THIN-IDEAL INTERNALIZATION, SELF-OBJECTIFICATION, AND BODY DISSATISFACTION IN THE PREVENTION OF EATING DISORDERS IN 5 TO 7 YEAR OLD GIRLS

A Dissertation

by

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ABSTRACT

Eating disorder symptoms and risk factors, such as body dissatisfaction, thin-ideal internalization and self-objectification are increasing in prevalence and are being seen in girls at younger ages. However, little is known about the onset and development of these symptoms in girls under the age of 10. Identifying the age of onset and factors that foster the development of these symptoms is pertinent to developing age appropriate eating disorder prevention programs. The aim of the current study is to explore the age of onset and factors that influence the development of thin-ideal internalization, self-objectification, body dissatisfaction, and eating disorder symptoms in 5 to 7 year old girls. Since previous research has identified mothers' as influential in the development of body dissatisfaction and eating disorder symptoms in adolescent girls, the current study will explore the mother-daughter relationship in a younger sample with regards to eating disorder symptoms.

Participants for the current study included 151 mother-daughter pairs. Each pair completed individual mirror exposure exercises and a joint mirror exposure exercise with both mother and daughter participating. Mothers then completed a survey on their own self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms. Daughters completed a semi-structured interview to assess these same constructs. Demographic information was provided by mothers, and body mass indexes were directly measured for both mothers and daughters.

Results from the current study indicate that girls as young as 5 years old are beginning to report experiencing self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms, with most of these variables steadily increasing as age increases. Additionally, mothers' comments about her own body dissatisfaction in the presence of her daughter can directly impact their daughters' comments about their own bodies, with mothers who make more negative comments about their bodies having daughters who also make more negative comments about their own bodies. These results can be used to aid the development of prevention programs designed to educate mothers on the impact they have on their daughters, as well as ways that they can shape their daughters' body image to be more positive in an effort to prevent eating disorder symptoms.

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INTRODUCTION

Prevalence rates of eating disorder symptoms and associated risk factors such as body dissatisfaction, self-objectification, and thin-ideal internalization are rising and are occurring at younger ages (Feingold & Mazzella, 1998; Muth & Cash, 1997; Park, 2007; Stice 1994; Striegel-Moore & Franko, 2002). In fact, research has indicated that girls as young as 5 years old already report desires for a thinner body (Flannery-Schroeder & Chrisler, 1996; Gardner, Sorter, & Friedman, 1997; Lowes & Tiggemann, 2003). In addition to increasing prevalence rates, self-objectification, thin-ideal internalization, and body dissatisfaction have been associated with a number of negative consequences including the development of disordered eating (Calogero, 2009; Moradi & Subich, 2002; Noll & Fredrickson, 1998; Thompson & Stice, 2001; Tylka & Hill 2004). However, in order to develop age appropriate eating disorder prevention programs that target thin-ideal internalization, self-objectification, and body dissatisfaction, more information is needed about the age at which these variables develop, how they manifest in young children, and what factors may be associated with increased risk of early onset of these variables. Therefore, the current study explored the age of onset and biological and social factors that influence the development self-objectification, thin-ideal internalization, and body dissatisfaction in young girls. The information gathered from this study can then be used to aid the creation of effective and age appropriate eating disorder prevention programs.

A large body of research has indicated that girls and women are at greater risk for developing thin-ideal internalization, self-objectification, body dissatisfaction and eating disorder symptoms than boys and men (Bartky, 1990; Bryant, 1993; Fredrickson & Roberts, 1997; McKinley & Hyde, 1996; Moradi, Dirks, & Matteson, 2005; Murnen & Smolak, 2000; Murnen, Smolak, Mills, & Good, 2003; Noll & Fredrickson, 1998; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). Since girls and women are at greater risk for developing eating disorders and associated risk factors, and girls have been found to begin to develop some of the associated risk factors such as self-objectification and thin-ideal internalization before young boys, the current study will focus on girls and women.

Research also suggests that parent's attitudes and behaviors surrounding eating and body image influence their children's eating and body attitudes and behaviors (Abramovitz & Birch, 2000; Birch & Fisher, 2000; Fisher, Sinton, & Birch, 2009; Kroon Van Diest & Tylka, 2010; Tylka & Hill, 2004). Mothers in particular have been found to play a major role in shaping their children's eating and body attitudes and behaviors, with a greater emphasis on the influence of the maternal role in shaping their daughter's behaviors (Abramovitz & Birch, 2000; Francis & Birch, 2005; Savage, Fisher, & Birch, 2009). While a large body of research has indicated that mother's play a large role in shaping their daughter's eating and body attitudes and behaviors, less is known about how maternal self-objectification and thin-ideal internalization may influence or shape the onset and development of these same variables in their daughters. Thus, the current

study will examine thin-ideal internalization, self-objectification, body dissatisfaction, and eating disorder symptoms in both mothers and daughters.

Eating Disorders

Eating disorders are one of the most common psychiatric disorders experienced by girls and women, with approximately 10% of females being diagnosed with clinical eating disorders in the United States (Lewinsohn, Striegel-Moore, & Seeley, 2000). In addition, subclinical eating disorders are experienced by approximately 61% of young adult females (Mintz & Betz, 1988) and are equally as impairing as clinically diagnosable eating disorders (Hoffman & Brownell, 1997; Peebles, Hardy, Wilson, & Lock, 2010; Stice, Marti, Shaw, & Jaconis, 2009; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). In fact, young girls are more likely to experience subclinical levels of eating disorders than clinically diagnosable eating disorders (Loeb, Brown, & Goldstein, 2011). Since individuals with subclinical eating disorders often progress to being diagnosed with clinical eating disorders as the disorder develops and becomes more serious (Stice et al., 2008), and subclinical levels of eating disorders are just as impairing as clinical eating disorders, preventing subclinical eating disorders in young children is important.

Both clinical and subclinical levels of eating disorders typically first appear during childhood and adolescence (Le Grange, 2011) and are characterized by serious eating disturbances such as fasting, purging, and binge eating, as well as excessive concerns about body weight and shape (Lewinsohn et al., 2000). They are also commonly associated with a number of medical complications, including diabetes,

hypertension, loss of teeth enamel, osteoporosis, decreased kidney functioning, gastrointestinal bleeding, malnutrition, bowel disease, infertility, stress fractures, obesity and cardiac arrest (Kaye, Bulik, Thornton, Barbarich, & Masters, 2004; Keel et al., 2003; Mitchell & Crow, 2006; Striegel-Moore, Leslie, Petrill, Garvin, & Rosenheck, 2000). Eating disorders are also associated with psychosocial functional impairment and are marked by chronicity and relapse (Newman et al., 1996; Thompson & Stice, 2001). Increased rates of mortality, suicide, future risk for onset of obesity, substance abuse, and mood, anxiety, and personality disorders are also seen in individuals with eating disorders (Becker, Grinspoon, Klibanski, & Herzog, 1999; Franko & Keel, 2006; Hudson, Hiripi, Pope, & Kessler, 2007; Johnson, Cohen, Kasen, & Brook, 2002; Woodside et al., 2001).

Increases in eating disorder symptoms have been observed over the past few decades and are associated with increases in societal pressures placed on individuals to be thin (Wilson & Eldredge, 1992). Also, decreases in the ideal body weight promoted by society evidenced by decreases in bust-to-waist ratios for actresses and models over the past few decades (Silverstein, Perdue, Peterson, & Kelly, 1986) and decreases in the weights of Playboy centerfolds and Miss America contestants since 1959 (Garner, Garfinkel, Schwartz, & Thompson, 1980; Wiseman, Gray, Mosimann, & Ahrens, 1992) have been observed. The combination of these factors leads individuals to be more vulnerable to experiencing eating disorder risk factors such as thin-ideal internalization, self-objectification, and body dissatisfaction (Stice & Shaw, 1994), further increasing the chances of the development of eating disorders (Tiggemann, 2011). Thus, identifying

the age at which these variables begin to occur and what factors influence the onset is necessary for developing effective prevention programs.

Self-Objectification

Self-objectification is a form of self-consciousness characterized as the habitual monitoring of physical appearance and viewing one's self as a collection of body parts. According to objectification theory, self-objectification is a result of internalizing a viewer's perspective from sexually objectifying experiences that are encountered daily by girls and women (Fredrickson & Roberts, 1997). According to Fredrickson and Roberts (1997), self-objectification can be conceptualized in two ways: trait self-objectification and state self-objectification. Trait self-objectification is pervasive across most contexts, with individuals who engage in trait self-objectification placing a greater value on observable characteristics such as physical attractiveness rather than non-observable traits such as physical health, coordination, and stamina (Noll & Fredrickson, 1998). State self-objectification tends to vary in different social contexts, commonly increasing in circumstances where individuals are made aware that their bodies are being observed, evaluated or objectified. This can result in anticipation of being viewed as an object leading to preoccupied with appearance (Fredrickson & Roberts, 1997). State self-objectification can be induced in experimental settings (Morry & Staska, 2001), while trait self-objectification cannot. For the current study, only trait self-objectification was assessed.

The habitual monitoring of one's appearance due to self-objectification can lead to appearance anxiety, body dissatisfaction and body shame, which in turn lead to

psychological disorders such as sexual dysfunction, depression, and eating disorders. Empirical research has consistently identified self-objectification as a major risk factor for the development of body dissatisfaction and disordered eating (Calogero, 2009; Greenleaf, 2005; Greenleaf & McGreer, 2006; Grippo & Hill, 2008; Hurt et al., 2007; McKinley, 2004; Noll & Fredrickson, 1998; Prichard & Tiggeman, 2005; Tiggemann & Lynch, 2001; Tylka & Hill, 2004). These findings have been replicated in samples of Australian women (Tiggemann & Slater, 2001), older women (Augustus-Horvath & Tylka, 2009; McKinley 1999), women with clinical eating disorders (Calogero, Davis, & Thompson, 2005), homosexual women (Haines et al., 2008), and international samples (Morrison & Sheahan, 2009).

Self-objectification has also been examined in younger samples of female adolescents. Slater and Tiggemann (2002) examined self-objectification in a sample of 12 to 16 year old girls, and found that girls as young as 12 were already reporting high levels of self-objectification. Another study conducted by Harrison and Fredrickson (2003) examined self-objectification in 10 to 19 year old girls found that self-objectification increased significantly between early and mid-adolescence. One study that examined self-objectification in both girls and boys aged 12 to 16 years revealed that while some boys report experiencing self-objectification and eating disorder symptoms girls report higher levels of self-objectification and disordered eating than boys (Slater & Tiggeman, 2010). Other researchers have replicated the link between self-objectification and body dissatisfaction and eating disorders in adolescent boys and girls, with girls reporting higher levels of self-objectification and body dissatisfaction

than boys (Grabe, Hyde, & Lindberg, 2007; Lindberg, Hyde, & McKinley, 2006) further indicating that girls are at higher risk for engaging in self-objectification and body dissatisfaction than boys. Additionally, research has indicated that clothing for young girls that has become increasingly "sexy" and less conservative in nature (American Psychological Association Task Force on the Sexualization of Girls, 2007) has been associated with increases in self-objectification in young girls (Goodin, Van Denburg, Murnen, & Smolak, 2011; Smolak, 2011).

While self-objectification has been studied in adolescent populations, only one study to date has examined self-objectification in samples as young as 4 to 6 year old children. This study found that while both boys and girls as young as 4 reported engaging in some level of self-objectification, girls were significantly more likely than boys to report engaging in this risk factor (Kroon Van Diest & Perez, 2013). Additionally, 6 year old girls were found to engage in the greatest levels of self-objectification when compared to 4 and 5 year old girls and 4 to 6 year old boys. Since this study was the first to examine self-objectification in young children, the evidence is preliminary and needs replication. Therefore, the current study will further examine the onset and development of self-objectification in young girls.

Thin-Ideal Internalization

Like self-objectification, thin-ideal internalization has also consistently been identified as a risk factor for the development of body dissatisfaction and eating disorder symptoms (Blowers, Lozton, Grady-Flesser, Occhipinti & Dawe, 2003; Thompson et al., 1999; Thompson & Stice, 2001). Thin-ideal internalization refers to the extent to which

an individual adopts socially defined ideals of thinness as part of their own beliefs (Thompson & Stice, 2001), and is commonly a result of pressures from family, peers, interpersonal encounters, and the media to attain a thin body (Stice & Shaw, 1994). The thin-ideal body type proposed by society is unattainable for most people (Cusumano & Thompson, 1997), frequently leading to body dissatisfaction (Heinberg & Thompson, 1995). Body dissatisfaction caused by internalizing the thin-ideal can then lead to unhealthy eating behaviors and eating disorders in an attempt to attain this body type (Agliata & Tantleff-Dunn, 2004; Moradi & Subich, 2002; Stormer & Thompson, 1995). Extensive research on the relationship among thin-ideal internalization and body dissatisfaction and disordered eating has found that this relationship is applicable to many different samples, including adolescent girls (Stice, Chase, Stormer, & Appel, 2001; Stice, Marti, Spoor, Presnell, & Shaw, 2008; Stice, Mazotti, Weibel, & Agras, 2000; Stice, Shaw, Burten, & Wade, 2006; Stice, Trost, & Chase, 2003), college women and sororities (Becker, Smith, & Ciao, 2006; Becker, Bull, Chaumberg, Cauble, & Franco, 2008; Perez, Becker, & Ramirez, 2010), other non-collegiate samples of adult women (Ahern, Bennett, Kelly, & Hetherington, 2010), and women with clinical eating disorders (Stice, Shaw, & Nemeroff, 1998).

Thin-ideal internalization has been studied primarily in adult and adolescent populations, although some research has examined thin-ideal internalization in younger populations. For example, Blowers and colleagues (2003) found that girls as young as 10 were engaging in thin-ideal internalization and body dissatisfaction. Another study found that thin-ideal internalization predicted eating disorder symptoms in males and

females as young as 8 years old that were overweight or at risk for being overweight (Eddy et al., 2007). Collins (1991) also examined thin-ideal internalization using a sample of 6 to 9 year old boys and girls and found that both boys and girls in this age range engaged in thin-ideal internalization, although boys had lower levels of thin-ideal internalization than girls. However, another similar study using a sample of girls and boys aged 5 to 10 years found that girls as young as 5 were engaging in thin-ideal internalization while boys in this age range were not (Williamson & Delin, 2001). A recent study conducted by Harriger, Calogero, Witherington, and Smith (2010) examined thin-ideal internalization and body size stereotyping in 3 to 5 year old preschool girls, and found that girls as young as 3 years old are engaging in thin-ideal internalization. A similar study assessing thin-ideal internalization in 4 to 6 year old boys and girls found that both boys and girls as young as 4 were engaging in thin-ideal internalization (Kroon Van Diest & Perez, 2013), but girls were more likely to report desiring a thinner figure than boys. Collectively, these findings indicate that girls are at a higher risk for experiencing thin-ideal internalization increasing the importance of researching ways to prevent thin-ideal internalization in girls at a young age in an effort to reduce the risk for the future onset of eating disorders.

Body Dissatisfaction

Body dissatisfaction, known as overall dissatisfaction with one's body shape and size, has become relatively pervasive throughout the world in women and girls (Polivy & Herman, 2002). Empirical research has frequently identified self-objectification and thin-ideal internalization as risk factors of body dissatisfaction. Specifically, individuals

who engage in thin-ideal internalization and self-objectification are more prone to experiencing body dissatisfaction as individuals become dissatisfied with their own bodies when they are unable to attain the thin-ideal figure promoted by society that they have come to internalize and objectify themselves for (Thompson et al., 1999; Thompson & Stice, 2001). Additionally, like self-objectification and thin-ideal internalization, a number of studies have identified body dissatisfaction as a major risk factor in the development eating disorder symptoms in both women and men (Cash & Deagle, 1997; Fairburn, Peveler, Jones, Hope, & Doll, 1993; Fairburn, Stice et al., 1993; Hrabosky & Grilo, 2007; Killen et al., 1996; Polivy & Herman, 2002; Post & Crowther, 1987; Stice, 2002).

Body dissatisfaction has been studied in young children, with many of these studies focusing on weight and shape concerns including thinness (Ricciardelli & McCabe, 2001; Smolak, 2011). Studies have indicated that by age 6, there is evidence of body dissatisfaction evidenced by weight and shape concerns in both boys and girls (Brownell, Zerwas, &Ramani, 2007; Musher-Eizenman, Holub, Miller, Goldstein, & Edwards-Leeper, 2004; Wood, Becker, & Thompson, 1996) with 40-50% of elementary children being dissatisfied with some element of their body shape and size (Smolak, 2011). Similarly, one study examined body dissatisfaction in 4 to 6 year old boys and girls and found that both genders as young as 4 years old were engaging in body dissatisfaction (Kroon Van Diest & Perez, 2013). However, 6 year old girls were more likely than any other age group regardless of gender to be engaging in body dissatisfaction. Other studies have supported these gender differences, indicating that

girls are more likely to experience body dissatisfaction than boys, even when examining this phenomenon cross-culturally (Smolak, 2011). Additionally, like self-objectification, studies have indicated that young girls are likely to identify body image concerns in relation to clothing which has become more sexualized and less conservative for young girls (Goodin et al., 2011; Smolak, 2011).

The parental role has also been examined as a risk factor for children developing body dissatisfaction. These studies have suggested that parents who openly display body dissatisfaction with their own bodies around their children through negative body-related comments and behaviors are more likely to have children that also experience body dissatisfaction than parents who do not openly express dissatisfaction with their own bodies (Birch & Fisher, 2000; Fisher et al., 2009; Smolak, 2011). Additionally, children who have parents who restrict their child's food intake because they are do not want their child to be overweight or are actively trying to get their child to lose weight are more likely to have children who experience body dissatisfaction (Tylka & Hill, 2004). Similar to disordered eating symptoms, mothers tend to have a greater influence in shaping their children's body image through their own attitudes and behaviors, and are more likely to negatively influence their daughter's body image than their son's (Smolak, 2011). Since research has identified mother's body dissatisfaction as a risk factor for the development of body dissatisfaction in their daughters, and thin-ideal internalization and self-objectification have been identified as risk factors for the development of body dissatisfaction, the current study will examine these variables simultaneously within the mother-daughter relationship.

Integrating Self-Objectification, Thin-Ideal Internalization and Body Dissatisfaction in Eating Disorder Development

Some research has examined the roles of thin-ideal internalization, self-objectification, and body dissatisfaction in the development of eating disorder symptoms, although a limited number of studies have simultaneously investigated these variables. Additionally, most of these studies were cross-sectional in nature, and none of these studies were conducted in populations of children. In one study, Morry and Staska (2001) examined thin-ideal internalization and state self-objectification and found that for women, exposure to beauty magazines predicted self-objectification and eating disorder symptoms and that this relationship was mediated by thin-ideal internalization. For men, exposure to fitness magazines predicted thin-ideal internalization which then predicted self-objectification. Moradi, Dirks, and Matteson (2005) expanded upon Morry and Staska's study by examining the links between sexual objectification experiences, thin-ideal internalization, body shame, eating disorder symptoms, and trait self-objectification manifested as body surveillance. These authors found that sexual objectification experiences predicted thin-ideal internalization and self-objectification, thin-ideal internalization predicted self-objectification, body shame, and eating disorder symptoms, self-objectification predicted body shame and eating disorder symptoms, and body shame predicted eating disorder symptoms. These findings have been generalized to women suffering from eating disorders (Calogero, Davis, & Thompson, 2005), and a sample of undergraduate women in Ireland (Morrison & Sheahan, 2009).

Cumulatively, the evidence from these studies suggests that thin-ideal internalization predicts both trait and state self-objectification, which in turn predicts body dissatisfaction and eating disorder symptoms. However, the only longitudinal study to date that has simultaneously investigated thin-ideal internalization, self-objectification, and body dissatisfaction in the development of eating disorder symptoms found different results. Specifically, results from this study suggest that thin-ideal internalization and self-objectification are equally predictive of one another in the development of body dissatisfaction and eating disorder symptoms (Kroon Van Diest & Perez, 2013). Thus, unlike other studies, neither self-objectification nor thin-ideal internalization preceded the other in the development of body dissatisfaction and eating disorder symptoms suggesting an equally important role of both variables.

No studies simultaneously investigating thin-ideal internalization, self-objectification, and body dissatisfaction in the development of eating disorder symptoms have been conducted in children. However, the current study begins to address this gap in the literature by exploring the age of onset of these symptoms in young girls, as understanding the age of onset is necessary for beginning to explore the causal chain of the development of eating disorders in young children. It is especially important to determine if the developmental trajectory of these symptoms is different for young children than for adults in order to develop effective prevention programs. If the current conceptualization of development of eating disorders for adults is replicated in children, current prevention programs that have been shown by empirical research to be effective in reducing eating disorder symptoms and risk factors can be used to inform the creation

of prevention programs for children. It is likely that the same programs would not be cognitively and developmentally appropriate for use in young children, but could be used after adaptations are made.

Bio-Ecological System Influences on Eating Disorder Development

When conceptualizing the development of psychological disorders in children, it is common to use a systems orientation to this development to account for the many factors that influence both the development and the maintenance of the disorder (Steele & Aylward, 2009). Using these approaches can allow for the development of effective ways of addressing the psychological needs of the child as well as creating effective prevention programs in order to prevent the disorder from occurring. A common systems model that is used across many contexts in the field of psychology is Bronfenbrenner's bio-ecological model of development (1979, 1994). This particular model suggests that human development occurs as a result of influences from many different systems including family, society, culture, politics, biological factors, and psychological factors. Each of these systems all interact in some way to promote human development and are not considered as independent of one another. This model can easily be adapted to address different disorders, allowing for a better understanding of factors that influence the development of specific disorders. Using this bio-ecological model to conceptualize the development of specific disorders allows researchers to develop effective prevention programs for that disorder that address system influences as well as the child's needs. Thus, a bio-ecological model to conceptualize the development of eating disorder symptoms and risk factors including thin-ideal

internalization, self-objectification, and body dissatisfaction was used to guide the current study hypotheses.

Bronfenbrenner's systems model is comprised of four systems: microsystems, mesosystems, exosystems, and macrosystems (Bronfenbrenner, 1994). Microsystems are systems that are considered the most proximal to the child and have the most influence of the child's development. Children are also most likely to have reciprocal influences on microsystems due to their close proximal relationships. The most basic microsystem is the child themselves. Other common microsystems include parents, siblings, and peers. For the current study, daughters will be the main microsystem that is explored, specifically in relation to self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms. The second microsystem explored in the current study is mothers, and their own relations to eating disorder symptoms and risk factors.

Mesosystems are interactions between microsystems. For example, children who have begun to develop eating disorder symptoms may be experiencing these symptoms based on interactions with other microsystems, such as parents or siblings. Specifically, children may experience pressure to lose weight from comments about their weight or eating from their parents (e.g., mesosystem is comprised of parent-child interactions) or siblings (e.g., mesosystem is comprised of between-sibling interactions). Interactions may also be less direct, such as the child simply observing a parent or sibling engaging in eating disordered behaviors, or hearing parents or siblings making negative comments about their own bodies. Mesosystems explored in the current study include the mother-

daughter system and the daughter-sibling system, with a major focus on the mother-daughter mesosystem. Previous research has demonstrated that mothers have a great impact on their daughters' eating and body image (Smolak, 2011), but the current study expands upon this research by exploring direct contributions of mothers' body-related comments' on their daughters' own body related comments. Additionally, the current study will explore self-objectification and thin-ideal internalization within this mother-daughter relationship, which has not yet been explored in young children.

Although siblings will not be directly examined within the current study, mothers will be asked to report if their daughters have older siblings and the age and gender of these siblings. The influence of siblings is frequently left out of research on disordered eating and other psychiatric disorders, but the limited existing research has indicated that siblings may play an important role in the development of these symptoms. Twin studies have shown that having a sibling with body dissatisfaction and eating disordered behaviors increases one's risk of experiencing the same symptoms (Ferguson, Munoz, Winegard, & Winegard, 2012). Another study indicated that having an older sister that displays eating disorder symptoms and body dissatisfaction can result in a younger sister experiencing these same symptoms (Pachucki, Jacques, & Christakis, 2011). One study indicated that having an older sibling, regardless of gender or their level of eating disordered symptoms, can result in greater eating disorder symptoms in the younger sibling (Lanflisi, 2012). The current study will attempt to replicate the results of the Lanflisi (2012) study by exploring the influence of older sisters on daughters' levels of eating disorder symptoms and risk factors.

Exosystems are further removed from the child than mesosystems, and include variables that are not directly related to the child as they were in micro and mesosystems. Exosystems may include extended family, school and home environments, and extracurricular activity settings. Since these different exosystems can promote certain ideals of thinness or eating habits, they are also applicable to the development of eating disorders. The exosystem explored in the current study was participation in extracurricular activities. Previous research has consistently demonstrated that participation in extracurricular activities among adolescents, particularly participation in sports, is a protective factor against self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms (Amrita, 2011; Fredrickson & Roberts, 1997; Mattison, 2011; Morrison, 2006; Tiggemann, 2001). However, these studies have not explored the impact of participation in extracurricular activities on eating disorder symptoms and risk factors in younger children. Thus, the current study will attempt to address this gap in the literature.

Finally, macrosystems are the furthest removed from the child but include any systemic patterns that encompass all other systems surrounding the child. Macrosystems typically include culture, media, and socioeconomic status. The current study will focus on the macrosystems of culture and media as they have been found to have a strong association with the development of eating disorders and associated risk factors whether as a protective factor or a risk factor. Specifically, a small amount of literature suggests that Western culture has increased the sexualized nature of clothing for young girls (e.g., thongs for 7-year-old girls, sexualized slogans on clothing such as “juicy” or “wink

wink"), which has led to increases in self-objectification and body dissatisfaction (American Psychological Association, 2010; Fredrickson & Roberts, 1997). However, the majority of this literature has explored the relationship between the sexualized nature of clothing outfits and eating disorder symptoms and risk factors in adolescent and pre-adolescent girls (McConnell, 2001; Slater & Tiggemann, 2002).

One macrosystem that has been studied frequently in relation to children's behavior is the media. Research on media specifically designed for children, including advertisements, movies, television shows, and cartoons and animation, has demonstrated increases in young girls (even in cartoons and animations) behaving as adult women in a very sexualized manner (e.g., engaging in sexual activity, teen pregnancy, teen strippers or prostitutes), which is often associated with self-objectification and body dissatisfaction (Eaton, 1997; Grauerholz & King, 1997; Levin, 2005; Strasburger, 1995; Ward, 2003). Relevant to the current study, the mass media has been identified as a risk factor for the development of body dissatisfaction and eating disorders in children (Dohnt & Tiggemann, 2006; Smolak, 2011), particularly television programs and advertisements that display girls and women in a sexualized manner (American Psychological Association, 2010). However, one study exploring the frequency of television viewing in twin siblings found that greater media use was actually associated with lower levels of disordered eating symptoms (Ferguson et al., 2012). Thus, the current study expands upon previous research on culture, media, and socioeconomic status in the development of thin-ideal internalization, self-objectification, body

dissatisfaction, and eating disorder symptoms, by exploring each of these macrosystems in a population of girls that are younger than those previously studied.

For the current study, the bio-ecological systems approach was applied to the development of self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms in children. However, the bio-ecological systems model provides a very comprehensive way of conceptualizing factors that influence the onset and development of eating disorder symptoms and risk factors, making it difficult to be entirely inclusive of every possible factor that fits into each system. Further, it would be challenging to assess all factors from each of these systems within one research study. Therefore, the current study will attempt to address only some of the potential factors from this framework that may influence the onset and development of eating disorder symptoms. Figure 1 provides a visual representation of the specific factors from each system that are explored in the current study. Based on the descriptions above, the current study addresses at least one aspect from each system, with a particular focus on the mother-daughter relationship within the mesosystem that is related to social learning theory.

Social Learning Theory and Eating Disorder Development

Another salient theory that outlines ways in which behavior is learned and developed that is closely related to the bio-ecological systems theory is the social learning theory. Social learning theory posits that behavior is learned by observing and imitating one's environment (Bandura, 1977). This developmental process of observing, learning, and eventually imitating behaviors displayed by others is known as modeling

(Bandura, 1986). While the concept of modeling is applicable to any age group, it is particularly salient for children, as they are continuously observing and imitating others allowing them to develop required skills for daily functioning (Bandura, 1994). This is especially true of young girls, who learn socially acceptable ways of behaving by modeling what they see older girls and women doing (Bussey & Bandura, 1984, 1992; Lips, 1989), as well as imitating what young girls and women are portrayed doing within the media (Huston & Wright, 1998). With increasing prevalence rates of eating disorder symptoms and risk factors, it is logical that girls at younger ages are beginning to display these same symptoms based on the principles of social learning theory and modeling.

Given that children typically spend most time with their parents, it would be expected that through modeling, children adopt similar behavioral patterns as their parents. While both mothers and fathers have been found to influence their daughters' eating behaviors and body image (Abramovitz & Birch, 2000; Birch & Fisher, 2000; Fisher et al., 2009; Kroon Van Diest & Tylka, 2010; Tylka & Hill, 2004), mothers have been identified as more influential than fathers in their daughters' development of these symptoms (American Psychological Association, 2010; Francis & Birch, 2005; Smolak, 2011). Since women are more likely than men to experience self-objectification, thin-ideal internalization, body dissatisfaction and eating disorder symptoms than men (Bartky, 1990; Bryant, 1993; Fredrickson & Roberts, 1997; McKinley & Hyde, 1996), mother are more likely than fathers to demonstrate these behaviors to their daughters. Additionally, mothers have been found to be more likely to use "fat talk" or negative comments about their own bodies in front of their daughters (Nichter, 2000). Thus,

based on the principles of social learning theory, girls are more likely to develop eating disorder symptoms and risk factors from modeling these behaviors after their mothers than modeling after their fathers.

In regards to more broad variables, or macrosystem variables including media and the sexualized nature of clothing, young girls are influenced by social learning theory in these areas as well. Specifically, young girls see the types of media that their mothers and/or older siblings (particularly sisters) are watching, and will often want to watch similar television shows, movies, read the same magazines, and listen to the same types of music. Thus, if mothers and sisters are observed viewing media that encourages focus on physical appearance, adhering to the culturally accepted thin-ideal body type, and/or engaging in disordered eating behaviors to attain this body type, young girls are more likely to imitate these behaviors based on social learning theory. Similarly, if mothers and older sisters are wearing more sexualized, revealing clothing, young girls are more likely to prefer similarly sexualized outfits, placing them at greater risk for experiencing the negative eating disorder symptoms and risk factors associated with wearing more sexualized clothing.

Using the principles of social learning theory in conjunction with the bio-ecological systems approach to symptom development, the current study will explore the impact of the mother-daughter relationship on the daughters' development of eating disorder symptoms and risk factors. The mother-daughter relationship is chosen as the focus given that previous research has indicated that mothers have a greater impact on their daughters' behavior than fathers, particularly in relation to body image and eating

behaviors (Abramovitz & Birch, 2000; Francis & Birch, 2005; Smolak, 2011). Mothers and daughters are also targeted for the current study since they are at greater risk for experiencing these symptoms than boys and men (Bartky, 1990; Fredrickson & Roberts, 1997; Noll & Fredrickson, 1998).

Prevention of Eating Disorders and Associated Risk Factors

Current eating disorder treatment programs have produced limited success, with only 30% of patients who receive treatment experiencing long-lasting symptoms remission (Fairburn, 2002; Fairburn et al., 2009; Wilson, Becker, & Heffernan, 2003). This lack of treatment success has led to the development of eating disorder prevention programs. Current eating disorder prevention programs, such as cognitive dissonance eating disorder prevention programs, target common risk factors such as thin-ideal internalization, body dissatisfaction and self-objectification in an attempt to reduce eating disorder symptoms. Cognitive dissonance based eating disorder prevention programs are one of the most extensively studied and empirically supported forms of eating disorder prevention (Stice, Shaw, Becker, & Rohde, 2008). Cognitive dissonance based interventions were developed using principles from Festinger's cognitive-dissonance theory (1957), which identifies cognitive dissonance as a state in which incongruent thoughts, beliefs, or attitudes create psychological discomfort or tension (Brehm & Cohen, 1962; Festinger 1957). This discomfort may motivate individuals to change their thoughts, beliefs, or attitudes in order to restore a sense of internal consistency (Beauvois & Joule, 1999).

Based on this theory, dissonance based eating disorder prevention programs seek to create dissonance in individuals about eating disorder risk factors such as thin-ideal internalization and body dissatisfaction. Additionally, many current dissonance eating disorder prevention programs are based on the dual pathway model (Stice, Ziemba, Margolis, & Flick, 1996), an empirically supported etiologic model which suggests that sociocultural pressures to have a thin body promote thin-ideal internalization, which predicts body dissatisfaction, negative affect, and dieting. Body dissatisfaction, negative affect and dieting in turn foster eating disorder symptoms. Therefore, many current dissonance-based eating disorder prevention programs attempt to create cognitive dissonance about the thin ideal, as it occurs early in the causal chain and can potentially lead to eating disorder symptoms.

Once participants engage in counter-attitudinal activities in which they critique the thin ideal proposed by society and voluntarily take a stance against it, they are more likely to become faced with an internal conflict between their own internalized acceptance of the thin-ideal and the arguments they generated to counter the pressures to attain this thin-ideal, therefore experiencing the psychological discomfort that results from cognitive dissonance. They may then be motivated to alter their own thin-ideal internalization in order to reduce or eliminate this discomfort. For example, participants are asked to write a one-page statement about the costs associated with attaining the thin-ideal in an effort to increase cognitive dissonance about wanting to attain the thin-ideal body type. This reduction of internalization of the thin-ideal in turn leads to decreases in other eating disorder risk factors and eating disorder symptoms.

Other specific strategies used within cognitive dissonance prevention programs include discussions about the short-term and long-term costs of objectification for the participant, their family, and society such as the perpetuation of sexist attitudes towards women, the development of body dissatisfaction and eating disorder symptoms in women that engage in the thin-ideal, and the difficulties that family members of individuals with eating disorders experience as a result of the disorder. In addition, mirror exposure exercises, group discussions, and role plays encourage women to identify non-physical characteristics they like about themselves, rather than focusing on physical features.

Evaluations of cognitive dissonance and other eating disorder prevention programs are providing encouraging results with approximately 51% of eating disorder prevention programs reducing risk factors associated with disordered eating, and 29% reducing current or future eating disorder symptoms (Stice, Shaw, & Marti, 2007). Some programs have produced reductions in eating disorder symptoms and associated risk factors that persisted through follow-up assessments. For example, Becker and colleagues (2005) evaluated the effects of a dissonance based prevention program in a college sorority and found that significant reductions in eating disorder symptoms and associated risk factors including body dissatisfaction and thin-ideal internalization were maintained at a 1-year follow-up assessment. These results from the same program conducted within a different sorority have been replicated by other researchers (Perez, Becker, & Ramirez, 2010). Other less frequently used programs, such as

psychoeducational and online interventions, have reduced the risk of future onset of clinical and subclinical eating disorders (Stice & Shaw, 2004).

While the results from these prevention programs are promising, these programs have not been developed for use in young children. These programs have also not been assessed for effectiveness when used in populations of young children. In fact, little is known about eating disorder prevention in children and adolescents and is one of the least researched areas in the field of eating disorders (Le Grange, 2011). Since young children are beginning to engage in thin-ideal internalization and self-objectification which are major risk factors for the development of body dissatisfaction and subsequent eating disorder symptoms, research on effective prevention programs for children is necessary. Therefore, once researchers identify the prime age for implementing eating disorder prevention programs by identifying the age at which children begin to engage in these risk factors, prevention programs should be created to be used with children in this age group. Current prevention programs that have been identified as effective in older populations can inform researchers developing prevention programs for young children. However, tasks and discussions from current prevention programs, such as role plays and written assignments that encourage others to challenge the thin-ideal, discussions of the costs of self-objectification and thin-ideal internalization for individuals and society, and mirror exposure exercises, would have to be adapted to be cognitively and developmentally age appropriate for children. The information from the current study can be used to inform researchers in the development of eating disorder prevention programs for young children.

A limited number of programs have been developed for the prevention of body image issues and eating disorder symptoms in children. The majority of these interventions have targeted children who are 9 years old or above and have been implemented with children and adolescents in the school setting, in elementary, middle, and high schools (Smolak, 2011). Most of the school-based interventions have targeted individual students, although a few have targeted the school as a whole focusing on increasing healthy eating behaviors and positive body image while working to decrease weight-related teasing (Neumark-Sztainer, 1996; O'Dea & Maloney, 2000; Piran 1998, 1999; Haines, Neumark-Sztainer, Perry, Hannan, & Levine, 2006). One very comprehensive school-based intervention, the Healthy Schools – Healthy Kids program, includes activities for training school staff, parent education, in-class curriculums, peer support groups, a play production, posters and videos, and public service announcements (McVey, Tweed, & Blackmore, 2007). This program is the known intervention that targets children, school personnel, and parents within the same program. A few additional prevention programs have been implemented in community settings, including the Free to be Me, and Full of Ourselves (Neumark-Sztainer, Sherwood, Coller, & Hannan, 2000; Sjostrom & Steiner-Adair, 2005; Steiner-Adair et al., 2002). Research that has been conducted evaluating these programs has shown that these interventions implemented in younger children have shown some success in increasing body esteem and self-evaluations and modest decreases in body dissatisfaction (Holt & Ricciardelli, 2008; Neumark-Sztainer et al., 2006; Pratt & Woolfenden, 2002; Stice, Shaw, & Marti, 2007).

Since research has shown that children as young as 6 have been found to experience body dissatisfaction, thin-ideal internalization, and self-objectification (Brownell et al., 2007; Kroon Van Diest & Perez, 2013; Wood et al., 1996), and the few existing eating disorder prevention programs designed for children have not been used in children younger than the age of 8, prevention programs that are targeted at younger children are necessary. However, more information is needed about the age of onset and development of these variables to inform researchers and professionals on what age the programs should be implemented at, what variables should targeted, and who should be included in the intervention to increase the effectiveness of the interventions.

Mirror Exposure

Mirror exposure exercises, a form of body exposure, are a central component to prevention programs targeting body dissatisfaction. For mirror exposure exercises, individuals are instructed to stand in front of a mirror while systematically looking at each part of their body for an extended period of time. Many mirror exposure techniques include verbal interaction including challenging and feedback from a therapist (Delinsky & Wilson, 2006; Key et al., 2002; Vocks, Legenbauer, Wächter, Wucherer, & Kosfelder, 2007). Mirror exposure has also been included as a component within some dissonance based eating disorder prevention programs (Stice et al., 2000; Becker, Smith, & Ciao, 2005; Perez et al., 2010), and has also been used in conjunction with other forms of therapy for eating disorder treatment.

While the procedure for mirror exposure is relatively uniform, there are different ways of completing a mirror exposure exercise each with slightly different instructions

for participants. Vocks et al. (2007) conducted mirror exposure exercises in two separate sessions lasting for 40 minutes in which participants were instructed on which body parts to look at. In contrast, Delinsky and Wilson (2006) asked participants to describe themselves from head to toe systematically rather than instructing them on which body part to look at. Participants were asked to refrain from dwelling on or skipping any body parts and using critical language. During the second session, participants were asked to select clothing to wear that would cause them to face their fears about their appearance while challenging them to be nonjudgmental towards themselves. Behavioral homework assignments designed to eliminate body monitoring and avoidance were also given between sessions. Other researchers have followed similar protocols with alterations in the length of each exposure session (Key et al., 2002).

Mirror exposure alone has been shown to be an effective way to reduce body image disturbances (Delinsky & Wilson, 2006). It is posited that mirror exposure works as a way of decreasing body dissatisfaction through a similar mechanism as exposure therapy (Delinksy & Wilson, 2006). Specifically, in exposure therapy, individuals are encouraged to repeatedly face the object or situation that they dislike or fear until they become comfortable in the presence of that feared object (Watson & Tharp, 2007). Similarly, mirror exposure encourages individuals to spend time repeatedly viewing or "exposing" themselves to their own bodies in the mirror in an effort to become comfortable with what they see in the mirror (the "disliked" object). Additionally, mirror exposure exercises that encourage participants to say positive things they like

about themselves works to induce cognitive-dissonance by counteracting the negative thoughts they have about their bodies with positive statements. It is expected that over time, participants' body dissatisfaction will decrease in order to reduce the cognitive dissonance induced by this activity.

An examination of the effects of use mirror exposure in a sample of undergraduate women indicated that mirror exposure produced a decrease in body image avoidance, weight and shape concerns, dieting and depression, and an increase in body satisfaction, with these improvements being maintained at a 1-month follow-up assessment (Delinksy & Wilson, 2006). Mirror exposure has also been found to enhance outcomes of obesity (Jansen et al., 2008) and eating disorder treatment (Key et al., 2002). Research on the effects of mirror exposure when used as a component in a dissonance based prevention program via a dismantling study indicated that mirror exposure moderates the effects of the prevention program (Ramirez, Perez, & Becker, 2012). Additionally, participants who completed the mirror exposure assignment as part of the dissonance intervention showed higher body acceptance and body likability than participants who did not complete the assignment with these effects being sustained at a 1-year follow-up assessment. This evidence suggests that while mirror exposure alone can be an effective way to reduce body image disturbances and eating disorder symptoms, it may be more effective when used in conjunction with other techniques in a prevention program.

For the current study, an experimental form of mirror exposure was conducted with both mothers and daughters. Although mirror exposure has been extensively studied, no previous studies have examined mirror exposure in mothers and daughters

simultaneously. Based on social learning theory and modeling, it is expected that mothers' comments about her own body made in the presence of her daughter may influence daughters' comments about her own body. This is also supported by previous studies that have indicated that mothers own negative body-related comments have led to increase body dissatisfaction in their daughters (Nichter, 2000). Information gathered from this experimental mirror exposure task with mothers and daughters can be used to educate mothers on the direct impact of their body-related comments on their daughters, as well as to determine if mirror exposure conducted with both mothers and daughters simultaneously could be used in future eating disorder and body dissatisfaction prevention programs.

Current Study and Hypotheses

The current study seeks to expand the literature on self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms by examining these variables in 5 to 7 year old girls and their mothers. Specifically, the current study will assess the onset and potential risk factors for the onset and development of these variables in young girls using principles from social learning theory and the bio-ecological systems approach to symptom development. Specific hypotheses generated for this study are outlined below and are arranged in order by their respective systems from the bio-ecological systems model:

Microsystem. H1: Limited existing research on eating disorder symptoms and risk factors in young girls has provided preliminary evidence that girls as young as 6 are beginning to experience these symptoms (Kroon Van Diest & Perez, 2013), and

adolescents typically report higher levels of these same symptoms (LeGrange, 2011). Thus, it was hypothesized that for daughters, levels of self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms would increase with increased age of the child.

H2: Since body dissatisfaction has become normative among women in Western society, leading women to more freely express dissatisfaction with aspects of their physical appearance (Nichter, 2000), it was hypothesized that mothers who were not instructed to report only positive body attributes during the joint mother-daughter mirror exercise (no instructions condition) would be less likely to reduce the number of negative body attributes reported from the individual mirror exercise than mothers who were instructed to report only positive body attributes.

H3: Body mass index has consistently been found to be a predictor of body dissatisfaction (Smolak, 2011), leading to the hypothesis that both mothers and daughters with higher body mass indexes (BMI) would be more likely to report more negative body attributes during the individual mirror exercise tasks.

Mesosystem. H4-H7: Social learning theory and modeling purport that young children often learn and develop behaviors by observing and imitating behaviors they observe by others (Bandura, 1977, 1986), which is especially true for young girls learning behaviors from observing their mothers (Smolak, 2011) or older sisters (Lanflisi, 2012; Pachucki, et al., 2011). Thus, it was predicted that daughters whose mothers reported more positive body attributes during the joint mother-daughter mirror exercise would be more likely to report more positive body attributes during the joint

mother-daughter mirror exercise than daughters whose mothers reported more negative body attributes (H4). Similarly, it was predicted that daughters whose mothers reported more negative body attributes during the joint mother-daughter mirror exercise would be more likely to report negative body attributes during the joint mother-daughter mirror exercise than daughters whose mothers reported more positive body attributes (H5). Additionally, daughters whose mother's reported higher levels of self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms were predicted to have higher levels of these same variables than daughters whose mother's reported engaging in lower levels of these variables (H6). Finally, it was hypothesized that daughters with older sisters would be more likely to have higher levels of self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms than daughters who do not have older sisters (H7).

Exosystem. H8: Previous research has consistently demonstrated that participation in extracurricular activities, particularly sporting activities, is a protective factor against the development of eating disorder symptoms and risk factors among adolescents (Amrita, 2011; Fredrickson & Roberts, 1997; Mattison, 2011; Morrison, 2006; Tiggemann, 2001). Therefore, it was predicted that daughters who engage in sporting extracurricular activities would be less likely to report experiencing self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms than daughters who do not participate in sport-related extracurricular activities.

Macrosystem. H9: Given that children spend more time consuming media than they do with any other activity with the exception of school and sleeping (Roberts, Foehr, & Rideout, 2005), and previous research among adolescents has indicated that the mass media plays a major role in the development of eating disorder symptoms and risk factors (Smolak, 2011), it was hypothesized that daughters who engage in more media consumption as reported by their mothers would be more likely to engage in higher levels of self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms than daughters who engage in less media consumption (H9).

H10-H12: Since research has demonstrated an increase in the sexualized nature of clothing for young girls which has become the preference of many young girls (American Psychological Association, 2010), and this sexualized nature of clothing is associated with body dissatisfaction and eating disorder symptoms among adolescents (McConnell, 2001; Slater & Tiggemann, 2002) it is predicted that when choosing clothing outfits, it was hypothesized that daughters will select less conservative outfits for themselves to wear, while mothers will choose more conservative outfits for their daughters to wear (H10). Also when choosing clothing outfits, it is hypothesized that daughters will indicate that their mothers would choose more conservative outfits for them to wear while mothers will indicate that their daughters would choose less conservative outfits for themselves to wear (H11). Finally, daughters who select less conservative outfits as the outfit they would most want to wear were predicted to have higher levels of self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms (H12).

METHOD

Participants

Participants for the current study included 151 mother-daughter dyads. A total of 140 mothers participated in the study: 11 mothers had more than one daughter that participated in the study, resulting in 151 mother-daughter pairs. Mothers ranged in age from 23 to 50 (M = 35.19, SD = 5.41). The majority of mothers reported their race as Caucasian (69%), followed by Hispanic (14%), African American (10%), Asian American (3%), other (3%), and biracial (1%). Mothers' BMI's as measured ranged from 17.00 to 48.80 (M = 27.12, SD = 6.74). Mothers were asked to report their highest level of education, with most mothers reporting that they had obtained a college degree (35%), followed by graduate degree (29%), some college (18%), some graduate education (7%), high school diploma or GED (both 5%), and some high school (1%). In terms of employment status, most mothers reported being employed full-time (38%), followed by part-time employment (20%), unemployed (7%), other (5%), and 30% identified as homemakers. Yearly household incomes ranged from $8000.00 to $270,000.00 ($M$ = $73,800.33, SD = 51,403.48), with one mother not reporting an estimated yearly income. Mothers reported their marital status as married (80%), single (8%), other (5%), divorced (4%), in a long-term relationship (3%), and separated (1%). The majority of mothers (53%) had more than one child.

Mothers were also asked to provide demographic information for their daughters. All 151 daughters ranged in age from 5 to 7 years old (M = 5.91, SD = 0.86) due to the

age requirement for participation in the study. Daughters' BMI's as measured ranged from 10.40 to 31.70 (M = 16.43, SD = 2.74). Based on the Center for Disease Control and Prevention (CDC) guidelines for BMI classification (CDC, 2011) 1% of participants were underweight (< 5th percentile), 71% normal weight (5th – 85th percentile), 28% overweight (≥ 85th percentile), and 14% obese (≥ 95th percentile). Most mothers reported that their daughters' race as Caucasian (60%), followed by Hispanic (15%), African American (8%), biracial (8%), other (5%), and Asian American (4%). Daughters were enrolled in preschool (7%), kindergarten (35%), first or second grade (both 27%), third grade (3%), and 2 daughters (1%) were not yet enrolled in school.

Measures

Body dissatisfaction. For mothers, body dissatisfaction was assessed using the Body Shape Questionnaire (BSQ; Cooper, Taylor, Cooper, & Fairburn, 1987). The BSQ contains 34 items (e.g., "have you felt ashamed of your body") that are rated on a 6-point scale ranging from 1 (*never*) to 6 (*always*). For the BSQ, scores are obtained by summing all items, with higher scores indicating greater body dissatisfaction. The BSQ has demonstrated internal consistency, Cronbach's α = .96 (Cooper et al., 1987), test-retest reliability, r = .88 (Rosen, Jones, Ramirez, & Waxman, 1996), and convergent and predictive validity (Cooper et al., 1987; Evans & Dolan, 1993). For the current study, Cronbach's α = .95.

Body dissatisfaction for the daughters was assessed using a set of 14 questions created by Kroon Van Diest and Perez (2013) to measure body dissatisfaction in young children (located in Appendix A). Several steps were taken to assure that these items (as

well as the self-objectification and eating disorder symptom items described below) were valid and appropriate for young children. First, the items were modeled after well validated measures used to assess these constructs in adult women, but changed to be more age appropriate. Second, all items were reviewed independently by three professors of psychology who specialize in self-objectification, thin-ideal internalization, eating behaviors, and parent-child feeding dynamics, and one professor of psychology who specializes in children and development. Finally, these tasks were piloted with a group of 15 children aged 4 to 6 years (M_{age} = 4.80) by Kroon Van Diest and Perez (2013) to determine if any changes needed to be made to the task. Based on feedback from the professors and results from the pilot study, two items were removed due to being questionable and difficult for children to understand and respond to.

For this task, children are asked to indicate if they *liked* their own body parts from the following body parts: arms, legs, stomach, face, hair, skin color, and overall body size. After answering these questions, children were then asked if they liked the way each of those same body parts *looked*. For each body part children were how much they liked a particular body part (i.e. "Do you like your stomach?"), on a scale of *"I don't know", never, sometimes, or always*. Item responses were then rated on a 3-point scale ranging from 0 to 2 (0 = "*I don't know"* or *always*, 1 = *sometimes,* 3 = *never*). Scores for this task are calculated by summing all items, with higher scores indicating higher levels of body dissatisfaction. Cronbach's alpha for all 14 items assessed for the current study was .70.

Self-objectification. For mothers, self-objectification was assessed using the 10-item Self-Objectification Questionnaire (SOQ; Noll & Frederickson, 1998). Participants are asked to rank-order ten body attributes, five of which are appearance-based (weight, sex appeal, physical attractiveness, firm/sculpted muscles, measurements), and five are competence-based (strength, physical coordination, energy level, health, physical fitness), from most important (*0*) to least important (*9*) according to how much impact each had on their physical self-concept. Overall scores are computed by subtracting the sum of the competence rankings from the sum of the appearance rankings. Possible scores range from -25 to 25, with higher scores indicating greater self-objectification. Internal consistency reliability for the SOQ is determined by calculating a correlation between the sum of the appearance-based items and the sum of the competence-based items due to the scoring method and rank-ordering of data (Hill & Fischer, 2008). Previous research using this method as a measure of internal consistency reliability for the SOQ has demonstrated strong negative correlations between appearance and competence rankings, indicating good reliability, r = -.81 to -.88 (Hill & Fischer, 2008; Calogero & Jost, 2011). For the current study, reliability of the SOQ was adequate, r = -.70.

Self-objectification in mothers was also assessed using the 8-item Surveillance subscale of the Objectified Body Consciousness Scale (OBCS; McKinley & Hyde, 1996), which specifically measures the degree to which women view their bodies as an outside observer. Participants rate items (e.g., "I often worry about whether the clothes I am wearing make me look good") on a 7-point scale ranging from 1 (*strongly disagree*)

to 7 (*strongly agree*). After reverse scoring appropriate items, scores for this subscale are calculated by averaging all 8 items with higher scores indicating higher levels of self-objectification. Research on scores from the Surveillance subscale of the OBCS has demonstrated good internal consistency, Cronbach's $\alpha = .89$, and test-retest reliability over a 2-week period (McKinely & Hyde, 1996). Cronbach's alpha for the current study was .83.

For daughters, self-objectification was assessed using a task specifically designed by Kroon Van Diest and Perez (2013) for measuring self-objectification young in children. These questions were asked at the same time as the body dissatisfaction questions (described above) and use the same list of body parts. After asking the daughters to indicate if they like a particular body part, they are asked to indicate why they do or do not like that particular body part (see Appendix A). The open-ended question for why they liked or disliked a particular body part allowed them to respond with a functional (i.e. "It lets me eat food") or appearance-based (i.e. "It's skinny") explanation for their choice. Daughters who are engaging in self-objectification were more likely to respond to these questions with appearance based-reasons for liking or disliking a particular body part. The questions and scoring method for this measure of self-objectification in young girls was designed to be similar to the Self-Objectification Questionnaire (SOQ; Noll & Fredrickson, 1998).

In order to score this task, item responses are rated as either appearance-based or functional-based by three independent raters who were trained on the coding system and have a conceptual understanding of self-objectification. A neutral code was also used to

allow responses that do not fall into either appearance or functional-based categories. In the case that the three raters disagreed on the basis of the response, a fourth rater was used to finalize the decision. Item responses that are coded as appearance-based receive a score of 2, functional-based receive a score of 1, and neutral receive a score of 0. Similar to the SOQ, scores were calculated by subtracting the sum of the number of functional responses from the sum of the number of appearance-based responses. Using this scoring method, scores range from -14 to 14, with higher scores indicating greater levels of self-objectification. Due to the method of scoring this measure, a traditional internal consistency measure is not appropriate. Thus, internal consistency reliability for this measure of self-objectification in children was determined by calculating a correlation between the sum of the appearance-based responses and the sum of the functional responses. This method has been used to determine internal consistency of the SOQ in adult samples, with significant negative correlations between the appearance and functional responses indicating good reliability (Hill & Fischer, 2008). For the current study, the correlation between the appearance and functional responses was significant and negative in direction reflecting internal consistency of the items, $r = -.33$, $p < .001$.

Thin-ideal internalization. For mothers, thin-ideal internalization was assessed using the 10-item Ideal Body Stereotype Scale-Revised (IBSS-R; Stice, Ziemba et al., 1996). Participants rated items (e.g., "thin women are more attractive") on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Items are averaged with higher scores indicating higher levels of thin-ideal internalization. Scores on the IBSS-R have demonstrated internal consistency reliability, Cronbach's $\alpha = .91$, test-retest

reliability, r = .80, and predictive validity (Stice, Ziemba et al., 2006). Cronbach's alpha for the IBSS-R in the current study was .81.

Thin-ideal internalization for daughters was assessed using a task originally developed by Collins (1991). For this task, children are presented with a set of seven female child figures designed to illustrate body weight ranging from very thin to very obese. The daughter was presented with the set of child figures and asked to identify which figure they think looks most like them, and which figure shows the way they want to look. Levels of thin-ideal internalization were determined based on the size of the figures chosen for each set of images by calculating a difference score. This difference score was derived by subtracting the number of the figure selected (1 through 7) as the "ideal self" from the number of the figure selected as the "actual self." Higher positive numbers indicate greater levels of thin-ideal internalization. Previous research on this task has demonstrated internal consistency, α = .91, and test-retest reliability (Collins, 1991). For the current study, internal consistency was acceptable at .73.

Eating disorder symptoms. For mothers, eating disorder symptoms were assessed using the Eating Disorder Examination-Questionnaire (EDE-Q; Fairburn & Beglin, 1994). The EDE-Q contains 28 items that specifically measure participant's eating attitudes and behaviors over one-month (e.g., "over the past 28 days how many times have you taken laxatives as a means of controlling your shape or weight?"), and can be used to make tentative diagnoses of anorexia nervosa and bulimia nervosa. The EDE-Q is a self-report version of the Eating Disorders Examination (EDE; Fairburn & Cooper, 1993), a semi-structured interview used for the assessment of eating disorders.

The EDE-Q is comprised of four subscales that assess the severity of different aspects of disordered eating symptoms: Restraint (5 items), Eating Concern (5 items), Shape Concern (8 items), and Weight Concern (5 items). Subscale scores are derived by averaging all of the items on each subscale. Global scores, calculated by averaging the average scores from each of the four subscales, were used for the current study. Research on the EDE-Q has demonstrated internal consistency for Global scores, α =.78 to .93, and test-retest reliability, r = .81 to .94 (Luce & Crowther, 1999; Mond, Hay, Rodgers, Owen, & Beaumont, 2004). Internal consistency for the Global EDE-Q score in the current study was .90.

Daughter's eating disorder symptoms were assessed using a set of 6 questions (see Appendix B) that were created specifically for assessing disordered eating in young girls within the current study (e.g., "Do you ever eat until you are too full and your stomach hurts?", "Do you think about wanting to be thinner?"). The questions for this task were modeled after questions from the Child Eating Attitudes Test (ChEAT; Maloney, McGuire, Daniels, & Specker, 1989), reflecting different facets of disordered eating symptoms. The ChEAT was not used to assess eating disorder symptoms in the current study given it is only suitable for children aged 7 and older. Therefore, 5 to 7 year old children would likely have greater difficulty responding to self-report instruments like the ChEAT using a Likert-type rating scale. Answers were coded as: *"I don't know", never, sometimes, or always*. Item responses were them rated on a 3-point scale ranging from 0 to 2 (0 = "*I don't know"* or *always*, 1 = *sometimes*, 3 = *never*). Scores for this task are calculated by summing all items, with higher scores indicating

higher levels of eating disorder symptoms. Cronbach's alpha for these questions in the current study was in the unacceptable range at .48. Although internal consistency of these items was in the questionable range, the total score for this scale was significantly correlated in the expected direction with daughters' thin-ideal internalization and body dissatisfaction, lending to support to using these questions as a measure of daughters' eating disorder symptoms for the current study analyses. Previous researchers have indicated that significant and meaningful relationships between a measure with a low alpha value and other variables that should correlate with that measure based on theory and prior research provide enough justification for inclusion of the measure with the low alpha coefficient (Schmitt, 1996).

Mirror exposure exercise. For the mirror exposure exercise, a trained research assistant instructed participants to stand in front of a full length mirror and examine their bodies. The research assistants then asked participants to describe things they liked or disliked about a particular body part (i.e. "Tell me, what do you like or dislike about your face?"). Participants were asked about the following body parts: hair, face, arms, stomach, hips, buttocks, and legs. All participants will be asked the questions in that order, moving systematically from head to toe. Participant's responses were recorded via audio recording to later code the responses. No specific instructions for not dwelling on certain body parts will be given during this task.

Mothers and daughters first participated in this exercise individually in separate rooms with independent research assistants providing the instructions. Following the individual exercise, a joint mother-daughter mirror exercise was conducted using the

same protocol used during the individual mirror exercises with the mother being asked to respond about a particular body part first, followed by the daughter's response. For the joint mother-daughter mirror exposure exercise, participants were assigned to conditions prior to their arrival to the study. Mothers assigned to the "positive responses only condition" were instructed to provide only positive responses for each body part during the joint mother-daughter exposure task. These instructions were given after the individual mirror exposure task, before being brought into the room with their daughter for the joint task. The research assistants conducting the joint mother-daughter mirror exposure exercise were aware of the condition each mother-daughter pair was in in order to provide the mother with the appropriate instructions prior to beginning the task. Daughters were unaware that their mothers were given these specific instructions. Mothers not assigned to the "positive responses only condition" were assigned to the "no instructions condition." These mothers did not receive any instructions about how to respond during the joint mirror exposure task and were informed that they would be completing the same task again but this time with their daughter.

To obtain scores from this exercise, trained research assistants who were blind to the mother-daughter pairs' conditions reviewed each participant's responses to each item for the individual and joint mirror exposure tasks and calculated the number of positive body attributes and negative body attributes. Three independent coders rated who were trained on the coding system individually calculated the total number of positive and negative body attributes for each participant (a simple frequency count). Item responses that did not fall into either category (e.g., "I don't know") were not included. In the case

that the three raters disagreed on the total number for each variable, a fourth rater was used to finalize the decision.

Clothing choice. Both mothers and daughters were presented with 6 images displaying different outfit options for young girls (presented in Appendix C). Outfit options presented in the images ranged from very conservative to not conservative. Images were presented in black and white and showed outfits on a 6-year-old girls from the shoulders down (the face of the child in the picture was not revealed). Conservativeness of the outfits was determined by obtaining independent rankings of outfit conservativeness from 12 clinical psychology doctoral candidates. Interrater reliability between all 12 raters on their item rankings from least conservative to most conservative was 100%. The images presented to mothers and daughters were in random order, not in order of outfit conservativeness.

For the task, daughters were asked to choose which outfit they would most want to wear and why, and which outfit they think their mother would most want them to wear and why. Mothers were shown the same images while in a separate room from their daughter and asked which outfit they would most like their daughter to wear and why, and which outfit they think their daughter would most want to wear and why. Both mother and daughter outfit selections were recoded based on conservativeness of the outfits (as determined by the independent ratings provided by the doctoral students), with 1 being the least conservative and 6 being the most conservative. This coding system was used to explore differences in conservativeness of outfit preferences between mothers and daughters.

Media consumption. Amount and type of media consumption of daughters was assessed by maternal reports of the child's media consumption. Specifically, mothers were asked the following questions: "On the weekends, how many hours per day does your daughter watch television or movies? During the school year, how many hours per day in the morning before school does your daughter watch television or movies? During the school year, how many hours per day in the afternoon/evening does your daughter watch television or movies?" Mothers responded to this question by selecting the most appropriate response from 13 different options provided in 30 minutes increments ranging from 0 minutes to 6 or more hours. To create a total score for media consumption per seven-day week during the school year (which lasts for approximately 9 months, or the majority of a 12 month calendar year), responses to the questions of how many hours in the morning and afternoon/evening does your daughter watch television were multiplied by five and added together. The response for the question of how many hours per day on the weekend does your daughter watch television was multiplied by two and added to the previous total to create an overall score of average hours per week during the school year daughters' spend consuming media via television and movies.

Extracurricular activities. To assess daughters' participation in extracurricular sporting activities, mothers were asked to identify all extracurricular sporting activities that their daughters' participate in throughout the school year from a list of 14 common sporting activities (e.g., tennis, swimming, volleyball, basketball, gymnastics etc.). Total scores for daughters' extracurricular activity participation were derived by calculating

the total number of activities mothers indicated that their daughters' participated in throughout the school year.

Body mass index. Height in inches and weight in pounds was directly measured for both mothers and daughters, which were converted to metric units to calculate their BMI (kg/m^2). Daughters' BMIs were then transferred into percentile ranks using the CDC guidelines for interpreting BMIs for children, as BMI for children varies by age (CDC, 2011). Body mass index was used as a covariate in the current study.

Procedures

After obtaining approval from the Institutional Review Board, participants were recruited through the use of fliers advertising the study. Fliers were displayed at pediatrician's offices, supermarkets, retail centers that sell children's merchandise, and recreational facilities for children in a small urban town in the Southern U.S. Interested participants contacted the study center to determine if they were eligible for the study. Eligibility criteria for all mother-daughter dyads required the daughter to be within the appropriate age range (5 to 7 years old) and both mother and daughter were required to speak fluent English. Once eligible mother-daughter pairs were identified, participants scheduled an appointment to participate in one 1-hour session. Once participants were scheduled, they were randomly assigned to one of the two mirror exposure conditions (positive responses only condition or no-instructions condition). The trained research assistants conducting the study were required to be made aware of the condition participants were placed in order to provide them with the appropriate instructions. Mothers and daughters were not informed on the condition they were assigned to.

Upon arrival to the facility, mother's provided written consent for both their and their daughter's participation in the study prior to beginning the activities. Daughter's also provided verbal assent to participate in the study. After consent and assent were obtained, height and weight of both mother and daughter were measured. Once the measurements were completed, the mother and daughter individually completed the mirror exposure task described in detail in the methods section. All research assistants conducting the mirror exposure exercises were female, as providing responses about their physical appearance and specific body parts to a male may have made mothers and daughters uncomfortable and may have influenced their responses. Audio recordings of the mirror exposure tasks were obtained to allow for coding of the responses at a later time. Following the individual mirror exposure tasks, the mother and daughter then completed a joint mirror exposure task with some mothers receiving specific instructions on how to respond during the joint task based on their assigned condition. Specifically, mothers who were assigned to the positive responses only condition were instructed to only say positive comments about their body during the joint mother-daughter mirror exposure task before being brought to the room with the daughter. Mothers who were assigned to the no instructions condition were told they would be completing the same mirror exercise they had just completed, but this time they would be doing the activity with their daughter.

After completion of the joint mirror exposure task, mothers were placed in a separate room from their daughters to complete the self-report questionnaires and the clothing selection task. During this time, the daughter completed the body

dissatisfaction, self-objectification, eating disorder symptoms, and clothing selection tasks in this order. Each mother-daughter pair was compensated $40.00 for their participation in the study.

RESULTS

Data Preparation

SPSS 19.0 was used to conduct all analyses. The proportion of missing data across assessments ranged from 0 to 2%. The few missing item values were handled by substituting participants' mean subscale score for the missing value. Data were screened for normality of distribution. No outliers were detected using Mahalanobis distance. No variables were transformed as the skewness and kurtosis values for all study variables were in the acceptable range (skewness range = -1.24 to 2.56, kurtosis range = -1.01 to 8.35) recommended by Kline (2010). Means and standard deviations and correlations for mothers' and daughters' BMI, body dissatisfaction, self-objectification, thin-ideal internalization, eating disorder symptoms were calculated and are presented in Table 1.

Demographic Statistics

Bivariate Pearson *r* correlations were conducted to assess group differences in demographic information across the main study variables, and any demographic variables found to be significantly related to any study variables were controlled for within the subsequent analyses containing that particular variable. For mothers, differences in age, BMI, race, education level, employment status, relationship status, and yearly income were explored among mothers' self-reported thin-ideal internalization, self-objectification, body dissatisfaction, and eating disorder symptoms. Mothers' age was significantly negatively associated with mother's body dissatisfaction, $r = -0.20$, $p < .05$, and eating disorder symptoms, $r = -0.17$, $p < .05$, indicating that

younger mothers were more likely to experience body dissatisfaction and engage in disordered eating behaviors than older mothers. Mothers' BMI was significantly and positively associated with mothers' body dissatisfaction, $r = 0.38$, $p < .001$, and eating disorder symptoms, $r = 0.40$, $p < .001$, suggesting that as mothers' BMI increases, so do their levels of body dissatisfaction and eating disorder symptoms. Mothers' level of education was positive associated with their thin-ideal internalization, $r = 0.24$, $p < .01$, and negatively associated with their eating disorder symptoms, $r = -0.20$, $p < .05$. These results indicate that mothers with higher levels of education are more likely to experience greater thin-ideal internalization but fewer disordered eating symptoms than mothers with lower education levels. Mothers' yearly income was positively associated with their thin-ideal internalization, $r = 0.19$, $p < .05$, such that mothers with higher yearly incomes reported higher levels of thin-ideal internalization. No other significant associations were found among mothers' demographic variables and the main study variables for mothers.

For daughters, differences in daughters' age, race, and BMI percentile, and household yearly income among daughters' thin-ideal internalization, self-objectification, body dissatisfaction, and eating disorder symptoms were explored. Daughters' age was significantly positively associated with their thin-ideal internalization, $r = 0.27$, $p < .01$, and self-objectification, $r = 0.24$, $p < .01$. These results indicate that older daughters were more likely to experience greater thin-ideal internalization and self-objectification than younger daughters. No other significant associations were found for daughters.

Microsystem Analyses

For daughters, levels of self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms were hypothesized to increase with increased age of the child (H1). Self-objectification for daughters' varied across the three age groups, with 6-year-olds reporting the highest levels of self-objectification (M = 1.35, SD = 0.40), followed by 7-year-olds (M = 1.32, SD = 0.39), and 5-year-olds (M = 1.07, SD = 0.52). Although these differences across age groups did not linearly increase with age, an ANOVA indicated that these age differences were significant, $F(2,148) = 6.16$, $p < .01$. Tukey's post hoc analysis indicated that the 5-year-olds had significantly lower levels of self-objectification than the 6 and 7-year-olds, but the 6 and 7-year-olds did not significantly differ. Daughter's eating disorder symptoms were also varied across age with 5-year-olds reporting the highest levels of eating disorder symptoms (M = 0.88, SD = 0.35), followed by 7-year-olds (M = 0.84, SD = 0.30), and 6-year-olds (M = 0.83, SD = 0.28). An ANOVA revealed that these age differences were not significant, $F(2,148) = 0.37$, $p = .69$.

While self-objectification and eating disorder symptoms were varied across the three age groups, daughter's body dissatisfaction and thin-ideal internalization increased linearly as age increased. Specifically, body dissatisfaction was lowest among 5-year-olds (M = 1.237, SD = 0.25), and increased among 6-year-olds (M = 1.24, SD = 0.22), and again among 7-year-olds (M = 1.27, SD = 0.24). Although body dissatisfaction increased with age as hypothesized, an ANOVA revealed that these age differences were not significant, $F(2,148) = 0.20$, $p = .82$. Similarly, thin-ideal internalization was lowest

among 5-year-olds (M = -0.33, SD = 1.64), and increased among 6-year-olds (M = 0.28, SD = 1.64), and again among 7-year-olds (M = 0.63, SD = 1.20). An ANOVA indicated that differences across the age groups existed for thin-ideal internalization, $F(2,148) = 5.81$, $p < .01$, with post hoc analysis indicating that 5-year-olds reported significantly lower levels of thin-ideal internalization than 7-year-olds. No other significant differences occurred between age groups. Overall, partial support was garnered for this hypothesis for body dissatisfaction and thin-ideal internalization.

It was hypothesized that mothers who were in the no instructions condition would be less likely to reduce the number of negative body attributes reported during the joint mother-daughter mirror exposure exercise from the individual mirror exercise than mothers who were in the positive comments only condition (H2). This hypothesis is also a manipulation check of the mirror exposure exercise conditions. An ANOVA conducted comparing the number of mothers' negative body-related comments per condition made during the joint-mirror exercise was conducted while controlling for the number of mothers' negative body-related comments per condition made during the individual mirror exercise. Results from the ANOVA revealed significant differences between the groups, $F(1, 148) = 16.89$, $p < .001$, with mothers in the positive responses only condition reporting significantly fewer negative body related comments (M = 0.71, SD = 1.57) than mothers in the no instructions condition (M = 5.49, SD = 2.62). To further assess this hypothesis, a change score was calculated by subtracting the number of negative body attributes reported during the individual mirror exposure exercise from the number of negative body attributes reported during the joint mirror exposure task.

Change scores were used because it would be expected that mothers in the positive comments on condition would change the number of negative body attributes reported during the joint exercise because they were explicitly asked to do so. Change scores were calculated for both conditions because it is also plausible that mothers, regardless of condition, may reduce the number of negative body attributes reported in front of their daughters simply as a result of concerns about the impact of their own comments on their daughter. The change scores from all mothers regardless of condition ranged from -24 (i.e., they reduced the number of negative attributes from the individual to the joint exercise) to 2 (i.e., they increased the number of negative attributes from the individual to the joint exercise), with most mothers reducing the number of negative attributes reported between exercises (M = -3.60, SD = 3.91). Mothers in the positive comments only condition had greater reductions in the number of negative body attributes between exercises (M = -5.83, SD = 3.89) than mothers in the no instructions condition (M = -1.39, SD = 2.38). An independent samples t-test revealed that the difference in these reductions between mothers in the positive comments only condition compared to mothers in the no instructions condition was significant, $t(149) = -8.45$, $p < .001$, supporting the hypothesis.

Finally, it was predicted that both mothers and daughters with higher BMI's would be more likely to report more negative body attributes during the individual mirror exercise tasks (H3). For mothers, bivariate Pearson r correlations indicate that mothers' BMI was not significantly associated with the number of positive, r = -0.12, p = .14, or negative body attributes, r = 0.13, p = .12. Although these correlations are not

significant, the values indicate that mothers with higher BMI's were more likely to report fewer positive and more negative body attributes during the individual mirror exercise. Similar to their mothers, correlations indicate that daughters' BMI was not significantly associated with the number of positive, $r = -0.10$, $p = .25$, or negative body attributes, $r = 0.15$, $p = .08$, reported by the daughters. Again, these correlations are not significant but the values indicate that daughters with higher BMI's were more likely to report fewer positive and more negative body attributes during the individual mirror exercise. Overall, this hypothesis was not supported by the data.

Mesosystem Analyses

Means, standard deviations and correlations for the total number of positive body attributes and negative body attributes for mothers' and daughters' from both individual and joint mirror exposure exercises were calculated and are presented in Table 2. It was hypothesized that daughters whose mothers reported more positive body attributes during the joint mother-daughter mirror exercise would be more likely to report more positive body attributes during the joint mother-daughter mirror exercise than daughters whose mothers reported more negative body attributes (H4). Partial order correlations controlling for both mother and daughter positive body attributes reported during the individual mirror exercise indicated that mothers who reported more positive body attributes during the joint mirror exposure exercise had daughters who reported more positive body attributes during the joint exercise, $r = 0.18$, $p < .05$. An exploration of differences in the number of positive body attributes reported by daughters between the two conditions using an ANOVA while controlling for daughters positive body attributes

reported during the individual mirror exercise. Results revealed that while daughters in the positive comments only conditions on average reported more positive body attributes (M = 6.93, SD = 2.76) than daughters in the no instructions condition (M = 6.34, SD = 3.28) during the joint mirror exposure exercise, these differences were not significant, $F(1,146) = 1.22$, $p = .27$.

Similar to hypothesis four, it was predicted that daughters whose mothers reported more negative body attributes during the joint mother-daughter mirror exercise would be more likely to report negative body attributes during the joint mother-daughter mirror exercise than daughters whose mothers reported more positive body attributes (H5). Partial order correlations and an ANOVA, both conducted controlling for mother and daughter negative body attributes reported during the individual mirror exposure exercise, provided support for this hypothesis. Specifically, mothers who reported more negative body attributes had daughters who also reported more negative body attributes during the joint mother-daughter mirror exposure exercise while controlling for negative body attributes reported by mothers and daughters during the individual mirror exposure exercise, $r = 0.29$, $p < .001$. When exploring differences in the number of negative body attributes reported by daughters between the two conditions, daughters in the no instructions conditions on average reported more negative body attributes (M = 1.93, SD = 2.19) than daughters in the positive comments only condition (M = 1.01, SD = 1.44). An ANOVA controlling for daughters' negative body related comments during the individual mirror exercise revealed that daughters in the no instructions condition

reported significantly more negative body attributes than daughters in the positive comments only condition, $F(1,146) = 89.24$, $p < .001$.

It was predicted that daughters whose mothers report higher levels of self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms will have higher levels of these same variables than daughters whose mother's report engaging in lower levels of these variables (H6). Mothers' age, BMI, education level, yearly income, and daughters' age were controlled for within these analyses given that these demographic variables were significantly associated at least one of the outcome variables being explored. Partial order correlations revealed that only mothers' self-objectification measured using the SOQ and daughters' levels of self-objectification were significantly associated, however, this association was negative, $r = -0.24$, $p < .01$. The correlations among mothers' and daughters' thin-ideal internalization, self-objectification measured using the OBCS Surveillance subscale, thin-ideal internalization, and eating disorder symptoms (controlling for the previously mentioned demographic variables) revealed no significant associations among any of the outcome variables (all ps > .05). In fact, with the exception of body dissatisfaction ($r = 0.07$), the correlation coefficients for self-objectification (using the OBCS Surveillance subscale) thin-ideal internalization and eating disorder symptoms between mothers and daughters were negative (rs = -0.04, -0.24, and -0.02 respectively) suggesting an inverse relationship between mothers' and daughters' levels of these variables. ANOVA's were then conducted to separately compare mothers' levels of thin-ideal internalization, self-objectification, thin-ideal internalization, and eating disorder symptoms to daughters'

levels of these same variables. The ANOVA's produced non-significant results for thin-ideal internalization, $F(1, 67) = 0.86$, $p = .73$, self-objectification (using results from both the SOQ and the OBCS for mothers), $F(1, 13) = 0.91$, $p = .62$, body dissatisfaction, $F(1, 118) = 0.89$, $p = .59$, or eating disorder symptoms, $F(1, 7) = 0.66$, $p = .83$. Thus, no support was garnered for this hypothesis.

It was predicted that daughters with older sisters would be more likely to have higher levels of self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms than daughters who do not have older sisters (H7). Partial order correlations controlling for age of the daughter that participated in the study indicated that no significant associations existed between having an older sister and the participating daughters' self-objectification, thin-ideal internalization, body dissatisfaction, or eating disorder symptoms (all *p*s > .05). However, with the exception of self-objectification ($r = -0.06$), the correlation coefficients for body dissatisfaction, thin-ideal internalization and eating disorder symptoms were in the positive direction (*r*s = 0.03, 0.02 and 0.10 respectively). Mean comparisons were then conducted to further explore the impact of having an older sister on the participating daughters' level of eating disorder symptoms and risk factors controlling for the participating daughters' age. Daughters who had an older sister had higher levels of body dissatisfaction ($M = 1.26$, $SD = 0.23$) and eating disorder symptoms ($M = 0.92$, $SD = 0.32$) than daughters' who did not have an older sister ($M_{bd} = 1.24$, $SD_{bd} = 0.24$; $M_{ed} = 0.83$, $SD_{ed} = 0.32$), while daughters who did not have an older sister had higher levels of thin-ideal internalization ($M = 0.14$, $SD = 1.61$) and self-objectification ($M = 1.24$, $SD = 0.43$) than

daughters who had an older sister (M_{ti} = 0.13, SD_{ti} = 1.43; M_{so} = 1.15, SD_{so} = 0.59). Independent samples *t*-tests revealed that none of the mean differences were significant for any of the variables (all *p*s > .05), regardless of having an older sister.

Exosystem Analyses

It was predicted that daughters who engage in sporting extracurricular activities would be less likely to report experiencing self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms than daughters who do not participate in sport-related extracurricular activities. Partial order correlations controlling for daughters' age were conducted and revealed no significant associations between participation in extracurricular sporting activities and eating disorders symptoms and risk factors (all *p*s > .05). However, correlation coefficients for all variables with the exception of body dissatisfaction (*r* = 0.07) were negative, indicating that daughters' who participate in sports experience fewer symptoms of self-objectification, thin-ideal internalization, and eating disorder symptoms (*r*s = -0.14, -0.04 and -0.003 respectively). A MANOVA was then conducted to further explore associations between participation in extracurricular sporting activities and eating disorder symptoms and risk factors. The MANOVA indicated that no significant relationships exist between daughters' participation in extracurricular activities and thin-ideal internalization, self-objectification, body dissatisfaction, and eating disorder symptoms, $F(28,409) = 1.11$, $p = .32$, Wilks's $\Lambda = 0.77$. Thus, this hypothesis was not supported by the data.

Macrosystem Analyses

It was hypothesized that daughters who engage in more media consumption as reported by their mothers will be more likely to engage in higher levels of self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms than daughter's who engage in less media consumption (H9). Daughters' total time per week during the school year spent watching television or movies as reported by their mothers ranged from 0 to 37 or more (M = 10.01, SD = 6.31). Partial order correlations, controlling for daughters' age as it was significantly associated with daughters' thin-ideal internalization and self-objectification, revealed no significant associations among amount of daughters' television viewing and any of the outcome variables (all ps > .05). Although these relationships were not significant, with the exception of thin-ideal internalization (r = -0.08), the correlation coefficients between television viewing time and body dissatisfaction, self-objectification, and eating disorder symptoms were positive (rs = 0.02, 0.03, 0.09). A MANOVA also revealed no significant relationships between television viewing and the outcome variables, $F(156,429) = 0.75$, $p = .98$, Wilks's $\Lambda = 0.38$.

It was hypothesized that when asked about clothing outfit preferences, daughters would select less conservative outfits for themselves to wear, while mothers would choose more conservative outfits for their daughters to wear (H10). Outfits were numbered from 1 to 6, with one being the least conservative and 6 being the most conservative. Most daughters selected outfit 2 as the outfit they would most want to wear (26.5%), followed by outfit 4 (24.5%), outfit 3 (23.2%), outfit 1 (10.6%), outfit 6

(9.3%), and outfit 5 (6.0%). Most mothers selected outfit 3 as the outfit they would most want their daughter to wear (45.7%), followed by outfit 4 (24.5%), outfit 6 (17.2%), outfit 5 (8.6%), and outfit 2 (3.9%). No mothers selected outfit 1 as the outfit they would most want their daughter to wear. On average, daughters preferred less conservative outfits (M = 3.13, SD = 1.43) than mothers (M = 3.87, SD = 1.24) selected for their daughters to wear. A paired samples t-test revealed that this difference was significant, $t(150) = 4.69$, $p < .001$, supporting the original hypothesis.

It was also hypothesized that when selecting outfit preferences, daughters would indicate that their mothers would choose more conservative outfits as the outfit they would most want their daughters to wear when compared to their daughter's outfit preference. Similarly, it was predicted that mothers would indicate that their daughters would choose less conservative outfits to wear when compared to the mothers' preference for their daughter to wear (H11). Most daughters selected outfit 6 as the outfit they thought their mothers would most want them to wear (22.5%), followed by outfit 3 (21.9%), outfit 2 (19.2%), outfit 4 (17.9%), outfit 5 (11.3%), and outfit 1 (7.3%). Most mothers selected outfit 3 as the outfit they think their daughter would most want to wear (37.7%), followed by outfit 6 (29.1%), outfit 2 (15.9%), outfit 4 (12.6%), outfit 1 (3.9%), and outfit 5 (0.7%). Mean comparisons indicated that daughters chose a less conservative outfit (M = 3.13, SD = 1.43) compared to the outfit they thought that their mothers would choose for them to wear (M = 3.74, SD = 1.63). Paired sample t-tests indicated that this difference was significant, $t(150) = -4.08$, $p < .001$, supporting the hypothesis. Mothers also believed that their daughters would choose a less conservative

outfit (M = 3.76, SD = 1.61) compared to their own choice for their daughter to wear (M = 3.87, SD = 1.24). However, a paired samples t-test revealed that this difference was not significant, $t(150) = 0.76$, $p = .45$.

It was predicted that daughters who selected less conservative outfits as the outfit they would most want to wear would have higher levels of self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms than daughters who preferred more conservative outfits (H12). Daughters' age was controlled for within these analyses since daughters' age was significantly associated with body dissatisfaction and self-objectification. Partial order correlations revealed no significant associations between daughters' outfit choice and any of the outcome variables of interest while controlling for daughters' age (all ps > .05). In fact, the correlation coefficients for body dissatisfaction and self-objectification were in the positive direction (rs = 0.06 and 0.05 respectively). Although these values are small and non-significant, their direction indicates that higher levels of these variables are associated with greater conservativeness of daughters' outfit preference. The correlation coefficients for both thin-ideal internalization and eating disorder symptoms were in the negative direction as expected (rs = -0.09 and -0.14 respectively), but these values are negligible. Further, a MANOVA indicated that no significant relationships exist between daughters' outfit preference and thin-ideal internalization, self-objectification, body dissatisfaction, and eating disorder symptoms, $F(24,490) = 1.21$, $p = .23$, Wilks's $\Lambda = 0.88$. Thus, this hypothesis was not supported by the data.

DISCUSSION AND CONCLUSIONS

Although eating disorder symptoms and risk factors such as self-objectification, thin-ideal internalization, and body dissatisfaction are becoming more pervasive throughout society, little is known about the age of onset of these symptoms and how they develop and manifest in young girls. Most studies have not examined these symptoms in girls younger than 8 to 10 years old, despite calls from researchers to examine these symptoms in younger girls so that an approximate age of onset and developmental trajectory can be identified (LeGrange, 2011; Smolak, 2011). The current study sought to address this call for research by exploring eating disorder symptoms and associated risk factors of self-objectification, thin-ideal internalization and body dissatisfaction among 5 to 7 year old girls in an attempt to identify an age of onset of these symptoms. Additionally, using a bio-ecological systems approach (Bronfenbrenner, 1994) in conjunction with principles of social learning theory (Bandura, 1977), specific factors, selected based on previous research in adolescent and adult females, that could influence the onset and development of these symptoms were explored.

Microsystem

Within the microsystem, daughters were the main system explored. Their mothers were also explored as a microsystem, as they are particularly influential in shaping their daughters' eating and body attitudes and behaviors (Smolak, 2011). Daughters from the current study reported experiencing self-objectification, thin-ideal

internalization, body dissatisfaction, and eating disorder symptoms. Further, for body dissatisfaction, self-objectification, and thin-ideal internalization, 5-year-olds reported significantly lower than the 7-year-olds, indicating that increases in these symptoms occur as age increases. This finding corroborates previous research findings that have demonstrated that children as young as 4 are beginning to experience self-objectification, thin-ideal internalization, and body dissatisfaction with these variables increasing with age (Kroon Van Diest & Perez, 2013). Although eating disorder symptoms did not linearly increase with age, several daughters' indicated that they had previously or are currently on diets, they know what calories are and pay attention to the amount of calories they consume, and they want to be thinner. These responses collectively suggest that girls as young as 5 are beginning to display patterns of disordered eating that will likely increase with age, particularly as they get closer to adolescence. Additionally, several girls indicated that they learned how to diet or count calories from their mothers.

Interestingly, mothers' age was negatively associated with their own body dissatisfaction and eating disorder symptoms. This indicates that as mothers get older, their levels of body dissatisfaction and eating disorder symptoms decrease. This is the opposite of the findings from daughters' and suggests that levels of eating disorder symptoms and risk factors begin at a young age and increase until a certain age, when they then begin to decline with increased age in a curvilinear fashion. Collectively, these results suggest that implementing eating disorder prevention programs in young girls may prevent or reduce the impact of age on increases in eating disorder symptoms

and risk factors through adolescence, which has been identified as the "peak" of this curvilinear pattern of eating disorder symptoms (LeGrange, 2011).

During the mirror exposure task, it was expected that mothers that were instructed to say only positive body attributes during the joint mother-daughter mirror exposure exercise would have greater reductions in the number of negative body attributes reported from the individual exercise to the joint exercise when compared to mothers who were not instructed to report on positive body attributes during the joint exercise. Most mothers, regardless of condition, reduced the number of negative body attributes reported in front of their daughter from the number of negative attributes reported during the individual mirror exposure exercise. This is a positive finding, considering that previous research has demonstrated that mothers' "fat talk" toward her own body is associated with higher levels of body dissatisfaction in their daughters (Nichter, 2000). While most mothers reduced the negative body attributes they reported when in the presence of their daughters, mothers who were instructed to say only positive body attributes in front of their daughters were found say significantly fewer negative body attributes than mothers who were not asked to say only positive things about their bodies in front of their daughters. Thus, most mothers were able to follow the instructions given when asked to say only positive things about themselves in front of their daughters. This is also a positive finding as it can be difficult to find positive things to say about particular body parts that mothers' may greatly dislike, which is consistent with "normal body dissatisfaction" that has become the standard in Western society (Nichter, 2000).

The current study predicted that both mothers' and daughters' BMI's would be independently positively correlated with the number of negative body attributes they reported during the individual mirror exposure task, such that participants with higher BMI's would report more negative body attributes. This is based on previous research that has consistently linked higher BMI with greater levels of body dissatisfaction (see Smolak, 2011). Although significant associations between BMI and positive or negative body attributes reported by mothers' or daughters' during the individual mirror exposure tasks were not observed, the correlation coefficients were in the expected direction. Additionally, mothers' self-reported body dissatisfaction from the survey was significantly positively associated with their BMI, supporting associations between increased BMI and greater body dissatisfaction.

Mesosystem

Mesosystems are interactions between microsystems, leading the current study to explore mother-daughter relationships and daughter-sibling relationship at the mesosystem level. When exploring the mother-daughter relationship during the joint mother-daughter mirror exposure exercise, although the correlation coefficients were not significant, the direction of the coefficients suggested that daughters body-related comments were modeled after their mothers' body-related comments provided during the task. Specifically, the more positive body attributes mothers stated during the task, the more likely it was that their daughters would also report more positive body attributes during the same mirror exposure exercise. Similarly, when mothers reported more negative body attributes, their daughters were more likely to report more negative

attributes about her own body. Further, daughters whose mothers were assigned to the no instructions condition (they were simply told to complete the mirror exposure task with their daughters) reported a significantly higher number of negative body attributes during the joint mother-daughter mirror exposure task than daughters' whose mothers were asked to report only positive body attributes in front of their daughters. Overall, daughters modeled their responses directly after their mothers' responses, indicating that the principles of social learning theory can be applied to young girls observing and imitating body image after their mothers. These findings also suggest that the principles of social learning theory can be applied immediately (no lapse in time is required between observing a behavior and modeling that same behavior), and with repeated exposure to overt negative body-related comments from mothers, it may be expected that daughters' own negative body-related comments would continue to increase or intensify.

Although the principles of social learning theory were observed within the mirror exposure tasks, these principles did not seem to occur when exploring similarities between mothers' and daughters' levels of self-objectification, thin-ideal internalization, and eating disorder symptoms. After controlling for significantly associated demographic variables, no significant relationships were found between mothers' and daughters' eating disorder symptoms and risk factors. In fact, many of the correlation coefficients were negative, indicating that as mothers' symptoms increase, daughters' symptoms decrease. However, since most mothers from the current study reduced the number of negative body attributes reported in front of their daughters during the joint mother-daughter mirror exposure exercise regardless of the instructions they were given,

mothers from the current sample may tend to be more self-aware of their own negative eating and body attitudes and behaviors and may be more likely to attempt to avoid displaying these attitudes and behaviors to their daughters at home. It is also possible that daughters' are more likely to model only very overt behaviors displayed by their mothers', such as the direct body-related comments made by mothers during the mirror exposure exercise, than less covert behaviors related to eating disorder symptoms or risk factors (e.g., habitual body monitoring, secretly counting calories, secretly binging and purging).

No significant relationships were found when exploring associations between having an older sister and daughters' levels of self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms. Previous research on the influence of older siblings on eating disorder symptoms and risk factors has suggested that having older siblings, regardless of their level of disordered eating, can result in greater levels of eating disorder symptoms for the younger sibling (Lanflisi, 2012). Additional research has suggested that having older siblings with eating disorder symptoms increases the risk for younger siblings experiencing eating disorder symptoms (Ferguson et al., 2012; Pachucki et al., 2011). The lack of significant results from the current study could be due to a lack of specific information regarding the daughters' older sister, specifically in regards to the older sisters' levels of eating disorder symptoms and risk factors. Additionally, previous research has explored these sibling interactions in older children, making it possible that younger siblings may be more likely to modeling their older sisters' behaviors at an older age.

Exosystem

Participation in extracurricular activities was explored at the exoystem level. Although previous research has consistently identified participation in extracurricular activities, particularly sporting activities, as a protective factor against eating disorder symptoms and risk factors (Mattison, 2011; Morrison, 2006; Tiggemann, 2001), the current study was unable to replicate these results. This does not mean, however, that extracurricular activities are not a protective factor against eating disorder symptoms and risk factors in young girls. While non-significant, the majority of the correlation coefficients between participation in extracurricular activities and eating disorder symptoms and risk factors were negative, indicating that participation in extracurricular activities is associated with fewer symptoms. These relationships may be significant in older girls who spend more time engaging in these activities, and who are likely experiencing greater symptoms. The young age of the girls in the current sample may be indicative of less participation in extracurricular activities since many of them are just beginning school. Thus, it is likely that increased participation in these activities and increases in eating disorder symptoms and risk factors that occurs with increased age and grade level in school results in increased protection against eating disorder symptoms and risk factors. Additionally, the level of involvement or competitiveness of the extracurricular activities may be a better indicator of the protective nature of extracurricular activities against the development of eating disorder symptoms than the amount of time spent engaging in activities. Future studies should consider assessing different aspects of extracurricular activity participation (e.g., type of activity,

competitiveness of the sport, children's' level of involvement or investment in the activity) as protective factors against the development of eating disorder symptoms.

Macrosystem

The macrosystems explored within the current study as potential factors influencing the development of eating disorder symptoms and risk factors included culturally driven outfit preferences and the mass media. Over time, the media has been found to increasingly portray young girls behaving as adult women in a sexualized manner (Eaton, 1997; Grauerholz & King, 1997; Levin, 2005; Strasburger, 1995; Ward, 2003). Subsequently, this increase in the portraying young girls in the media as sexualized has resulted in the media being identified as a risk factor for the development of body dissatisfaction and eating disorders in children (Dohnt & Tiggemann, 2006). However, the current study did not find significant relationships between frequency of media consumption and eating disorder symptoms and risk factors. Based on the frequency of daughters' media consumption reported by mothers, daughters from the current study watch an average of 1.44 hours of television per day during the school year. This is less than the average 3 hours of television per day watched by children or teens according to Nielsen Media Research (1998). Thus, it may be that children from the current study are not experiencing increases in eating disorder symptoms and risk factors in relation to their frequency of media consumption simply because they view less media than the average child. Additionally, many mothers reported that they would not allow their children to watch certain types of television or certain channels such as ABC family that often display young girls in more sexualized (teen pregnancy) or

unhealthy manner (engaging in disordered eating). It is plausible, however, that as the children in the current study get older and have more freedom in the content of the media they consume, they may be more prone to experiencing increases in eating disorder symptoms and risk factors. Social learning theory would suggest that greater exposure to girls on television who adhere to the thin-ideal body type or are engaging in eating disorder behaviors would increase these symptoms in young girls viewing this type of media; therefore, reduced consumptions of media would result in fewer "learned associations" between media and children's own behavior.

The second macrosystem explored in the current study was culturally driven outfit preferences. Specifically, researchers have indicated that Western culture has increased the sexualized nature of clothing for young girls, which is becoming the preferential style for some girls as young as 7 (American Psychological Association, 2010). This sexualized nature of clothing has been linked to increases in self-objectification and body dissatisfaction among adolescent and pre-adolescent girls (McConnell, 2001; Slater & Tiggemann, 2002). The current study is the first to explore the impact of sexualized clothing in 5 to 7 year old girls. Consistent with the study hypotheses, when presented with six different clothing images ranging from sexualized to conservative, daughters on average chose more sexualized as the outfit they would want to wear most (most daughters picked the second most sexualized outfit out of 6 choices) when compared to their mothers' choice of outfit they would most want their daughter to wear. Mothers' tended to choose more conservative outfits as the outfit they would want their daughters to wear (most mothers chose outfit 3 out of 6), and no

mothers selected the most sexualized outfit as their first choice. In fact, when queried on their reasoning behind their outfit selection, several mothers used words such as "conservative," "appropriate," and "modest" when providing their rationale. Girls frequently used words such as "pretty" and "cute" to describe why they chose a particular outfit as the one they would want to wear the most.

When queried on which outfit they believed their mother would want them to wear, most daughters indicated that they believed their mother would choose the most conservative outfit. Daughters' often made comments such as "that's the way she wants me to dress" or "because she makes me wear stuff like that even though I don't like it" when asked why they believed their mothers would want them to wear a particular outfit. Girls may also have learned what outfits are "appropriate" by observing what their mothers or older sisters wear, and have determined what their female family members consider as acceptable outfits. However, mothers on average believed their daughters' would select the same outfit mothers selected (outfit 3 of 6). Most mothers indicated that they believed their daughter would select a particular outfit because "she would like it." Interestingly, for mothers who did select a less conservative outfit as the outfit they believed their daughter would want to wear they most, they frequently indicated that their daughters would want to wear the outfit even though they would not allow their daughter to wear clothes similar to those in the picture. One mother indicated that her daughter "tends to wear shorter skirts than her father and I allow. She also often likes to dress in clothes that I don't think are age appropriate." These findings suggest that daughters' are aware of their mothers' preference for them to wear more conservative,

age appropriate clothing, while mothers may not be as aware of their daughter's preference for slightly more sexualized outfits.

While daughters tended to select more sexualized clothing as their outfit preferences, the sexualized nature of daughters' outfit selection was not significantly associated with higher levels of self-objectification, thin-ideal internalization, body dissatisfaction, or eating disorder symptoms. This is surprising given that previous research has demonstrated that girls who wear more sexualized clothing are likely to experience greater eating disorder symptoms and risk factors than girls who wear more conservative clothing (American Psychological Association, 2010). However, the previous studies that have explored these relationships have been conducted in pre-adolescent and adolescent girls. It is possible that the younger age group examined within the current study, which on average preferred more sexualized clothing, have not yet begun to experience the negative effects of increased eating disorder symptoms and risk factors associated with this cultural style. Similar to participation in extracurricular activities, increases in the negative effects of adhering to this culturally preferred sexualized style of clothing may not be apparent until the girls become older. Nonetheless, girls as young as 5 are already adopting this culturally preferred sexualized style of clothing.

Although socioeconomic status was not explored as a main macrosystem variable within the current study, it was examined in relation to eating disorder symptoms and risk factors. Interestingly, yearly income and mothers' level of education were only found to be significantly and positively associated with mothers' levels of thin-ideal

internalization, indicating that higher socioeconomic status was associated with greater thin-ideal internalization in mothers. Also, mothers' level of education was negatively associated with their own eating disorder symptoms. Previous research has found significant relationships between socioeconomic status and eating disorder symptoms and body dissatisfaction. Specifically, within Western culture, higher socioeconomic status has been associated with greater levels of eating disorder symptoms and body dissatisfaction (Swami & Abbasnejad, 2010). This makes the current study findings particularly interesting, given that the average yearly income reported by mothers' in the current study was in the middle to upper-middle class range of socioeconomic status.

Implications for Prevention Programs

Although a number of the hypotheses generated for the current study were not supported by significant results, there are still important implications for all of the results obtained from the current study. Most importantly, girls between the ages of 5 and 7 are beginning to report experiencing self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms, with most of these symptoms increasing as age increases. Given that adolescence has been identified as the period during which girls are most at risk for experiencing eating disorder symptoms and risk factors (LeGrange, 2011), it would be expected that unless interventions were implemented, these symptoms that girls as young as 5 are beginning to experience would continue to increase as they approached adolescence. Thus, it appears that the prime age for implementing interventions to see the greatest benefits would be among 5 to 7 year old girls.

Even though frequency of media exposure and preferring sexualized clothing among daughters was not significantly associated with their levels of self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms, previous research has shown that these macrosystem variables are associated with greater eating disorder symptoms and risk factors among pre-adolescent and adolescent girls (Dohnt & Tiggemann, 2006; McConnell, 2001; Slater & Tiggemann, 2002). Based on the current study results, 5 to 7 year old daughters are beginning to experience eating disorder symptoms and risk factors, but have not yet begun to experience increases in these symptoms that are associated with media exposure and preferring sexualized clothing outfits. These findings further support targeting this age group for implementation of prevention programs to reduce the likelihood that these factors will lead to increases in these symptoms as girls get older.

Prevention programs could specifically target the impact of the media and sexualized clothing by engaging young girls in discussions about ways in which the media portrays girls and women in a sexually objectifying manner, and how girls and women in the media are typically very thin and are often shown engaging in dieting or eating disordered behaviors. These discussions would focus on enhancing girls' understanding of the negative influence of the media, as well as working to create cognitive dissonance surrounding the thin-ideal proposed by the media. Previous research has demonstrated that similar tasks used among adolescent and adult females are protective factors against the body dissatisfaction and eating disorder symptoms (Levine & Smolak, 2006; Smolak, 2011). Although no previous research has been

conducted on prevention programs that target sexualized clothing, similar discussions could be held with young girls about the objectifying nature of sexualized clothing for girls and women to increase their understanding of the detrimental effects of wearing these clothes, as well as inducing cognitive dissonance about wanting to wear this style of clothing.

The current study also did not find daughters' participation in extracurricular sporting activities to be a significant protective factor against eating disorder symptoms and risk factors, but previous research has indicated that participation in extracurricular activities is a protective factor against eating disorder symptoms and risk factors among adolescent females (Amrita, 2011; Mattison, 2011). While 5 to 7 year old girls may not yet be experiencing the protective effects of participating in extracurricular activities, prevention programs could educate young girls on how participation in these activities can be protective against these symptoms. Programs could also encourage girls to participate in these activities and continue to participate in these activities as they get older and closer to adolescence where the risk of experiencing these symptoms increases. Finally, programs could help young girls try different activities to discover extracurricular activities that they enjoy and are more likely to continue participating in.

The current study results also provide important implications for including mothers within eating disorder prevention programs for young girls. The joint mother-daughter mirror exposure exercise demonstrated the importance of the mother-daughter relationship on daughters own body image, as daughters' were found to model responses after their mothers' comments about her own body. These findings suggest that

mothers' comments about their own bodies are directly influential for daughters' own body-related comments. Additionally, when instructed to say only positive things about their bodies, most mothers were able to follow these instructions. This is promising for interventions targeting mothers to help their daughters have less body dissatisfaction and eating disorder symptoms. Specifically, mothers can be instructed on how to conduct mirror exposure exercises with their daughters at home, while mothers say only positive things about herself. The purpose of this exercise would be for mothers to model overt positive body image in front of their daughters, and based on the principles of social learning theory and the results from the current study, it would be expected that daughters would model similar positive body image. Mothers could also be encouraged to begin to focus on positive attributes that are not related to physical appearance (e.g., personality characteristics) during these mirror exposure exercises with their daughters in an effort to reduce self-objectification and thin-ideal internalization by reducing the focus on physical appearance. Like mirror exposure used with individual adult women, repeated use of this exercise with mothers and daughters should then reduce body dissatisfaction, self-objectification, and thin-ideal internalization, which should translate into fewer eating disorder symptoms.

Previous research also provides support for the inclusion of mothers within eating disorder prevention programs for young girls. Specifically, mothers could be encouraged to have more frequent meals as a family, as previous research has indicated that this is a protective factor against extreme weight control behaviors (Neumark-Sztainer, Eisenberg, Fulkerson, Story, & Larson, 2008; Neumark-Sztainer, Wall, Story,

& Fulkerson, 2004). Mother can also be educated on ways to be supportive and increase positive interactions with their daughters, as high family support and positive family interactions have also been identified as protective factors against body dissatisfaction (Snapp, Hensley-Choate, & Ryu, 2012) and eating disorder symptoms (Crago, Shisslak, Ruble, 2001; McVey, Pepler, David, Flett, & Abdolell, 2002). Finally, previous research has indicated that parents of children often question how to help their children have a positive body image and healthy eating habits, but do not know where to find answers to these questions (Neumark-Sztainer, 2011). In fact, the majority of mothers from the current study indicated that they would be interested in participating in an online program that provided them with ideas of things they can do at home to improve their daughter's body image and eating behaviors. Several mothers also indicated that they had questions about how to help their daughters have a positive body image.

Collectively, the results from the current study have provided an initial framework for developing prevention programs that target the different variables among the systems that may place children at greater risk for the development of these symptoms. This framework, presented in Figure 1, can also be used in prevention programs as a tool to educate mothers on the influence of the different systems that influence the development of eating disorder risk factors and symptoms. The use of this tool can then guide discussions with mothers on ways to combat the negative influences of these systems in an effort to prevent the development of eating disorder symptoms. It is pertinent, however, that future research continue to expand upon this framework to be inclusive of additional variables within the systems that were not addressed within the

current study to increase the overall effectiveness of prevention programs designed for use in young girls.

Limitations and Future Research

While the current study addressed some gaps in the literature on eating disorder symptoms and risk factors in young girls, there are a number of limitations that need to be considered. First, the data from the current study are cross sectional, preventing any causal relationships from being established. Future longitudinal research on eating disorder symptoms and risk factors in young girls is necessary to truly identify the development of these variables in a cause-and-effect manner. Second, the data is also largely self-report in nature. While research in adults often relies on self-reported data, this practice is less common in children as young as those from the current sample. However, many researchers agree that while children 3 years old or younger are not capable of appropriately respond to self-report questions such as the ones used in the current study (Kuhn, 2000; Perner, 2000), children as young as 4 are relatively capable of answering self-report questions that reflect on aspects of self and identity (Eder & Magelsdorf, 1997; Marsh, Ellis, & Craven, 2002) such as the questions used in the current study. Additionally, the current study included open ended questions (i.e. "Why do you like or dislike a particular body part?") that allowed for determination of the children's understanding of what they were being asked so that children who could not articulate responses to these questions or who provided answers that did not appropriately address the questions were eliminated from the study.

The order of administration of the measures in the current study may have influenced participants' performance on subsequent tasks/measures. For example, all participants completed the mirror exposure exercises prior to answering any questions about body image or eating behaviors. Engaging in the mirror exposure exercise may have heightened participant's awareness of their body, potentially increasing body dissatisfaction and increasing their level of reported body dissatisfaction on the subsequent questionnaires. However, a pilot study was conducted to assess the influence of the order of measures/tasks for the current study. Of 10 mother-daughter pairs, half completed the questionnaires prior to completing the mirror exposure exercises, and half completed the mirror exposure exercises before answering and questionnaires. Mothers who participated in the questionnaires prior to engaging in the mirror exposure exercises verbally reported feeling more uncomfortable during the mirror exposure exercises after answering several questionnaires about their body and eating behaviors. Mothers who completed the mirror exposure exercise before completing the questionnaires did not report feeling that their answers on the questionnaires were influenced by the mirror exposure exercises. Further, daughters who engaged in the mirror exposure exercises after answering the questions during the semi-structured interview appeared to have a more difficult time participating in the joint mother-daughter mirror exercise than daughters' who engaged in the mirror exercises before answering these questions (evidenced by fewer responses and avoiding looking at themselves in the mirror while their mother was in the room). Therefore, based on this qualitative information gathered

from the pilot study, the mirror exposure exercise was completed prior to beginning the questionnaires for all participants.

The sample used in this study was also relatively similar, with most participants being Caucasian, from middle to upper-middle class, and from the same geographic location. Most mothers also reported being married and having a college or graduate degree. This homogeneity of the current sample reduces the generalizability of the results to other populations that differ demographically. Future research should attempt to replicate and expand upon the current study results in more diverse populations, particularly in regards to race and socioeconomic status. The majority of mothers also reported having at least one other child, indicating that most daughters from the current study had sibling. While the current study explored the impact of having an older sister on daughters' experience of eating disorder symptoms and risk factors, there is still a lack of information on the influence of siblings within eating disorder research, including specific gender and age differences. Additionally, the impact of having a brother was not assessed in the current study. Having a brother, particularly an older brother who may make comments about his younger sisters' weight and/or physical appearance, may negatively impact the onset of eating disorder symptoms and risk factors among young girls. Thus, future research should continue to explore the impact of siblings, including brothers, on eating disorder development.

Within the current study methodology, the low internal consistency of set of questions used to assess daughters' eating disorder symptoms is a limitation. The low internal consistency indicates that these items are not similar in nature and may not be

collectively tapping into the construct of disordered eating behaviors in young children. An exploratory factor analysis of these items was conducted to determine if these items would have higher internal consistency if broken down into subscales reflecting different aspects of eating disorder symptomatology (similar to the EDE). The analysis suggested a potential four-factor solution; however, all items had eigenvalues that allowed them to load on more than one factor (e.g., no items loaded at least $\geq .40$ on a single primary factor and less than $\leq .25$ on any other factor; in some cases, items would load on 3 of the 4 factors). Thus, the questions could not be broken down into subscales based on this exploratory factor analysis. While the internal consistency for these items was low, the scores obtained for these items were significantly correlated in the expected direction with daughters' body dissatisfaction, thin-ideal internalization, and BMI, which is consistent with research on eating disorders in adolescent and adult women. Researchers have argued that measures with low alpha values can still be considered meaningful when they are significantly related to variables that they are expected to be related to (Schmitt, 1996). Thus, it was determined that the responses to these questions continue to be used in the current study as they provided valuable information regarding daughters' eating behaviors that was relevant to disordered eating symptoms and risk factors. Additionally, although these items were designed to be similar to questions from the ChEAT used to assess eating disorder symptoms among older children (8 years and older), future exploration and adjustments to these items could include having professionals in the field of eating disorders and child psychology review these items for appropriateness of content and for this young age group in assessing eating disorders.

An additional methodological limitation from the current study was the fact that the research assistants conducting the mirror exposure exercises were aware of the conditions (positive comments only or no instructions) that mother-daughter pairs were placed in for the exercise. Since the research assistants were conducting the exercise and had to provide the appropriate instructions to the mother, they could not be blind to the assigned condition for each pair. Although each research assistant was thoroughly trained on the study protocol and the importance of remaining neutral throughout the mirror exposure tasks regardless of condition, it is possible that they could have influenced mothers' responses during this task by showing certain reactions (e.g., facial expressions) to mothers' comments. If this occurred, it could have influenced mothers' responses during the joint mirror exposure task, which may have skewed the study results.

Finally, the current study only looked at a few of the factors included within each system in the bio-ecological systems model. There are a number of factors included within each level of the system that need additional research to determine their impact on the onset and development of eating disorder symptoms and risk factors, making it nearly impossible to comprehensively explore each of these factors within a single study. However, future research should continue to explore additional aspects of each system in younger children, such the influence of peers (micro and mesosystems), school and home environments, objectification experiences (exosystems), and additional cultural variables (macrosystems). This is especially important because the current study demonstrated that girls as young as 5 years old are beginning to display self-

objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms. School (as an exosystem), may be a particularly interesting variable to assess, given that girls typically begin attending school regularly between the ages of 5 to 7 years old. Therefore, the transition from daycare or being at home all day to attending school and being surrounded by same-aged peers may be a potential trigger for the onset of eating disorder symptoms and risk factors. Future studies should explore this transition to beginning school as a potential risk factor, as well as a potential prime time for interventions.

Conclusion

Girls as young as 5-years-old are beginning to experience self-objectification, thin-ideal internalization, body dissatisfaction, and eating disorder symptoms, and most of these symptoms increase as age increases. Girls in this age group are also beginning to prefer culturally approved sexualized clothing, but are not yet experiencing the detrimental effects of these preferences that have been found among adolescent girls. These findings suggest that girls within this age group should be targeted for eating disorder prevention programs, to prevent continuous increases in eating disorder symptoms and risk factors that occur with age as well as the negative effects associated with repeated media exposure and choosing to wear sexualized clothing. Additionally, daughters were found to model behaviors related to body dissatisfaction displayed by their mothers, supporting the for need for prevention programs that guides mothers on how to help daughters, using the principles from social learning theory. Overall, the

results from this study provide a beginning framework for developing prevention programs that target mothers and 5 to 7 year old daughters.

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APPENDIX A

Child body dissatisfaction and self-objectification questions from the semi-structured interview.

1. Do you like your **arms**? Why/Why not?

2. Do you like your **legs**? Why/Why not?

3. Do you like your **stomach**? Why/Why not?

4. Do you like your **face**? Why/Why not?

5. Do you like your **hair**? Why/Why not?

6. Do you like your skin color? Why/Why not?

7. Do you like the overall size of your body? Why/Why not?

8. Do you like the way you look? Why/Why not?

9. Do you like the way your **arms** look? Why/Why not?

10. Do you like the way your **legs** look? Why/Why not?

11. Do you like the way your **stomach** looks? Why/Why not?

12. Do you like the way your **face** looks? Why/Why not?

13. Do you like the way your **hair** looks? Why/Why not?

14. Do you like the way your **skin color** looks? Why/Why not?

APPENDIX B

Child eating disorder symptoms questions from the semi-structured interview.

1. Do you think about food a lot of the time? Why/Why not?

2. Do you feel guilty after you eat? Why/Why not?

3. Do you like trying new foods? Why/Why not?

4. Do you take longer to eat than others? Why/Why not?

5. Do you stay away from certain foods? Why/Why not?

6. Do you ever eat until you are uncomfortably full? Why/Why not?

7. Do you think about wanting to be thinner? Why/Why not?

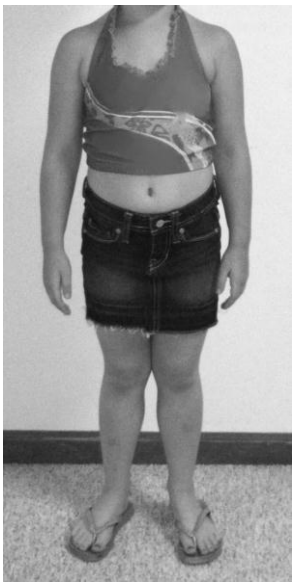
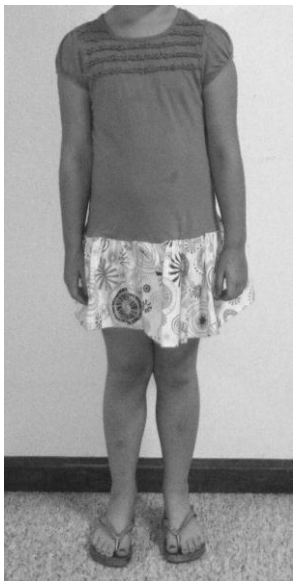
8. Do you pay attention to how many calories are in the foods you eat? Why/Why not?

9. Do others make comments to you about the way you eat? (If yes, ask for examples of comments.)

10. Do others tell you that you shouldn't eat certain foods? (If yes, ask what types of food and why.)

APPENDIX C

Pictures used to assess mother and daughter clothing style preferences.



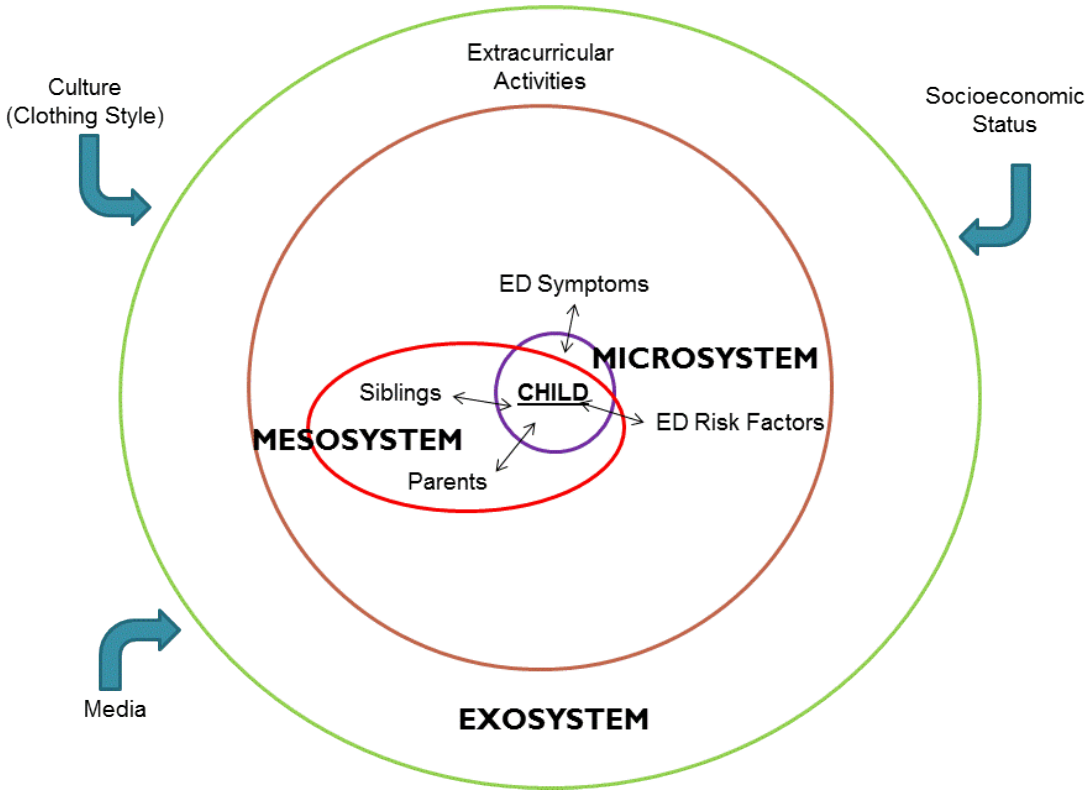


Figure 1. *A bio-ecological model of the factors explored in the current study that may influence the development of eating disorder symptoms and risk factors*

Table 1

Means, standard deviations, and correlations of the main study variables

Variable	*M* (*SD*)	1	2	3	4	5	6	7	8	9	10	11
1. M-Body Diss.	77.98 (26.39)	------										
2. D-Body Diss.	17.47 (3.36)	0.05	------									
3. M-Thin-Ideal	3.50 (0.61)	0.34**	-0.00	------								
4. D-Thin-Ideal	0.14 (1.57)	-0.03	0.00	-0.05	------							
5. M-Self-Ob. (SOQ)	-6.86 (11.48)	0.28**	0.08	0.17	0.05	------						
6. M-Self-Ob. (OBCS)	4.12 (1.09)	0.59**	0.07	0.21*	-0.02	0.42**	------					
7. D-Self-Ob.	2.99 (4.98)	-0.02	-0.09	0.06	0.10	-0.23**	-0.04	------				
8. M-Eating Dis.	2.35 (0.93)	0.86**	0.02	0.26**	-0.04	0.32**	0.53**	-0.03	------			
9. D-Eating Dis.	7.19 (2.79)	0.12	0.24**	0.09	0.07*	0.04	0.01	-0.02	0.10	------		
10. M-BMI	27.12 (6.74)	0.38**	-0.11	-0.13	0.12	0.06	0.06	0.01	0.40**	0.22**	------	
11. D-BMI	16.43 (2.74)	0.13	0.02	-0.01	0.36**	-0.04	-0.01	0.09	0.18*	0.18*	0.36**	------

Note. M = mother; D = daughter; Body Diss. = body dissatisfaction; Thin-Ideal = thin-ideal internalization; Self-Ob. = self-objectification; Eating Dis. = eating disorder symptoms; BMI = body mass index; SOQ = Self-Objectification Questionnaire; OBCS = Surveillance subscale from the Objectified Body Consciousness Scale; *$p < .05$, **$p < .01$

Table 2

Means, standard deviations, and correlations for mirror exposure exercises

Variable	*M* (*SD*)	1	2	3	4	5	6	7	8
1. D-Ind. Positive	6.27 (2.87)	------							
2. D-Ind. Negative	1.59 (1.94)	-0.06	------						
3. M-Ind. Positive	7.62 (3.78)	0.12	0.11	------					
4. M-Ind. Negative	6.71 (3.17)	0.07	0.12	0.24**	------				
5. D-Joint Positive	6.63 (3.04)	0.51**	-0.03	0.30**	0.10	------			
6. D-Joint Negative	1.48 (1.91)	-0.10	0.60**	-0.00	0.08	-0.10	------		
7. M-Joint Positive	9.79 (4.41)	0.11	0.09	0.56**	0.21**	0.32**	-0.02	------	
8. M-Joint Negative	3.31 (3.23)	-0.05	0.04	-0.05	0.26**	-0.08	0.25**	-0.43**	------

Note. D = daughter; M = mother; Ind. Positive = positive body attributes from individual mirror exposure task; Ind. Negative = negative body attributes from individual mirror exposure task; Joint Positive = positive body attributes from the joint mother-daughter mirror exposure task; Joint Negative = negative body attributes from the joint mother-daughter mirror exposure task; **$p < .01$

Table 3

Summary of Study Hypotheses and Results

Hypothesis	Type of Analysis	Control Variable(s)	Results	Supported/Not Supported
H1: Daughters' levels of SO, TI, BD, and ED would increase with increased age of the child	ANOVAs	None	**SO:** $F(2,148) = 6.16$, $p < .01$. Tukey's post hoc: 5-year-olds significantly lower SO than 6 and 7-year-olds **TI:** $F(2,148) = 5.81$, $p < .01$. Tukey's post hoc: 5-year-olds significantly lower TI than 7-year-olds **BD:** $F(2,148) = 0.20$, $p = .82$ **ED:** $F(2,148) = 0.37$, $p = .69$	Supported for SO and TI. Not supported for BD or ED.
H2: Mothers in the NIC would be less likely to reduce the number of negative body attributes reported from the individual mirror exercise to the joint mirror exercise than mothers in the PROC	ANOVA, independent sample *t*-test using change scores	Mother's negative body attributes reported during the individual mirror exercise	**ANOVA:** $F(1, 148) = 16.89$, $p < .001$; mothers in positive responses only condition had significantly lower negative comments reported during joint mirror ***t*-test:** $t(149) = -8.45$, $p < .001$ mothers in positive responses only condition significantly reduced the number of negative comments reported from the individual to the joint mirror exercise more than mothers in the no instructions condition	Supported
H3: Mothers and	Bivariate	None	**Moms:** $r = 0.13$, $p = .12$	Not supported

daughters with higher BMIs would report more negative body attributes during the individual mirror exercise	Pearson *r* correlations		**Daughters:** $r = 0.15$, $p = .08$	
H4: Daughters whose mothers reported more positive body attributes during the joint mirror exercise would be more likely to report more positive body attributes during the joint mirror exercise than daughters whose mothers reported more negative body attributes	ANOVA	Daughters' positive body attributes reported during the individual mirror exposure exercise	$F(1,146) = 1.22$, $p = .27$	Not supported
H5: Daughters whose mothers reported more negative body attributes during the joint mirror exercise would be more likely to report negative body attributes during the joint mirror exercise than	ANOVA	Daughters' negative body attributes reported during the individual mirror exposure exercise	$F(1,146) = 89.24$, $p < .001$	Supported

daughters whose mothers reported more positive body attributes				
H6: Daughters whose mother's report higher levels of SO, TI, BD and ED were predicted to have higher levels of these same variables than daughters whose mother's report engaging in lower levels of these variables	Partial order correlations, ANOVAs	Mothers' age, BMI, education level, yearly income Daughters' age	**SO (SOQ):** r = -0.24, p < .01 **SO (OBCS):** r = -0.04, p > .05 **TI:** r = -0.24, p > .05 **BD:** r = 0.07, p > .05 **ED:** r = -0.02, p > .05 All ANOVAs were non-significant (all ps > .05)	Not supported
H7: Daughters with older sisters would be more likely to have higher levels of SO, TI, BD, and ED than daughters who do not have older sisters	Partial order correlations, independent samples *t*-tests	Daughters' age	**Correlations:** no significant associations for SO, TI, BD, or ED (all ps > .05) **Independent samples *t*-tests**: no significant differences (all ps > .05)	Not supported
H8: Daughters who engage in sporting extracurricular activities would be less likely to report experiencing SO, TI, BD, and ED than	Partial order correlations, MANOVA	Daughters' age	**Correlations:** no significant associations for SO, TI, BD or ED (all ps > .05) **MANOVA:** $F(28,409) = 1.11$, $p = .32$, Wilks's $\Lambda = 0.77$	Not supported

daughters who do not participate in sport-related extracurricular activities				
H9: Daughters who engage in more media consumption as reported by their mothers would be more likely to engage in higher levels of SO, TI, BD, and ED than daughters who engage in less media consumption	Partial order correlations, MANOVA	Daughters' age	**Correlations:** no significant associations for SO, TI, BD or ED (all ps > .05) **MANOVA:** $F(156,429) = 0.75$, $p = .98$, Wilks's $\Lambda = 0.38$	Not supported
H10: Daughters will select less conservative outfits for themselves to wear, while mothers will choose more conservative outfits for their daughters to wear	Mean comparisons, paired samples *t*-test	None	**Mean comparisons:** daughters preferred less conservative outfits (M = 3.13, SD = 1.43) than mothers (M = 3.87, SD = 1.24) **Paired samples *t*-test:** $t(150) = 4.69$, $p < .001$	Supported
H11: Daughters will indicate that their mothers would choose more conservative outfits for them to wear while mothers will indicate that their	Mean comparisons, paired samples *t*-test	None	**Daughters:** chose less conservative outfits ($M = 3.13$, $SD = 1.43$) compared to the outfit they thought that their mothers would want them to wear ($M = 3.74$, $SD = 1.63$). Paired sample t-test indicated	Supported for daughters Not supported for mothers

daughters would choose less conservative outfits for themselves to wear			that this difference was significant, t(150) = -4.08, p < .001 **Mothers**: believed that their daughters would choose a less conservative outfit (*M* = 3.76, *SD* = 1.61) compared to their own choice for their daughter to wear (*M* = 3.87, *SD* = 1.24). Paired samples t-test revealed that this difference was not significant, *t*(150) = 0.76, *p* = .45	
H12: Daughters who select less conservative outfits as the outfit they would most want to wear were predicted to have higher levels of SO, TI, BD, and ED	Partial order correlations, MANOVA	Daughters' age	**Correlations:** no significant associations for SO, TI, BD, or ED (all *p*s > .05) **MANOVA:** *F*(24,490) = 1.21, *p* = .23, Wilks's Λ = 0.88	Not supported

Note. SO = self-objectification; TI = thin-ideal internalization; BD = body dissatisfaction; ED = eating disorder symptoms.