The Longitudinal Association Between Body Image Dissatisfaction, Social Anxiety, and Fear of Negative Evaluation in Adolescents

Ashley Gerada

Thesis submitted to the University of Ottawa
in partial Fulfillment of the requirements for the
Master of Arts in Counselling Psychology

Faculty of Education
University of Ottawa

Acknowledgements

First and foremost, I would like to thank my supervisor, Dr. Tracy Vaillancourt, for her endless support and mentorship. Without her, I wouldn't have learned as much as I have in these two short years. I would also like to thank the Brain and Behaviour Lab Research Coordinators, Amanda Krygsman and Heather Brittain, for everything they do to keep our lab running smoothly. Lastly, I appreciate the support I received from my fellow lab mates who provided encouragement and guidance throughout my thesis journey.

Abstract

Adolescents with body image dissatisfaction experience more anxiety than their peers who are more satisfied with their body. This is problematic given that adolescents who experience these concerns have a greater likelihood of later developing other mental health disorders and have more disordered eating cognitions and behaviour. For this reason, I investigated how body image dissatisfaction, social anxiety, and fear of negative evaluation were related to one another. Participants included 527 adolescents (301 girls; aged 15 to 19 years; 83.1% White) who were accessed annually over 4 years (Grade 10 to one-year post high school) using the Multidimensional Anxiety Scale for Children, the Brief Fear of Negative Evaluation scale-II, and validated questions to assess body image dissatisfaction. A developmental cascade model was used to examine direct and indirect effects between the study variables. Results indicated two significant indirect paths; body image dissatisfaction to social anxiety via fear of negative evaluation and body image dissatisfaction to fear of negative evaluation via social anxiety. Direct effects included a reciprocal positive association between body image dissatisfaction and social anxiety in mid-adolescence and a reciprocal positive association between social anxiety and fear of negative evaluation across adolescence. Lastly, there was a positive association from body image dissatisfaction to fear of negative evaluation across adolescence. These results suggest that adolescents with low body image dissatisfaction are likely to experience greater fear and anxiety regarding social interaction. This study emphasizes the need to target adolescents with body image intervention programs to reduce the experience of psychopathology.

Table of Contents

List of Tables

List of Figures

The Longitudinal Association between Body Image Dissatisfaction, Social Anxiety, and Fear of Negative Evaluation in Adolescents

Anxiety disorders include "excessive fear and anxiety and related behavioral disturbances" (American Psychiatric Association, 2013, p. 189). Fear encompasses the emotional response to a threat that is either present or absent, whereas anxiety is the concern over a threat occurring in the future (American Psychiatric Association, 2013). With anxiety disorders, individuals develop a preconscious attentional bias toward a stimulus which is deemed threatening (Craske et al., 2009). Consequently, individuals have an elevated sensitivity to the feared object(s) (Craske et al., 2009). Anxiety can be present in children. For example, a child may exhibit separation anxiety when their parent leaves the room (Rynn, Vidair, & Blackford, 2012). Of all the mental disorders, anxiety disorders are the most frequent class of psychiatric disorders that children and adolescents are diagnosed with (Rynn et al., 2012).

Anxiety is a global concern with one in 14 adults experiencing an anxiety disorder at any given time (Baxter, Scott, Vos, & Whiteford, 2013). The prevalence of anxiety disorders in youth is also high, with an estimation that 204,400 Canadian youth between the ages of 4- and 17-years affected (prevalence of 3.8%; Waddell, Shepherd, Schwartz, & Barican, 2014). Childhood and adolescence is a critical developmental period where youth are at risk of developing symptoms of anxiety which could range anywhere from mild symptoms to diagnosable anxiety disorders (Beesdo, Knappe, & Pine, 2009). These findings are disconcerting given that youth who develop anxiety disorders are more likely to be affected by subsequent anxiety disorders (Beesdo et al., 2009; Clark, Smith, Neighbors, Skerlec, & Randall, 1994, Kashani & Orvaschel, 1990) and other mental illnesses throughout their life (Beesdo et al., 2009). Specifically, in children aged 8- through 17-years, generalized anxiety disorder was found

to be the most common psychiatric disorder (Kashani & Orvaschel, 1990). Anxiety regarding social fears, interpersonal concerns, and personal adequacy were highest in late adolescence (Kashani & Orvaschel, 1990). As well, it is more likely for older adolescents to experience social anxiety compared to younger adolescents (Burstein et al., 2011), making the sample of the present study—mid to late adolescence—particularly relevant.

There are a variety of negative outcomes that arise from youth experiencing a mental health problem. Anxiety negatively impacts interpersonal and intrapersonal behaviour in adolescents (Kashani & Orvaschel, 1990). Kashani and Orvaschel (1990) found that anxious 17-year-olds (compared to non-anxious 17-year-olds) had worse social relationships and more behavioural concerns, mood problems, somatic complaints, and school difficulties. Having more anxiety symptoms is related to poorer health-related quality of life (Raknes et al., 2017). Given the decreased quality of life that accompanies anxiety symptoms, there is a need to improve mental health interventions and implement prevention initiatives that target anxious adolescents.

Anxiety disorders are differentiated from one another based on the situation or object that contributes to the anxious or fearful response. A few examples of anxiety disorders include separation anxiety (fear or anxiety experienced when separated from one's attachment figure), specific phobia (fear or anxiety toward a particular object or situation), and of particular relevance to the present study, social anxiety (American Psychiatric Association, 2013).

With social anxiety disorder, the fear or anxiety experienced by an individual is related to social situations or interpersonal interaction. The cognitive component of this disorder often involves worry over being embarrassed, humiliated, or rejected by others (American Psychiatric Association, 2013). The presentation of social anxiety, thus, has a strong social evaluative component.

Social anxiety exists on a spectrum, such that individuals can experience symptoms of social anxiety without meeting the criteria for a formal diagnosis for social anxiety disorder. The 12-month prevalence rates for children and adolescents for social anxiety disorder are comparable to adults which is around 7% (American Psychiatric Association, 2013). Stein, Walker, and Forde (1994) found that 33.3% of Canadian adults were "much more nervous than other people" in at least one social situation, although these participants did not necessarily have social anxiety disorder (p. 410). This suggests that it is relatively common to experience anxiety in social situations; however, it is much less common to have social anxiety disorder.

It is well known that the diagnosis of social anxiety results in a greater risk of other mental health disorders and overall life impairments; however, even individuals with subclinical expressions of social anxiety have been found to experience these impairments (Fehm, Beesdo, Jacobi, & Fiedler, 2008). The participants in the present study were assessed in terms of social anxiety symptoms and were not required to meet the criteria for social anxiety disorder to be considered.

Regarding body image, body image dissatisfaction has been found to be positively related to anxiety (e.g., Cruz-Sáez, Pascual, Salaberria, & Echeburúa, 2015; Dooley, Fitzgerald, & Giollabhui, 2015; Duchesne et al., 2017). In one study, anxious 17-year-olds had a worse self-concept than same-aged adolescents without anxiety (Kashani & Orvaschel, 1990). Thus, it appears that those with anxiety are more likely to experience body image dissatisfaction. Body image is defined as "one's thoughts, perceptions, and attitudes about their physical appearance" which includes what one believes about their appearance and how one thinks and feels about their body (Body Image & Eating Disorders, 2018). Body dissatisfaction usually has negative impacts on a person's life. For example, those with body image dissatisfaction have been found

to experience distress and/or attempt to alter their appearance (Cash, 1996). Neumark-Sztainer, Paxton, Hannan, Haines, and Story (2006) found that adolescent boys and girls were more likely to diet and engage in unhealthy weight control behaviour if they were dissatisfied with their body. Men and women in late adulthood with body image dissatisfaction were more likely to experience anxiety and depression, and middle-aged men were more likely to have problematic social and sexual functioning if they were dissatisfied with their body (Davison & McCabe, 2005). Conversely, individuals who were satisfied with their body image were less likely to experience anxiety and to have problematic internet use, and were more likely to have good self-esteem (Cash, 1996).

Specific to youth, body image dissatisfaction has been found to be related to a variety of psychological well-being factors including more distress, depression, and anxiety, and worse self-esteem and self-concept. In their review of the literature on body image in boys, Cohane and Pope (2001) found that body dissatisfaction in boys (under 18 years) was often associated with distress (e.g., impaired self-concept and self-esteem). Similarly, Kostanski and Gullone (1998) found that body image dissatisfaction was negatively correlated with self-esteem in adolescents between the ages of 12 and 18. Body image dissatisfaction was also related to depression and anxiety, such that the more body image dissatisfaction that an adolescent reported, the more anxiety and depression they were likely to have (Duchesne et al., 2017; Kostanski & Gullone, 1998). Thus, the more concerned adolescents are about their body image, the less likely they are to have good self-esteem and the more likely they are to experience psychological distress (i.e., depression and anxiety). Given that body image dissatisfaction is related to various psychological disturbances in youth, adolescence is a prime time to investigate this variable. With an understanding that body image dissatisfaction tends to be relatively consistent

throughout adulthood (Davison & McCabe, 2005), it is important that adolescent body image is acknowledged rather than waiting for these concerns to negatively impact individuals throughout their life.

Specifically concerning anxiety, more body image dissatisfaction has been shown to be associated with more anxiety (e.g., Di Blasi et al., 2015; Duchesne et al., 2017). Halliwell and Dittmar (2003) found that women (mean age of 31 years) who were exposed to thin models in the media had more body-focused anxiety compared to those who were exposed to average-sized models or no models. This suggests that body image in the media impacts anxiety. Given that we are regularly surrounded by advertising in various forms, being exposed to thin models is often unavoidable making it likely for anxiety to be experienced. When individuals experience anxiety about their health they were more likely to engage in body checking (Hadjistavropoulos & Lawrence, 2007), which provides further support to the argument that anxiety and body image are linked. It is possible that those who experience body image dissatisfaction are more vigilant of their body, leading them to experience anxiety in social situations since they are not feeling confident with their body.

Gaining a better understanding of the relation between body image dissatisfaction and anxiety in adolescents is important for informing, and consequently improving, the mental health of adolescents. A better understanding can come from investigating the potential impact that certain variables have on body image dissatisfaction and social anxiety. For instance, children who were rejected by their peers have been found to experience increased negative affect and an increased likelihood to engage in maladaptive social behaviour (Nesdale & Lambert, 2008). It makes sense that children who were rejected by their peers are more likely to experience negative outcomes. However, even children who were not actually rejected, but anticipate

rejection (i.e., children high on rejection sensitivity; Park 2007), were more likely to experience negative outcomes. Downey, Lebolt, Rincón, and Freitas (1998) found that children (in Grades 5 to 7) who angrily expected rejection became more distressed compared to children who were less afraid of being rejected. Downey et al. also found that children who were high on rejection sensitivity had more social conflicts (with peers and teachers), were more disruptive and oppositional, and were less engaged in school. Being sensitive to rejection appears to be related to a variety of negative outcomes. It is possible that those who are most afraid of being rejected are more likely to experience social anxiety given that social anxiety involves being fearful of being rejected by others.

In the present study, I examined the relation between body image dissatisfaction, social anxiety, and fear of negative evaluation. I investigated whether fear of being negatively evaluated influenced the relation between body image dissatisfaction and social anxiety in adolescents, with the aim of informing current body image intervention strategies. In the literature review, an overview of the literature on the variables being studied is discussed which includes the impact and prevalence of body image dissatisfaction and social anxiety, as well as the relation between these two variables. Fear of negative evaluation is explained and considered in relation to body image dissatisfaction and social anxiety. Further, any longitudinal studies involving these variables are discussed. A detailed description of the study's objectives and methodology follows. The results are then presented and discussed as well as the future implications and the contribution of my research.

Literature Review

Body Image Dissatisfaction

The way one perceives their appearance dictates whether they are pleased with their looks (Cash, 1996). Thus, experiencing body image dissatisfaction depends on if one perceives their body negatively. Generally, body image dissatisfaction involves feeling discontent and self-conscious about one's appearance (Cash, 1996). The size of one's body appears to influence whether or not people are satisfied with their body. Girls and women typically desire a body that is thinner than average and experience body image or weight concerns when they have a body mass index above "normal" (Dion et al., 2015; Duchesne et al., 2017; Ferguson, Munoz, Contreras, & Velasquez, 2011; Ferrari, Petroski, & Silva, 2013; Latiff, Muhamad, & Rahman, 2017; Paxton, Schutz, Wertheim, & Muir, 1999). Boys and men tend to be dissatisfied when they are underweight (Dion et al., 2015) *or* overweight (Paxton et al., 1999). Essentially, failing to attain one's ideal body size is often related to experiencing body image dissatisfaction.

Adolescents who were exposed to thinness ideals in the media experienced body-specific discrepancies (the actual self was discrepant from the ideal self; Harrison, 2001). Youth with these body-specific discrepancies experienced more disordered eating cognitions and behaviour (Harrison, 2001). As well, Clay, Vignoles, and Dittmar (2005) found that when girls (11 to 16 years) were experimentally exposed to "ultra-thin" or "average-sized" models in photos, the girls reported lower body satisfaction. This finding supports the notion that when girls compare themselves to others who are not overweight, their body image satisfaction can be lowered. With body image being influenced by the media and by unrealistic body size ideals, it is hardly surprising that one in three youth with a normal weight reported that they do not think that their body is a normal size (Janssen, 2012).

For the past few decades, the prevailing trend regarding gender and body image has been that girls experience greater body image dissatisfaction than boys (Duchesne et al., 2017; Wright,

1988). It is often the case that more girls and women (compared to boys and men) are dissatisfied with their body, are concerned about others' evaluations of their bodies, compare their appearance to others, conceal their bodies, have lower self-esteem, and are less satisfied with their body parts (Davison & McCabe, 2005, 2006; Kostanski & Gullone, 1998; Latiff et al., 2017; Wichstrøm, 1999; Wright, 1988). In a meta-analysis comparing 222 studies over five decades, Feingold and Mazzella (1998) found that women were generally less satisfied with their bodies and regarded themselves as less attractive than men did, despite judges rating the women as more attractive than the men (Feingold & Mazzella, 1998).

Notwithstanding the literature suggesting that girls and women experience body image dissatisfaction to a greater extent than boys and men, it should not go unrecognized that boys and men also experience body image dissatisfaction. Mellor, Fuller-Tyszkiewicz, McCabe, and Ricciardelli (2010) found that although women were more dissatisfied with their bodies than men, men reported their appearance as more important than women did and reported high levels of body dissatisfaction. In Cohane and Pope's (2001) literature review, although boys were not as dissatisfied with their body as girls, several of the studies that they compared found that many boys were unsatisfied with their body proportions. Contrary to women, men who are underweight tend to view themselves negatively (Harmatz, Gronendyke, & Thomas, 1985), with boys wanting to gain weight by increasing muscle mass, rather than fat (Staffieri, 1967). It is possible then for both females and males to be dissatisfied with their body image. Accordingly, both boys and girls were examined in the present study.

Those who are attractive are not necessarily more content with their body image; similarly, those who are unattractive are not necessarily unsatisfied with their appearance (Cash, 1996). How much an individual experiences body image dissatisfaction varies, regardless of

one's level of attractiveness. Some individuals are relatively unaffected by body image dissatisfaction, whereas others can suffer from a variety of the concerns previously discussed, including difficulties with self-esteem and social anxiety (Cash, 1996). Yet, there appears to be a high prevalence of body image dissatisfaction for individuals of all ages.

Regarding youth, Latiff et al. (2017) found that approximately 69.5% of elementary school children were dissatisfied with their body image. More than 60% of pre-adolescents between the ages of 9- and 11-years reported wanting to be thinner, worrying about becoming fat, or weighing themselves daily (Gustafson-Larson & Terry, 1992).

In another study, 35-44% of the adolescent girls and 16-23% of adolescent boys reported being moderately or extremely dissatisfied with their body (Bearman, Presnell, Martinez, & Stice, 2006). Fifty percent of girls in Grade 10 thought their body was too fat (40%) or too thin (10%), and 46% of the boys in this grade thought their body was too fat (24%) or too thin (22%; Boyce, King, & Roche, 2008). This suggests that almost half of 10th graders think that their body is not "about right" in size. Similarly, 86.4% of adolescent girls and 48% of adolescent boys rated themselves as being larger or smaller than their ideal figure and experienced affective dissonance (discrepancy between how they feel rating their figure and their ideal figure rating; Kostanski & Gullone, 1998). Duchesne et al. (2017) found that many 14- to 18-year-old girls (63.5%) and boys (36.5%) were dissatisfied with their body image. Body image dissatisfaction does not appear to be a new phenomenon among adolescents; just over twenty years ago, Kostanski and Gullone (1998) found that 80% of adolescent girls and 40% of adolescent boys (12- to 18-years) were dissatisfied with their body image and many reported that they wanted to be a weight that is different from their current weight.

Regarding post-secondary students, Ferrari et al. (2013) found that 69.5% of college students were dissatisfied with their body. In contrast, Goswami, Sachdeva, and Sachdeva (2012) found that the body image dissatisfaction of first-year college women was lower than Ferrari et al. (2013) did, with only 13.5% reporting body dissatisfaction. The discrepancy in prevalence rates could be a result of various differences between study samples; for instance, Goswami et al. (2012) found that overweight women had a higher prevalence of body image dissatisfaction (54.5%), whereas the low weight women had a higher prevalence of body image satisfaction (85.7%). Nonetheless, even though there have been slightly varied findings on body image dissatisfaction prevalence, the need to address this concern is apparent.

The persistence and prevalence of body image dissatisfaction suggests that this problem will not extinguish anytime soon. Neumark-Sztainer et al. (2006) advised that there is a need to pay attention to youth with body image dissatisfaction given the association between body dissatisfaction and a variety of concerning health behaviour, such as those discussed above (e.g., anxiety). Research on body image dissatisfaction at an early age (i.e., youth) is needed to better understand the factors contributing to poor body image before this issue persists throughout one's life. In the present study, I aimed to better understand body image in adolescents by looking at its association with anxiety.

Anxiety

Individuals with anxiety disorders have been found to have a compromised quality of life and poorer psychosocial functioning, even for individuals with sub-threshold anxiety disorders (Comer et al., 2011; Mendlowicz & Stein, 2000). Comer et al. (2011) found that adults with an anxiety disorder were less likely to make money, more likely to have physical conditions (e.g., hypertension), had greater diagnoses of other mental health disorders (e.g., depressive disorders,

personality disorders, substance use disorders), as well as reported poorer social functioning, mental health, and physical well-being.

There is evidence that girls and women experience anxiety more often than boys and men (Essau, Lewinsohn, Lim, Ho, & Rohde, 2018; Kostanski & Gullone, 1998; Somers, Goldner, Waraich, & Hsu, 2006). Specifically, Baxter et al. (2013) found that girls and women were more than twice as likely to have an anxiety disorder compared to boys and men. McLean, Asnaani, Litz, and Hofmann (2011) argued that anxiety disorders were more disabling for women; for instance, women had higher rates of lifetime diagnoses of anxiety disorders than men which then made them more likely to be diagnosed with a subsequent anxiety disorder. However, this should not negate that males also experience anxiety. For instance, McLean et al. (2011) found no differences between men and women for the age of onset of anxiety disorders. Although women (33.3%) had a statistically significantly higher lifetime prevalence of anxiety disorders than men (22.0%), a sizable proportion of men still experienced anxiety disorders (McLean et al., 2011). There was no significant difference between women's (10.3%) lifetime prevalence of social anxiety and men's (8.7%; McLean et al., 2011). Similarly, although the difference between women's (7.7%) and men's (4.1%) lifetime prevalence of generalized anxiety disorder was statistically significant, there was only a 3.6% difference between these rates. Thus, men's experience of anxiety should be regarded as equally as worthy of investigation as women's anxiety.

Worldwide prevalence of anxiety disorders in youth is 6.5% (Polanczyk, Salum, Sugaya, Caye, & Rohde, 2015) and 3.8% for Canadian youth (Waddell et al., 2014), suggesting that this mental health concern is not exclusively relevant to adults. Anxiety in adolescence has been found to be related to a greater likelihood of later developing other mental health disorders such

as depressive, somatoform, and substance use disorders (Essau, Conradt, & Petermann, 2002). Specifically, social anxiety (being fearful, anxious, or avoidant of social activities where one may be judged; American Psychiatric Association, 2013), has also been linked to negative outcomes such as poorer psychosocial functioning 12 months later (Kelly, Walters, & Phillips, 2010). Of importance, Burstein et al. (2011) identified that the median age of onset for social phobia (i.e., social anxiety) was 9.2 years. These researchers also found that adolescents were unable to function for 4 days a year which these adolescents rated as moderately disabling. Thus, many negative outcomes can result from experiencing an anxiety disorder, or specifically, social anxiety, even among youth and even at a sub-clinical level (e.g., Besteher, Gaser, & Nenadić, 2019; Raknes et al., 2017).

Body Image and Anxiety

A study conducted on a clinical population of women with anorexia nervosa demonstrated that body image perceptions were strongly associated with and predicted symptoms of anxiety (Junne et al., 2016). This supports a relation between body image and anxiety; however, given that this study was conducted on a clinical sample these findings may not be transferable to the general population or to a population of adolescents. Regarding studies that have been conducted on the general population, body image dissatisfaction has been found to be positively related to anxiety for adolescents (Cruz-Sáez et al., 2015; Dooley et al., 2015; Duchesne et al., 2017; Koronczai et al., 2013; Kostanski & Gullone, 1998) and adults (Davison & McCabe, 2005; Hart, Leary, & Rejeski, 1989). For instance, Duchesne et al. (2017) looked at 409 adolescent boys and girls between the ages of 14- and 18-years and found that body dissatisfaction positively predicted anxiety. Similarly, Dooley et al. (2015) found that higher

levels of body dissatisfaction were related to more severe anxiety symptoms in 12- to 18-year-olds.

There are also studies which have found a positive correlation between body dysmorphic concerns and social anxiety (Fang & Hofmann, 2010; Pinto & Phillips, 2005). Body dysmorphic concerns are defined as the "excessive preoccupation or concern with an imagined or slight defect in bodily appearance" (Tomas-Aragones & Marron, 2016, p. 49). This relation between body dysmorphic concerns and social anxiety suggests that the more body dysmorphic concerns an individual is experiencing, the more social anxiety they are likely to experience. Importantly, body dysmorphic concerns are separate from body image dissatisfaction since body dysmorphic concerns are more commonly associated with poor insight about appearance and/or delusional ideas (Tomas-Aragones & Marron, 2016). However, this evidence further builds the case that concerns related to body image are associated with anxiety.

If there is a relation between anxiety and body image dissatisfaction, it is possible that there are variables that influence this relation. For instance, self-esteem has been shown to mediate the relation between body image and anxiety (Davison & McCabe, 2006; Duchesne et al., 2017). Since self-esteem influenced the relation between body image dissatisfaction and anxiety, it is possible that other variables influence this relation as well. The present study adds to the existing literature by looking at another variable of interest, fear of negative evaluation, in terms of whether or not this variable mediates the relation between body image dissatisfaction and anxiety.

Fear of Negative Evaluation

Being surrounded by peers who reported more body change and extreme weight loss behaviour as an adolescent contributed to increased anxiety about being rejected by others based

on appearance (Webb & Zimmer-Gembeck, 2016). As well, low self-worth has been found to be associated with concern about one's appearance being negatively evaluated by others (Davison & McCabe, 2006). Fear of negative evaluation can be defined as the experience of apprehension about being evaluated negatively (Leary, 1983).

Experiencing rejection from peers can lead to increased anxious and angry rejection expectations overtime (London, Downey, Bonica, & Paltin, 2007); however, even in the absence of actual rejection, individuals who are more sensitive to being rejected have been shown to experience more anxiety. Harb, Heimberg, Fresco, Schneier, and Liebowitz (2002) found that those with generalized social anxiety (those who fear most social situations) had increased levels of interpersonal rejection sensitivity. These authors also found that anxious expectations of rejection are related to experiencing more social anxiety over time.

Rejection sensitivity is comparable to fear of negative evaluation in that it involves the anxious expectations that one experiences in the presence of being rejected by others (Park, 2007), and thus, studies examining this variable, as well as studies measuring fear of negative evaluation, were considered in this section of the literature review.

There are some studies that have shown that individuals who are nervous to be rejected by others based on their appearance experienced more body dysmorphic disorder symptoms (Calogero, Park, Rahemtulla, & Williams, 2010). Given these findings, it is likely that body image dissatisfaction and fear of negative evaluation are positively related, however, the direction of the relation between these variables is unknown.

Ultimately, there is a necessity to further investigate the variables that can influence body image (i.e., fear of negative evaluation). Since there are only a few studies which have investigated the relation between some combination of body image, social anxiety, and fear of

negative evaluation, it seems logical to investigate the extent to which body image dissatisfaction and social anxiety are affected in someone who is fearful of negative evaluation.

It is particularly important to investigate the potential influence of fear of negative evaluation on social anxiety and body image dissatisfaction given the negative outcomes that can result from being sensitive to being rejected. Individuals who scored high on rejection sensitivity were nervous when being evaluated and desired social approval (Watson & Friend, 1969), felt alone (when participants were asked to think about 'un-liked' aspects of their appearance; Park, 2007), and were more likely to withdraw from social interaction (Park & Pinkus, 2009). Rejection sensitivity has been shown to be stable across adolescence (Marston, Hare, & Allen, 2010) and was found to be linked to increases in internalizing problems (i.e., anxiety and depression) and decreases in social competence (Marston et al., 2010). Therefore, by investigating fear of negative evaluation, I examined a variable of relevance to the adolescent population.

Body Image Dissatisfaction, Anxiety, and Fear of Negative Evaluation

Fang et al. (2011) looked at the relation between rejection sensitivity, anxiety, and body dysmorphic concerns. These authors found that rejection sensitivity partially mediated the relation between anxiety and body dysmorphic concerns. Similarly, Webb et al. (2015) found that increased social anxiety was associated with more body dysmorphic concerns for adolescents, which was partially explained by higher appearance rejection sensitivity. These studies suggest that rejection sensitivity partly explains the relation between anxiety and body dysmorphic concerns. Similarly, appearance-based rejection sensitivity was found to partially mediate the relation between social anxiety and body dysmorphic concerns (Lavell, Zimmer-Gembeck, Farrell, & Webb, 2014). Since body dysmorphic concerns (preoccupation with an

imagined defect in physical appearance; Fang & Hofmann, 2010) are not the same as body image dissatisfaction, and since this study used a rejection sensitivity measure (which is similar but different from fear of negative evaluation), further research is needed to examine the relation between body image dissatisfaction, social anxiety, and fear of negative evaluation. To my knowledge, no study has looked at body image dissatisfaction, social anxiety, and fear of negative evaluation (or rejection sensitivity) together in a longitudinal study. I addressed this gap in knowledge by examining all three variables together in one integrated model.

Longitudinal studies. Some studies have looked at body image dissatisfaction from a longitudinal perspective. Wright (1988) used a longitudinal design to examine body satisfaction in adolescents at age 11, 13, 15, and 18 and found that body image satisfaction for 11- to 13-year-old girls was positively related to variables such as self-esteem and experienced attractiveness; whereas, for 18-year-old women, body image satisfaction was positively related to social variables, such as time spent in social activities. Although this study assessed body image dissatisfaction, it failed to consider social anxiety and fear of negative evaluation.

Other studies have looked at the longitudinal relation between body image and anxiety. Junne et al. (2016) implemented a 12-month follow-up design when investigating body image and anxiety in a sample of participants with anorexia nervosa. These authors found that body image perceptions at baseline predicted symptoms of anxiety 12-months post-therapy. This suggests that there is a temporal influence that body image appears to have on anxiety. Cattarin and Thompson (1994) used a longitudinal design to look at variables such as levels of body image disturbance, eating dysfunction, and psychological functioning in a group of adolescent girls over three years. The results showed that teasing led to overall appearance dissatisfaction, body dissatisfaction predicted restrictive eating practices, and bulimic symptoms led to increases

in psychological distress (e.g., anxiety). This study used appearance satisfaction to assess body image and evaluated psychological distress, which encompasses anxiety, but failed to specifically measure social anxiety. Both of these studies considered body image and anxiety; however, neither considered fear of negative evaluation or social anxiety.

Although all of these studies used a longitudinal design, none examined body image dissatisfaction, social anxiety, and fear of negative evaluation in one study. Researchers have previously demonstrated that body image dissatisfaction was related to anxiety, and specifically, social anxiety. Thus, it is important to further examine the relation between these variables while considering other variables that may influence this relation. Fear of negative evaluation may be one such variable that contributes to the negative experience of social anxiety and body image dissatisfaction in individuals. My longitudinal model allowed for the temporal precedence between these variables to be better understood. In the present study, I investigated body image dissatisfaction, social anxiety, and fear of negative evaluation across four years of development beginning in mid-adolescence and ending one-year post high school.

Theoretical Model

Being sensitive to rejection is said to be related to psychological outcomes. Researchers have found that sensitivity to rejection is related to experiencing avoidant and ambivalent adult attachment styles (Feldman & Downey, 1994). Those who are sensitive to rejection behaved in ways to avoid rejection (Downey, Khouri, & Feldman, 1997). Downey, Bonica, and Claudia (1999) suggested that adolescents attempt to shield themselves from being rejected by engaging in avoidance behaviour (e.g., avoiding romantic relationships). This avoidance of social interaction, out of fear of rejection, parallels the symptomatology of social anxiety which includes the diagnostic criteria of avoiding social situations or enduring them with immense

anxiety (American Psychiatric Association, 2013). As such, rejection sensitivity is regarded as a core symptom of social anxiety (Downey et al., 1997). Relating this to the present study, rejection sensitive adolescents could be expected to engage in avoidance strategies and consequently experience symptoms of social anxiety.

The model suggested by Downey and colleagues (1997; 1999) proposed that early experiences of rejection lead to rejection sensitive adolescents, which further results in the use of an avoidance strategy. These authors suggested that those who have experienced past rejection will be more likely to be sensitive to rejection (Downey et al., 1999). In the present study, instead of investigating early experiences of rejection, I examined body image dissatisfaction. Since research has found that early experiences of body image rejection, such as being teased about one's body, appearance, and weight resulted in youth being dissatisfied with their bodies (Lieberman, Gauvin, Bukowski, & White, 2001), it is possible that body image dissatisfaction will have a similar effect on fear of negative evaluation and social anxiety, as the models by Downey and colleagues (1997, 1999) suggest. Furthermore, I tested the theory that those who have body image dissatisfaction would be more sensitive to rejection (mediating relationship), and consequently, experience more social anxiety (avoidance strategy).

Present Study

Body image dissatisfaction has been demonstrated to be positively related to anxiety (e.g., Cruz-Sáez et al., 2015; Davison & McCabe, 2005; Dooley et al., 2015; Duchesne et al., 2017; Junne et al., 2016; Koronczai et al., 2013) and social anxiety (Cash, Thériault, & Annis, 2004). As well, rejection sensitivity has been found to be positively related to body image dissatisfaction/body dysmorphic disorder (e.g., Calogero et al., 2010) and social anxiety (e.g., Harb et al., 2002), which suggests that fear of negative evaluation may also be positively related

to body image dissatisfaction and social anxiety. Social anxiety, which involves an intense fear or anxiety of social situations in which the individual may be scrutinized by others (American Psychiatric Association, 2013), is more similar to fear of negative evaluation than generalized anxiety. Consequently, social anxiety, rather than generalized anxiety, was examined in the present study. At present, there is no published research examining the relation between body image dissatisfaction, social anxiety, and fear of negative evaluation for adolescents using a longitudinal design. My study addressed this gap in the literature.

Jaworska and MacQueen (2015) suggested that clinical research needs to specifically target adolescents given that psychiatric illness often begins during this developmental period. Accordingly, I examined the relation between body image dissatisfaction, social anxiety, and fear of negative evaluation in adolescents over the course of four years. A longitudinal design allowed for the examination of changes in the relation between body image dissatisfaction, social anxiety, and fear of negative evaluation (i.e., the temporal sequence linking these variables). Specifically, the directionality of the relation between body image dissatisfaction and social anxiety was investigated. In doing so, I explored the question: Does body image dissatisfaction at an earlier time point influence social anxiety at a later time point? Further, I examined whether fear of negative evaluation influenced (i.e., mediated) the relation between body image dissatisfaction and social anxiety. I also explored the factors contributing to social anxiety and body image dissatisfaction in adolescents to increase understanding and improve interventions targeting adolescent mental health.

Research Objectives

The objectives of this study were to examine (1) the relation between body image dissatisfaction, social anxiety, fear of negative evaluation in adolescents; (2) fear of negative

evaluation as a mediator in the relation between body image dissatisfaction and social anxiety; and (3) the longitudinal relationship between body image dissatisfaction, social anxiety, and fear of negative evaluation in adolescents.

Hypotheses

Previous researchers have found a positive relation between body image dissatisfaction and anxiety (e.g., Cruz-Sáez et al., 2015; Davison & McCabe, 2005). As such, I predicted that a positive relationship between body image dissatisfaction and social anxiety would be found. There is limited research on the temporal relation between body image dissatisfaction and anxiety in adolescents, although Junne et al. (2016) found that body image at baseline predicted anxiety 12 months later in a sample of adult women with anorexia nervosa. As such, I predicted that adolescents with body image dissatisfaction would experience more social anxiety in subsequent years. Similar measures to fear of negative evaluation (e.g., rejection sensitivity and appearance-based rejection sensitivity) have been found to mediate body dysmorphic concerns and anxiety/social anxiety (Fang et al., 2011; Webb et al., 2015). Thus, I predicted that fear of negative evaluation would act as a mediator, helping to explain the relation between body image dissatisfaction and social anxiety across four years of investigation.

Methodological Framework

The present study was guided by positivistic and post-positivistic frameworks. Positivistic and post-positivistic are the two approaches that most commonly influence quantitative research (Ponterotto, 2005; Wildemuth, 1993). The quantitative traditions methods are based off the scientific method and often involves hypotheses, objectivity, variables, and quantification (O'Leary, 2009). Post-positivists observe and quantify relations that exist between variables (Payne & Payne, 2004). The post-positivistic framework believes in falsifying a theory,

rather than attempting to prove a theory to be true (Ponterotto, 2002). Importantly, hypotheses are informed by former research (Ponterotto, 2005), rather than being arbitrarily constructed. Throughout the research process, the researcher adopts an objective role and has minimal influence on the interpretation of the results (Ponterotto, 2005).

With a positivist approach, research findings are generalized to situations other than those investigated (Wildemuth, 1993). Confidence in the generalizability of findings comes from the validity and reliability of the measures used. A measure is valid when it accurately captures what it is intended to measure and is reliable when it can be "interpreted consistently across situations" (Field, 2009, p.11). When measures in a quantitative study are valid and reliable, the study findings can be generalized with good confidence.

It was advantageous for my study to be guided by positivist and post-positivist frameworks because it allowed for the cause-effect linkages between variables to be studied, identified, and generalized (Ponterotto, 2005). It is typical for body image dissatisfaction, social anxiety, and fear of negative evaluation to be studied using a quantitative approach, which has often involved collecting and analyzing survey data (e.g., Fang et al., 2011; Webb et al., 2015). A positivistic framework supports the use of survey data (O'Leary, 2009) which makes it easier to collect large amounts of data and attain large sample sizes which is ideal in social science research (Field, 2009). The aim of the present study was to gather large scale data on adolescents to better understand the relation between body image dissatisfaction, social anxiety, and fear of negative evaluation and then generalize these findings to other adolescents. Quantitative methods, led by positivistic and post-positivistic frameworks, allowed for a reliable and concrete understanding of how body image dissatisfaction, social anxiety, and fear of negative evaluation relate to each other in my study.

Methods

Procedure

Data from the McMaster Teen Study, an on-going, prospective study examining a variety of constructs, including body image dissatisfaction, social anxiety, and fear of negative evaluation, were used for this study. Data have been collected since the study began in the spring of 2008 and the study continues to this date. Participants were compensated for their participation in the study with a five-dollar gift card in the first year. Each year the monetary value of the gift card increased by five dollars. Participants who completed the survey within the first two weeks were entered into a draw to win one of four iPad Minis. In the first year of the study, participants completed surveys using pencils and paper in their classrooms. In all other years, participants completed surveys outside of school with an option to complete the survey online or using paper/pencil. Every year of the study, a trained research assistant would conduct parent interviews over the telephone or the parents filled out a pencil/paper version of the survey if the parents did not have access to a telephone.

Participants

Grade five students were randomly recruited from 51 elementary schools within a Southern Ontario Public School Board. All Grade five classrooms in each of the 51 randomly drawn schools were approached and asked to participate. A total of 875 participants agreed to be part of this study, of which 703 participants participated in at least one year of the study. At the start of this study participants were 10.91 (SD = 0.36) years old on average and 53% were girls. Yearly consent was provided by parents and assent was given from the students until the participants turned 16-years of age and consented for themselves. The participants in the present study were assessed over a four-year period from when participants were in Grade 10 to one-year

post high school. Research has shown that body image dissatisfaction increases between middle school and high school, and continues to increase until young adulthood (Bucchianeri, Arikian, Hannan, Eisenberg, & Neumark-Sztainer, 2013). Therefore, although data collection began when participants were in Grade five, I used data from Grade 10 to one-year post high school since this is a period where body image dissatisfaction has been shown to increase (Bucchianeri et al., 2013).

To be included in my study, participants needed to provide data for at least one variable in at least one time point. Data from 527 participants (75% of the longitudinal sample) were available for the time points being measured. In Grade 10, 444 participants participated which dropped to 399 participants by one-year post high school. Four hundred and twenty-nine participants participated in Grade 11 and 445 participants participated in Grade 12.

Participants (301 girls and 226 boys) were primarily white (83.1%) and 53.8% had a household income of more than $80,000. Only 2.4% of the participants' parents did not complete high school and 77.8% had a college diploma/trades certificate or higher. The participants in the present study with parents who had higher education had household incomes which were greater. These demographic statistics are typical for the area where the participants reside (Statistics Canada, 2017). In the location where many of the participants resided, 82.3% of the residents in this area are not a visible minority, the average after-tax household income was found to be $80,008, and 10.3% of individuals between 25- and 64-years do not have a diploma, certificate, or degree (Statistics Canada, 2017).

Measures

Body image dissatisfaction. Participants were asked six questions regarding their body image from Grade 10 to one-year post high school using a measure developed for the study.

They were asked, “Do you notice that you…” and then were asked: (1) “are very upset about even small changes in your weight?”, (2) “complain about your body weight or shape?”, (3) “are self-conscious wearing a bathing suit in public?”, (4) “are worried about being or becoming overweight?”, (5) “become very upset when others comment on your weight or body shape?”, and (6) “worry your friends or classmates won’t like you because of your weight?”. Questions were answered on a 3-point scale (*0* = Never, *1* = Sometimes, *2* = Often). Responses to these six items were averaged to create a body image dissatisfaction mean. Higher scores indicated more body image dissatisfaction. Participants who responded to at least 4 out of 6 of the questions were included. This scale has demonstrated excellent internal consistency, stability, and predictive validity (Lee & Vaillancourt, 2018). In the present study, each item was significantly positively correlated with the scale total in Grade 10, 11, 12 and one-year post high school. Moreover, the body image scale had good reliability in Grade 10 ($\alpha = 0.89$), Grade 11 ($\alpha = 0.90$), Grade 12 ($\alpha = 0.88$), and one-year post high school ($\alpha = 0.88$).

Social anxiety. The Multidimensional Anxiety Scale for Children (MASC) was developed to assess common anxiety symptoms in youth (March, Parker, Sullivan, Stallings, & Conners, 1997). This 39-item self-report questionnaire assessed anxiety symptoms. Five of these items pertain to social anxiety (humiliation fears and performance fears) and were used in my study. Items were rated on a 4-point Likert-style scale ranging from *0* (never true about me) to *3* (often true about me). A sample item included, “I’m afraid that other people will think I’m stupid”. The MASC was completed by the students from Grade 10 to one-year post high school. Responses to these five items were averaged to create a social anxiety mean. Higher scores indicated greater social anxiety. Participants who responded to at least 4 out of 5 of the questions were included.

The MASC was validated on youth ranging in ages from 8- to 17-years (March et al., 1997). March et al. (1997) found strong internal reliability for both genders (α = 0.90 overall). In addition, March et al. (1997) found satisfactory to excellent test-retest reliability (intraclass correlation coefficients between 0.78 and 0.93). Similarly, Wei et al. (2014) sampled youth between the ages of 7 and 17 years and found acceptable internal reliability overall (α = 0.88). In the current study, the 5-item social anxiety scale had excellent reliability in Grade 10 (α = 0.92), Grade 11 (α = 0.92), Grade 12 (α = 0.93), and one-year post high school (α = 0.93).

Fear of Negative Evaluation. The Brief Fear of Negative Evaluation scale-II (BFNE-II; Carleton, McCreary, Norton, & Asmundson, 2006), which is the revised version of the BFNE by Leary (1983), was used to assess fear of negative evaluation. The scale consisted of 12 self-reported items, which were rated on a 5-point Likert scale ranging from *1* (not at all characteristic of me) to *5* (extremely characteristic of me). A sample item included, "I worry about what other people will think of me even when I know it doesn't make any difference". Some items were reverse-worded, such as "Other people's opinions of me do not bother me". Responses to these 12 items were averaged to create a fear of negative evaluation mean; higher scores indicated greater fear of negative evaluation. Participants who responded to at least 7 out of 12 of the questions were included.

The BFNE-II had excellent internal consistency (α =.95) with an undergraduate student sample (Carleton et al., 2006). In the present study, the 12-item BFNE-II had excellent reliability in Grade 10 (α = 0.97), Grade 11 (α = 0.97), Grade 12 (α = 0.97), and one-year post high school (α = 0.97).

Controls. Gender, socioeconomic status (SES), and ethnicity were controlled for. Gender differences have been found for anxiety (e.g., Kostanski & Gullone, 1998) and body image (e.g.,

Duchesne et al., 2017). The moderating role of gender could not be examined due to my study being underpowered. Other studies with a complex model, similar to mine, have also been underpowered to conduct a multi-level analysis (Vaillancourt & Brittain, 2019). Thus, self-reported gender was controlled for in subsequent analyses.

SES was controlled for using household income and parental education as indicators. SES has been found to be related to weight satisfaction for adolescent boys and girls (Story, French, Resnick, & Blum, 1994), and anxiety was more common for those who are unemployed (Alonso et al., 2004). Household income at time one was significantly positively correlated with household income during two time points assessed in my study (r = 0.75; Time 7 and Time 8), as well, parental education at time one was significantly positively correlated with parental education during two time points assessed in my study (r = 0.83; Time 7 and Time 8). With the understanding that parental education and household income were correlated across time points, household income and parental education from when participants were in Grade 5 (Time 1) was considered. The most knowledgeable parent reported on their household income using eight categories (1 < $20,000, 2 = $20,000 to $30,000, 3 = $30,000 to $40,000, 4 = $40,000 to $50,000, 5 = $50,000 to $60,000, 6 = $60,000 to $70,000, 7 = $70,000 to $80,000, 8 > $80,000). The most knowledgeable parent reported their highest level of education attained (1 = did not complete high school, 2 = completed high school, 3 = College diploma or trades certificate, 4 = University undergraduate degree, 5 = University graduate degree).

Differences between ethnicity and body satisfaction have been found. For instance, White women have been found to be less satisfied with their bodies compared to Black women (Story et al., 1994). In a review of the literature, there were mixed findings about the differences in anxiety symptomatology for various ethnicities (Safren et al., 2000). For instance, in Safren and

colleague's (2000) review, some studies identified higher rates of mental health problems for ethnic minority children while other studies found that the differences in mental health problems between ethnic groups were relatively similar once SES is accounted for. Nonetheless, there were differences in rates of anxiety based on ethnicity (Safren et al., 2000). In the present study, participants were asked to select which race/ethnicity they identify with from the following choices: "European-Canadian", "Middle-Eastern-Canadian", "African/West-Indian-Canadian", "Asian-Canadian", "South-Asian-Canadian", "Native-Canadian", "South/Latin American-Canadian", "Other", and "I don't know". Given the high prevalence of White participants, race/ethnicity was categorized as White (76.5%) and non-White (15.6%).

Data Analysis

A developmental cascade model was used to assess the relations between my study variables. Cascade models help to understand how variables are related within a certain time point and across time points (Masten & Cicchetti, 2010). Within-time correlations and across-time stability were controlled for to ensure that the cascade effect did not reflect correlations in the data at the beginning of assessment or unmeasured outcome covariance (Masten & Cicchetti, 2010). Controlling for prior associations between variables (i.e., within-in time associations and across-time stability) reduces the magnitude of the effect sizes between predictors and later outcomes (i.e., cross-lagged pathways) in longitudinal studies (Adachi & Willoughby, 2015). Regardless, the effect sizes of cross-lagged pathways (including mediated pathways) are still to be interpreted as meaningful even though the size of the effect may appear to be small if applying Cohen's (1992) or Ferguson's (2009) guidelines (Adachi & Willoughby, 2015). Adachi and Willoughby (2015) argue that "very small predictor effects (i.e., $\beta < 0.10$)" can be

interpreted as meaningful when there is "strong stability in the outcome" and "at least moderate overlap" between the outcome and predictor within-time (p. 124).

Developmental cascade models have been used to explore the role of variables "within a more complex developmental system" (Vaillancourt, Brittain, McDougall, & Duku, 2013; p. 1204). In my study, a cascade model allowed for the complex interrelation between body image dissatisfaction, social anxiety, and fear of negative evaluation to be understood. Given that developmental cascades require repeated assessments of variables over time, a longitudinal study design is needed.

Statistical modeling.

The data were analyzed using Mplus version 8.1 with Maximum Likelihood Robust (MLR) estimator to adjust for any non-normality in the data. Missing data was handled using Full Information Maximum Likelihood (FIML). Model fit was assessed by looking at the chi-square, root mean square of error approximation (RMSEA), standardized root mean square (SRMR), comparative fit index (CFI), and Tucker-Lewis index (TLI; see Hu & Bentler, 1999). Models with excellent fit were said to have non-significant chi-square and RMSEA, a RMSEA value of <.06, a SRMR value of <.05, a CFI value of >.95, and a TLI value of >.95. Since MLR estimation was used, Satorra-Bentler scaled chi-square difference tests were used to compare the nested models.

Nested models were built upon one another with a series of steps. Model fit was assessed between the models at each step. Model 1 looked at within-time correlations between body image, fear of negative evaluation, and social anxiety (e.g., Grade 10 body image with Grade 10 social anxiety). One- and two-year stability paths were added in Model 2 between repeated measures (e.g., Grade 10 body image with Grade 11 body image, and Grade 10 body image with

Grade 12 body image). Cross-lagged paths between body image, fear of negative evaluation, and social anxiety were added in Model 3 (e.g., Grade 10 body image to Grade 11 social anxiety). The model with the best fit was selected as the final model.

Indirect effects were examined for the pathways in the final model with three significant cross-lagged paths across three consecutive years. The MODEL INDIRECT command was used to assess indirect effects. Percentile bootstrapping with 5000 iterations was used to determine the 95% confidence intervals (Biesanz, Falk, & Savalei, 2010). Confidence intervals were determined to be significant if they did not include zero.

I controlled for gender, household income, parental education, and ethnicity in the final model by estimating the correlation between each control variable with the variables in Grade 10, and by estimating the direct paths from these control variables to study variables at all other time points. I compared the control model to the original model in terms of the Akaike Information Criterion (AIC). The final model was the one with the lower AIC value since a low AIC generally indicates better fit and fewer free parameters (Kline, 2011).

Results

Descriptive Statistics

The minimums, maximums, means, and standard deviations of body image dissatisfaction, social anxiety, and fear of negative evaluation at each time point are presented in Table 1. Bivariate correlations between study variables, which were all significant at $p < .01$, are found in Table 2. All study variables had acceptable skewness (i.e., less than 3) and kurtosis values (i.e., less than 10; Kline, 2011) and were normally distributed.

Missing Values Analysis

Missing by attrition.

Of the total number of participants available for my time points, 39.8% were missing from the larger longitudinal study. As such, I tested whether the analytic sample differed from the non-analytic sample with regards to demographics (gender, ethnicity, household income, and parental education) with a series of chi-square tests and *t*-tests. The crosstabs feature in SPSS was used to compute chi-square tests to examine if participants from Grade 10 to one-year post high school (i.e., analytic sample) were significantly different from individuals who did not have data on the study variables of interest (i.e., non-analytic sample) in terms of gender and ethnicity, and *t*-tests were used to examine differences between the analytic sample and non-analytic sample on household income and parental education.

There were significant differences between the analytic sample and non-analytic sample in gender ($\chi^2 = 9.903$, $df = 1$, $p = .002$), ethnicity ($\chi^2 = 12.563$, $df = 1$, $p < .001$), parental education ($t = -7.538$, $df = 588.437$, $p < .001$), and household income ($t = -7.548$, $df = 770$, $p < .001$). Specifically, there were more girls in the analytic sample (57.1%) than the non-analytic sample (46.3%). There were also more white participants in the analytic sample (83.1%) than the non-analytic sample (72.5%). Regarding household income, the analytic sample ($M = 6.40$, $SD = 2.18$) had a significantly higher household income than the non-analytic sample ($M = 5.10$, $SD = 2.54$). Regarding parental education, the analytic sample ($M = 3.24$, $SD = 0.98$) had a significantly higher parental education than the non-analytic sample ($M = 2.68$, $SD = 1.06$).

Missing within-time.

In addition to comparing the analytic sample from the non-analytic sample, I assessed whether the data for participants in the analytic sample were missing at random. A Missing Completely at Random (MCAR; Little, 1988) analysis was conducted. According to this analysis, the data were not MCAR, $\chi^2(282) = 337.127$, $p = 0.013$ which is common for

longitudinal studies (Laird, 1988). I further examined the data for patterns of missingness with *t* tests for each study variable (i.e., body image dissatisfaction, social anxiety, and fear of negative evaluation). The *t* tests allowed me to test if the missingness in each variable is related to any other study variables. Using the Benjamini-Hochberg correction for multiple testing (Benjamini & Hochberg, 1995), there were no significant differences in the missing data. Given this, I concluded that the data for my study variables was missing at random.

Developmental Pathway Models

Model fit statistics for each model are found in Table 3. In Model 1, within-time correlations were included which had poor fit to the data. Model 2 added the across-time stability paths and two-year stability paths which also had poor fit to the data but was a significant improvement from Model 1 (CD = 1.6280, *TRd* = 1127.311, $\Delta df = 15$, $p < 0.001$). Cross-lagged paths between social anxiety, body image dissatisfaction, and fear of negative evaluation between each adjacent time point were added in Model 3. Model 3 had good fit and had a significantly better fit than Model 2 (CD = 5.6844, TRd = 87.8870, $\Delta df = 18$, $p < 0.001$). Model 4 included the covariates—gender, household income, parental education, and ethnicity—which had excellent fit. Model 4 also had a lower AIC value than Model 3. Thus, Model 4 was determined to have a significantly better fit and was selected as the final model. See Figure 1 for the model with standardized estimates.

Within-time associations. There were significant positive associations between each variable (i.e., body image and social anxiety, social anxiety and fear of negative evaluation, and body image and fear of negative evaluation) within each time point.

Across-time associations. All of the associations for body image dissatisfaction across-time (i.e., Grade 10 to Grade 11, Grade 11 to Grade 12, and Grade 12 to one-year post high

school) were positive and statistically significant. All of the associations for social anxiety across-time (i.e., Grade 10 to Grade 11, Grade 11 to Grade 12, and Grade 12 to one-year post high school) were positive and statistically significant as were all of the associations for fear of negative evaluation (i.e., Grade 10 to Grade 11, Grade 11 to Grade 12, and Grade 12 to one-year post high school). The two-year stability paths were also all positive and statistically significant (i.e., Grade 10 and Grade 12, and Grade 11 and one-year post high school) for body image dissatisfaction, social anxiety, and fear of negative evaluation.

Cross-lagged effects. There were several significant cross-lagged effects in my model, all of which were positive. There was one significant cross-lagged effect from body image dissatisfaction to social anxiety (Grade 10 to Grade 11). There were two significant cross-lagged effects from body image to fear of negative evaluation (Grade 10 to Grade 11 and Grade 12 to one-year post high school). There was one significant cross-lagged effect from social anxiety to body image dissatisfaction (Grade 10 to Grade 11) and three significant cross-lagged effects from social anxiety to fear of negative evaluation (Grade 10 to Grade 11, Grade 11 to Grade 12, and Grade 12 to one-year post high school). There were two-significant cross-lagged effects from fear of negative evaluation to social anxiety (Grade 11 to Grade 12 and Grade 12 to one-year post high school).

Indirect effects. Confidence intervals indicated two significant indirect effects which involved cross-lagged pathways across three time points. Grade 10 body image dissatisfaction was significantly indirectly associated with Grade 12 fear of negative evaluation through Grade 11 social anxiety (b = 0.038, se = 0.018, β = 0.025, 95% CI [0.009, 0.099]). Grade 10 body image dissatisfaction was significantly indirectly associated with Grade 12 social anxiety

through Grade 11 fear of negative evaluation (b = 0.038, se = 0.018, β = 0.025, 95% CI [0.009, 0.078]).

Control variable effects. Body image dissatisfaction was significantly positively associated with gender at all four time points, meaning that girls had more body image dissatisfaction in Grade 10, 11, 12, and one-year post high school than boys. Grade 10 fear of negative evaluation was significantly positively associated with gender, such that girls had more fear of negative evaluation than boys. Grade 10 social anxiety was significantly positively associated with gender, indicating that girls had more social anxiety than boys.

Parental education was significantly negatively associated with Grade 10 body image dissatisfaction and Grade 10 social anxiety, and was significantly positively associated with Grade 11 fear of negative evaluation. This indicates that higher levels of parental education were associated with lower levels of body image dissatisfaction and social anxiety, and higher levels of fear of negative evaluation. Parental education and household income were significantly positively associated, indicating that those with higher parental education had a higher household income.

Ethnicity was significantly negatively associated with Grade 11 social anxiety, indicating that White participants had more social anxiety in Grade 11 than non-White participants. Ethnicity and income were significantly negatively associated, such that White participants had higher household income than non-White participants.

Discussion

I tested a model to help understand the temporal associations and indirect effects between body image dissatisfaction, social anxiety, and fear of negative evaluation over a 4-year period in adolescence. Although there are studies which have looked at the relation between some

combination of these variables, I have expanded the understanding of how they relate to one another across time in one integrated model.

Across-time Stability Paths

My model demonstrated that the across-time associations for each variable were statistically significant at each time point, indicating that body image dissatisfaction, social anxiety, and fear of negative evaluation positively predicted their scores in the following year. Past research has shown that social anxiety (Hayward et al., 2008), rejection sensitivity (Marston et al., 2010), and body image dissatisfaction (Jones, 2004) are stable throughout adolescence. The findings of my study provide further support to the stability of these variables. Essentially, when adolescents experience any one of these concerns (body image dissatisfaction, social anxiety, or fear of negative evaluation), it is likely for them to continue to experience this same concern for the duration of their high school career. To my knowledge, there have been no studies that have assessed the stability of body image dissatisfaction or fear of negative evaluation in adolescence across four or more consecutive years which highlights the contribution of my longitudinal study.

The stability of these variables across time should emphasize the need to intervene and support youth mental health. With concerns such as psychological distress, self-esteem, and social avoidance being associated with body image dissatisfaction, social anxiety, and fear of negative evaluation (Duchesne et al., 2017; Park & Pinkus, 2009; Sahin, Barut, Ersanli, & Kumcagiz, 2014), these concerns are more than a momentary inconvenience in youth's lives but rather a potential detriment that will make it harder for them to excel in adolescence and adulthood.

Pathways for Body Image Dissatisfaction and Social Anxiety

Body image dissatisfaction has been found to be associated with greater levels of anxiety, concurrently (e.g., Di Blasi et al., 2015; Duchesne et al., 2017) and longitudinally (e.g., Junne et al., 2016). Junne et al.'s (2016) longitudinal study showed that body image perceptions at baseline predicted anxiety 12 months later. As such, I predicted that body image dissatisfaction would be positively associated with social anxiety in subsequent years. As hypothesized, I found that body image dissatisfaction in Grade 10 positively predicted social anxiety in Grade 11. I also found that social anxiety in Grade 10 positively predicted body image dissatisfaction in Grade 11. Thus, although my hypothesis was supported, an unexpected association of social anxiety predicting body image dissatisfaction in the following year was also found suggesting a reciprocal association between these two variables.

Past researchers have suggested that body image dissatisfaction increases between middle school and high school and continues to increase until young adulthood (Bucchianeri et al., 2013), which indicates that adolescence is a period where body image concerns are at their peak. In Grade 10 to 11, adolescents have a heightened awareness of their body, while also placing greater value on their social rank than they have previously. With this increased awareness, adolescents may recognize the importance of their body image in terms of maintaining their social status which can then lead to social anxiety. Conversely, adolescents in this age range who become more aware of their social status may more readily scrutinize their body as a way of maintaining their social rank. Further, this reciprocal relation suggests that when adolescents are anxious regarding their social environment (e.g., anxiety over being scrutinized by others), they appear to also be considering the appearance of their body in this social context. So, not only do adolescents with social anxiety symptoms appear to be nervous about how they appear to others,

they are also critically considering their bodies in social contexts as well. Thus, it is essential to consider body satisfaction when addressing social anxiety in a clinical setting since body dissatisfaction appears to be related to an adolescent's experience of social anxiety.

Pathways for Social Anxiety and Fear of Negative Evaluation

Previous studies have found that when individuals experience social anxiety, they have increased levels of interpersonal rejection sensitivity (Harb et al., 2002). It could be expected that these two variables would be positively related to one another due to the similarity of these variables (i.e., social anxiety is concerned with fear or anxiety related to social situations and fear of negative evaluation is concerned with fear of being evaluated negatively by others). As such, I found that the positive relationship between social anxiety and fear of negative evaluation was replicated across time points. Social anxiety in Grade 10, 11, and 12 positively predicted fear of negative evaluation in the following year, as well, fear of negative evaluation in Grade 11 and 12 positively predicted social anxiety in the following year, suggesting another reciprocal association.

The cognitive component of social anxiety disorder involves worry over being embarrassed, humiliated, or rejected by others (American Psychiatric Association, 2013), thus, the presentation of social anxiety has a social evaluative component, which is similar to that of fear of negative evaluation. This may partly explain the significant direct paths between these variables across time. Baumeister and Tice (1990) suggested that feeling threatened of being excluded from social relationships is a major contributor to anxiety. Based on this theory, if adolescents are worried about being rejected by peers, they are likely to experience more anxiety. This can be explained by evolutionary theories which suggest that humans have a need to congregate together in small groups (Baumeister & Tice, 1990). When there is worry about being

connected to others, anxiety may be experienced in an attempt to prevent someone from being complacent with being disconnected from others.

As discussed, there are negative implications of experiencing social anxiety (e.g., poor psychosocial functioning; Kelly, Walters, & Phillips, 2010) and fear of negative evaluation (e.g., body dysmorphic symptoms; Calogero et al., 2010). Since these two variables appear to be reciprocally associated, individuals with either one of these concerns are likely to experience the other. This is concerning given that individuals are at more risk of impairment than if they were only impacted by one of these concerns. Those who experience comorbidity typically have a more severe course and outcome of their mental disorders (Merikangas & Kalaydjian, 2007). Although fear of negative evaluation is not characterized as a mental disorder in the Diagnostic and Statistical Manual for Mental Disorders-V (American Psychiatric Association, 2013), it is still a relevant personality temperament that has been shown to contribute to negative outcomes for those who experience it (e.g., Park & Pinkus, 2009). Knowledge that there is a reciprocal relation between social anxiety and fear of negative evaluation for adolescents is useful with regards to treatment of social anxiety. This knowledge should impact how mental health clinicians work with adolescents with social anxiety. For example, it may be beneficial to focus on challenging one's fear of being negatively evaluated by other's when working with an adolescent with social anxiety in a psychotherapeutic setting.

Interestingly though, although reciprocally related to each other over time, these two variables had different relations with body image dissatisfaction for every year except for Grade 10 where body image dissatisfaction in this year positively predicted Grade 11 social anxiety *and* Grade 11 fear of negative evaluation. In all other years where there was a significant direct path, body image dissatisfaction predicted either social anxiety *or* fear of negative evaluation in the

following year (e.g., Grade 12 body image dissatisfaction positively predicted one-year post high school fear of negative evaluation (but not social anxiety)). In other instances, social anxiety *or* fear of negative evaluation positively predicted body image dissatisfaction in the following year (e.g., Grade 10 social anxiety (but not fear of negative evaluation) positively predicted Grade 11 body image dissatisfaction). This suggests that although social anxiety and fear of negative evaluation are related to one another, they are still independent of one another, especially with regards to their relation to other variables, such as body image dissatisfaction.

Pathways for Body Image Dissatisfaction and Fear of Negative Evaluation

Researchers have shown that when participants were nervous about being rejected by others based on their appearance, they experienced more body dysmorphic concerns (Calogero et al., 2010). As well, researchers have found a positive association between perceptions about body image (i.e., negative feelings about body shape and size) and fear of negative evaluation (Lundgren, Anderson, & Thompson, 2004). Until this point, the direction of the relation between body image dissatisfaction and fear of negative evaluation has been unknown. In my study, body image dissatisfaction positively predicted fear of negative evaluation in the following year from Grade 10 to Grade 11 and from Grade 12 to one-year post high school. There were no significant direct paths from fear of negative evaluation to body image dissatisfaction for any of the timepoints assessed in the present study. This suggests that body image dissatisfaction precedes fear of negative evaluation.

Youth may be responding to how people treat one another based on their physical appearance. Once adolescents start to view their body negatively, they may begin worry that they will be rejected by their peers because of their appearance. Puhl and King (2013) found in their review of the literature that overweight adolescents were more likely to experience social

isolation, were less likely to be nominated as friends by peers, and were more likely to report weaker social bonds with peers. Another study found that peer acceptance for students in Grades 2 to 10 was significantly positively related to peer appearance ratings, such that peers were more greatly accepted if they had a higher appearance rating (Vannatta, Gartstein, Zeller, & Noll, 2009). Thus, it is possible that youth are aware that they are more likely to be rejected by peers if they are less attractive and consequently develop greater fear of negative evaluation if they are dissatisfied with their body.

With this knowledge, it appears that an adolescent's poor view of their body is related to decreased social confidence (i.e., more fear over being negatively evaluated). Thus, body image dissatisfaction appears to be a risk factor for fear of negative evaluation. With fear of negative evaluation being associated with being withdrawn from social interaction (Park & Pinkus, 2009) and decreased social competence (Marston et al., 2010), it becomes likely that an adolescent will have hindered social relationships as a result of viewing their body negatively. If we don't want youth's social confidence to be determined by their view of their body image, then better positive body image practices need to be distributed and emphasized.

Pathways for Body Image Dissatisfaction, Social Anxiety, and Fear of Negative Evaluation

Rejection sensitivity has been found to mediate the relation between body dysmorphic concerns and anxiety (Fang et al., 2011). Thus, it was predicted that fear of negative evaluation would mediate the relation between body image dissatisfaction and social anxiety in my study. As predicted, my findings supported the mediating relationship of fear of negative evaluation between body image dissatisfaction and social anxiety. Specifically, adolescents with body image dissatisfaction in Grade 10 had more social anxiety in Grade 12, which was explained by having greater fear of negative evaluation in Grade 11. My findings are consistent with the

findings of Webb et al. (2015) who found that appearance rejection sensitivity partially explained the relation between body dysmorphic concerns and social anxiety.

In my study there was another significant mediating relationship that I did not hypothesize; body image dissatisfaction to fear of negative evaluation via social anxiety. Specifically, adolescents with body image dissatisfaction in Grade 10 had more fear of negative evaluation in Grade 12, which was associated with having greater social anxiety in Grade 11. Although this was not predicted, it makes sense that this path exists. As discussed, fear of negative evaluation and social anxiety are similar constructs; where fear of negative evaluation is defined as the experience of apprehension about being evaluated negatively (Leary, 1983) and social anxiety involves fear or anxiety related to social situations or interactions (American Psychiatric Association, 2013). Thus, it appears that body image dissatisfaction predicts later social insecurities whether it be fear of negative evaluation or social anxiety.

The pathway that Downey and colleagues (1999) proposed suggested that adolescents will attempt to protect themselves from rejection by engaging in avoidance behaviour. The findings of my study suggest that those who fear being rejected by others will develop symptoms of social anxiety; therefore, instead of actually avoiding others, adolescents appear to experience fear and anxiety related to being around others. The model by Downey and colleagues (1997; 1999) suggested that early rejection experiences contribute to the development of rejection sensitivity in adolescents. The findings of my study suggest a different start to the pathway—body image dissatisfaction. My study demonstrated that having more body image dissatisfaction was associated with more social anxiety and fear of negative evaluation. When adolescents are concerned about their body, they are also likely to be concerned about their social image. This concern regarding social image appears to manifest as fear of negative evaluation and symptoms

of social anxiety. As discussed earlier, it is particularly important for adolescents to maintain their social image. Therefore, once adolescents begin to evaluate their body critically, they are likely to be concerned with how they appear to others.

Downey and colleagues (1997) suggested that youth who are fearful of rejection will behave in ways to avoid rejection, such as avoiding social interaction. My study adds to Downey et al.'s theory because it suggested that adolescents who are fearful of rejection experience anxious thoughts and feelings related to social disapproval, rather than just the behaviour of social avoidance. As such, youth with a poor body concept appear to have anxious thoughts and feelings related to fear of social disapproval, which may be related to wanting to prevent future rejection, although they may not actually engage in social withdrawal behaviour.

Adolescence is a period where psychiatric illness often commences. These findings of the indirect relations between body image dissatisfaction, social anxiety, and fear of negative evaluation advance the understanding of the complex relation between mental health variables during this critical time period. There is now a better understanding of the role that body perceptions have on adolescent social confidence. Body image concerns in adolescence are more detrimental that just not liking your body, they are also related to increased apprehension regarding social interactions with peers.

With this knowledge of the association between adolescent body image perceptions and social confidence, there is evidence of the role of the social environment on the formation of body image concepts. This suggests the need to focus on the social context around youth which is impacting the way they view their body. Adding to this argument, teasing has been found to be related to lower body image satisfaction (Cattarin & Thompson, 1994) and up to 50% of youth reported that they were teased moderately to very often (Hayden-Wade et al., 2005). Hence,

more consideration needs to be placed on the social context around adolescents if wanting to improve their body image satisfaction since peer acceptance appears to be related to how adolescents evaluate their body concept.

Pathways from Controls to Model Variables

The girls in my study had more social anxiety in Grade 10, more fear of negative evaluation in Grade 10, and more body image dissatisfaction at all four time points than boys. This is not surprising given the literature which suggested that girls have more body image dissatisfaction than boys (Duchesne et al., 2017; Wright, 1988), females experience social anxiety more often than males (e.g., Baxter et al., 2013), and females have more fear of negative evaluation than males (Duke, Krishnan, Faith, & Storch, 2006). The experience of more body image dissatisfaction in girls, compared to boys, may be explained by the multitude of social pressures aimed toward girls, including pressures to be thin. Further, some types of behaviour (e.g., anger, yelling) may be excused more easily for boys than girls, such that girls are often expected to behave more “proper” than boys. With this expectation of "proper" behaviour being placed on girls, it is possible that girls become more cognizant of their actions and consequently are fearful of behaving inappropriately. This may partly explain why they experience more social anxiety and fear of negative evaluation than boys.

A systemic review of the literature on SES (which included parental education) found that children and adolescents with lower SES had greater mental health concerns (Reiss, 2013). In the present study, lower parental education was related to higher levels of body image dissatisfaction and higher levels of social anxiety. McLaughlin et al. (2011) suggested that higher parental education may contribute to increased access to resources that assist with the recovery from mental health concerns. It might be thought that parental education would be negatively

related to fear of negative evaluation as well, but this was not the case for my study. Instead, my study found that lower parental education was related to less fear of negative evaluation. Few studies have looked at the relation between SES and fear of negative evaluation. One study, by Cheng, Zhang, and Ding (2015), found that the association between SES and fear of negative evaluation was not significant in their sample of Chinese participants, which is inconsistent with the findings of my study. It is possible that the standards of parents with greater levels of education are higher than those with less education. Although the children of parents with more education may have more access to resources to improve their mental health (McLaughlin et al., 2011), these same children may feel more pressure to perform to their parents' standards, contributing to greater fear of negative evaluation. Regarding household income, it had been shown that children from impoverish families reported having higher levels of mental health concerns such as anxiety (Samaan, 2000). However, the present study did not find any significant differences between household income and social anxiety, body image dissatisfaction, or fear of negative evaluation. The participants in my study may have access to support and resources via other sources that are independent of their household income (e.g., school) which explains why their mental health concerns were not related to their family's income.

Generally, non-White children report fewer mental health problems (Samaan, 2000). Consistent with this, I found that non-White participants had less social anxiety in Grade 11 compared to White participants. Hofmann, Asnaani, and Hinton's (2010) review of the literature suggested that Asians, Hispanics and Blacks are less likely to have social anxiety disorder. Similarly, Breslau et al. (2006) found that Hispanics and non-Hispanic Blacks had lower risk of social phobia compared to non-Hispanic Whites. As well, risk for anxiety has been found to be 20-50% lower in all cultures other than 'Euro/Anglo' which encompasses North America,

Western Europe, and Australia (Baxter et al., 2013). The findings of my study are consistent with the existing literature, indicating that non-White ethnicities typically have lower levels of social anxiety.

Hofmann and colleagues (2010) suggested that social anxiety presentations are different across cultures, such that certain social behaviours may be regarded as normal for one culture yet unacceptable for another which can lead to heighted social anxiety. One such cultural difference may be whether an individual is from a collectivist or individualistic culture. Collectivistic countries have been found to show more accepting attitudes toward socially reserved and withdrawn behaviors than individualistic countries (Heinrichs et al., 2006). Generally, the more accepting one is toward attention-seeking behaviour, the less social anxiety they experience (Heinrichs et al., 2006). As such, Heinrichs et al. (2006) found that collectivist countries reported greater levels of social anxiety than individualistic countries. Since it is likely that the White participants in the present study have views which align with an individualistic society (characteristic of Western countries like Canada), the findings of Heinrichs et al.'s (2006) study are inconsistent with my findings. It is important to note that in Grade 10, 12, and one-year post high school there were no differences between White and non-White participants in terms of social anxiety which may be a result of all participants residing in an individualistic country.

Previous studies have found that White females are less satisfied with their body than Black females (Story et al., 1994; Winter, Danforth, Landor, & Pevehouse-Pfeiffer, 2019). I did not find any differences in ethnicity for body image dissatisfaction and fear of negative evaluation, which may be explained by all participants living in a similar geographical area. With all participants living in similar environments in Southern Ontario, this may diminish some of

the typical ethnic differences that individuals experience if they are raised in different cultural settings.

Contribution of Research

Curriculums designed to promote healthy body image views have been shown to be effective at increasing positive body image attitudes in elementary school children (Kater, Rohwer, & Levine, 2000). The present study supports the notion that addressing body image dissatisfaction in youth is advantageous. Body image dissatisfaction has been shown to be related to anxiety concerns (e.g., Koronczai et al., 2013; Sahin et al., 2014). My study confirms this finding and advances the research by suggesting that body image concerns predict social anxiety and fear of negative evaluation in the following years. My study provides support for the need for early intervention addressing body image dissatisfaction in adolescents. My research should motivate educators to recognize the importance of implementing body image prevention practices in schools. Since media messages have been shown to have a negative impact on body satisfaction (Spettigue & Henderson, 2004), it may be effective for programs to target this topic. Spettigue and Henderson (2004) stressed the need for adolescents to be taught media literacy and media activism in order to alter their perspectives on normative body sizes.

Interventions aimed at reducing sociocultural pressures to be thin can help adolescents be less preoccupied with thinness ideals, which may improve body satisfaction (Stice & Shaw, 2002). Cicchetti and Gunnar (2008) suggested that preventing maladaptation and mental disorders requires a thorough understanding of the dynamic relation between risk factors and protective factors. The present study lends support for the risk factors of social anxiety and fear of negative evaluation—poor body image.

Cicchetti (1984) urged the need for longitudinal research on various psychopathologies. With an understanding that mental health concerns have effects across the lifespan, it is crucial to consider youth's psychopathology (Cicchetti, 1984). My study's longitudinal design allowed for an understanding of how body image dissatisfaction is linked to social anxiety and fear of negative evaluation across time.

Limitations and Future Directions

Although the present study adds to the literature by helping to clarify the longitudinal associations between three variables related to mental health, there are areas where this study could be improved or modified to further advance the literature in this area. The present study relied on self-reports of participants. It can be advantageous to obtain data about participants' internal experiences via self-report due to the subjective nature of the variables being measured. However, self-report measures can contribute to measurement error. Self-report measures can result in factors (other than those intended) influencing how participants respond (Field, 2009) and also lead to stronger associations between variables due to shared method variance (Podsakoff, MacKenzie, Lee & Podsakoff, 2003).

Research is needed to replicate these findings. The literature can be extended by sampling other age groups to see if similar patterns emerge. As well, since the participants in the present study were primarily White, it would be of interest to sample other ethnic groups to determine if the same patterns are found. It has been established that there are differences in how boys and girls experience body images concerns (e.g., Duchesne et al., 2017), social anxiety (e.g., Baxter et al., 2013), and fear of negative evaluation (Duke et al., 2006). The present study considered gender as a control variable and found that girls experience social anxiety, body image, and fear

of negative evaluation more than boys. Future studies could conduct a multi-group analysis for gender to better understand how estimates vary between each gender.

The present study has the ability to influence the direction of future research. Although a major strength of the present study is the use of cascade modeling to examine the longitudinal relations between variables, I am unable to infer causal inferences from the data. Thus, implementing an experimental design with control and experimental groups would be helpful in terms of better understanding the causality between the variables of interest.

Although the measure of body image dissatisfaction has shown good internal consistency, stability, and predictive validity (Lee & Vaillancourt, 2018), it was developed for the purpose of this study and thus requires more formal investigation into its psychometric properties.

Lastly, the present study did not control for other variables that could potentially impact the association between body image dissatisfaction, social anxiety, and fear of negative evaluation. For example, body mass index (BMI) was not controlled for although it has been shown to be positively related to body image dissatisfaction (Dion et al., 2015; Latiff et al., 2017; Paxton et al., 1991). Although, BMI has been found to not be significantly related to social anxiety (e.g., Titchener & Wong, 2015). Regardless, future research might benefit from including BMI as a control variable to account for the influence of body weight on the associations between the study variables.

The present study increased the understanding of social anxiety in adolescents; therefore, other psychopathological concerns could be considered in future studies. For example, mental disorders such as depression have been shown to be positively related to body image dissatisfaction (Richard, Rohrmann, Lohse, & Eichholzer, 2016). It would be beneficial to consider pathologies, such as depression, in a model similar to the present study to gather a

greater understanding of how these variables are temporally related. As well, potential mediators—other than fear of negative evaluation—that may influence the relation between body image dissatisfaction and social anxiety could be considered. For instance, appearance-based teasing could be investigated to gain a deeper understanding of the relation between another undesirable experience and body image dissatisfaction for adolescents.

Conclusion

This study contributes important knowledge to the field of adolescent body image and mental health, by increasing the understanding of how body image dissatisfaction, social anxiety, and fear of negative evaluation relate to one another over a four-year period in adolescence. Overall, my study demonstrated that adolescents with poor body image are more likely to experience social anxiety and be fearful of being negatively evaluated. Essentially, when adolescents are dissatisfied with their body, they are likely to be fearful and anxious around others. Conversely, in mid-adolescence, adolescents who display symptoms of socially anxiety later develop body image concerns. These associations demonstrate the impairment that body image dissatisfaction can have on mental health and social relationships. These findings should speak to the necessity for a preventative approach that promotes body image acceptance before adolescents are impacted psychologically. The findings of my study can be used to inform prevention and intervention strategies for youth with body image dissatisfaction who may be at risk for later mental health concerns.

References

Adachi, P., & Willoughby, T. (2015). Interpreting effect sizes when controlling for stability effects in longitudinal autoregressive models: Implications for psychological science. *European Journal of Developmental Psychology*, *12*(1), 116–128. https://doi.org/10.1080/17405629.2014.963549

Alonso, J., Angermeyer, M. C., Bernert, S., Bruffaerts, R., Brugha, T. S., Bryson, H., Girolamo, G. de, Graaf, R. de, Demyttenaere, K., Gasquet, I., Haro, J. M., Katz, S. J., Kessler, R. C., Kovess, V., Lépine, J. P., Ormel, J., Polidori, G., Russo, L. J., Vilagut, G., … Vollebergh, W. A. M. (2004). Prevalence of mental disorders in Europe: Results from the European Study of the Epidemiology of Mental Disorders (ESEMeD) project. *Acta Psychiatrica Scandinavica*, *109*(420), 21–27. https://doi.org/10.1111/j.1600-0047.2004.00327.x

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5.* (Fifth edition). American Psychiatric Association.

Baumeister, R. F., & Tice, D. M. (1990). Point-counterpoints: Anxiety and social exclusion. *Journal of Social and Clinical Psychology*, *9*(2), 165–195. https://doi.org/10.1521/jscp.1990.9.2.165

Baxter, A. J., Scott, K. M., Vos, T., & Whiteford, H. A. (2013). Global prevalence of anxiety disorders: A systematic review and meta-regression. *Psychological Medicine*, *43*(5), 897–910. https://doi.org/10.1017/S003329171200147X

Bearman, S. K., Presnell, K., Martinez, E., & Stice, E. (2006). The skinny on body dissatisfaction: A longitudinal study of adolescent girls and boys. *Journal of Youth and Adolescence*, *35*(2), 217–229. https://doi.org/10.1007/s10964-005-9010-9

Beesdo, K., Knappe, S., & Pine, D. S. (2009). Anxiety and anxiety disorders in children and adolescents: Developmental issues and implications for DSM-V. *Psychiatric Clinics of North America*, *32*(3), 483–524. https://doi.org/10.1016/j.psc.2009.06.002

Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society*, *57*(1), 289–300. https://doi.org/10.1111/j.2517-6161.1995.tb02031.x

Besteher, B., Gaser, C., & Nenadić, I. (2019). Brain structure and subclinical symptoms: A dimensional perspective of psychopathology in the depression and anxiety spectrum. *Neuropsychobiology*, *78*(3), 113–126. https://doi.org/10.1159/000501024

Biesanz, J. C., Falk, C. F., & Savalei, V. (2010). Assessing mediational models: Testing and interval estimation for indirect effects. *Multivariate Behavioral Research*, *45*(4), 661–701. https://doi.org/10.1080/00273171.2010.498292

Body Image & Eating Disorders. (2018, February 19). National Eating Disorders Association. https://www.nationaleatingdisorders.org/body-image-eating-disorders

Boyce, W. F., King, M. A., & Roche, J. (2008). *Healthy settings for young people in Canada*. Public Health Agency of Canada.

Breslau, J., Aguilar-Gaxiola, S., Kendler, K. S., Su, M., Williams, D., & Kessler, R. C. (2006). Specifying race-ethnic differences in risk for psychiatric disorder in a USA national sample. *Psychological Medicine*, *36*(1), 57–68. https://doi.org/10.1017/S0033291705006161

Bucchianeri, M. M., Arikian, A. J., Hannan, P. J., Eisenberg, M. E., & Neumark-Sztainer, D. (2013). Body dissatisfaction from adolescence to young adulthood: Findings from a 10-

year longitudinal study. *Body Image*, *10*(1), 1–7. https://doi.org/10.1016/j.bodyim.2012.09.001

Burstein, M., He, J.-P., Kattan, G., Albano, A. M., Avenevoli, S., & Merikangas, K. R. (2011). Social phobia and subtypes in the national comorbidity survey–adolescent supplement: Prevalence, correlates, and comorbidity. *Journal of the American Academy of Child & Adolescent Psychiatry*, *50*(9), 870–880. https://doi.org/10.1016/j.jaac.2011.06.005

Calogero, R. M., Park, L. E., Rahemtulla, Z. K., & Williams, K. C. D. (2010). Predicting excessive body image concerns among British university students: The unique role of appearance-based rejection sensitivity. *Body Image, 7*(1), 78–81. https://doi.org/10.1016/j.bodyim.2009.09.005

Carleton, R. N., McCreary, D. R., Norton, P. J., & Asmundson, G. J. G. (2006). Brief Fear of Negative Evaluation scale—Revised. *Depression and Anxiety*, *23*(5), 297–303. https://doi.org/10.1002/da.20142

Cash, T. F. (1996). Body image and cosmetic surgery: The psychology of physical appearance. *The American Journal of Cosmetic Surgery*, *13*(4), 345–351. https://doi.org/10.1177/074880689601300407

Cash, T. F., Thériault, J., & Annis, N. M. (2004). Body image in an interpersonal context: Adult attachment, fear of intimacy and social anxiety. *Journal of Social and Clinical Psychology*, *23*(1), 89–103. https://doi.org/10.1521/jscp.23.1.89.26987

Cattarin, J. A., & Thompson, J. K. (1994). A three-year longitudinal study of body image, eating disturbance, and general psychological functioning in adolescent females. *Eating Disorders*, *2*(2), 114–125. https://doi.org/10.1080/10640269408249107

Cheng, G., Zhang, D., & Ding, F. (2015). Self-esteem and fear of negative evaluation as mediators between family socioeconomic status and social anxiety in Chinese emerging adults. *International Journal of Social Psychiatry*, *61*(6), 569–576. https://doi.org/10.1177/0020764014565405

Cicchetti, D. (1984). The emergence of developmental psychopathology. *Child Development*, *55*, 1–7. https://doi.org/10.1111/1467-8624.ep7405150

Cicchetti, D., & Gunnar, M. R. (2008). Integrating biological measures into the design and evaluation of preventive interventions. *Development and Psychopathology*, *20*(3), 737–743. https://doi.org/10.1017/S0954579408000357

Clark, D. B., Smith, M. G., Neighbors, B. D., Skerlec, L. M., & Randall, J. (1994). Anxiety disorders in adolescence: Characteristics, prevalence, and comorbidities. *Clinical Psychology Review*, *14*(2), 113–137. https://doi.org/10.1016/0272-7358(94)90012-4

Clay, D., Vignoles, V. L., & Dittmar, H. (2005). Body image and self-esteem among adolescent girls: Testing the influence of sociocultural factors. *Journal of Research on Adolescence, 15*(4), 451–477. https://doi.org/10.1111/j.1532-7795.2005.00107.x

Cohane, G. H., & Pope, H. G. (2001). Body image in boys: A review of the literature. *International Journal of Eating Disorders*, *29*(4), 373–379. https://doi.org/10.1002/eat.1033

Cohen, J. (1992). A power primer. *Psychological Bulletin*, *112*, 155–159. http://doi.org/10.1037//0033-2909.112.1.155

Comer, J. S., Blanco, C., Hasin, D. S., Liu, S.-M., Grant, B. F., Turner, J. B., & Olfson, M. (2011). Health-related quality of life across the anxiety disorders: Results from the

national epidemiologic survey on alcohol and related conditions (NESARC). *The Journal of Clinical Psychiatry*, *72*(01), 43–50. https://doi.org/10.4088/JCP.09m05094blu

Craske, M. G., Rauch, S. L., Ursano, R., Prenoveau, J., Pine, D. S., & Zinbarg, R. E. (2009). What is an anxiety disorder? *Depression and Anxiety*, *26*(12), 1066–1085. https://doi.org/10.1002/da.20633

Cruz-Sáez, S., Pascual, A., Salaberria, K., & Echeburúa, E. (2015). Normal-weight and overweight female adolescents with and without extreme weight-control behaviours: Emotional distress and body image concerns. *Journal of Health Psychology*, *20*(6), 730–740. https://doi.org/10.1177/1359105315580214

Davison, T. E., & McCabe, M. P. (2005). Relationships between men's and women's body image and their psychological, social, and sexual functioning. *Sex Roles*, *52*(7–8), 463–475. https://doi.org/10.1007/s11199-005-3712-z

Davison, T. E., & McCabe, M. P. (2006). Adolescent body image and psychosocial functioning. *The Journal of Social Psychology*, *146*(1), 15–30. https://doi.org/10.3200/SOCP.146.1.15-30

Di Blasi, M., Cavani, P., Pavia, L., Lo Baido, R., La Grutta, S., & Schimmenti, A. (2015). The relationship between self-image and social anxiety in adolescence. *Child and Adolescent Mental Health*, *20*(2), 74–80. https://doi.org/10.1111/camh.12071

Dion, J., Blackburn, M.-E., Auclair, J., Laberge, L., Veillette, S., Gaudreault, M., Vachon, P., Perron, M., & Touchette, É. (2015). Development and aetiology of body dissatisfaction in adolescent boys and girls. *International Journal of Adolescence and Youth*, *20*(2), 151–166. https://doi.org/10.1080/02673843.2014.985320

Dooley, B., Fitzgerald, A., & Giollabhui, N. M. (2015). The risk and protective factors associated with depression and anxiety in a national sample of Irish adolescents. *Irish Journal of Psychological Medicine*, *32*(1), 93–105. https://doi.org/10.1017/ipm.2014.83

Downey, G., Bonica, C., & Claudia, R. (1999). Rejection sensitivity and adolescent romantic relationships. In *The Development of Romantic Relationships in Adolescence* (pp. 148–172). Cambridge University Press.

Downey, G., Khouri, H., & Feldman, S. I. (1997). Early interpersonal trauma and later adjustment: The mediational role of rejection sensitivity. In *Developmental perspectives on trauma: Theory, research, and intervention* (Vol. 8, pp. 85–114). University of Rochester Press.

Downey, G., Lebolt, A., Rincón, C., & Freitas, A. L. (1998). Rejection sensitivity and children's interpersonal difficulties. *Child Development*, *69*(4), 1074–1091. https://doi.org/10.1111/j.1467-8624.1998.tb06161.x

Duchesne, A.-P., Dion, J., Lalande, D., Bégin, C., Émond, C., Lalande, G., & McDuff, P. (2017). Body dissatisfaction and psychological distress in adolescents: Is self-esteem a mediator? *Journal of Health Psychology*, *22*(12), 1563–1569. https://doi.org/10.1177/1359105316631196

Duke, D., Krishnan, M., Faith, M., & Storch, E. A. (2006). The psychometric properties of the Brief Fear of Negative Evaluation Scale. *Journal of Anxiety Disorders*, *20*(6), 807–817. https://doi.org/10.1016/j.janxdis.2005.11.002

Essau, C. A., Conradt, J., & Petermann, F. (2002). Course and outcome of anxiety disorders in adolescents. *Journal of Anxiety Disorders*, *16*(1), 67–81. https://doi.org/10.1016/S0887-6185(01)00091-3

Essau, C. A., Lewinsohn, P. M., Lim, J. X., Ho, M. R., & Rohde, P. (2018). Incidence, recurrence and comorbidity of anxiety disorders in four major developmental stages. *Journal of Affective Disorders*, *228*, 248–253. https://doi.org/10.1016/j.jad.2017.12.014

Fang, A., Asnaani, A., Gutner, C., Cook, C., Wilhelm, S., & Hofmann, S. G. (2011). Rejection sensitivity mediates the relationship between social anxiety and body dysmorphic concerns. *Journal of Anxiety Disorders*, *25*(7), 946–949. https://doi.org/10.1016/j.janxdis.2011.06.001

Fang, A., & Hofmann, S. G. (2010). Relationship between social anxiety disorder and body dysmorphic disorder. *Clinical Psychology Review*, *30*(8), 1040–1048. https://doi.org/10.1016/j.cpr.2010.08.001

Fehm, L., Beesdo, K., Jacobi, F., & Fiedler, A. (2008). Social anxiety disorder above and below the diagnostic threshold: Prevalence, comorbidity and impairment in the general population. *Social Psychiatry and Psychiatric Epidemiology*, *43*(4), 257–265. https://doi.org/10.1007/s00127-007-0299-4

Feingold, A., & Mazzella, R. (1998). Gender differences in body image are increasing. *Psychological Science*, *9*(3), 190–195. https://doi.org/10.1111/1467-9280.00036

Feldman, S., & Downey, G. (1994). Rejection sensitivity as a mediator of the impact of childhood exposure to family violence on adult attachment behavior. *Development and Psychopathology*, *6*(1), 231–247. https://doi.org/10.1017/S0954579400005976

Ferguson, C. J. (2009). An effect size primer: A guide for clinicians and researchers. *Professional Psychology: Research and Practice*, *40*(5), 532–538. http://dx.doi.org.proxy.bib.uottawa.ca/10.1037/a0015808

Ferguson, C. J., Munoz, M. E., Contreras, S., & Velasquez, K. (2011). Mirror, mirror on the wall: Peer competition, television influences, and body image dissatisfaction. *Journal of Social and Clinical Psychology*, *30*(5), 458–483. https://doi.org/10.1521/jscp.2011.30.5.458

Ferrari, E. P., Petroski, E. L., & Silva, D. A. S. (2013). Prevalence of body image dissatisfaction and associated factors among physical education students. *Trends in Psychiatry and Psychotherapy*, *35*(2), 119–127. https://doi.org/10.1590/S2237-60892013000200005

Field, A. (2009). *Discovering statistics using SPSS:(and sex, drugs and rock'n'roll)* (3rd ed., Vol. 497). Sage.

Goswami, S., Sachdeva, S., & Sachdeva, R. (2012). Body image satisfaction among female college students. *Industrial Psychiatry Journal*, *21*(2), 168–172. https://doi.org/10.4103/0972-6748.119653

Gustafson-Larson, A. M., & Terry, R. D. (1992). Weight-related behaviors and concerns of fourth-grade children. *Journal of the American Dietetic Association*, *92*(7), 818–822.

Hadjistavropoulos, H., & Lawrence, B. (2007). Does anxiety about health influence eating patterns and shape-related body checking among females? *Personality and Individual Differences*, *43*(2), 319–328. https://doi.org/10.1016/j.paid.2006.11.021

Halliwell, E., & Dittmar, H. (2003). A qualitative investigation of women's and men's body image concerns and their attitudes toward aging. *Sex Roles*, *49*(11–12), 675–684. https://doi.org/10.1023/B:SERS.0000003137.71080.97

Harb, G. C., Heimberg, R. G., Fresco, D. M., Schneier, F. R., & Liebowitz, M. R. (2002). The psychometric properties of the Interpersonal Sensitivity Measure in social anxiety

disorder. *Behaviour Research and Therapy*, *40*(8), 961–979. https://doi.org/10.1016/S0005-7967(01)00125-5

Harmatz, M. G., Gronendyke, J., & Thomas, T. (1985). The underweight male: The unrecognized problem group of body image research. *Journal of Obesity*, *4*(4), 258–267.

Harrison, K. (2001). Ourselves, our bodies: Thin-ideal media, self-discrepancies, and eating disorder symptomatology in adolescents. *Journal of Social and Clinical Psychology*, *20*(3), 289–323. https://doi.org/10.1521/jscp.20.3.289.22303

Hart, E. A., Leary, M. R., & Rejeski, W. J. (1989). The measurement of social physique anxiety. *Journal of Sport*, *11*(1), 94–104. https://doi.org/10.1123/jsep.11.1.94

Hayden-Wade, H. A., Stein, R. I., Ghaderi, A., Saelens, B. E., Zabinski, M. F., & Wilfley, D. E. (2005). Prevalence, characteristics, and correlates of teasing experiences among overweight children vs. non-overweight peers. *Obesity Research*, *13*(8), 1381–1392. https://doi.org/10.1038/oby.2005.167

Hayward, C., Wilson, K. A., Lagle, K., Kraemer, H. C., Killen, J. D., & Taylor, C. B. (2008). The developmental psychopathology of social anxiety in adolescents. *Depression and Anxiety*, *25*(3), 200–206. https://doi.org/10.1002/da.20289

Heinrichs, N., Rapee, R. M., Alden, L. A., Bogels, S., Hofmann, S. G., Ja Oh, K., & Sakano, Y. (2006). Cultural differences in perceived social norms and social anxiety. *Behaviour Research and Therapy*, *44*(8), 1187–1197. https://doi.org/10.1016/j.brat.2005.09.006

Hofmann, S. G., Asnaani, A., & Hinton, D. E. (2010). Cultural aspects in social anxiety and social anxiety disorder. *Depression and Anxiety*, *27*(12), 1117–1127. https://doi.org/10.1002/da.20759

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Janssen, I. (2012). *Chapter 9: The health of Canada's young people: A mental health focus – healthy weights* [Research]. Government of Canada. https://www.canada.ca/en/public-health/services/health-promotion/childhood-adolescence/publications/health-canada-young-people-mental-health-focus/healthy-weights.html

Jaworska, N., & MacQueen, G. (2015). Adolescence as a unique developmental period. *Journal of Psychiatry & Neuroscience*, *40*(5), 291–293. https://doi.org/10.1503/jpn.150268

Jones, D. C. (2004). Body image among adolescent girls and boys: A longitudinal study. *Developmental Psychology*, *40*(5), 823–835. https://doi.org/10.1037/0012-1649.40.5.823

Junne, F., Zipfel, S., Wild, B., Martus, P., Giel, K., Resmark, G., Friederich, H.-C., Teufel, M., Zwaan, M. de, Dinkel, A., Herpertz, S., Burgmer, M., Tagay, S., Rothermund, E., Zeeck, A., Ziser, K., Herzog, W., & Löwe, B. (2016). The relationship of body image with symptoms of depression and anxiety in patients with anorexia nervosa during outpatient psychotherapy: Results of the ANTOP study. *Psychotherapy*, *53*(2), 141–151. https://doi.org/10.1037/pst0000064

Kashani, J. H., & Orvaschel, H. (1990). A community study of anxiety in children and adolescents. *American Journal of Psychiatry*, *147*(3), 313–218. https://doi.org/10.1176/ajp.147.3.313

Kater, K. J., Rohwer, J., & Levine, M. P. (2000). An elementary school project for developing healthy body image and reducing risk factors for unhealthy and disordered eating. *Eating Disorders*, *8*(1), 3–16. https://doi.org/10.1080/10640260008251208

Kelly, M. M., Walters, C., & Phillips, K. A. (2010). Social anxiety and its relationship to functional impairment in body dysmorphic disorder. *Behavior Therapy*, *41*(2), 143–153. https://doi.org/10.1016/j.beth.2009.01.005

Kline, R. B. (2011). *Principles and Practice of Structural Equation Modeling* (3rd ed). The Guilford Press.

Koronczai, B., Kökönyei, G., Urbán, R., Kun, B., Pápay, O., Nagygyörgy, K., Griffiths, M. D., & Demetrovics, Z. (2013). The mediating effect of self-esteem, depression and anxiety between satisfaction with body appearance and problematic internet use. *The American Journal of Drug and Alcohol Abuse*, *39*(4), 259–265. https://doi.org/10.3109/00952990.2013.803111

Kostanski, M., & Gullone, E. (1998). Adolescent body image dissatisfaction: Relationships with self-esteem, anxiety, and depression controlling for body mass. *Journal of Child Psychology and Psychiatry*, *39*(2), 255–262. https://doi.org/10.1017/S0021963097001807

Laird, N. M. (1988). Missing data in longitudinal studies. *Statistics in Medicine*, *7*(1–2), 305–315. https://doi.org/10.1002/sim.4780070131

Latiff, A. Ab., Muhamad, J., & Rahman, R. A. (2017). Body image dissatisfaction and its determinants among young primary-school adolescents. *Journal of Taibah University Medical Sciences*, *13*(1), 1–8. https://doi.org/10.1016/j.jtumed.2017.07.003

Lavell, C. H., Zimmer-Gembeck, M. J., Farrell, L. J., & Webb, H. (2014). Victimization, social anxiety, and body dysmorphic concerns: Appearance-based rejection sensitivity as a mediator. *Body Image*, *11*(4), 391–395. https://doi.org/10.1016/j.bodyim.2014.06.008

Leary, M. (1983). A brief version of the Fear of Negative Evaluation scale. *Personality and Social Psychology Bulletin*, *9*(3), 371–375. https://doi.org/10.1177/0146167283093007

Lee, K. S., & Vaillancourt, T. (2018). Body mass index, peer victimization, and body dissatisfaction across 7 years of childhood and adolescence: Evidence of moderated and mediated pathways. *Developmental Science*, *22*(2), 1-12. https://doi.org/10.1111/desc.12734

Lieberman, M., Gauvin, L., Bukowski, W. M., & White, D. R. (2001). Interpersonal influence and disordered eating behaviors in adolescent girls: The role of peer modeling, social reinforcement, and body-related teasing. *Eating Behaviors*, *2*(3), 215–236. https://doi.org/10.1016/S1471-0153(01)00030-7

Little, R. J. A. (1988). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association*, *83*(404), 1198–1202. https://doi.org/10.1080/01621459.1988.10478722

London, B., Downey, G., Bonica, C., & Paltin, I. (2007). Social causes and consequences of rejection sensitivity. *Journal of Research on Adolescence*, *17*(3), 481–506. https://doi.org/10.1111/j.1532-7795.2007.00531.x

Lundgren, J. D., Anderson, D. A., & Thompson, J. K. (2004). Fear of negative appearance evaluation: Development and evaluation of a new construct for risk factor work in the field of eating disorders. *Eating Behaviors*, *5*(1), 75–84. https://doi.org/10.1016/S1471-0153(03)00055-2

March, J. S., Parker, J. D. A., Sullivan, K., Stallings, P., & Conners, C. K. (1997). The Multidimensional Anxiety Scale for Children (MASC): Factor structure, reliability, and

validity. *Journal of the American Academy of Child & Adolescent Psychiatry*, *36*(4), 554–565. https://doi.org/10.1097/00004583-199704000-00019

Marston, E. G., Hare, A., & Allen, J. P. (2010). Rejection sensitivity in late adolescence: Social and emotional sequelae. *Journal of Research on Adolescence*, *20*(4), 959–982. https://doi.org/10.1111/j.1532-7795.2010.00675.x

Masten, A. S., & Cicchetti, D. (2010). Developmental cascades. *Development and Psychopathology*, *22*(3), 491–495. https://doi.org/10.1017/S0954579410000222

McLaughlin, K. A., Breslau, J., Green, J. G., Lakoma, M. D., Sampson, N. A., Zaslavsky, A. M., & Kessler, R. C. (2011). Childhood socio-economic status and the onset, persistence, and severity of DSM-IV mental disorders in a US national sample. *Social Science & Medicine*, *73*(7), 1088–1096. https://doi.org/10.1016/j.socscimed.2011.06.011

McLean, C. P., Asnaani, A., Litz, B. T., & Hofmann, S. G. (2011). Gender differences in anxiety disorders: Prevalence, course of illness, comorbidity and burden of illness. *Journal of Psychiatric Research*, *45*(8), 1027–1035. https://doi.org/10.1016/j.jpsychires.2011.03.006

Mellor, D., Fuller-Tyszkiewicz, M., McCabe, M., & Ricciardelli, L. (2010). Body image and self-esteem across age and gender: A short-term longitudinal study. *Sex Roles*, *63*(9–10), 672–681. https://doi.org/10.1007/s11199-010-9813-3

Mendlowicz, M. V., & Stein, M. B. (2000). Quality of life in individuals with anxiety disorders. *American Journal of Psychiatry*, *157*(5), 669–682. https://doi.org/10.1176/appi.ajp.157.5.669

Merikangas, K. R., & Kalaydjian, A. (2007). Magnitude and impact of comorbidity of mental disorders from epidemiologic surveys. *Current Opinion in Psychiatry*, *20*(4), 353–358. https://doi.org/10.1097/YCO.0b013e3281c61dc5

Nesdale, D., & Lambert, A. (2008). Effects of experimentally manipulated peer rejection on children's negative affect, self-esteem, and maladaptive social behavior. *European Journal of Developmental Psychology*, *5*(1), 19–38. https://doi.org/10.1080/17405620600717581

Neumark-Sztainer, D., Paxton, S. J., Hannan, P. J., Haines, J., & Story, M. (2006). Does body satisfaction matter? Five-year longitudinal associations between body satisfaction and health behaviors in adolescent females and males. *Journal of Adolescent Health*, *39*(2), 244–251. https://doi.org/10.1016/j.jadohealth.2005.12.001

O'Leary, Z. (2009). *The essential guide to doing your research project*. SAGE.

Park, L. (2007). Appearance-based rejection sensitivity: Implications for mental and physical health, affect, and motivation. *Personality and Social Psychology Bulletin*, *33*(4), 490–504. https://doi.org/10.1177/0146167206296301

Park, L. E., & Pinkus, R. T. (2009). Interpersonal effects of appearance-based rejection sensitivity. *Journal of Research in Personality*, *43*(4), 602–612. https://doi.org/10.1016/j.jrp.2009.02.003

Paxton, S. J., Schutz, H. K., Wertheim, E. H., & Muir, S. L. (1999). Friendship clique and peer influences on body image concerns, dietary restraint, extreme weight-loss behaviors, and binge eating in adolescent girls. *Journal of Abnormal Psychology, 108*(2), 255–266. https://doi.org/10.1037/0021-843X.108.2.255

Paxton, S., Wertheim, E., Gibbons, K., Szmukler, G., Hillier, L., & Petrovich, J. (1991). Body image satisfaction, dieting beliefs, and weight loss behaviors in adolescent girls and boys. *Journal of Youth and Adolescence*, *20*(3), 361–379. https://doi.org/10.1007/BF01537402

Payne, G., & Payne, J. (2004). *Key Concepts in Social Research*. SAGE.

Pinto, A., & Phillips, K. A. (2005). Social anxiety in body dysmorphic disorder. *Body Image*, *2*(4), 401–405. https://doi.org/10.1016/j.bodyim.2005.10.003

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879–903. https://doi.org/10.1037/0021-9010.88.5.879

Polanczyk, G. V., Salum, G. A., Sugaya, L. S., Caye, A., & Rohde, L. A. (2015). Annual Research Review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. *Journal of Child Psychology and Psychiatry*, *56*(3), 345–365. https://doi.org/10.1111/jcpp.12381

Ponterotto, J. (2002). Qualitative research methods: The fifth force in psychology. *The Counseling Psychologist*, *30*(3), 394–406. https://doi.org/10.1177/0011000002303002

Ponterotto, J. G. (2005). Qualitative research in counseling psychology: A primer on research paradigms and philosophy of science. *Journal of Counseling Psychology*, *52*(2), 126–136. https://doi.org/10.1037/0022-0167.52.2.126

Puhl, R. M., & King, K. M. (2013). Weight discrimination and bullying. *Best Practice & Research Clinical Endocrinology & Metabolism*, *27*(2), 117–127. https://doi.org/10.1016/j.beem.2012.12.002

Raknes, S., Pallesen, S., Himle, J. A., Bjaastad, J. F., Wergeland, G. J., Hoffart, A., Dyregrov, K., Håland, Å. T., & Haugland, B. S. M. (2017). Quality of life in anxious adolescents. *Child and Adolescent Psychiatry and Mental Health, 11*. https://doi.org/10.1186/s13034-017-0173-4

Reiss, F. (2013). Socioeconomic inequalities and mental health problems in children and adolescents: A systematic review. *Social Science & Medicine*, *90*, 24–31. https://doi.org/10.1016/j.socscimed.2013.04.026

Richard, A., Rohrmann, S., Lohse, T., & Eichholzer, M. (2016). Is body weight dissatisfaction a predictor of depression independent of body mass index, sex and age? Results of a cross-sectional study. *BMC Public Health*, *16*(1), 1–8. https://doi.org/10.1186/s12889-016-3497-8

Rynn, M. A., Vidair, H., & Blackford, J. (2012). *Anxiety Disorders, An Issue of Child and Adolescent Psychiatric Clinics of North America*. Elsevier Health Sciences.

Safren, S. A., Gonzalez, R. E., Horner, K. J., Leung, A. W., Heimberg, R. G., & Juster, H. R. (2000). Anxiety in ethnic minority youth: Methodological and conceptual issues and review of the literature. *Behavior Modification*, *24*(2), 147–183. https://doi.org/10.1177/0145445500242001

Sahin, E., Barut, Y., Ersanli, E., & Kumcagiz, H. (2014). Self-esteem and social appearance anxiety: An investigation of secondary school students. *Journal of Basic and Applied Scientific Research*, *4*, 152–159.

Samaan, R. A. (2000). The influences of race, ethnicity, and poverty on the mental health of children. *Journal of Health Care for the Poor and Underserved*, *11*(1), 100–110. http://dx.doi.org.proxy.bib.uottawa.ca/10.1353/hpu.2010.0557

Somers, J. M., Goldner, E. M., Waraich, P., & Hsu, L. (2006). Prevalence and incidence studies of anxiety disorders: A systematic review of the literature. *The Canadian Journal of Psychiatry*, *51*(2), 100–113. https://doi.org/10.1177/070674370605100206

Spettigue, W., & Henderson, K. A. (2004). Eating disorders and the role of the media. *The Canadian Child and Adolescent Psychiatry Review*, *13*(1), 16–19.

Staffieri, J. R. (1967). A study of social stereotype of body image in children. *Journal of Personality and Social Psychology*, *7*(1), 101–104. https://doi.org/10.1037/h0021227

Statistics Canada. (2017). *Census Profile, 2016 Census—Hamilton [Census metropolitan area], Ontario and Ontario [Province]* (Ottawa). Statistics Canada Catalogue. https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/page.cfm?Lang=E&Geo1=CMACA&Code1=537&Geo2=PR&Code2=35&SearchText=Hamilton&SearchType=Begins&SearchPR=01&B1=Education&TABID=1&type=1

Stein, M. B., Walker, J. R., & Forde, D. R. (1994). Setting diagnostic thresholds for social phobia: Considerations from a community survey of social anxiety. *American Journal of Psychiatry*, *151*(3), 408–412. https://doi.org/10.1176/ajp.151.3.408

Stice, E., & Shaw, H. E. (2002). Role of body dissatisfaction in the onset and maintenance of eating pathology: A synthesis of research findings. *Journal of Psychosomatic Research*, *53*(5), 985–993. https://doi.org/10.1016/S0022-3999(02)00488-9

Story, M., French, S. A., Resnick, M. D., & Blum, R. W. (1994). Ethnic/racial and socioeconomic differences in dieting behaviors and body image perceptions in adolescents. *International Journal of Eating Disorders*, *18*(2), 173–179.

Titchener, K., & Wong, Q. J. J. (2015). A weighty issue: Explaining the association between body mass index and appearance-based social anxiety. *Eating Behaviors*, *16*(Supplement C), 13–16. https://doi.org/10.1016/j.eatbeh.2014.10.005

Tomas-Aragones, L., & Marron, S. E. (2016). Body image and body dysmorphic concerns. *Acta Derm Venereol*, *96*(217), 47–50. https://doi.org/10.2340/00015555-2368

Vaillancourt, T., & Brittain, H. (2019). Longitudinal associations among primary and secondary psychopathic traits, anxiety, and borderline personality disorder features across adolescence. *Personality Disorders: Theory, Research, and Treatment*, *10*(4), 354–364. https://doi.org/10.1037/per0000325

Vaillancourt, T., Brittain, H., McDougall, P., & Duku, E. (2013). Longitudinal links between childhood peer victimization, internalizing and externalizing problems, and academic functioning: Developmental cascades. *Journal of Abnormal Child Psychology*, *41*(8), 1203–1215. https://doi.org/10.1007/s10802-013-9781-5

Vannatta, K., Gartstein, M., Zeller, M., & Noll, R. (2009). Peer acceptance and social behavior during childhood and adolescence: How important are appearance, athleticism, and academic competence? *International Journal of Behavioral Development*, *33*(4), 303–311. https://doi.org/10.1177/0165025408101275

Waddell, C., Shepherd, C., Schwartz, C., & Barican, J. (2014). *Child and youth mental disorders: Prevalence and evidence-based interventions*. British Columbia Ministry of Children and Family Development.

Watson, D., & Friend, R. (1969). Measurement of social-evaluative anxiety. *Journal of Consulting and Clinical Psychology*, *33*(4), 448–457. https://doi.org/10.1037/h0027806

Webb, H. J., & Zimmer-Gembeck, M. J. (2016). A longitudinal study of appearance-based rejection sensitivity and the peer appearance culture. *Journal of Applied Developmental Psychology*, *43*(Complete), 91–100. https://doi.org/10.1016/j.appdev.2016.01.004

Webb, H., Zimmer-Gembeck, M., Mastro, S., Farrell, L., Waters, A., & Lavell, C. (2015). Young adolescents' body dysmorphic symptoms: Associations with same- and cross-sex peer teasing via appearance-based rejection sensitivity. *Journal of Abnormal Child Psychology*, *43*(6), 1161–1173. https://doi.org/10.1007/s10802-014-9971-9

Wei, C., Hoff, A., Villabø, M. A., Peterman, J., Kendall, P. C., Piacentini, J., McCracken, J., Walkup, J. T., Albano, A. M., Rynn, M., Sherrill, J., Sakolsky, D., Birmaher, B., Ginsburg, G., Keeton, C., Gosch, E., Compton, S. N., & March, J. (2014). Assessing anxiety in youth with the multidimensional anxiety scale for children. *Journal of Clinical Child & Adolescent Psychology*, *43*(4), 566–578. https://doi.org/10.1080/15374416.2013.814541

Wichstrøm, L. (1999). The emergence of gender difference in depressed mood during adolescence: The role of intensified gender socialization. *Developmental Psychology*, *35*(1), 232–245. https://doi.org/10.1037/0012-1649.35.1.232

Wildemuth, B. M. (1993). Post-positivist research: Two examples of methodological pluralism. *The Library Quarterly: Information, Community, Policy*, *63*(4), 450–468. https://doi.org/10.1086/602621

Winter, V. R., Danforth, L. K., Landor, A., & Pevehouse-Pfeiffer, D. (2019). Toward an understanding of racial and ethnic diversity in body image among women. *Social Work Research*, *43*(2), 69–80. https://doi.org/10.1093/swr/svy033

Wright, M. R. (1988). Body image satisfaction in adolescent girls and boys: A longitudinal study. *Journal of Youth and Adolescence*, *18*(1), 71–83. https://doi.org/10.1007/BF02139247

Table 1. Descriptive Statistics for Study Variables

	Min	Max	*M*	*SD*
Body Image Dissatisfaction				
Grade 10	0	2	0.69	0.62
Grade 11	0	2	0.70	0.62
Grade 12	0	2	0.71	0.61
1-year post high school	0	2	0.81	0.62
Social Anxiety				
Grade 10	0	3	1.22	0.90
Grade 11	0	3	1.23	0.89
Grade 12	0	3	1.29	0.94
1-year post high school	0	3	1.45	0.92
Fear of Negative Evaluation				
Grade 10	1	5	2.64	1.08
Grade 11	1	5	2.60	1.06
Grade 12	1	5	2.61	1.07
1-year post high school	1	5	2.95	1.11

Table 2. Bivariate Correlations Between Body Image Dissatisfaction, Social Anxiety, and Fear of Negative Evaluation

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
Body Image												
1. Grade 10												
2. Grade 11	.78											
3. Grade 12	.71	.77										
4. 1-year post high school	.66	.75	.75									
Social Anxiety												
5. Grade 10	.52	.46	.40	.41								
6. Grade 11	.43	.57	.47	.43	.67							
7. Grade 12	.39	.42	.55	.44	.56	.64						
8. 1-year post high school	.36	.39	.41	.52	.56	.62	.66					
Fear of Negative Evaluation												
9. Grade 10	.49	.39	.38	.39	.66	.54	.51	.50				
10. Grade 11	.39	.52	.45	.39	.55	.70	.57	.55	.63			
11. Grade 12	.37	.38	.51	.40	.49	.56	.76	.59	.52	.64		
12. 1-year post high school	.38	.39	.45	.52	.50	.54	.60	.77	.55	.59	.68	

Note. All correlations are significant at $p < .01$.

Table 3. Model Fit Statistics

	$\chi 2$	*df*	*p*	scf	RMSEA (90% CI)	SRMR	CFI	TLI	AIC	Model Comparison	CD	TRd	Δ*df*	*p*
Model 1: Within time correlations	1989.603	108	0.0000	1.1735	0.182 (0.175-0.189) $p = 0.000$	0.348	0.464	0.404	15822.834					
Model 2: Within time correlations, across-time stability, and two-year stability	454.083	93	0.0000	1.1002	0.086 (0.078-0.094) $p = 0.000$	0.153	0.885	0.855	14017.691	2 vs. 1	1.6280	1127.311	15	< .00001
Model 3: Within time correlations, across time stability, two-year stability, cross-lagged	321.502	75	0.0000	1.0763	0.079 (0.070-0.088) $p = 0.000$	0.112	0.921	0.877	13900.134	3 vs. 2	5.6844	87.8870	18	< .00001
Model 4: Within time correlations, across time stability, cross-lagged, two-year stability, and covariates	79.087	62	0.0706	1.0759	0.023 (0.000-0.037) $p = 1.000$	0.038	0.995	0.991	12906.984					

Note. $\chi 2$, chi-square; *df*, degrees of freedom; scf, scaling correction factor; RMSEA, root mean square error of approximation; CI, confidence intervals; SRMR, standardized root mean square residual; CFI, comparative fit index; TLI, Tucker-Lewis Index; AIC, Akaike Information Criterion; CD, difference test scaling correction; TRd, Sattora-Bentler scaled chi-square difference; Δdf, difference in degrees of freedom

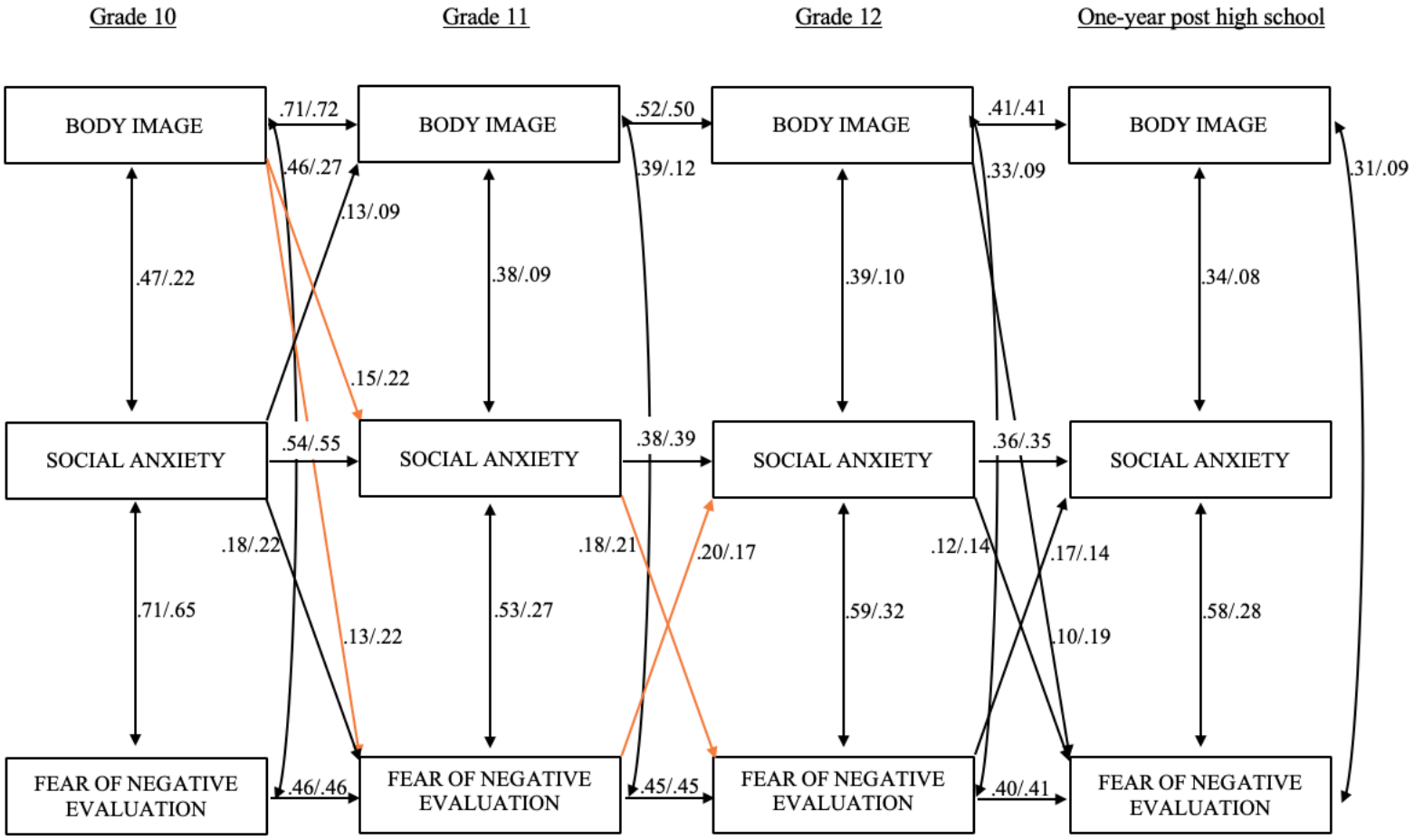

Figure 1. Model of body image, social anxiety, and fear of negative evaluation for individuals in mid to late adolescence. Values before the slash represent standardized coefficients and values after the slash represent unstandardized coefficients. Non-significant estimates remained in the model, however, only significant paths, at $p < .05$, are shown. Two-year stability paths and covariates were excluded from the figure for ease of interpretation.

→ Indirect effects