingencies of self-worth, individuals high in anxious attachment (anxiously or fearfully attached) reported the lowest global self-esteem and had self-worth that was highly contingent on their appearance. In contrast, avoidantly attached individuals were the least likely (of the four attachment styles) to have self-esteem contingent on appearance. As such, it seems as though attachment styles rooted in positive models of the self (secure and avoidant) may foster greater (more positive) self-esteem, that is also less reliant on external validation, whereas attachment styles anchored in negative models of the self (anxious and fearful) may promote weaker self-esteem, that is more vulnerable to extrinsic factors.

Low global self-esteem is theorized to be a risk factor for appearance overvaluation, a dysfunctional system of self-worth that largely or exclusively focuses on the control of one's body shape/weight in the forming one's self-concept, and spurs engagement in disordered eating behaviours (Fairburn et al., 2003). Insecurely attached individuals high in attachment anxiety (either anxiously or fearfully attached) hold negative views of the self. Low global self-esteem may render these individuals (with a negative model of self) more susceptible to appearance overvaluation, in the absence of a diversified sense of self and robust sense of self-worth. Endorsing appearance overvaluation would, in turn, spur engagement in disordered eating behaviours. In contrast, individuals who are avoidantly attached hold a positive model of the self, which seems to serve as a protective factor against low global self-esteem. Attachment avoidance then, may be more directly related to appearance overvaluation and disordered eating behaviours.

**Present Study**

The purpose of the present research was to explore the relationship between attachment, global self-esteem, appearance overvaluation, and restrictive eating in a community sample of undergraduate women. More specifically, I addressed the following research questions and corresponding hypotheses (see Figure 3):

Research question 1: Is attachment anxiety related to restrictive eating via low global self-esteem and appearance overvaluation?

Hypothesis 1: Higher attachment anxiety will be associated with greater appearance overvaluation indirectly via low global self-esteem (paths a1, b1 in Figure 3)

Hypothesis 2: Higher attachment anxiety will be associated with greater restrictive eating indirectly via low global self-esteem (paths a1, b1 in Figure 3) and appearance overvaluation (path c1 in Figure 3).

Research question 2: Is attachment avoidance related to restrictive eating via low global self-esteem and appearance overvaluation?

Hypothesis 3: Higher attachment avoidance will be directly associated with greater appearance overvaluation (path a5 in Figure 3), but not indirectly via low global self-esteem (paths a4, b1).

Hypothesis 4: Higher attachment avoidance will be associated with greater restrictive eating, both directly (path a6 in Figure 3), and indirectly via appearance overvaluation (paths a5, c1 in Figure 3).

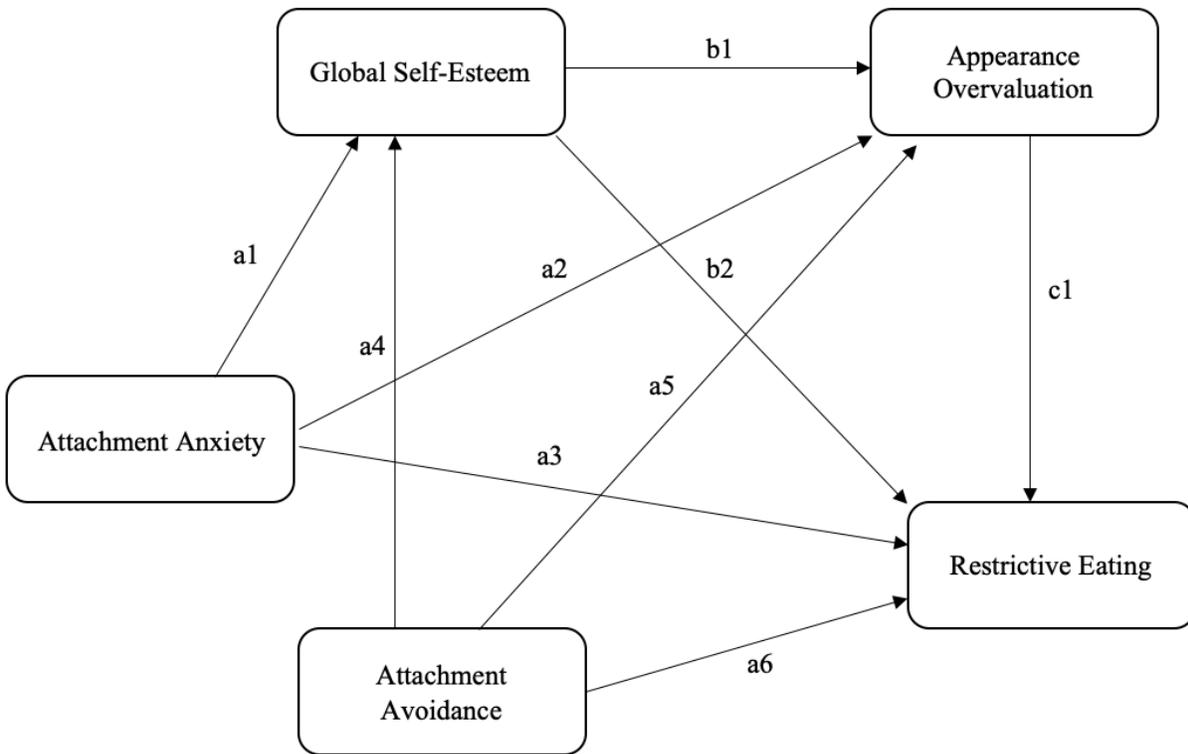


Figure 3. Proposed serial mediation model for attachment anxiety, attachment avoidance, global self-esteem, appearance overvaluation, and restrictive eating.

## Method

### Participants, procedure, and materials

I conducted a secondary analysis of existing data that were collected for a different, but related line of research. Participants ( $N = 527$ ) were adult undergraduate women at Carleton University recruited through the SONA system. Participants aged 25 and older were excluded from the study, as average onset for disordered eating behaviours peak in late adolescence and early adulthood (Lewinsohn et al., 2000; Stice et al., 2013). Furthermore, participants were excluded from the study if they were under the age of 18, had incomplete data, or withdrew from the study. In total, 245 participants were excluded from the study. Participants completed the study online (via Qualtrics), and provided basic demographic information, including their age,

height, and weight. The average age of participants was 19.02 years old ( $SD = 1.38$ ; range was 18 to 24 years old). They also completed a battery of questionnaires of which the following were analyzed in my thesis:

**Experiences in Close Relationships-12 (ECR-12).** The Experiences in Close Relationships-12 (ECR-12; Lafontaine et al., 2016) is a 12-item self-report measure of adult attachment (to romantic partners) that was derived from the original Experiences in Close Relationships questionnaire (ECR; Brennan, Clark, & Shaver, 1998) using Item Response Theory (IRT). The ECR-12 evaluates two dimensions of attachment: Attachment Avoidance (e.g., “I do not feel comfortable opening up to romantic partners”) and Attachment Anxiety (e.g., “I need a lot of reassurance that I am loved by my partner”), each of which corresponds to six (or half of the) items on the questionnaire. Participants responded to each item using a 7-point Likert scale with endpoints *strongly disagree* (1) and *strongly agree* (7). Total scores range from 12 to 84, with higher scores indicating greater attachment avoidance and anxiety with romantic partners. The ECR-12 showed good internal consistency in its development, with alpha values between .78 and .87 for the anxiety subscale, and between .74 and .83 for the avoidance subscale (Lafontaine et al., 2016), indicating acceptable to excellent internal consistency. Furthermore, Tasca and colleagues (2017) replicated these findings of good internal consistency with a sample of patients with EDs, producing alpha values of .86 for both the attachment anxiety and avoidance subscales. Moreover, findings suggest the ECR-12 yields relatively consistent results over time, indicating good stability (Lafontaine et al., 2016; Tasca et al., 2017).

**Rosenberg Self-Esteem Scale (RSES).** The Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) is 10-item self-report measure of global self-esteem that evaluates both positive (e.g., “I feel that I have a number of good qualities”) and negative (e.g., “I feel I do not

have much to be proud of”) feelings about the self. Participants responded to each using a 7-point Likert response scale with endpoints ranging from *strongly disagree* (1) and *strongly agree* (7). Items 3, 5, 8, 9, and 10 are reverse scored (e.g., “At times I think I am no good at all”) and all items were coded such that higher scores indicate greater global self-esteem. The RSES demonstrated good reliability with an overall coefficient alpha of .91 in a community sample (Sinclair et al., 2010). A study by Griffiths and colleagues (1999) demonstrated the RSES to have good construct and convergent validity in a disordered eating sample, over the Coopersmith Self-Esteem Inventory (SEI; Coopersmith, 1967).

**Beliefs About Appearance Scale (BAAS).** The Beliefs About Appearance Scale (BAAS; Spangler, 1999a; Spangler & Stice, 2001) is a 20-item self-report measure of appearance overvaluation. The BAAS consists of 20 items equally distributed across four domains that assess the agreement with beliefs about the perceived importance of appearance for self-views (e.g., “My value as a person depends upon how I look”), feelings, (e.g., “My moods are influenced by how I look”), interpersonal relationships (e.g., “The opinion others have of me is based on my appearance”), and achievement (e.g., “The opportunities that are available to me depend upon how I look”). Responses to the BAAS items were anchored at 0 (*not at all*) and 4 (*extremely*). An average of the 20 items is computed with higher numbers indicating greater appearance overvaluation. Psychometric research on the BAAS indicates a single construct underlies responses to the four domains (see Spangler & Stice, 2001). The BAAS has been shown to have high internal consistency with alpha values between .94 and .96 in its development samples (Spangler & Stice, 2001). The BAAS has also been shown to have high test-retest reliability in over three weeks and over 10 months, indicating good rank order stability over time. Of note, in the data I analyzed, participants completed a short 4-item version of the

BAAS that included one item from each domain that had the highest factor loading reported by Spangler and Stice (2001). The items were “How I feel about myself is largely based on my appearance,” “My moods are influenced by how I look,” “People will think less of me if I don’t look my best,” and “The opportunities that are available to me depend upon how I look.”

**Eating Disorder Examination Questionnaire 6.0.** The Eating Disorder Examination Questionnaire (EDE-Q) version 6 (Fairburn & Beglin, 1994) is a 36-item self-report measure used to assess the frequency and severity of core eating disorder symptoms over the past four weeks (28 days). It was adapted from the Eating Disorder Examination (EDE) structured interview used to diagnose EDs (Fairburn & Cooper, 1993). Most test items are measured using one of two 7-point response scales, where 0 represents “no days” or “not at all” and 6 represents “everyday” or “markedly”. The test assesses cognitive and behavioural ED symptoms, and contains four subscales: restraint (e.g., “Have you gone for long periods of time – 8 waking hours or more – without eating anything at all in order to influence your shape or weight?”), eating concern (e.g., “Has thinking about food, eating, or calories made it very difficult to concentrate on things you are interested in – for example, working, following a conversation, or reading?”), shape concern (e.g., “How dissatisfied have you been with your shape?”), and weight concern (e.g., “Has your weight influenced how you think about – judge – yourself as a person?”). A global score can also be calculated that ranges from 0 to 216, with higher scores suggesting greater levels of ED symptomology. The EDE-Q has demonstrated good reliability with coefficient alphas ranging from  $\alpha = .73$  to  $\alpha = .85$  (Tasca et al., 2013). Normative data indicates that (Western/American) undergraduate women ( $N = 723$ ) demonstrate clinically significant (based on a cut-off  $> 4.0$ ) restraint (7.9%), eating concern (2.2%), shape concern (14.8%), weight concern (10.2%) and global eating pathology (5.6%) (Luce et al., 2008). The

EDE-Q also contains questions, about the frequency of engagement in certain maladaptive eating and weight-control behaviours (binge eating, vomiting, laxative use, compulsive exercise) over a 28-day period (e.g., “Over the past 28 days, how many times have you taken laxatives as a means of controlling your shape or weight?”). Of note, in the data I analyzed, participants only completed the five items in the restraint subscale. The items were “Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight (whether or not you have succeeded)?,” “Have you gone for long periods of time (8 waking hours or more) without eating anything at all in order to influence your shape or weight?,” “Have you tried to exclude from your diet any foods that you like in order to influence your shape or weight (whether or not you have succeeded)?,” “Have you tried to follow definite rules regarding your eating (for example, a calorie limit) in order to influence your shape or weight (whether or not you have succeeded)?,” and “Have you had a definite desire to have an empty stomach with the aim of influencing your shape or weight?”

## **Results**

### **Preliminary Analyses**

I tested my hypotheses through a series of regression analyses conducted using the Statistical Package for Social Sciences (SPSS) and PROCESS macro version 3.5 (Hayes, 2013). To ensure the proper assumptions for a regression analysis were upheld, I screened the data for the presence of heteroskedasticity and outliers. I assessed the data for heteroskedasticity, using the Breusch-Pagan and Koenker tests, which produced Lagrange multiplier values of 42.65,  $p < .001$  and 48.14,  $p < .001$ , respectively. Since both values were statistically significant, I concluded that heteroskedasticity was present in the data. Accordingly, heteroskedasticity-consistent Huber-White standard errors were used in the main analyses.

No univariate outliers were detected based on *z*-scores of each variable. To probe for potential cases of multivariate outliers, I performed a multiple linear regression with EDEQ restriction scores as the dependent variable, and ECR Avoidant, ECR Anxious, global self-esteem, and appearance overvaluation scores entered as independent variables. Mahalanobis' Distance scores were calculated for each participant, and the values were compared to a chi-squared distribution with the same degrees of freedom, returning probabilities. These probabilities were then compared against a cut-off score of .001. Based on that cut-off, two participants were identified as multivariate outliers. Note that I conducted my main analyses both with and without the two multivariate outliers to examine their impact on results, and determined that their impact was minimal. As such, the two multivariate outliers were retained in the analyses. I also assessed the internal consistency reliability of the scales used in my thesis. Alpha values for RSES ( $\alpha = .91$ ), short 4-item BAAS ( $\alpha = .82$ ), ECR-12 ( $\alpha = .79$ ), and restrictive eating subscale of the EDEQ ( $\alpha = .90$ ) were all good to excellent.

### **Descriptive and Bivariate Analyses**

Descriptive statistics and correlations between all model variables are reported in Table 1). As expected, attachment anxiety was negatively correlated with global self-esteem ( $r = -.48, p < .001$ ), and positively correlated with appearance overvaluation ( $r = .43, p < .001$ ), and restrictive eating ( $r = .32, p < .001$ ). Attachment avoidance was also negatively correlated with global self-esteem ( $r = -.27, p < .001$ ), and positively correlated with appearance overvaluation ( $r = .10, p < .05$ ), and restrictive eating ( $r = .10, p < .05$ ). Global self-esteem was negatively correlated with both appearance overvaluation ( $r = -.45, p < .001$ ), and restrictive eating ( $r = -.38, p < .001$ ). Finally, appearance overvaluation was positively correlated with restrictive eating ( $r = .45, p < .001$ ).

**Table 1***Descriptive analyses and bivariate correlations*

	<i>M</i>	<i>SD</i>	1	2	3	4
1. Attachment Anxiety	28.62	8.80	–			
2. Attachment Avoidance	18.55	7.79	-.03	–		
3. Global Self Esteem	42.69	12.06	-.48**	-.27**	–	
4. Appearance Overvaluation	13.31	3.92	.43**	.10*	-.45**	–
5. Restrictive Eating	14.34	8.69	.32**	.10*	-.38**	.45**

*Note.* \*  $p < .05$ . \*\*  $p < .001$ .

### Test of the Hypotheses

I conducted a serial mediation analysis to examine my hypotheses using the PROCESS macro version 3.5 (Hayes, 2013) for SPSS. Model 4 was used to test hypothesis 1 and model 6 was used to test hypotheses 2 to 4. Unstandardized regression coefficients and associated 95% confidence intervals (CI) for the direct effects from the serial mediation analyses are reported in Table 2. Hypothesis 1 was that higher attachment anxiety would be associated with greater appearance overvaluation indirectly via lower global self-esteem. Consistent with Hypothesis 1, attachment anxiety was indirectly related to appearance overvaluations via lower global self-esteem ( $b = .07$ , 95% CI = .04, .09).

Hypothesis 2 was that higher attachment anxiety would be associated with greater restrictive eating indirectly via lower global self-esteem and higher appearance overvaluation. Consistent with Hypothesis 2, greater attachment anxiety was indirectly related to greater restrictive eating via lower global self-esteem and higher appearance overvaluation ( $b = .05$ , 95% CI = .03, .07).

Hypothesis 3 was that higher attachment avoidance would be directly associated with greater appearance overvaluation, but not indirectly via lower global self-esteem. Contrary to my hypothesis, attachment avoidance was not directly related to appearance overvaluation ( $b = .02$ ,

95% CI = -.03, .06). Instead, greater attachment avoidance was directly related to lower global self-esteem ( $b = -.44$ , 95% CI = -.55, -.32).

Hypothesis 4 was that higher attachment avoidance would be associated with greater restrictive eating, both directly, and indirectly via higher appearance overvaluation. Inconsistent with hypothesis 4, attachment avoidance was not related to restrictive eating, either directly ( $b = .02$ , 95% CI = -.07, .11), or indirectly via appearance overvaluation ( $b = .01$ , 95% CI = -.02, .04).

**Table 2**

*Direct effects from the serial mediation model*

Path	<i>b</i>	95% CI
Attachment Anxiety → Global Self-Esteem (path a1)	-.67**	[-.78, -.57]
Global Self-Esteem → Appearance Overvaluation (path b1)	-.10**	[-.13, -.07]
Appearance Overvaluation → Restrictive Eating (path c1)	.72**	[.53, .92]
Attachment Anxiety → Restrictive Eating (total effect)	.32**	[.25, .40]
Attachment Avoidance → Global Self-Esteem (path a4)	-.44**	[-.55, -.31]
Attachment Avoidance → Appearance Overvaluation (path a5)	.02	[-.03, .06]
Attachment Avoidance → Restrictive Eating (path a6)	.02	[-.07, .11]
Attachment Avoidance → Restrictive Eating (total effect)	.12*	[.02, .22]

*Note.* \*  $p < .05$ . \*\*  $p < .001$ . CI = Confidence Interval

**Discussion**

In my thesis, I examined the relationship between attachment, global self-esteem, appearance overvaluation, and restrictive eating in a sample of undergraduate women. My hypotheses for attachment anxiety were supported. Notably, my first hypothesis was confirmed, in that women higher (relative to lower) in attachment anxiety experienced greater appearance overvaluation, via lower global self-esteem. My second hypothesis was also confirmed, as those with higher (relative to lower) attachment anxiety reported more restrictive eating through lower global self-esteem and higher appearance overvaluation. Conversely, my hypotheses for attachment avoidance were not supported. Notably, contrary to my third hypothesis, attachment

avoidance was not related to appearance overvaluation, but was negatively related to global self-esteem, such that higher attachment avoidance was related to lower global self-esteem. Lastly, inconsistent with my fourth hypothesis, attachment avoidance was neither directly nor indirectly related to restrictive eating.

The finding that women higher (relative to lower) in attachment anxiety experienced greater appearance overvaluation indirectly via lower global low self-esteem (hypothesis 1) is consistent with prior research. It is generally accepted and consistently found that individuals in community samples with high (compared to low) attachment anxiety, and therefore a negative model of the self, experience lower global self-esteem compared to individuals with a positive model of the self who are either securely or avoidantly attached (Bartholomew & Horowitz, 1991; Bylsma et al., 1997; Park et al., 2004). Indeed, my study replicated these findings, showing that women who scored high (compared to low) on attachment anxiety experienced significantly lower global self-esteem.

Women high (relative to low) in attachment anxiety also experienced greater appearance overvaluation, through lower global self-esteem. Although no previous research exists (to my knowledge) exploring the relationship between attachment dimensions and appearance overvaluation, this finding aligns with earlier research on the related construct of contingencies of self-worth. For example, results from a study by Park and colleagues (2004) revealed individuals with higher (relative to low) attachment anxiety had lower global self-esteem and self-worth that was largely and significantly contingent on appearance. Together, these findings suggest that overvaluing the importance of appearance in the self-concept may provide an additional route by which individuals high in attachment anxiety may seek to validate

their feelings of low global self-esteem and feel closer to others (by attempting to approximate the societally endorsed thin ideal).

The finding that women higher (relative to lower) in attachment anxiety experience greater restrictive eating through lower global self-esteem and subsequent higher appearance overvaluation (hypothesis 2) is also consistent with prior research. For example, many studies have found associations between attachment anxiety and disordered eating behaviours in clinical (Dakanalis et al., 2014; Illing et al., 2010; Tasca et al., 2009) and non-clinical samples (Bamford & Halliwell, 2009; Pepping et al., 2015; Suldo & Sandberg, 2000; Troisi et al., 2006). Likewise, appearance overvaluation and low global self-esteem are consistently related to disordered eating behaviours, as evidenced by their inclusion in the transdiagnostic cognitive-behavioural theory of EDs (Fairburn et al., 2003). My findings merge these two lines of research and extend the existing literature by establishing a new path through which attachment anxiety may indirectly affect (increase) restrictive eating via the mediating mechanism of low global self-esteem and high appearance overvaluation.

The finding that women higher (relative to lower) in attachment avoidance also had lower global self-esteem (hypothesis 3), is in line with existing research. Although individuals high in attachment avoidance typically report high self-esteem – often similar to that of securely attached individuals – their self-esteem can be considered somewhat defensive, as they refuse to acknowledge personal weaknesses that could render them susceptible to rejection or expose these flaws to others (Mikulincer, 1995, 1998a). Considering the defensive nature of avoidantly attached individuals' self-esteem, and remembering that attachment avoidance is a form of attachment insecurity, it is perhaps understandable that it may occasionally be related to global low self-esteem. In fact, a study by Wu (2009) found medium associations between both

attachment anxiety and avoidance and low global self-esteem (as measured by the RSES), although the relationship was stronger for attachment anxiety, as was the case in my study. Similarly, Foster and colleagues (2007) also revealed negative associations between both attachment anxiety and avoidance and global self-esteem, once again demonstrating a larger effect for attachment anxiety. Together, these findings lend support to the notion that insecurely attached individuals have lower global self-esteem than their securely attached counterparts, with individuals high in avoidant attachment experiencing slightly higher global self-esteem than those high in anxious attachment.

To my knowledge, this was the first study to probe the relationship between attachment dimensions and appearance overvaluation (hypothesis 3). Nonetheless, previous research has explored embodiment as a mediator between attachment dimensions and ED psychopathology, revealing some promising and interesting insights, which may help situate my results in context. Monteleone and colleagues (2017) investigated whether embodiment (disturbance in the way one experiences their own body) might be a mediating mechanism between attachment insecurity and ED psychopathology (in a clinical sample). Individuals with EDs had higher levels of both attachment anxiety and avoidance (compared to healthy controls), and there were significant correlations between insecure attachment and ED psychopathology. Furthermore, people with EDs with higher levels of anxious or avoidant attachment experienced greater difficulties with embodiment, and this effect was particularly pronounced for those high in avoidant attachment. Additionally, embodiment was found to mediate the relationship between attachment avoidance and ED psychopathology (Monteleone et al., 2017). These findings suggest that (a disorder of) embodiment may be a critical factor in determining whether or not attachment avoidance is related to appearance overvaluation and ED psychopathology.

Conversely, there may be another (unknown) critical mechanism underpinning the relationship between attachment avoidance, appearance overvaluation, and ED psychopathology.

In my thesis, I found a small zero-order association between attachment avoidance and appearance overvaluation (see Table 1); however, this association was attenuated when shared variance with attachment anxiety was accounted for in the analyses. As such, in my thesis, it seems the link between attachment avoidance and appearance overvaluation was due to the shared variance with attachment anxiety. These results are consistent with Park and colleagues (2004) who did not find attachment avoidance to be associated with appearance contingencies of self-worth--a construct related to appearance overvaluation--suggesting those who are high in avoidant attachment may stake their self-worth on domains other than physical appearance. Accordingly, more research is needed to better understand how dimensions of insecure attachment are related to appearance overvaluation.

The finding that women higher (relative to lower) in attachment avoidance did not experience greater restrictive eating – either directly, or indirectly via appearance overvaluation (hypothesis 4) – is somewhat inconsistent with prior research. Previous studies have noted mixed results regarding the associations between attachment avoidance and disordered eating behaviours. For example, in clinical samples, Tasca and colleagues (2009) discovered a direct association between attachment avoidance and ED symptoms; however, Illing and colleagues (2010) did not find attachment avoidance was uniquely and directly related to ED psychopathology. Similarly, in community samples, whereas Bamford and Halliwell (2009) showed a direct relationship between attachment avoidance and ED psychopathology, Suldo and Sandberg (2000) only found a direct relationship between attachment avoidance and body dissatisfaction, but not bulimia or drive for thinness. In my thesis, I found a small zero-order

correlation between attachment avoidance and restrictive eating; however, this association was attenuated when shared variance with attachment anxiety was accounted for. This finding suggests that when controlling for attachment anxiety, attachment avoidance is unrelated to restrictive eating.

Another explanation for the finding of no relationship between attachment avoidance and restrictive eating in my study could be that the association between attachment avoidance and restrictive eating is mediated by variables not considered in my thesis. For instance, Dakanalis and colleagues (2014) revealed an indirect relationship between attachment avoidance and ED symptoms via maladaptive perfectionism (in a clinical sample). Additionally, Pidgeon and Grainer (2013) and Ty and Francis (2013) discovered indirect relationships between attachment avoidance and disordered eating in community samples, mediated by mindfulness, and social comparison and emotion dysregulation, respectively. As such, more information is needed to better understand the mechanisms underpinning (or explaining) relationship between attachment avoidance and disordered eating. Moving forward, future research should examine the mediating influence of other variables – particularly perfectionism, social comparison, and emotion dysregulation – between attachment avoidance and disordered eating.

### **Implications of the Research**

The findings from my thesis have several implications for research, theory, and practice. These results offer a novel contribution to the literature, as my thesis is the first study (to my knowledge) to explore the relationship between attachment styles and appearance overvaluation. This is also the first study (to my knowledge) to examine attachment styles, global self-esteem, appearance overvaluation, and restrictive eating simultaneously in one model. Notably, by entering these variables into one model simultaneously, the risk of Type I error is

reduced, and there can be greater confidence in the results. The investigation of these relationships extends research by identifying possible antecedents of appearance overvaluation – the core psychopathology underlying disordered eating. Notably, my findings suggest that attachment anxiety may be a factor that may make women more susceptible to appearance overvaluation and restrictive eating. Identifying risk factors for the development of appearance overvaluation is critical for improving existing treatments for disordered eating, developing prevention efforts, and furthering our understanding of its significance for ED psychopathology (Fairburn, 2008). The transdiagnostic cognitive-behavioural theory of EDs (Fairburn et al., 2003) identifies both perfectionism and low global self-esteem as antecedents of appearance overvaluation, but does not elaborate on the role of interpersonal issues in eating disorders, or consider a developmental perspective. As such, currently less than 50% of patients with EDs achieve recovery after receiving treatment based on the transdiagnostic cognitive-behavioural theory of EDs (Poulsen et al., 2014; Thompson-Brenner, 2002).

Although interpersonal difficulties are mentioned in the transdiagnostic cognitive-behavioural theory of EDs, and interpersonal processes are recognized as contributing to the maintenance of EDs, there is not much elaboration on their unique contribution to appearance overvaluation and disordered eating. Critically, incorporating attachment theory into the existing conceptualization of EDs may help provide a more comprehensive understanding of the etiology of disordered eating. Indeed, the results from this study lend support to the notion that women who are high (relative to low) in anxious attachment may be uniquely or especially susceptible to low global self-esteem, appearance overvaluation, and restrictive eating.

Beyond the theoretical significance, the results of my thesis could help inform the development of effective prevention efforts for disordered eating, and may provide a fruitful path

for ED researchers to explore in investigating treatment-outcome research. The findings from my research implicate attachment anxiety as a vulnerability factor in the development of low global self-esteem, appearance overvaluation, and restrictive eating. Accordingly, it may be prudent to consider attachment styles or dimensions when determining which individuals or demographics to target with preventative measures, and what sorts of methods to employ. Although internal working models of the self, as denoted by attachment styles (as either positive or negative), are relatively stable throughout the lifespan (Pinquart et al., 2013), attachment characteristics can be modified through intensive interpersonal changes and long-term encouraging relationships (Waters & Waters, 2006). As such, it may be beneficial to identify those with higher attachment anxiety (who may be at greater risk for appearance overvaluation and disordered eating), and provide them with protective interventions before they develop problems such as disordered eating. For example, widespread screening with attachment measures (e.g., in schools, through doctors, etc.) could help determine which individuals to target (i.e., those high in attachment anxiety) with psychoeducational interventions that may help them better understand themselves and issues related to their insecure attachment (e.g., emotion regulation), with the goal of trying to delay or prevent the development of disordered eating psychopathology.

### **Limitations and Future Directions**

The results of my thesis should be considered within the context of its limitations. First, a cross-sectional design was employed, meaning I could not draw causal inferences about the relationship between the variables. For this reason, the results should be considered preliminary, and future longitudinal research is needed to elucidate the direction of the relationships between attachment anxiety, attachment avoidance, low global self-esteem, appearance overvaluation, and restrictive eating.

Another limitation was the use of self-report questionnaires to assess the variables of interest, including attachment styles, global self-esteem, appearance overvaluation, and restrictive eating. For example, in completing self-report questionnaires, individuals may be prone to self-presentation or social desirability bias, a phenomenon in which people attempt to portray themselves in a favourable light, thereby potentially obscuring symptoms and experiences (Tracey, 2016). Furthermore, participants completing self-report measures are also vulnerable to recall bias, whereby individuals may inaccurately remember experiences or omit relevant details. Participants may also lack the required introspective abilities to accurately respond to items. Additionally, self-report measures can be subject to random responding and acquiescence by participants, which is an additional risk (McGrath et al., 2010). Future research could benefit from incorporating alternative measures, such as the Adult Attachment Interview (AAI; George et al., 1985). The AAI is a structured, semi-clinical interview of a retrospective nature that focuses on early attachment experiences and their effects, and assesses attachment from a developmental perspective. The interview is coded based on content and quality of discourse, and as it is not a self-report measure, it is not subject to the pitfalls of self-report questionnaires.

An additional limitation of my thesis was the restriction of the sample to include only women. It is true that EDs and disordered eating behaviours are traditionally more common in women; however, it is also increasingly accepted and understood that men and gender-diverse people also experience disordered eating and EDs. More research is needed to investigate the role or implications of gender in disordered eating, and contribute to a comprehensive understanding of the diverse presentations of eating disorders. It is important to strive for

diversity, inclusion, and representation in research, so those who are most marginalized and perhaps uniquely affected are not overlooked.

A further limitation of my thesis was the lack of demographic information (e.g., race or ethnicity, socioeconomic status) about the sample. As such, the generalizability of my findings may be impacted, as I cannot speak to the diversity or representativeness of the sample. More research is needed to ensure a diverse and representative sample of individuals is being considered in disordered eating research.

Another limitation of the results was the use of a non-clinical sample; as such, the findings are not generalizable to individuals diagnosed with EDs (clinical samples). Therefore, an important direction for future research is to replicate the results of the current research with a clinical sample, in order to investigate these constructs among individuals with EDs, and inform interventions for ED treatment. Clinical ED researchers may want to examine whether attachment dimensions play a role in ED treatment-outcome research, paying particular attention to the influence of attachment anxiety. It is also crucial that future research explore the relationship between attachment, global self-esteem, appearance overvaluation, and disordered eating behaviours beyond restrictive eating, including bingeing, self-induced vomiting, excessive exercise, and laxative use.

### **Conclusion**

The purpose of my thesis was to establish and elucidate the relationship between attachment dimensions (anxiety and avoidance), low global self-esteem, appearance overvaluation, and restrictive eating, among a sample of undergraduate women. I discovered evidence for the hypotheses that women who experience greater attachment anxiety (relative to those lower in attachment anxiety), may be more susceptible to restrictive eating, by way of

greater appearance overvaluation and lower global self-esteem. In contrast, I found no evidence that attachment avoidance was related to restrictive eating – either directly, or via the effect of appearance overvaluation. Together, these findings suggest that attachment anxiety may be critical for explaining and understanding the relationship between low global self-esteem, appearance overvaluation, and restrictive eating behaviours. My thesis contributes to a growing body of literature on attachment and disordered eating, and implicates attachment anxiety as a potential antecedent of appearance overvaluation and restrictive eating in undergraduate women.

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**APPENDIX A: Study Measures**

**Experiences in Close Relationships-12 (ECR-12; Lafontaine et al., 2016)**

Rate how well each statement describes your typical feelings in romantic relationships:

1	2	3	4	5	6	7
Disagree strongly						Agree strongly

Avoidance

- I don't feel comfortable opening up to romantic partners.
- I feel comfortable sharing my private thoughts and feelings with my partner.(R)
- I tell my partner just about everything. (R)
- I usually discuss my problems and concerns with my partner. (R)
- I don't mind asking romantic partners for comfort, advice, or help. (R)
- I feel comfortable depending on romantic partners. (R)

Anxiety

- I worry about being abandoned.
- I worry that romantic partners won't care about me as much as I care about them.
- I worry a fair amount about losing my partner
- I worry about being alone.
- I need a lot of reassurance that I am loved by my partner.
- If I can't get my partner to show interest in me, I get upset or angry.

R = reversed item

**Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965)**

Please indicate how strongly you agree or disagree with each statement.

1	2	3	4
Strongly Agree	Agree	Disagree	Strongly Disagree

1. On the whole, I am satisfied with myself.
2. At times I think I am no good at all. (R)
3. I feel that I have a number of good qualities.
4. I am able to do things as well as most other people.
5. I feel I do not have much to be proud of. (R)
6. I certainly feel useless at times. (R)
7. I feel that I'm a person of worth.
8. I wish I could have more respect for myself. (R)
9. All in all, I am inclined to think that I am a failure. (R)
10. I take a positive attitude toward myself.

R = reversed item

**Beliefs About Appearance Scale (BAAS; Spangler & Stice, 2001)**

Please indicate the extent to which you agree with the following statements:

0	1	2	3	4
Not at all				Extremely

*Interpersonal*

1. The opinion others have of me is based on my appearance.
2. The amount of influence I have on other people depends upon how I look.
- 3. People will think less of me if I don't look my best.**
4. People would be more interested in me if I looked better.
5. My relationships would improve if I looked the way I wished.

*Achievement*

6. The amount of success I have in my (future) job or career depends largely upon how I look.
7. My appearance influences my ability to do things.
8. My performance in activities (e.g., school, work, hobbies, etc.) is influenced by how I look.
- 9. The opportunities that are available to me depend upon how I look.**
10. My school and work performance or opportunities would improve if I looked the way I wished.

*Self-views*

11. My value as a person depends upon how I look.
- 12. How I feel about myself is largely based on my appearance.**
13. I would think more highly of myself if I looked the way I wished.
14. How I look is a large part of who I am.
15. It is difficult to feel good about myself when I am not looking my best.

*Feelings*

16. My ability to feel happy depends upon how I look.
17. Improving my appearance is one of the few activities that makes me feel good or like I am accomplishing something.
18. My life will be more exciting or rewarding if I look good.
- 19. My moods are influenced by how I look.**
20. I would enjoy life more if I looked the way I wished.

### Eating Disorder Examination-Questionnaire (EDE-Q; Fairburn, 2008)

The following questions are concerned with the past four weeks (28 days) only. Please read each question carefully. Please answer all questions. Thank you.

Please select the appropriate number using the scale below. Remember that the questions only refer to the past four weeks (28 days) only.

0	1	2	3	4	5	6
No days	1-5 days	6-12 days	13-15 days	16-22 days	23-27 days	Every day

On how many days of the past 28 days...

1. Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight (whether or not you have succeeded)?
2. Have you gone for long periods of time (8 waking hours or more) without eating anything at all in order to influence your shape or weight?
3. Have you tried to exclude from your diet any foods that you like in order to influence your shape or weight (whether or not you have succeeded)?
4. Have you tried to follow definite rules regarding your eating (for example, a calorie limit) in order to influence your shape or weight (whether or not you have succeeded)?
5. Have you had a definite desire to have an empty stomach with the aim of influencing your shape or weight?
6. Have you had the desire to have a totally flat stomach?
7. Has thinking about food, eating or calories made it difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?
8. Has thinking about shape or weight made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?
9. Have you had a definite fear of losing control over eating?
10. Have you had a definite fear that you might gain weight?
11. Have you felt fat?
12. Have you had a strong desire to lose weight?

We are now going to ask you questions about your eating behaviours.

Please fill in the appropriate number in the boxes on the right. Remember that the questions only refer to the past four weeks (28 days).	
Over the past four weeks (28 days)...	Number
13...how many <u>times</u> have you eaten what other people would regard as an <u>unusually large amount of food</u> (given the circumstances)?	
14...on how many of these times did you have a sense of having lost control over your eating (at the time you were eating)?	
15...on how many <b>DAYS</b> have such episodes of overeating occurred (i.e., you have eaten an unusually large amount of food <u>and</u> have had a sense of loss of control at the time)?	
16...how many <u>times</u> have you made yourself sick (vomit) as a means of controlling your shape or weight	
17...how many <u>times</u> have you taken laxatives as a means of controlling your shape or weight?	
18...how many <u>times</u> have you exercised in a “driven” or “compulsive” way as a means of controlling your weight, shape or amount of fat, or to burn off calories?	

Please select the appropriate number. Please note that for these questions the term “binge eating” means eating what others would regard as an unusually large amount of food for the circumstances, accompanied by a sense of having lost control over eating.

19. Over the past 28 days, on how many days have you eaten in secret (i.e., furtively)? Do not count episodes of binge eating.

0	1	2	3	4	5	6
No days	1-5 days	6-12 days	13-15 days	16-22 days	23-27 days	Every day

20. On what proportion of times that you have eaten have you felt guilty (felt that you’ve done wrong) because of its effect on your shape or weight? Do not count episodes of binge eating.

0	1	2	3	4	5	6
None of the times	A few of the times	Less than half	Half of the times	More than half	Most of the time	Every time

21. Over the past 28 days, how concerned have you been about other people seeing you eat? Do not count episodes of binge eating.

0	1	2	3	4	5	6
Not at all		Slightly		Moderately		Markedly

Please select the appropriate number using the scale below. Remember that the questions only refer to the past four weeks (28 days) only.

0	1	2	3	4	5	6
Not at all		Slightly		Moderately		Markedly

- 22. Has your weight influenced how you think about (judge) yourself as a person?
- 23. Has your shape influenced how you think about (judge) yourself as a person?
- 24. How much would it have upset you if you had been asked to weight yourself once a week (no more, or less, often) for the next four weeks?
- 25. How dissatisfied have you been with your weight?
- 26. How dissatisfied have you been with your shape?
- 27. How uncomfortable have you felt seeing your body (for example, see your shape in the mirror, in a shop window reflection, while undressing or taking a bath or shower)?
- 28. How uncomfortable have you felt about others seeing your shape or figure (for example, in communal changing rooms, when swimming, or wearing tight clothes)?