

WHICH EATING DISORDER PREVENTION THEMES ARE MOST PERSUASIVE?  
INPUT FROM CLINICAL AND NON-CLINICAL SAMPLES.

NICOLE SUZANNE WITTON

A DISSERTATION SUBMITTED TO  
THE FACULTY OF GRADUATE STUDIES  
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF  
DOCTOR OF PHILOSOPHY

GRADUATE PROGRAM IN PSYCHOLOGY  
YORK UNIVERSITY  
TORONTO, ONTARIO  
SEPTEMBER 2013

© Nicole Witton, 2013

## Abstract

Eating disorder prevention programs have been shown to be an effective strategy in combating the development of disordered eating behaviours and attitudes in young women. However, such programs are typically broadband in their content and there is some research suggesting that eating disorder prevention programs directed at young women can have adverse effects. The current study examined adolescent responses to five specific prevention themes that are commonly used in prevention programs, in order to establish which themes were considered most persuasive (i.e., relevant, believable, and emotionally impactful), and had the greatest impact on behavioural intentions (i.e., intention to diet, intention to compare body). The prevention themes were evaluated by clinical participants (i.e., adolescents in treatment for diagnosed eating disorders) and non-clinical participants (i.e., university undergraduates with no current symptoms or history of eating disorders), and the responses of the two groups were compared. Group differences were found in overall persuasiveness ratings, such that clinical participants found the messages to be less persuasive overall than did non-clinical participants. Additionally, clinical participants reported no change in their behavioural intentions following exposure to the prevention themes, whereas non-clinical participants reported a lower intention to diet and make body comparisons after viewing the messages. It was unclear as to whether eating disorder status was exclusively responsible for these group differences, as participant age also appeared to contribute to our findings. The current research found differences in how adolescents respond to common eating disorder prevention messages, which has implications for future treatment and prevention initiatives.

## TABLE OF CONTENTS

Abstract .....	ii
Table of Contents .....	iii
List of Tables .....	v
List of Figures .....	vi
Introduction	
1. Etiology and prevalence of eating disorders in adolescence.....	1
2. Prevention of eating disorders in adolescence.....	5
3. Effectiveness of prevention programs.....	7
4. Target age for prevention programs.....	8
5. Universal versus selected prevention programs.....	9
6. Iatrogenic effects.....	11
7. Persuasion theories and eating disorder prevention.....	12
a. Cognitive dissonance theory.....	12
b. Elaboration likelihood model (ELM).....	15
8. Most important prevention themes.....	19
9. Adolescent perspectives.....	25
10. Objectives of the current study.....	26
11. Research hypotheses.....	27
Method.....	28
Results.....	35
Discussion.....	48

References.....	64
Appendix.....	84

## LIST OF TABLES

Table 1: Participant Age, BMI, Positive/Negative Affect, and Self-Esteem.....	37
Table 2: Participant Ethnicity, Relationship Status, and Prevention Exposure.....	38
Table 3: Mean Group Ratings of Five Prevention Messages.....	41
Table 4: Covariates Contributing to Group Differences in Persuasiveness Ratings.....	42
Table 5: Message Source – Participant Preferences.....	46
Table 6: Message Location – Participant Preferences.....	47

## LIST OF FIGURES

Figure 1: Group Differences in Ratings of Message Persuasiveness.....	39
---	----

## Introduction

### *Etiology and prevalence of eating disorders in adolescence.*

Adolescence is a period of life that is marked by considerable biological, social, and psychological change. During this time, an individual is also at greatest risk for developing an eating disorder (Bulik, 2002; Reijonen, Pratt, Patel, & Greydanus, 2003; Stice, Marti, Shaw, & Jaconis, 2009). A definitive model of eating disorder etiology has not been established in the research literature due to the vast number of factors that are thought to contribute to the development of these illnesses. Biological, familial, emotional, cognitive-behavioural, socio-cultural, and personality factors are all thought to play a role in causing disordered eating in adolescents (Keel, Leon, & Fulkerson, 2001). Stice and colleagues propose a dual pathway model of eating disorder etiology (Stice, 1994, 2001; Stice & Agras, 1998) in which they assert that sociocultural factors, namely the pressure to be thin from peers, family, and media, combine with the cognitive internalization of a “thin-body ideal” to create body dissatisfaction. In their model, body dissatisfaction then leads to dieting, increased negative affect, and ultimately, the development of eating disorder symptoms. Stice’s (2001) model is based primarily on research involving 13 to 18-year old adolescent girls; however, recent research extends the generalizability of this sociocultural framework to even younger girls. Evans, Tovee, Boothroyd, and Drewett (2013) have recently examined body dissatisfaction and eating attitudes in 7 to 11-year old adolescent girls, and provided further support for this sociocultural model of eating disorder etiology. Other researchers adopt a developmental, or ecological, perspective to explain how numerous etiological factors converge to create eating disorders in adolescents (Levine & Smolak, 2006; Pratt, Philips, Greydanus, & Patel, 2003; Smolak & Levine, 1996). Levine, Smolak, and Hayden (1994) argue that adolescent girls live in a culture of intense weight and

body-shape concern, and that body dissatisfaction frequently develops in this milieu. Body dissatisfaction has become a widespread phenomenon among adolescent girls (McVey, Tweed, & Blackmore, 2007; Bucchianeri, Arikian, Hannan, Eisenberg, & Neumark-Sztainer, 2013), and research has demonstrated that it is an independent predictor of eating disorders (Evans et al., 2013; Levine & Piran, 2004; Stice, 2002). Furthermore, body dissatisfaction has been established as being common in girls as young as 5 to 7 years of age (Evans et al., 2013; Davison, Markey, & Birch, 2003). Numerous other etiological risk factors for eating disorders are also identified in the literature, including the influence of thin-body media images, internalization of the thin ideal, parental pressure to be thin, peer teasing, low self-esteem, negative affect, excessive dieting and/or exercise, and body mass (McVey, Pepler, Davis, Flett, & Abdoell, 2002; Polivy & Herman, 2002; Polivy, Herman, Mills, & Wheeler, 2003; Reijonen et al., 2003; Witton, Leichner, Sandhu-Sahota, & Filipelli, 2007). How these risk factors interact and unfold is a focus of ongoing empirical investigation (Clark & Tiggemann, 2006; Nicholls & Viner, 2009; Shuttlesworth & Zotter, 2011).

The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) provides diagnostic criteria for the two main types of eating disorders: anorexia nervosa (AN) and bulimia nervosa (BN). It also includes the diagnosis of eating disorder not-otherwise-specified (EDNOS), which incorporates clinically significant symptoms that do not entirely fit the criteria for AN or BN (American Psychiatric Association, APA, 2006). The reported lifetime prevalence of AN ranges from 0.3% to 3.7% (APA, 2006; Garfinkel et al., 1996; Hoek, 2006; Stice, Marti, Shaw, & Jaconis, 2009; Walters & Kendler, 1995). Prevalence estimates for BN range from 1% to 4.2% (APA, 2006; Hoek, 2006; Garfinkel et al., 1995; Kendler, MacLean, Neale, Kessler, Heath, et al., 1991). Interestingly, studies investigating the prevalence of eating disorders as a

whole find that the majority of individuals suffering from these illnesses never enter the health care system for their eating disorder (Hoek, 2006). Furthermore, the research demonstrates that many individuals exhibit multiple symptoms of AN and BN without reaching full diagnostic criteria for an eating disorder (Shisslak, Crago, & Estes, 1995; Stice, Killen, Hayward, & Taylor, 1998; Stice, Marti, Shaw, & Jaconis, 2009). Thus, the aforementioned prevalence rates probably underestimate the actual occurrence of disordered eating. In a Canadian study, McVey, Tweed, and Blackmore (2004) surveyed 2279 girls between the ages of 10 and 14, and found that 29.3% of the girls were currently trying to lose weight, and that 10.5% scored above the clinical threshold for disordered eating. Likewise, research by Levine and Smolak (2006) estimated that the spectrum of “disordered eating” affects at least 10 to 15% of girls and young women between the ages of 9 and 19 years. In a longitudinal study, Stice and colleagues (2009) tracked 12 to 15-year old girls over eight years and found that by age 20, approximately 12% of the young women had experienced some form of eating disorder that was associated with marked functional impairment. Furthermore, an analysis by the Agency for Healthcare Research and Quality (U.S. Department of Health and Human Resources) revealed that from 1999 to 2006, hospitalizations for eating disorders increased most dramatically – 119% – for children younger than 12 years of age. Thus, the exact prevalence of eating disorders in younger adolescents and children (i.e., 7 to 12 years) has not been adequately documented in the research literature (APA, 2006). There is, however, consensus that eating disorder behaviours are typically first adopted sometime during adolescence (O’Dea & Abraham, 1999; Hoek, 2006; Polivy et al., 2003), and growing concern that these disorders are increasing in prevalence and occurring at even younger ages (Evans et al., 2013; Davison et al., 2003; Rosen, 2003). Empirical research also supports the growing recognition of disordered eating in adolescents around the world (Alonso, Rodriguez, Alonso,

Carretero, & Martin, 2005; Chisuwa & O’Dea, 2010; Eapen, Mabrouk, & Bin-Othman, 2006; Franko, Coen, Roehrig, Rodgers, Jenkins, et al., 2012; Musaiger, Al-Mannai, Tayyem, Al-Lalla, Ali, et al., 2013; Toro et al., 2006). For instance, Mousa, Al-Domi, Mashal, and Jibri (2010) examined the eating attitudes and behaviours of a sample of 432 adolescent girls in Amman, Jordan, and found that one third of participants revealed clinical-level eating disorders, including BN, binge eating disorder, and EDNOS. Likewise, Chang, Lin, and Wong (2011) examined the eating attitudes and behaviours of a sample of 1605 adolescent girls in Taichung City, Taiwan, and found clinically significant eating disorder symptoms in 17% of participants.

Eating disorders have the potential to progress into severe and enduring illnesses that are associated with significant psychosocial and physical consequences. Psychosocial consequences include impaired social functioning, social isolation, emotional distress, psychiatric comorbidity (e.g., depressive disorders, anxiety disorders, substance abuse), chronicity, and increased mental health utilization (APA, 2006; Keel, Mitchell, Miller, & Crow, 1999; Stice et al., 2009; Strober, Freeman, & Morrell, 1997). The physical sequelae of eating disorders may include amenorrhea, bradycardia, cardiac arrhythmias, dental erosion, esophageal tears, gastric rupture, and other serious physical side effects (APA, 2006). Of particular concern, AN carries the highest mortality rate of any psychological disorder (Harris & Barraclough, 1998; Birmingham, Su, Hlynsky, Goldner, & Gao, 2005). The mortality rate for women and girls with AN is more than 12 times as high as the mortality rate for young women in the general population, and research indicates that 5.9 to 7.4% of individuals with AN will eventually die from the disorder and related causes (Crow, Praus, & Thuras, 1999; Sullivan, 1995). Cases of early-onset AN are particularly concerning, as weight loss can be extremely rapid and lead to delayed growth, osteopenia, and osteoporosis (APA, 2006). “Early-onset” generally refers to adolescents who are

younger than 14 years of age (e.g., Reiersen & Houlihan, 2008; Peebles, Wilson, & Locke, 2006). Recent research also indicates that when left untreated, there is little evidence of spontaneous recovery from disordered eating in adolescence and into early adulthood (Mills, Polivy, McFarlane, & Crosby, 2012). Because of the high mortality rates and other long-term physical consequences associated with eating disorders, early detection and treatment of adolescents with eating disorder symptoms is essential (Reijonen et al., 2003; Borzekowski & Bayer, 2005). Even more important is the prevention of these illnesses before they take hold. Adolescents represent an age population at highest risk for developing eating disorders, and a population for which the ongoing goal is to establish effective methods of treatment and prevention (Johnston, 2004; Nicholls & Yi, 2012; Morris & Katzman, 2003; Wilksch & Wade, 2009). In sum, eating disorders are a stubborn and very serious group of mental disorders. Given the psychosocial and physiological complications of these disorders, as well as the challenges involved in their treatment, eating disorder prevention efforts have increased in recent years.

#### *Prevention of eating disorders in adolescence.*

The field of eating disorder prevention has made significant strides over the past ten years (Stice, Rohde, Shaw, & Gau, 2011; Wilksch & Wade, 2009). Several prevention programs have been offered through elementary schools and high schools with encouraging results. Wade, Davidson, and O’Dea (2003) conducted and evaluated a school-based eating disorder prevention program in which adolescents were randomly assigned to either a control condition or one of two interventions – a media literacy program or a self-esteem program. The study revealed that the media literacy program was significantly more effective at reducing eating disorder risk factors than was the self-esteem program. In another study, McVey and colleagues (2007) evaluated an

eight-month, school-based prevention program involving the participation of 982 students and their teachers, parents, school administrators, and local health care professionals. The program was interactive and involved multiple forums, including public service announcements, poster and video presentations, a school play, nurse-led support groups, and parent training groups. Participants completed a series of baseline measures (e.g., examining body satisfaction, size acceptance, weight-related teasing, etc.), and repeated these measures immediately following the 8-month program. The prevention program successfully reduced adolescents' internalization of media ideals, and reduced disordered eating in female students. The program was also associated with fewer weight-loss behaviours among male and female students over time, though this effect was lost by the 6-month follow-up assessment. Wilksch and Wade (2009) conducted an 8-lesson media literacy program with 540 grade eight students. They found that participants in the media literacy group reported greater reductions in weight and shape concerns, dieting, body dissatisfaction, ineffectiveness, and depression than did participants in a control group who received regular classroom lessons. These group differences remained at both 6-month and 30-month follow-up assessments. Additionally, Wilksch (2010) noted that both high- and low-risk adolescents benefitted from the program. The aforementioned programs are examples of recent progress that has been made in the field of eating disorder prevention.

Researchers and clinicians have developed eating disorder prevention programs with the goal of thwarting the development of problematic attitudes and behaviours around eating, weight, and body image. However, prevention programs have focused on different methods of achieving this same goal. Some programs have included a psychoeducational approach, providing information about the causes of eating disorders and healthy weight control practices (e.g., Celio, Winzelberg, Wilfley, Eppstein-Herald, Springer, Dev, & Taylor, 2000), while others

have focused on reducing risk factors, such as internalization of the thin-body ideal, body dissatisfaction, and dieting (e.g., Stice, Trost, & Chase, 2002). Finally, some programs have aimed to increase protective factors, such as learning to critically analyze mass media, developing stress management skills, and/or improving self-esteem (e.g., Wade, Davidson, & O'Dea, 2003).

*Effectiveness of prevention programs.*

There is currently a demonstrated need for more powerful prevention programs, as the effect sizes found in current preventive studies tend to be small to moderate (Levine & Piran, 2004, Stice, Rohde, Shaw, & Gau, 2011; Thompson, Russell-Mayhew, & Saraceni, 2012; Wilksch, 2010). Three meta-analyses have evaluated prevention programs targeting adolescents (Fingeret, Warren, Cepeda-Benito, & Gleaves, 2006; Stice & Shaw, 2004; Stice, Shaw, & Marti, 2007). Stice and Shaw (2004) examined 51 eating disorder prevention studies and found small to medium overall effect sizes at program termination and follow-up ( $d = 0.05$  to  $0.38$ ). Fingeret and colleagues (2006) examined 46 eating disorder prevention studies and found small overall effect sizes at termination and follow-up ( $d = 0.13$  to  $0.21$ ). Finally, Stice, Shaw, and Marti (2007) examined 51 prevention programs, and although their results revealed significant heterogeneity of effect sizes, they found small average effect sizes at both program termination and follow-up ( $d = 0.10$  to  $0.18$ ). These combined meta-analyses provide strong support for the idea that current eating disorder prevention programs are producing positive results, but that there is a need to further develop, improve, and evaluate such programs with respect to their usefulness. For instance, the meta-analysis by Fingeret and colleagues (2006) indicated that “knowledge” was the outcome variable most successfully altered by the prevention programs they examined. However, an increase in participants’ knowledge did not necessarily reflect an

equal change in their attitudes or behaviours, as several of the other outcome variables (e.g., eating pathology, dieting, body dissatisfaction, thin-ideal internalization) revealed much lower effect sizes. Indeed, several studies have found that psychoeducation (i.e., increasing knowledge about eating disorders) alone does not appear to impact eating pathology or risk factors (Paxton et al., 2002; Stice, Mazotti, Weibel, & Agras, 2000; Stice, Shaw, & Marti, 2007; Varnado-Sullivan & Horton, 2006). Despite such findings, psychoeducation is an intuitive choice for school-based programs as it is considered the most acceptable (i.e., appropriate, fair, and reasonable) form of prevention by teachers and school administrators (Varnado-Sullivan & Horton, 2006), and has therefore continued to be a part of eating disorder prevention studies.

*Target age for prevention programs.*

The ideal age for participation in an eating disorder prevention program has been debated in the literature. Historically, prevention studies have targeted adolescents of different ages. For instance, Stice and Shaw's (2004) meta-analysis included prevention programs that were designed for individuals ranging from 10 to 19 years. In both their 2004 and 2007 meta-analyses, Stice and Shaw conclude that the ideal target age for eating disorder prevention programs is 15 years and older, given that the programs they examined revealed larger effect sizes for older adolescents. Other studies argue that prevention programs should be offered to adolescents younger than 15 years. Levine and Smolak (1996) have argued for the need to offer prevention programs at younger ages, in order to reach participants before the onset of puberty and before prevailing sociocultural pressures have been internalized. A study by Heinze, Wertheim, and Kashima (2000) found that adolescent girls in grade seven (mean age = 12.5 years) benefitted more from a preventative video intervention than did adolescent girls in grade ten (mean age = 15.8 years); the younger group demonstrated greater increases in their

knowledge of eating disorders, and greater increases in their intention to respond positively to weight gain during puberty. In a study examining the acceptability of eating disorder prevention programs, Varnado-Sullivan and Horton (2006) asked male and female undergraduate students about the ideal target age for prevention. Respondents indicated that prevention programs would be best suited to school-age children and adolescents (i.e., 11 to 14 years). Recent research also indicates that prevention programs can successfully target adolescents under the age of 15 (e.g., Wilksch & Wade, 2009; Wilksch, 2010). Despite continued debate over the ideal age (or age range) for prevention programs, it is generally agreed that adolescents are a population at high-risk for developing eating disorders and should therefore be the focus of ongoing preventive initiatives and effectiveness studies.

*Universal versus selected prevention programs.*

Another debate that has arisen in the field of eating disorder prevention is whether to use selected prevention programs (i.e., those delivered to high-risk participants only) or universal prevention programs (i.e., those delivered to both high and low-risk participants). The results of three meta-analyses indicate that selected programs provide the greatest benefits. Stice and colleagues' (2004, 2007) two meta-analyses revealed that selected prevention programs produced significantly larger intervention effects than did the universal programs. They also found that universal programs were more effective for specific sub-groups of high-risk participants (e.g., females, dieters, over 15 years of age) than they were for the full sample of participants. These two meta-analyses (2004, 2007) considered "universal programs" to be those that were delivered to all students in intact classrooms (i.e., classrooms without specific subgroups of students selected). Conversely, they considered "selected programs" to be those that included students based on one or more risk factors (e.g., females, dieters, gymnasts), or that

used recruitment strategies to implicitly screen participants (e.g., advertisements for a body acceptance intervention). Fingeret and colleagues (2006) also examined the risk status of program participants in their meta-analysis, using Gordon's (1983) classification system as their framework (i.e., universal, selective, and indicated). "Universal programs" referred to a community sample of participants not identified as being at-risk of developing an eating disorder, "selective programs" referred to groups whose risk was higher than average (e.g., female college students, gymnasts, ballet dancers), and "indicated programs" referred to groups that were identified as having minimal signs of an eating disorder (e.g., elevated body dissatisfaction, dieting, depressive symptoms). The results of their meta-analysis indicated that studies targeting participants at higher risk for developing an eating disorder (i.e., indicated or selective groups) produced greater benefits than those employing participants not identified as at-risk (i.e., universal group). Although these findings are consistent with research indicating that selected prevention programs are most effective, the authors noted that their "risk status" variable may have been confounded with age, as participants who were identified as high-risk tended to be older in age. Wilksch and colleagues (2009) argue that it is not surprising that selected prevention programs (i.e., those examining high-risk, college-aged females) produce more significant results, given the greater odds for statistical improvement. They further argue, in contrast to the above arguments for selective prevention, that there is a strong need for prevention research targeting low-risk, younger adolescents. Supporting this assertion, Wilksch (2010) examined the impact of a media literacy prevention program on 540 grade eight students and found that both high- and low-risk adolescents demonstrated significant reductions in body dissatisfaction, dieting, ineffectiveness, and depression. Additionally, these effects were maintained over the long-term follow-up (i.e., 2.5 years). Likewise, Raich, Portell, and Pelaez-

Fernandez (2010) examined the impact of a universal eating disorder prevention program on 349 secondary school students, taking into consideration five specific high-risk groups (i.e., early menarche, overweight, dieting, distorted attitudes to food, perceived pressure to be thin). Although they found greater effect sizes for the high-risk groups, all of their study participants demonstrated significant reductions in eating disorder risk factors following the intervention. Thus, recent research suggests that even girls who do not yet show signs of disordered eating can benefit from eating disorder prevention efforts. In sum, there is continued debate as to whether selected and/or universal prevention programs should be the focus of future research and intervention initiatives.

#### *Iatrogenic effects.*

Coinciding with the development of new and innovative prevention programs, concern over possible iatrogenic effects of these interventions has emerged. An iatrogenic effect refers to any unintentional harmful effect resulting from the intervention or advice of a health care professional. It is a term commonly used in prevention research where there is concern that prevention programs could have a detrimental impact on participants. The question has been raised whether well-intentioned eating disorder prevention strategies may “backfire” and actually increase the likelihood of eating disorder symptoms in some adolescents, particularly those who are at high-risk for developing eating disorders (e.g., Carter, Stewart, Dunn, & Fairburn, 1997; Mann, Nolen-Hoeksema, Huang, Burgard, Wright, et al., 1997). In light of such questions, it is imperative that the effects of conducting clinical interventions and research with vulnerable populations continue to be examined (Widom & Czaja, 2005). At present, however, no iatrogenic effects of eating disorder prevention programs have been clearly demonstrated in empirical research (Celio, Bryson, Killen, & Taylor, 2003; Fingeret et al., 2006; Murphy,

Edwards, Merrill, & Gidycz, 2011). Carter and colleagues (1997) designed an intervention for 46 adolescent girls, and found that dieting behaviours had increased six months following their participation in the program as compared to baseline. However, given that the study failed to include a control group, there was no way of knowing whether control participants would have shown the same, or an even greater prevalence in dieting at the six-month follow-up. Celio and colleagues (2003) asked 222 adolescent girls questions about risky weight control behaviours and attitudes to investigate whether the frequency of these behaviours and attitudes increased following exposure to these types of questions. They found the opposite – symptoms had decreased at 12-month follow up. Given that adolescent girls' weight control behaviours typically increase over time, the authors hypothesized that mere exposure to their research questions might have benefitted participants. Thus, even when eating disorder prevention strategies fail to reduce or prevent eating disorder symptoms, there is no reliable evidence demonstrating that they actually cause or worsen eating disorder symptoms.

*Persuasion theories and eating disorder prevention.*

Various social psychological theories can provide a framework for understanding the effects of eating disorder prevention messages on their audience. Two particular theories of persuasion have been applied to recent eating disorder prevention efforts: Cognitive Dissonance Theory (Festinger, 1957), and the Elaboration Likelihood Model (Petty & Cacioppo, 1986).

*Persuasion theory #1: Cognitive dissonance theory.*

Festinger's theory of cognitive dissonance asserts that individuals who possess incompatible or inconsistent cognitions will experience psychological discomfort, such that they will be motivated to alter their cognitions to produce greater consistency (Festinger, 1957). In an application of this theory to attitudes surrounding obesity, Ciao and Latner (2011) conducted a

randomized, controlled study examining the effectiveness of two interventions in reducing obesity stigmatization – a cognitive dissonance (CD) intervention, and a social consensus (SC) intervention. Participants completed a measure of negative attitudes toward obesity (the Antifat Attitudes Test, AFAT), and were given bogus feedback about their scores. In the CD condition, participants were told that their scores on the AFAT were discrepant from their stated values of kindness and equality. In the SC condition, participants were told that their AFAT scores were discrepant from their peers. Both interventions were compared to a control condition in which participants were told that their AFAT scores were consistent with their peers' scores and their stated values. After receiving feedback about their scores, participants completed the AFAT a second time (during a subsequent visit). Interestingly, the CD condition resulted in significantly greater reductions in obesity stigmatization than both the SC and control conditions, suggesting that dissonance-based interventions are an effective method of changing peoples' attitudes about obesity. Dissonance-based interventions, also known as "induced compliance" (O'Keefe, 2002), have been successfully employed to address other psychological and physical health concerns including chronic pain (Gilliam, Burns, Gagnon, Stanos, Matsuura, et al., 2012), binge drinking (McNally, Palfai, & Kahler, 2005), and unsafe sexual practices (Stone, Aronson, Crain, Winslow, & Fried, 1994).

Based on the demonstrated success of dissonance-based interventions in changing peoples' attitudes and behaviours, Stice and colleagues (2000) applied Festinger's theory to eating disorder prevention. They assert that dissonance-based interventions are an effective strategy for addressing one important and established risk factor for eating disorders: thin-ideal internalization (Stice, Mazotti, Weibel, & Agras, 2000; Stice, Shaw, Becker, & Rohde, 2008). They argue that when young women who place high value on the thin-body ideal are encouraged

to behave in a way that is contrary to thin-ideal internalization (i.e., take a counter-attitudinal stance) they will experience cognitive dissonance and therefore shift their attitude about the thin-body ideal. In a series of studies, Stice and colleagues demonstrated promising results using dissonance-based interventions for eating disorder prevention. Their interventions produced significant reductions in thin-ideal internalization and other putative risk factors for eating disorders such as body dissatisfaction, dieting, and negative affect (Stice, Chase, Stormer, & Appel, 2001; Stice, Trost, & Chase, 2003; Stice, Shaw, Burton, & Wade, 2006; Stice, Rohde, Shaw, & Gau, 2011). Another intervention by Stice, Rohde, Durant, and Shaw (2012) examined the impact of a dissonance-based intervention delivered over the Internet. They had 107 female college students with body image concerns critique the thin-ideal in both written and behavioural exercises. They found that the Internet dissonance-based intervention was equally as successful in reducing eating disorder risk factors as a regular group-based dissonance-based intervention, and significantly more successful than either psychoeducation or control conditions.

Dissonance-based interventions represent a promising area of research in the field of eating disorder prevention, offering multiple avenues for future research. An avenue of particular interest is the use of incentives offered to prevention program participants. It is imperative that future research pays close attention to incentives, as dissonance theory asserts that the amount of dissonance experienced depends centrally on the amount of incentive or reward that is offered for taking a counter-attitudinal stance (O'Keefe, 2002). In Stice and colleagues' Internet study (2012), participants were offered 30 dollars for completing a baseline assessment of body dissatisfaction. They were subsequently offered opportunities to earn points ("Body Project Bucks"), which could be used to purchase small prizes such as water bottles, coffee mugs, and t-shirts. It would be useful to determine whether offering different kinds (or

amounts) of incentives would lead to variations in the outcome of dissonance-based prevention programs.

Stice and colleagues focus on a specific eating disorder risk factor in their research using dissonance-based interventions: “internalization of the thin ideal.” However, other eating disorder risk factors (e.g., dieting, fat talk, peer teasing) have the potential to demonstrate significant results when integrated into dissonance-based interventions. For instance, adolescent girls who place high value on the benefits and acceptability of dieting might benefit from critiquing this practice in a fashion similar to critiquing the thin ideal. Further developing dissonance-based interventions to test a variety of prevention themes may lead to increasingly effective and enduring eating disorder prevention programs.

*Persuasion theory #2: Elaboration likelihood model.*

The second theoretical approach that provides a framework for understanding the effects of eating disorder prevention messages is Petty and Cacioppo’s Elaboration Likelihood Model (1986). This model is based on the belief that the success of persuasion depends on the degree to which an individual engages in elaboration, or “carefully thinks about issue-relevant information” (p. 7). Petty and Cacioppo (1986) describe both a “central route” and a “peripheral route” to persuasion. The central route involves high elaboration in which an individual carefully scrutinizes an argument, draws on previous knowledge and experience, and expends considerable mental effort. They argue that when the central route is engaged an individual may actively and effortfully alter his or her attitudinal stance. Furthermore, the emergent attitude will be robust and resistant to change. Because effortful information processing is not always possible, they argue that the peripheral route exists as an efficient alternative. This route involves significantly less cognitive effort (i.e., low elaboration), and more frequently relies on

simple associations, inferences, or heuristics. The resultant attitude change is therefore less resistant or robust.

Petty and Cacioppo (1986) suggest that a persuasive message contains multiple components including (a) message source (i.e., presenter), (b) message content, (c) message recipient(s), and (d) message channel (e.g., written, audiovisual). They further suggest that variability within these components can influence an individual's motivation or ability to elaborate. For example, "personal relevance" refers to message recipient(s), and indicates the degree to which they believe the information presented is pertinent to them. As self-relevance increases, people pay more careful attention to the information they receive and are more likely to use the central route to persuasion (Petty, Cacioppo, Strathman, & Priester, 2005). "Source attractiveness" refers to the message source, or presenter of the information, and can impact persuasion in a number of ways. The attractiveness of the presenter could act as a peripheral cue or heuristic (i.e., "attractiveness implies correctness"), serve as an argument (e.g., evidence for a beauty product), or influence the amount of elaboration (i.e., draw concentration toward or away from the persuasive message) (O'Keefe, 2002). It is therefore important to consider the different components of the Elaboration Likelihood Model when examining the persuasiveness of a particular message.

The Elaboration Likelihood Model has been used to conceptualize a range of prevention initiatives, including substance abuse (Stephens et al., 2009), smoking (Flynn, Worden, Bunn, Connolly, & Dorwaldt, 2011), and risky behaviour related to contracting HIV (Dinoff & Kowalski, 1999). Petty and Cacioppo's (1986) model has also been successfully utilized in the field of eating disorder prevention (Neimeyer & Guy, 1989; Paxton, Wertheim, Pilawski, Durkin, & Holt, 2002; Withers, Twigg, Wertheim, & Paxton, 2002). A study by Heinze and

colleagues (2000) examined whether changing the identity of the presenter (i.e., message source) would impact the responses of adolescent girls to a prevention video. Girls between the ages of 12 and 16 were assigned to one of four conditions in which they were informed that the presenter was (a) an expert, (b) a peer, (c) someone who had recovered from anorexia nervosa, or (d) no identity was given. They found that altering the identity of the presenter did not significantly impact participant knowledge, attitudes, or behaviours relating to disordered eating, which suggests that the characteristics of the message source were not an essential feature of the prevention program.

Sperry, Thompson, Roehrig, and Vandello (2005) examined whether “communicator weight” (i.e., weight of the presenter) would impact participant body dissatisfaction. They randomly assigned 217 college females with body dissatisfaction to one of three conditions (an underweight, average weight, or overweight presenter). They found that although their prevention program was effective in reducing body dissatisfaction, there were no significant differences among the three “communicator weight” conditions. Based on the tenets of the Elaboration Likelihood Model, Sperry and colleagues suggested that the prevention program had been high in personal relevance for study participants due to their pre-existing body dissatisfaction. Thus, the authors concluded that study participants had been motivated to use the central route to persuasion, and relied less on peripheral cues such as communicator weight. Alternatively, Sperry and colleagues suggested that their stimulus materials (i.e., pictures of the presenter) may have not have been salient enough. The images were computer-generated, and may not have depicted a realistic-looking, three-dimensional person, which impacted the effectiveness of the experimental manipulation. The authors concede that had a real person

delivered the message, either live or on video, communicator weight may have been more salient and powerful.

Withers and Wertheim (2004) have also applied principles from the Elaboration Likelihood Model to eating disorder prevention. They randomized 405 adolescent girls into one of three groups: (a) preventive video (“low elaboration”), (b) preventive video plus post-video activity (“high elaboration”), and (c) no intervention. They found that adolescents who watched the prevention video demonstrated significant improvements in knowledge, drive for thinness, and body dissatisfaction, compared to the adolescents receiving no intervention. However, there were no significant differences among the two prevention groups – completing an additional post-video activity (including a verbal discussion and written exercises) did not increase the effectiveness of the intervention. Based on the principles of the Elaboration Likelihood Model, the authors suggest that their attempt to experimentally increase elaboration was unsuccessful because the questions in the discussion group did not stimulate additional thinking (i.e., elaboration) beyond that which occurred with the video. Alternatively, the authors suggest that reviewing video content in a discussion group may not have been effective since, according to the Petty and Cacioppo’s model (1986), overly repetitious messages diminish the likelihood of positive attitude change.

One element of the Elaboration Likelihood Model that holds potential for future research into eating disorder prevention is message content. This refers to the specific topics, or themes, that are addressed in eating disorder prevention programs. Many of the prevention efforts in the eating disorder literature outline multi-component, comprehensive, full-scale approaches that have been developed with eating disorder prevention as their ultimate goal (e.g., McVey, Tweed, & Blackmore, 2007; Stice, Rohde, Shaw, & Marti, 2013). As is argued by Levine and Piran

(2004), however, further research is needed in order to identify the effective components or “active ingredients” of these multifaceted programs. In other words, it is important that future research studies evaluate the effectiveness of individual components of prevention programs (Heinze et al., 2000; Stice et al., 2008). One goal would be to isolate and evaluate specific prevention themes (e.g., avoiding peer pressure, importance of media literacy, dangers of dieting), rather than entire preventive programs. This would make prevention efforts more efficient and could help to avoid unhelpful or adverse effects of exposure to certain messages. Towards this goal, Loth and colleagues (2009) utilized semi-structured interviews to identify the specific themes that eating disorder patients found important and relevant to the role of families in preventing eating disorders. They found that eight specific “family themes” emerged as important and relevant to eating disorder prevention (e.g., modeling healthy eating and exercise, encouraging appropriate expression of feelings, building self-esteem beyond physical appearance, etc.).

Durkin, Paxton, and Wertheim (2005) have also explored the importance of specific prevention themes. They asked 120 adolescent girls with no known history of eating disorders to view nine body dissatisfaction prevention messages (plus one control message), and asked the girls to rate the persuasiveness of each message on the following dimensions: relevance, believability, emotional impact, intention to compare, and intention to diet. They found that the nine prevention themes varied in their persuasiveness, and identified three themes as particularly promising for future prevention initiatives and research: “Media images are not real”, “The ideal body changes through history and between cultures”, and “Don’t fall into the comparison trap”. Thus, as stated previously, future research efforts should similarly strive to isolate specific eating disorder prevention themes and examine their efficacy.

*Most important prevention themes.*

The following paragraphs outline the prevention themes revealed by Durkin and colleagues (2005), and describe the theoretical and empirical bases for their potential role in and importance to future eating disorder prevention initiatives.

(1) Don't be fooled by media images – they are not real.

The first theme pertains to the sociocultural pressure on women to be thin. The images found in the mass media represent a significant threat to women's physical and mental health, as they promulgate extreme thinness as the standard for female beauty and success. Furthermore, while the obesity rates have steadily increased in Western society, the ideal woman depicted in the media has become thinner and thinner, making it increasingly difficult, if not impossible, for most women to attain (Kilbourne, 1999; Owen & Laurel-Seller, 2000; Sypeck, Gray, & Ahrens, 2004). A large body of research evidence indicates that magazines, television, the Internet, and other forms of mass media play a unique role in the etiology and maintenance of eating disorders (e.g., Bair, Kelly, Serdar, & Mazzeo, 2012; Borzekowski & Bayer, 2005; Durkin, Paxton, & Sorbello, 2007; Fernandez & Pritchard, 2012; Grabe, Ward, & Hyde, 2008; Groesz, Levine, & Murnen, 2002; Hausenblas, Campbell, Menzel, Doughty, Levine, et al., 2013; Hawkins, Richards, Granley, & Stein, 2004; Thompson & Heinberg, 1999; Stice, Schupak-Neuberg, Shaw, & Stein, 1994). One of the most reliable effects of exposure to media images among women is a reduction in the perceived "ideal" body size for oneself (Mills, Polivy, Herman, & Tiggemann, 2002). Prevention research has therefore examined the role of media literacy education (including media activism and advocacy) in the development of eating disorder prevention programs (Piran, Levine, & Irving, 2000). Media literacy represents a promising approach to eating disorder prevention that draws on cognitive-behaviour theory and inoculation theory

(Compton & Pfau, 2005; Wilksch, Tiggemann, & Wade, 2006). It aims to reduce risk factors for eating disorders by increasing adolescents' awareness of the impact of mass media, building their skills to critically evaluate media content, and enabling them to create their own healthy messages using mass media. The assumption is that adolescents can be "inoculated" with strategies to manage the pressure exerted by mass media to look a certain way, and will therefore be less susceptible to the adverse effects of exposure to media-idealized body images (Durkin et al., 2005).

(2) Steer clear of the comparison trap.

Another theme that has emerged in the field of eating disorder prevention is social comparison. Festinger's Social Comparison Theory (1954) states that individuals are motivated to self-evaluate, and that they do so by comparing themselves with others. Research has indicated that young women frequently make appearance-related social comparisons (Leahy, Crowther, & Mickelson, 2007), and that these comparisons are typically "upward social comparisons", as women tend to compare themselves to individuals they perceive to be thinner and/or more attractive than themselves (Strahan, Wilson, Cressman, & Buote, 2006). Festinger's (1954) theory also suggests that young women will compare themselves to those with whom they are most similar (e.g., peers), versus those they perceive as dissimilar (e.g., fashion models). However, research indicates that this is not the case – it seems that young women compare themselves to both their peers (Franzoi & Klaiber, 2007; Strahan et al., 2006), and the thin-body images portrayed in mass media (e.g., Fitzsimmons-Craft, 2011; Tiggemann & McGill, 2004; Tiggemann & Slater, 2004), and that both types of comparisons result in negative consequences (McLean, Paxton, & Wertheim, 2013). A recent prospective study by Ferguson, Muñoz, Garza, and Galindo (2013) examined the influence of peers, television, and social media on the body

satisfaction, eating disorder symptoms, and life satisfaction of 237 adolescent girls. Their results revealed that peer competition was the strongest predictor of the negative outcomes from social comparison, rather than television or social media exposure, suggesting that appearance-comparisons with “similar others” can be equally as damaging as comparisons with mass media images. Appearance-related comparisons can be particularly damaging for adolescents with already low self-esteem (Corning, Krumm, & Smitham, 2006), therefore eating disorder prevention programs have endeavored to convey the dangers of body comparison by addressing the cognitive traps that occur (Paxton, 1996). For instance, young women tend to compare areas of their bodies that they do not like, and will typically compare themselves to others whom they believe look better in these areas (Durkin et al., 2005). The supposition is that by dissuading such comparisons, adolescents’ self-esteem will be better protected and they will be less likely to develop further risk factors and/or disordered eating.

(3) The ideal body shape and size change through history and between cultures.

Another theme that has emerged in the field of eating disorder prevention pertains to cultural and historical differences in what is perceived as the “ideal” body weight and shape. For example, research has demonstrated how people of different cultures can perceive the exact same body weight and shape very differently. Swami and Tovée (2007) examined perceptions of the female body in both indigenous (i.e., Sámi) and urban (i.e., Finnish, British) Europeans. They showed participants pictures of women with known body mass indices (BMI) and waist-to-hip ratios (WHR), and found that the Sámi participants preferred women of greater weight (i.e., BMI) and were more accepting of larger shape (i.e., WHR) than either the Finnish or British participants. Additionally, Swami, Neto, Tovée, and Furnham (2007) examined preferences for weight and shape among three urban European cities: London (England), Barcelona (Spain), and

Porto (Portugal), and found that although body weight (i.e., slimness) was an important predictor of perceived attractiveness in all three cities, there were significant differences in body shape preferences. Participants in the Mediterranean cities (Barcelona and Porto) demonstrated a significantly greater preference for a more curvaceous body shape (i.e., larger buttocks and wider hips) than the British participants (London). Swami and colleagues describe how local cultural and historical factors (e.g., local diet, degree of gender-role stereotyping, acculturation to Anglo-American ideals) in these Mediterranean countries may give rise to a different idealized body than their British counterparts. In a study examining body weight across history, Sypeck, Gray, and Ahrens (2004) analyzed the body size of cover models appearing on four popular fashion magazines between 1959 and 1999. They found that body weight for the fashion models decreased significantly during the 1980s and 1990s, and that there was a dramatic increase in the frequency with which the magazines depicted the entire bodies of the models from the 1960s to the 1990s. The authors suggest that the increasingly thin-body images and striking increase in full-body portrayals represent an increase in the value placed on the thin ideal for young women, a change that is concurrent with the increase in disordered eating patterns. Eating disorder prevention programs have attempted to convey a broader cultural and historical perspective to adolescent girls, with the intention of emphasizing the subjectivity in so-called “ideal” body types and of decreasing the impact of sociocultural pressures to conform to contemporary body ideals (Durkin et al., 2005).

(4) Fat talk has negative consequences.

The term “fat talk” was originally proposed by Nichter and Vuckovic (1994), and has been used to describe conversations with family or friends involving negative or self-disparaging statements about one’s body weight (e.g., “I’m so fat), body shape (e.g., “my thighs are too

big”), and/or eating behaviour (“I shouldn’t be eating this”) (Ousley, Cordero, & White, 2008; Warren, Holland, Billings, & Parker, 2012). There is growing empirical evidence that young women routinely engage in fat talk, and that it has become a social expectation for them to speak negatively about their weight and shape (Barwick, Bazzini, Martz, Rocheleau, & Curtin, 2012; Britton, Martz, Bazzini, Curtin, & LeaShomb, 2006). Research has also demonstrated that fat talk leads to body dissatisfaction (Salk & Engeln-Maddox, 2011; Stice, Maxfield, & Wells, 2003), an independent predictor of disordered eating (Evans et al., 2013). For example, Stice and colleagues (2003) examined the responses of 120 young women to a female confederate who (a) spoke about how fat she felt and her intention to lose weight, or (b) discussed a neutral topic (i.e., academics, plans for the weekend). They found that the young women exposed to fat talk reported increased body dissatisfaction, whereas those in the neutral condition did not. It has been suggested that fat talk reflects the idealization of thinness and appearance-related values that are ubiquitous in Western culture, and that body dissatisfaction and drive for thinness are the inevitable results of such talk (Warren et al., 2012). Thus, prevention programs have endeavored to communicate the dangers of fat talk, and to provide adolescents with strategies to help avert discussions of this nature (Arroyo & Harwood, 2012; Durkin et al., 2005).

(5) Thinness does not determine how attractive or valuable you are.

As adolescents attempt to navigate the path to adulthood, they are exposed to mass media, peer and friendship groups, and the home and family milieu, all on a daily basis. These are three central areas from which adolescents draw information in order to develop their beliefs and value systems (Levine, Smolak, & Hayden, 1994; Paxon, Norris, Wertheim, Durkin, & Anderson, 2005; Rodgers, Paxton, & Chabrol, 2009). As a result of these influences, many adolescents learn to value themselves primarily for their appearance, and to place great

importance on their body size and shape (Stice, 2002; Strahan, Buote, & Wilson, 2012), which puts them at increased risk for developing an eating disorder (Neumark-Sztainer, Bauer, Friend, Hannan, Story, et al., 2010). Thus, prevention programs have challenged adolescents' unhealthy beliefs about weight and shape, including exercises for understanding and improving body image (Durkin et al., 2005; Levine & Piran, 2004), and have also encouraged adolescents to discover other ways of defining themselves (i.e., through personality, sports, music, technology, intellect, relationships, etc.). The goal of such programs is to prevent adolescents from viewing a causal relationship between thinness and attractiveness/value.

*Adolescent perspectives.*

An additional goal of future research efforts in the field of eating disorder prevention should be to explore the viewpoints of adolescents. In an article addressing body image and eating disorder prevention, Levine and Piran (2004) suggest that, "... considering the preliminary stage of this research, even exploratory qualitative inquiries with program participants about what they found most helpful may prove useful" (p.68). Likewise, Varnado-Sullivan and Horton (2006) assert that, "given the difficulties in implementation that some researchers have encountered, examining opinions about prevention and the acceptability of programs would provide useful information for researchers when planning or conducting programs" (p.689). Along these lines, it is essential that researchers and clinicians ask the following question: "What do adolescents believe is most important to include in eating disorder prevention efforts?" Young girls and women have the potential to offer unique insight into preventive clinical and research methods (Paxton, Wertheim, Pilawski, Durkin, & Holt, 2002; Durkin et al., 2005).

In addition to community samples of adolescents, those with clinically diagnosed eating disorders have the potential to provide unique information to clinicians and researchers (Witton

et al., 2007; Loth, Neumark-Sztainer, & Croll, 2009; Noordenbos, 2011). Adolescents with clinically diagnosed eating disorders may provide invaluable insight into which prevention themes have the greatest psychological impact on adolescents developing, or at high-risk of developing, eating disorders. There are several similarities among adolescents who have been identified as higher-risk and those with full-blown eating disorders – both groups present with correlates of disordered eating (e.g., body dissatisfaction, dietary restriction, low self-esteem, internalization of the thin-body ideal), and both groups have the possibility of slipping further into their symptoms. Adolescents with diagnosed eating disorders, however, may have additional experience with, or insight into, these signs and symptoms given their increased severity and/or chronicity. Furthermore, individuals who are in treatment for eating disorders may be particularly aware of their problematic attitudes and behaviours, and therefore able to provide valuable assistance with developing and improving targeted prevention efforts.

*Objectives of the current study.*

As reviewed above, the combined literature to date suggests that eating disorder prevention programs are an important and effective strategy in combating the development of disordered eating in young women. However, the content of prevention programs varies, and there are limited empirical data as to which prevention messages, or themes, are most effective in dissuading eating disorder behaviours and attitudes. To date, no study has examined the reactions of eating disorder patients to specific prevention messages. Yet these individuals have first-hand experience with the symptoms of eating disorders and may therefore provide invaluable insight into the appropriateness and effectiveness of different prevention themes. The purpose of this study was to conduct a detailed analysis of the reactions of adolescent girls with and without an eating disorder to messages/themes that are typically used in prevention

programs. The aim of exposing individuals to eating disorder prevention messages was not to avert the development of symptoms, but to generate new theoretical insight for improving eating disorder prevention. The current study aimed to answer several research questions arising from the literature: Which prevention themes do adolescents think are most persuasive and why? Are the impressions and evaluations of prevention messages among adolescents with an eating disorder similar to those of adolescents without an eating disorder? What individual factors besides eating disorder symptoms moderate adolescents' reactions to prevention messages (e.g., mood, self-esteem)? Are there differences in how the two groups (girls with and without an eating disorder) perceive the appearance and credibility of the message presenter? And, finally, how do ratings of the presenter relate to ratings of message persuasiveness?

*Research hypotheses.*

Given the exploratory nature of this study, our hypotheses were conservative. First, it was hypothesized that adolescent girls both with and without an eating disorder would rate certain prevention messages as more effective than others, and that the results would be consistent with themes deemed to be the most impactful in previous research (i.e., Durkin et al., 2005). Second, based on previous research demonstrating that individuals with eating disorders have particular difficulty with negative affect and self-esteem (Espeset, Gulliksen, Nordbø, Skårderud, & Holte, 2012; Watson, Allen, Fursland, Byrne, & Nathan, 2012), it was hypothesized that adolescent girls with an eating disorder would report lower pre-existing mood and self-esteem scores than would those without an eating disorder. Third, it was predicted that adolescent girls with an eating disorder would rate prevention messages as less persuasive than would girls without an eating disorder. This hypothesis was based on the previous finding that adolescent girls with greater levels of dieting, body dissatisfaction, and negative affect provide

lower ratings of message persuasiveness than their counterparts (Paxton et al., 2002). Although Stice and colleagues (2007) describe a body of research that indicates the opposite (that adolescents with greater levels of disordered eating will respond more *positively* to prevention efforts), these findings pertain to the effects of full-scale prevention programs rather than adolescent ratings of specific prevention themes. Finally, consistent with research that has demonstrated that both mood and self-esteem influence participants' responses to persuasive messages (i.e., Paxton et al., 2002), we predicted that differences in mood and self-esteem would moderate group differences in persuasiveness ratings. Specifically, we predicted that adolescents with lower mood and self-esteem would rate the prevention messages as less persuasive than adolescents reporting higher mood and self-esteem.

One aspect of prevention program research that was mentioned previously and is important to investigate is how participants respond to the presenter of the information. Although Heinze and colleagues (2000) did not find any influence of presenter characteristics on their prevention outcome, we were interested in examining participants' direct ratings of the presenter (i.e., her credibility, attractiveness, size/shape). We were also interested in whether perceptions of the presenter affected participants' ratings of the prevention messages. Consistent with Durkin et al. (2005), the current study delivered eating disorder prevention messages in video format and with a real, female presenter (versus a computer generated image, as in Sperry and colleagues' 2005 study). Given that previous research has shown that chronic dieters are more critical of other women's weight than are non-dieters (Vella-Zarb & Mills, 2011), we predicted that girls with an eating disorder would likewise be more critical of the presenter (i.e., rate her as less attractive, less credible, and as having a larger body size/shape) than would girls

without an eating disorder. No specific hypotheses were made regarding how presenter ratings would relate (or not) to ratings of message persuasiveness.

## Method

### *Participants*

Two non-overlapping groups of participants were recruited for this study. In total, 98 adolescents participated in the current study. Both groups consisted exclusively of female adolescents. The non-clinical (NC) group was comprised of 76 undergraduate university students. Participants between the ages of 16 (the lowest age for the individual to give sole informed consent) and 19 were recruited through the undergraduate research participant pool from York University's Psychology Department in Toronto, Canada. Participants were pre-screened for signs and/or symptoms of an eating disorder at the beginning of the academic year when they registered for their online research participation account, using the following item: "Have you ever been diagnosed with or suspected that you have an eating disorder?" Undergraduate students who were in the desired age range and who indicated no current or past eating disorder were informed of the current study and offered participation over the following four months. There were no other inclusion criteria. As a result of significant missing data due to a printing error, the first ten participants were excluded from analyses. One participant was excluded upon indicating that she had recently been assessed for an eating disorder. Two participants were excluded due to age restrictions by the time they completed the study. Thus, a total of 63 participants were included in the final analyses. The mean age for this group was 18.5 years ( $SD = 0.5$ ).

A second group of participants, the clinical (CL) group, consisted of 46 adolescents with a diagnosed eating disorder. Participants were recruited through the inpatient Eating Disorders

Program (EDP) at Children's and Women's Hospital in Vancouver, Canada, which typically serves children and adolescents up to 19 years of age. Participants had been diagnosed with anorexia nervosa ( $n = 28$ ), bulimia nervosa ( $n = 1$ ), eating disorder not-otherwise-specified ( $n = 1$ ), or some combination of these diagnoses ( $n = 3$ ). Two participants declined to specify their diagnosis, but in order to be eligible for the hospital treatment would have met some eating disorder diagnosis. The study was described to patients by one of the nurses within the EDP, and participation was offered as part of the daily program of activities. It was made clear to all patients and parents that their treatment in the program would in no way be compromised by their decision to participate (or not) in the study. Only those patients who were considered to be both physically and psychologically stable (as assessed by an EDP pediatrician and psychiatrist/psychologist) were eligible to participate in the study. Of the 46 participants recruited for the study, six individuals were excluded from the analyses because they were under the age of 12 – deemed to be the minimum age of inclusion in the clinical group – and five were excluded based on significant missing data (i.e., questionnaire items which were determined to be missing at random). Thus, 35 eating disorder patients were included in the final analyses. The mean age for this group was 14.8 years ( $SD = 1.5$ ).

It was originally intended that the clinical group would include individuals between 13 and 19 years of age, and that the non-clinical group would include individuals between 16 and 19 years of age. Sixteen years was the anticipated minimum possible age for the non-clinical group due to the fact that we used an undergraduate student sample for convenience. In reality, and due to what we believe to be random factors, we ended up recruiting clinical participants from the low end of their age range, and non-clinical participants from the high end of their age range. Given the challenges inherent in recruiting young people with an eating disorder diagnosis, and

our uncertainty as to whether further data collection would result in age-matched groups, we decided to close data collection after a period of two years. Implications of the age difference between the groups are addressed in the Results and Discussion sections.

### *Materials*

Messages Videotape. A series of five different eating disorder prevention messages were selected for the current study, each message adapted with permission from Durkin, Paxton, and Wertheim (2005). These persuasive messages were translated into video format, and included as many details as possible from the original video by Durkin and colleagues (see Appendix D, video scripts). The presenter was a Caucasian female in her early thirties with brown hair and blue eyes. She was wearing an unadorned brown sweater, and presented the messages in front of a subtle grey background. She spoke in an animated manner, with the goal of focusing participants' attention on the content of the messages rather than on her environment or appearance. The main difference between the current video and the original was the voice accent of the presenter (e.g., Canadian versus Australian). A committee consisting of eight health care professionals (i.e., 3 nurses, 2 psychologists, 1 pediatrician, 1 psychiatrist, and 1 social worker) within the Eating Disorders Program at Children's and Women's Hospital evaluated the prevention messages in video format. They reached consensus that all five messages were clear and comprehensible, and that the presenter came across as both attractive and credible.

Message Evaluation Questionnaire. Participants' ratings of the eating disorder prevention messages were obtained using the same questionnaire as Durkin, Paxton and colleagues (2002; 2005) (see Appendix E). It contained 11 items in total, each rated on a five-point Likert Scale in which a high score indicated a positive response. The first nine items focused on three specific persuasiveness themes (subscales): relevance, believability, and

emotional impact. The two final items pertained to behavioural intention: intention to compare and intention to diet. Questionnaire items were established by Paxton and colleagues (2002) using principal component analysis (PCA), and adequate internal consistency was demonstrated on the relevance ( $\alpha = .75$ ), believability ( $\alpha = .69$ ), and emotional impact ( $\alpha = .87$ ) subscales. In the current study, high internal consistency was demonstrated for the relevance ( $\alpha = .87$ ), believability ( $\alpha = .90$ ), and emotional impact ( $\alpha = .94$ ) subscales. Furthermore, face validity was assumed for all 11 items, given that each item explicitly requested participants' opinions of the prevention messages.

Presenter Evaluation. Study participants were also given a questionnaire asking them to rate the presenter of the videos on three different dimensions: attractiveness, credibility, and body size/shape (see Appendix F). There were nine items in total, the first four of which were rated on a five-point Likert Scale with a high score indicating a negative response. The fifth item contained a visual analog scale, which asked participants to rate the presenter's body size/shape along a continuum from "small/thin" to "big/curvy". The remaining four items were multiple-choice and pertained to future possibilities for presenting eating disorder prevention messages (e.g., possible presenters: medical professional, mental health professional, parent, teacher, peer, or recovered eating disorder patient). Face validity was also assumed for this questionnaire, as it explicitly requested that participants evaluate the presenter (or potential presenters).

Demographic Questionnaire. Two versions of a demographic questionnaire were devised for the CL and NC groups (see Appendices G and H), in order to examine self-reported variables such as age, Body Mass Index (BMI:  $\text{kg}/\text{m}^2$ ), eating disorder diagnosis (CL group only), ethnicity, and relationship status. BMI was calculated based on participants' self-reported weight and height. Thus, it is possible that our BMI values were not entirely accurate, as

previous research has demonstrated that individuals with eating disorders tend to slightly overestimate (AN) or underestimate (BN) their weight, and individuals without eating disorders tend to underestimate their weight (McCabe, McFarlane, Polivy, & Olmsted, 2001). Although it would have been preferable to obtain objective heights and weights (i.e., more accurate BMIs), CL participants were not measured/weighed in order to maintain the integrity of their course of treatment, and NC participants were not measured/weighed due to the time commitment required to assess multiple participants in a single one-hour testing session.

Mood. The Positive and Negative Affect Schedule (PANAS-X, see Appendix I) was used to measure participants' state affect, or mood, prior to watching the videos. Study participants were asked to rate 60 words or phrases on a 5-point Likert Scale ranging from zero ("Very Slightly/Not at all") to five ("Extremely"), in order to indicate the extent to which they felt this way in the moment. The PANAS-X is comprised of two distinct subscales: positive affect and negative affect. This measure has demonstrated solid psychometric properties with both adult and adolescent populations (Ciarrochi, Heaven, & Davies, 2007; Watson & Clark, 1994). In the current study, internal consistency was high for both the positive affect ( $\alpha = .90$ ) and negative affect ( $\alpha = .89$ ) subscales.

Self-esteem. The State Self-Esteem Scale (SSES, see Appendix J), also known as the "Current Thoughts" scale, was used to measure participants' self-esteem prior to watching the videos. The SSES contains three subscales (appearance, performance, and social), and a total of 20 items using a scale from one ("not at all") to five ("extremely"), to indicate the degree to which each statement was true for them in the moment. This measure has demonstrated good psychometric properties with both adolescent and adult populations (Heatherton & Polivy, 1991; Linton & Marriott, 1996). In the current study, internal consistency was high for the overall

scale ( $\alpha = .95$ ), and the appearance ( $\alpha = .92$ ), performance ( $\alpha = .86$ ), and social ( $\alpha = .90$ ) subscales.

### *Procedure*

The current study was reviewed and approved by two separate ethics review boards. Research approval for our NC sample was obtained from the Human Participants Review Sub-Committee, at York University's Office of Research Ethics. Approval for our CL sample was obtained from the Research Ethics Board at Children's and Women's Hospital, which operates through the University of British Columbia.

The experimental procedure was almost identical for the CL and NC groups, the only differences being the size and location of the testing rooms, and the version of demographic questionnaire that was used. All participants were tested either individually or in small groups, depending on the participant's schedule. The number of individuals present in each testing session ranged from one to six. Upon arrival at the test room, participants were asked to read and sign an informed consent/assent form describing the general purpose of the study, the tasks they would be asked to perform, information on confidentiality, and potential risks and benefits associated with participating in the study. Due to the vulnerable nature of our CL population and the young age of some potential participants, parent consent forms (see Appendix B) were required for all CL participants. In addition, CL participants completed their own assent form (see Appendix C) indicating their interest/intent to participate in the study.

Following the informed consent process, participants viewed a series of five videos with sound, each containing a 2-3 minute eating disorder prevention message. Each video was followed by an evaluation questionnaire asking participants to rate the video's message according to its relevance, believability, emotional impact, and overall persuasiveness (i.e.,

potential for eating disorder prevention). The five videos were presented in randomized order, and a complete session (viewing all five videos and completing the questionnaires) lasted no longer than 45 minutes.

Finally, a demographics questionnaire was provided to both the clinical and non-clinical participant groups, requesting information on descriptive variables such as age, ethnicity, relationship status, BMI, and any previous exposure to eating disorder prevention messages.

Following their participation, all study participants were given the opportunity to debrief with Dr. Ron Manley, a Registered Psychologist and expert in the psychological assessment and treatment of individuals with eating disorders.

#### *Data Analytic Plan*

Statistical consultation for the current study was sought prior to and following data collection, and statistical procedures were chosen based on a preliminary examination of the data set. Data were analyzed using a series of profile analyses, which examined the responses of CL and NC groups to the five eating disorder prevention messages, in order to determine whether between- or within-group differences existed. This type of analysis was chosen after statistical consultation, as it is less restrictive with respect to the types of research questions it answers. While a regular MANOVA would have combined all of the dependent variables (i.e., ratings of all five messages) and looked at overall group differences (a levels test), a profile analysis examined group differences *across* the five prevention messages. Thus, each profile analysis consisted of a (1) parallelism test, (2) levels test, and (3) flatness test. By looking for differences in the *patterns* of outcomes, this type of analysis provided more detailed information about the outcome variables. The alpha level for all significance testing was set at  $p < .05$ .

The assumptions of profile analysis, like any other multivariate analysis, include the following: independence of groups, multivariate normality, and homogeneity of variance-covariance matrices. Although significance tests for multivariate techniques are based on the multivariate normal distribution, profile analysis is robust to violations of normality as long as the sample size of the smallest group is greater than the number of dependent variables (Tabachnick & Fidell, 2001). This was the case in the current study, which revealed minor skewness or kurtosis in some of the outcome variables, but involved larger sample sizes than the number of dependent variables (i.e., CL group:  $n=35$ , dependent variables =5).

Homogeneity of variance-covariance was tested using Box's M test. However, because this test is sensitive to multivariate non-normality, an alpha level of .001 was set. In instances where Box's M test was significant, the two groups' variance-covariance matrices were visually inspected to assess their degree of discrepancy. The largest variance or covariance ratio was 3:1, which is still within acceptable limits (Hakstian, 1979; Tabachnick & Fidell, 2001), suggesting that Box's M test was affected by minor skewness or the kurtosis of some of the outcome variables rather than between-group heterogeneity of variances or covariances.

### *Role of the Candidate*

The doctoral candidate's role for the current study was multifaceted. It involved preparation of the initial study proposal, acquisition of institutional ethics approvals, recruitment of an actor to present the prevention messages, direction of video production, participant recruitment, collection of data from clinical and non-clinical participants, participant debriefings, data analysis, and preparation of the current paper. This role also involved collaboration and consultation with multiple health and mental health care professionals in the Eating Disorders Program at Children's and Women's Hospital in Vancouver.

## Results

### *Pre-Analysis Data Screening*

Each outcome measure was inspected for significant departures from normality and for outliers. A score was considered an outlier if it was three standard deviations above or below the sample mean. There were no univariate or multivariate outliers, and a visual examination of the dependent variable distributions revealed only minor skewness or kurtosis in some of the outcome variables. However, there were two variables in the NC group (Message 1 Believability, Weight/Shape Recall) and one in the CL group (Message 5 Overall Intention) that showed statistically significant departures from normality (kurtosis = 3.69, 2.02, and 4.27, respectively). The issue of kurtosis was addressed previously, in our discussion of the data analytic plan.

### *Sample Size*

Our initial goal was to obtain a minimum sample size of 64 participants for both the clinical and non-clinical groups, as Cohen (1992) suggests that this sample size is required in order to detect a medium effect size ( $ES = 0.50$ ) with power = .80 and  $\alpha = .05$ . However, due to unanticipated conditions (e.g., hospital renovation and the relocation of the Eating Disorders Program at Children's and Women's Hospital), and following statistical consultation, we decided to close data collection after obtaining 46 clinical and 76 non-clinical participants over the course of two and a half years. As a result of missing data and participant exclusions, our final group numbers were 35 clinical and 63 non-clinical participants.

### *Participant Characteristics*

A MANOVA was conducted to assess any CL and NC group differences in participant age, positive affect, negative affect, and self-esteem. As predicted, there were significant group

differences on this combined variable set,  $F(4, 90) = 91.47$ ,  $p < .001$ , and follow-up univariate tests revealed that the two groups differed on all four individual variables (all  $p$ 's  $< .001$ ). CL participants were significantly younger than NC participants, and reported lower mood (i.e., lower positive affect, higher negative affect) and lower self-esteem than did the NC group. Body Mass Index (BMI) was not included in the MANOVA due to missing data; approximately half of CL participants were not willing or able to report their weight. Instead, BMI was analyzed separately, and likewise, there were group differences in this variable,  $F(1,87) = 18.89$ ,  $p < .001$ , with CL participants having a significantly lower BMI than NC participants. The mean BMI for NC participants was 21.5, which was comparable to other research examining the average BMI for this population (e.g., Mills, Jadd, & Key, 2012). Due to missing data and the highly significant group difference in BMI, the current study did not calculate BMI percentiles. All of the above participant characteristics were considered continuous variables (see Table 1).

A large number of different ethnicities were reported by participants in the demographic questionnaire, therefore the "ethnicity" variable was recoded into three categories: Caucasian, Asian, and "other ethnicity." The vast majority of CL participants indicated that they were Caucasian, with only a few participants selecting Asian or "other." In contrast, one-third of the NC group indicated Caucasian (e.g., Canadian, European, white), one-third Asian (e.g., Vietnamese, Indian, Iranian), and one-third "other" (e.g., Somalian, Chinese-Danish, Afghan-German). A Pearson chi-square test revealed significant group differences in participant ethnicity,  $\chi^2(2, N = 97) = 28.22$ ,  $p < .001$ . Similar to ethnicity, "relationship status" also differed according to group. The vast majority of CL participants indicated that they were single, whereas only half of NC participants selected single, the other half indicating that they were dating or in a relationship. When asked about previous exposure to prevention messages or

programs, the two groups had similar overall responses – roughly half of participants in each group had previously been involved in some form of eating disorder prevention effort. These participant characteristics were considered categorical variables (see Table 2).

Table 1.

*Participant Age, BMI, Positive/Negative Affect, and Self-esteem (Continuous Variables)*

	<i>N</i>	Minimum	Maximum	<i>M</i>	<i>SD</i>
<b>Clinical Group</b>					
Age	33	12.0	18.0	14.8	1.5
BMI	25	14.5	23.5	17.9	2.2
Positive Affect	35	1.1	4.0	2.2	0.6
Negative Affect	35	1.0	4.4	2.4	1.0
Self-esteem	35	2.1	5.0	2.7	0.8
<b>Non-Clinical Group</b>					
Age	62	18.0	19.0	18.5	0.5
BMI	63	14.0	37.7	21.5	3.6
Positive Affect	63	1.2	5.0	3.1	0.8
Negative Affect	63	1.0	3.5	1.5	0.5
Self-Esteem	63	2.1	5.0	3.8	0.7

*Note.* There were significant differences between Clinical and Non-Clinical group means on all continuous variables (all  $p$ 's <.001).

Table 2.

*Participant Ethnicity, Relationship Status, and Prevention Exposure (Categorical Variables)*

	Clinical Group ( <i>n</i> = 35)	Non-Clinical Group ( <i>n</i> = 63)
Ethnicity		
Caucasian	86%	32%
Asian	6%	36%
Other	6%	32%
Relationship Status		
Single	89%	52%
Dating	11%	48%
Prevention Exposure		
Yes	49%	54%
No	37%	40%

*Covariates*

Mood, self-esteem, and ethnicity were included as covariates in our statistical analyses, as significant group differences were indicated by a MANOVA for mood and self-esteem, and a chi-square test for ethnicity (as described in the previous section). A range of scores was observed across both the CL and NC groups on these variables. Therefore it was important to examine the potential influence of these participant variables on our expected results by including them as covariates in our subsequent analyses. Mood was examined as two distinct covariates (i.e., “positive affect” and “negative affect”), in order to determine whether either of these two aspects of mood played a role in adolescents’ message ratings.

In contrast, age and BMI were not included as covariates, despite significant CL and NC group differences in these variables. Further analysis of the “age” variable is addressed in the

following section, and BMI was not included as a covariate due to the missing data noted above, which would have led to loss of power. There were therefore a total of four covariates added to all analyses described below: positive affect, negative affect, ethnicity, and self-esteem.

### *Age Variable*

Unexpectedly, our CL and NC groups revealed a significant difference in age. Furthermore, there was little overlap between the two groups on this variable. More specifically, there was one 18-year old in the CL group, and three participants who did not report their age. The maximum possible overlap between the CL and NC groups would therefore have been four 18-year old participants from each group. Due to such limited overlap between the two groups, age was considered invalid as a covariate. That is, the removal of variability in message ratings associated with age would have removed too much of the variability in message ratings associated with (CL and NC) group membership. Thus, instead of including age as a covariate in our analyses, the influence of age on message ratings was examined within the CL group exclusively (which ranged in age from 12 to 18 years), but not the NC group (which included only 18 and 19 year olds). The correlation between adolescents' age and their message ratings was examined using Spearman's correlation coefficient, and the results of this analysis were non-significant ( $\rho = .22, p = .11$ ), suggesting that, at least for the CL group of adolescents, age was not an important influence on message ratings.

### *Message Evaluations*

Profile Analysis 1: Overall Persuasiveness. For each message, an "overall persuasiveness" variable was created by computing the mean of relevance, believability, and emotional impact ratings. A profile analysis was then conducted to examine group differences in overall persuasiveness ratings of the five prevention messages. According to the levels test, the

mean overall persuasiveness of the prevention messages was rated higher by the NC group ( $M = 3.74$ ,  $SD = .06$ ) than by the CL group ( $M = 3.15$ ,  $SD = .08$ ),  $F(1,96) = 36.50$ ,  $p < .001$ .

Furthermore, this group difference persisted when ethnicity, mood, and self-esteem were added to the analysis as covariates,  $F(1,91) = 17.03$ ,  $p < .001$ . The parallelism test revealed no significant group interactions in message ratings,  $F(4,93) = 1.87$ ,  $p = .12$ , and likewise, the flatness test indicated no significant differences between individual message ratings,  $F(4,93) = .59$ ,  $p = .67$ , meaning that the CL and NC groups demonstrated the same overall pattern of responding to the five prevention messages (see Figure 1).

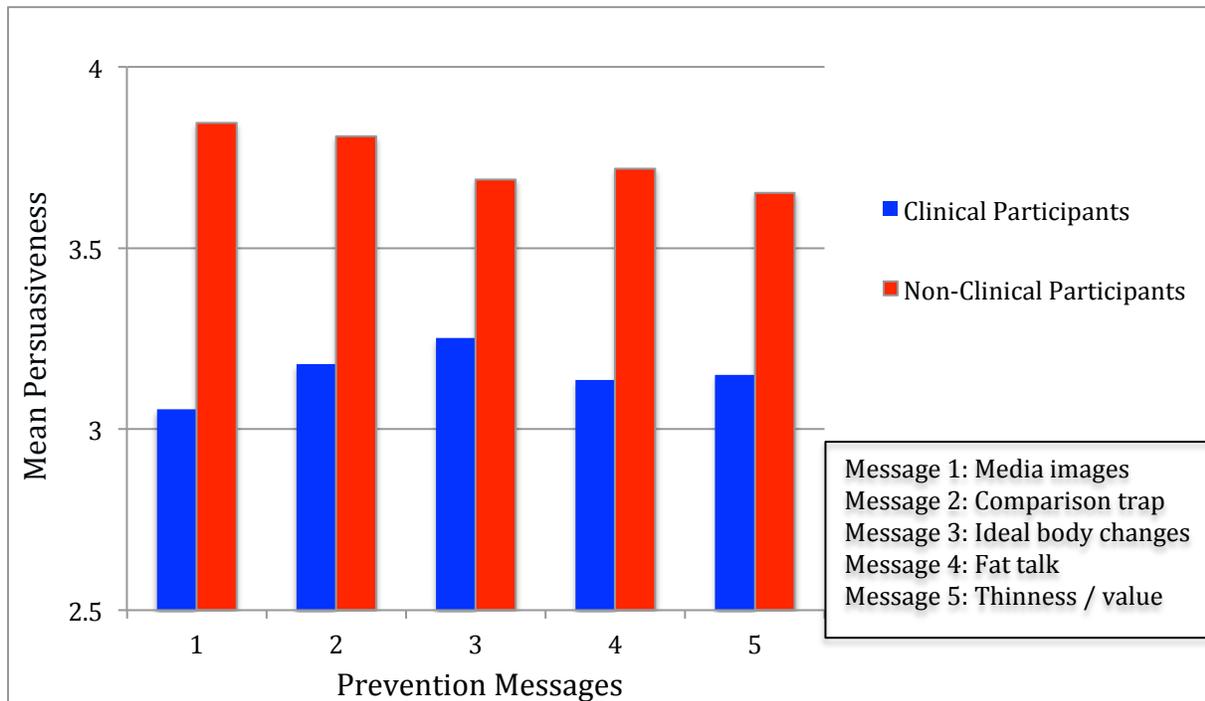
Profile Analysis 2: Overall Intention. An “overall behavioural intention” variable was also examined, which computed the mean of “intention to compare” and “intention to diet” ratings. As with overall persuasiveness, the overall intention variable revealed significant group differences on the levels test,  $F(1,96) = 23.36$ ,  $p < .001$ . Non-clinical participants ( $M = 3.54$ ,  $SD = .08$ ) indicated they were less likely to compare themselves to others or to diet after watching the prevention videos than CL participants ( $M = 2.94$ ,  $SD = .10$ ), and these differences were maintained when ethnicity, mood and self-esteem were added to the analysis as covariates,  $F(1,91) = 9.43$ ,  $p < .01$ . Tests of parallelism and flatness were non-significant,  $F(4,93) = 1.65$ ,  $p = .17$ ;  $F(4,93) = 1.38$ ,  $p = .25$ .

Profile Analysis 3: Per Dimension. In addition to examining group differences in overall persuasiveness and overall intention, we were also interested in group differences in ratings of the five separate dimensions. The “overall persuasiveness” and “overall intention” scores were broken down into their five dimensions – relevance, believability, emotional impact, intention to diet, and intention to compare – and a separate profile analysis was conducted for each one. Table 3 provides a list of mean values for both the clinical and non-clinical group on each

dimension. Because of the number of comparisons, the  $\alpha$  level was adjusted from  $p < .05$  to  $p < .05/5 = .01$ .

Figure 1.

*Group Differences in Ratings of Overall Persuasiveness*



**Relevance.** The levels test for relevance was significant,  $F(1,96) = 13.54, p < .001$ , with the NC group rating all five prevention messages as more relevant than the CL group. This effect remained significant when the four covariates (ethnicity, positive affect, negative affect, and self-esteem) were added to the analysis,  $F(1,91) = 11.56, p < .01$ . Parallelism and flatness tests were non-significant,  $F(4,93) = 2.22, p = .07$  and  $F(4,93) = 1.73, p = .15$ , respectively.

**Believability.** The flatness test for believability revealed a marginally significant effect,  $F(4,93) = 3.07, p = .02$ , indicating that as a whole, CL and NC participants found some messages more believable than others. However, this marginal effect was no longer significant when the four covariates were added to the analysis either individually or as a group,  $F(4,88) = .43, p = .79$ ,

suggesting that each covariate played a role in the believability ratings of the prevention messages. The levels test was found to be statistically significant, with the NC group rating all five prevention messages as more believable than did the CL group,  $F(1,96) = 42.38, p < .001$ , and these findings persisted when the four covariates were added to the analysis,  $F(1,91) = 13.02, p < .01$ . The parallelism test revealed no significant interaction between the CL and NC groups in their believability ratings,  $F(4,93) = .51, p = .73$ .

Table 3.

*Mean Group Ratings of Five Messages (Relevance, Believability, Emotional Impact, Intention to Diet, and Intention to Compare)*

	<i>M</i>	<i>SD</i>
Clinical Group ( <i>n</i> = 35)		
Relevance	2.74	.84
Believability	3.70	.76
Emotional Impact	2.98	.75
Intention to Diet	2.98	.67
Intention to Compare	2.89	.91
Non-Clinical Group ( <i>n</i> = 63)		
Relevance	3.20	.84
Believability	4.38	.55
Emotional Impact	3.61	.69
Intention to Diet	3.45	.75
Intention to Compare	3.64	.84

**Emotional Impact.** On the emotional impact dimension, the levels test was significant,  $F(1,96) = 28.81, p < .001$ . As with relevance and believability, NC participants rated all five messages as having a greater emotional impact than did the CL participants, and this effect remained significant with the four covariates added to the analysis,  $F(1,91) = 10.21, p < .01$ . Tests of parallelism and flatness were not significant,  $F(4,93) = 1.72, p = .15$  and  $F(4,93) = 2.39, p = .057$ , respectively.

**Intention to Diet.** The levels test was significant for intention to diet,  $F(1,96) = 14.20, p < .001$ ; NC participants indicated that they were less likely to diet after watching the videos, whereas CL participants indicated that they were not likely to change their intention to diet. This effect became marginally significant when the four covariates were added to the analysis,  $F(1,91) = 6.64, p = .01$ , and further analysis indicated that self-esteem was the covariate responsible for significant group differences in intention to diet. In order to determine which aspects of self-esteem were involved in the group effect, the three subscales of the self-esteem scale (appearance, performance, and social subscales) were covaried out separately, revealing that appearance and performance self-esteem (but not social self-esteem) played a role in the group differences in intention to diet. Tests of parallelism and flatness were non-significant,  $F(4,93) = .95, p = .44$  and  $F(4,93) = 2.20, p = .08$ , respectively.

**Intention to Compare.** Results from this profile analysis were consistent with those of the previous four dimensions – the levels test was significant,  $F(1,95) = 27.49, p < .001$ . NC participants reported that they were less likely to compare themselves to others after watching the videos, whereas CL participants indicated that they were not likely to change their intention to compare. Likewise, this effect remained significant when the four covariates were added to

the analysis,  $F(1,90) = 10.25, p < .01$ . Parallelism and flatness tests were not significant,  $F(4,92) = 1.82, p = .13$ .

### *Message Source*

Participants were also asked to evaluate the individual who presented the five persuasive messages. The presenter was evaluated according to her (a) attractiveness, (b) credibility, and (c) body size/shape. A MANOVA was conducted to determine whether CL and NC participants rated the presenter differently, and significant group differences were found on this variable set,  $F(5,92) = 5.20, p < .001$ . Follow-up univariate tests (with  $\alpha$  set at  $p < .05/3 = .02$ ) revealed no significant differences between CL and NC participants' ratings of presenter attractiveness,  $F(1,96) = 4.56, p = .04$ . However, there were significant group differences in ratings of presenter credibility,  $F(1,96) = 11.02, p = .001$ , and body size/shape,  $F(1,96) = 19.21, p < .001$ . NC participants found the presenter more credible ( $M = 2.30, SD = 1.07$ ) than did the CL participants ( $M = 3.09, SD = 1.20$ ), and also viewed the presenter as having a smaller body size/shape ( $M = 65.94, SD = 12.83$ ) than did CL participants ( $M = 78.90, SD = 15.98$ ).

The homogeneity of variance assumption was not met for the attractiveness and body size/shape ratings listed above; therefore, variances and sample sizes were inspected to determine the direction of the Behrens-Fisher problem. For the attractiveness measure, larger variance was associated with smaller sample size, which increased our confidence in the non-significant result. There was also larger variance associated with smaller sample size for the body size/shape variable, which could raise some doubt about the significant effect of group on body size/shape ratings. However, given that the effect was highly significant ( $p < .001$ ), it is likely that this result represented a true difference between the groups rather than a spurious finding.

In order to examine whether there was a relationship between presenter ratings and message ratings, Spearman's correlation coefficient was calculated for the three presenter variables (i.e., attractiveness, credibility, and body size/shape) in combination with overall message persuasiveness. For the CL group, Spearman's correlation coefficient was significant for overall message persuasiveness combined with attractiveness ( $\rho = -.35, p < .05$ ), and credibility ( $\rho = -.52, p < .01$ ). Likewise, for the NC group, significant negative correlations were found for overall message persuasiveness combined with attractiveness ( $\rho = -.22, p < .05$ ), and credibility ( $\rho = -.44, p < .01$ ). In other words, the more attractive and credible the participants found the presenter, the less persuasive they found the messages. No significant correlations were found between adolescents' ratings of message persuasiveness and presenter body size/shape.

Following their evaluation of the message presenter, CL and NC participants were asked to indicate their presenter preferences more generally – to select the characteristics that they believed would constitute the most persuasive future message source (e.g., female, medical professional, recovered eating disorder patient, etc.). Due to small cell sizes ( $n < 5$ ), a chi-square analysis could not be conducted; however, a descriptive table highlights participant preferences for message source (see Table 5).

Both CL and NC participants indicated a strong preference for female presenters (90% and 89%, respectively), and the most popular type of presenter selected by the two groups of participants was a peer who had previously recovered from an eating disorder (49% and 55%).

### *Message Recipients*

Study participants were also asked what they thought was the ideal target age for the eating disorder prevention messages. Over 90% of participants indicated an age range rather

than a single value; therefore the lowest value from each range was used as the ideal target age. This value was considered the “ideal initial target age” for future eating disorder prevention messages. A significant group difference was found, with the CL group indicating a lower ideal initial target age ( $M=10.24$ ,  $SD = 2.47$ ) than the NC group ( $M = 12.42$ ,  $SD = 2.11$ ),  $F(1,95) = 20.81$ ,  $p < .000$ .

Table 5.

*Message Source – Participant Preferences*

	Clinical Group ( $n = 35$ )	Non-Clinical Group ( $n = 63$ )
<b>Gender</b>		
Male	10	11
Female	90	89
<b>Qualifications</b>		
<b>(Adult)</b>		
Medical Professional	9	3
Mental Health Professional	20	12
Parent	6	3
Teacher	0	3
<b>(Peer)</b>		
No Eating Disorder	14	21
Recovered from Eating Disorder	49	55

*Note.* All numbers are shown in percentages.

*Message Location*

Participants were also asked about the best setting in which to present eating disorder prevention messages. CL and NC groups responded to the question, “Where do you think these messages would be most effective?” by selecting one of four options (see Table 6). The vast majority of CL and NC participants chose schools as the preferred location in which to present

eating disorder prevention messages (83% and 92% respectively). The CL group selected Parents/Home (0%) and the NC group selected Doctor’s Office (0%) as their least popular choices.

Table 6.

*Message Location – Participant Preferences*

	Clinical Group ( <i>n</i> = 35)	Non-Clinical Group ( <i>n</i> = 63)
Schools	83	92
Community Programs	14	7
Doctor’s Office	3	0
Parents/Home	0	2

*Note.* Numbers are shown in percentages. The Non-Clinical Group totals add to > 100% as a result of rounding decimals  $\geq 0.5$ .

### Discussion

The current study presented adolescent girls with a series of five eating disorder prevention messages and asked them to evaluate each of the messages on the following dimensions: 1) relevance, 2) believability, 3) emotional impact, 4) intention to diet, and 5) intention to make body comparisons. In addition to evaluating the five prevention messages, adolescents were asked to evaluate the message presenter by rating her attractiveness, credibility, and body size/shape. We examined the responses of two separate groups of participants: female adolescents who were hospitalized with a clinically diagnosed eating disorder (clinical group), and female undergraduate students with no history or symptoms of an eating disorder (non-clinical group). All participants completed measures of mood and self-esteem prior to watching and evaluating the prevention videos.

One of the main goals of the study was to identify which eating disorder prevention themes, or message content, the two groups considered most persuasive. Contrary to our hypotheses, adolescents in both the clinical and non-clinical groups indicated that all five prevention messages were similarly persuasive. This is in contrast to Durkin and colleagues' (2005) research, which examined the persuasiveness of nine body dissatisfaction prevention messages and found that three messages were rated more highly than the others (i.e., "media images are not real", "the ideal body changes across history and culture", and "don't fall into the comparison trap"). Given that the prevention messages used in the current study reflected five of the most persuasive prevention themes from Durkin and colleagues' research, it is possible that differences in methodology were responsible for the inconsistent results. The current study included a total of five eating disorder prevention messages (in contrast to their nine), in an attempt to further specify the types of messages that would be most persuasive for use in future prevention programs. However, this may not have provided enough variability to observe significant differences in persuasiveness across the different messages. Additionally, the mean ages of our clinical and non-clinical samples were 14.8 and 18.5 years, which were considerably older than the mean ages in Durkin and colleagues' seventh, eighth, and tenth grade samples, which ranged from 12 to 15.5 years. Although it is beyond the scope of the current study's data to elucidate how age differences may have led to the distinct outcomes in these two studies, age could play an important role in adolescent responses to eating disorder prevention messages and is further addressed in subsequent paragraphs. Finally, another difference between the two studies is that unlike the current study, Durkin and colleagues did not include a sample of adolescents with eating disorders. However, our non-clinical group alone rated the five

prevention messages as equally persuasive, therefore the inclusion of the clinical sample does not completely account for the different outcome of the two studies.

Another main goal of this study was to determine whether there were group differences in the pattern of message ratings. Given that both groups of participants rated all five prevention messages as equally persuasive, it follows that adolescents with and without eating disorders demonstrated the same pattern in message ratings. However, there were significant group differences found when messages one through five were taken as a whole – adolescents with an eating disorder found all five messages to be generally lower in persuasiveness than did adolescents without an eating disorder. Furthermore, this group difference was found on every persuasiveness dimension (i.e., relevance, believability, and emotional impact). This finding is consistent with the research of Paxton and colleagues (2002), which found that participants with higher levels of disordered eating (i.e., higher dieting and body dissatisfaction) rated prevention messages as less persuasive than did participants with lower levels of disordered eating.

Significant group differences were also found in behavioural intention ratings (i.e., intention to diet, intention to compare oneself to others) after viewing the videos. Adolescents with an eating disorder reported that their intention to diet and compare were not altered following exposure to the five prevention themes, whereas adolescents without an eating disorder indicated that they were less likely to diet or to compare their bodies following exposure. It is possible that these behavioural intention items are theoretically related to motivation for change. Adolescents with eating disorders generally have less motivation and/or greater ambivalence around changing their problematic behaviours (e.g., dieting, comparing body to others) than adolescents without eating disorders (Vitousek, Watson, & Wilson, 1998). Denial and resistance to change are common features in adolescents with eating disorders,

particularly anorexia nervosa (Nordbø, Espeset, Gulliksen, Skårderud, Geller, & Holte, 2012), due to the egosyntonic nature of their symptoms (Vitousek et al., 1998). Research indicates that often patients do not even recognize their disorder as a problem (Treasure & Schmidt, 2010). Adolescents with bulimia nervosa may be more motivated to recover than those with anorexia nervosa, yet they also demonstrate ambivalence around giving up the thin-body ideal, and the protective nature of their binge-purge behaviours (Vitousek et al., 1998). Our finding that adolescents with an eating disorder did not alter their intention to diet or compare their bodies may be related to the fact that eating disorders frequently involve resistance to and/or ambivalence around change.

As was anticipated, adolescents with an eating disorder rated their overall mood and self-esteem lower than did adolescents without eating disorders. Previous research has demonstrated that low mood and self-esteem are established risk factors for the development of disordered eating (Courtney, Gamboz, & Johnson, 2008; Stice, Marti, & Durant, 2011; Welch & Ghaderi, 2013), and that individuals with eating disorders, including those in various stages of treatment, continue to experience lower mood and self-esteem than do their non-eating disordered counterparts (e.g., Espeset, Gulliksen, Nordbø, Skårderud, & Holte, 2012; Watson, Allen, Fursland, Byrne, & Nathan, 2012).

In addition to the hypothesized group differences on mood and self-esteem, our results revealed three other group differences – adolescents in our clinical and non-clinical groups differed in age, BMI, and ethnic distribution. First, as mentioned previously, it is believed that the significant age differences were mostly the result of chance – greater age overlap between the two groups had been anticipated. Second, although group differences were also found on body mass index (BMI), these differences were clearly anticipated given that the majority of

adolescents in our clinical population were diagnosed with anorexia nervosa (28 out of 35 clinical participants), which by definition includes the criterion of a medically low body weight. Finally, the group differences in ethnicity may have been due to geographical location, as our data was collected in two different cities (i.e., clinical participants in Vancouver, non-clinical participants in Toronto), and may therefore represent the differing ethnic distributions within these two urban centres.

Given the significant age difference between our clinical and non-clinical samples, and an insufficient degree of overlap between the two groups, it was not possible to include age in our subsequent analyses of the clinical and non-clinical groups' message ratings. The possibility of an age effect was therefore examined within the clinical group exclusively, which ranged in age from 13 to 19 years. Our results indicated that there was no relationship between adolescent age and message ratings (within the clinical group), which increased our confidence that it was eating disorder status (i.e., the clinical / non-clinical distinction) causing the observed group differences in message ratings, rather than the age difference between the two groups.

Our findings that adolescent age was unrelated to message ratings is consistent with previous research indicating that participant age does not impact overall message persuasiveness (Paxton et al., 2002; Durkin et al., 2005). However, our results differ from other research suggesting that adolescent age (or developmental stage) plays an important role in determining adolescent responses to eating disorder prevention efforts (Heinze et al., 2000; Varnado-Sullivan & Horton, 2006), and that it is important to target younger adolescents in eating disorder prevention efforts (McVey et al., 2007; Wilksch & Wade, 2009). It has been suggested that adolescent age could lead to differences in prevention message comprehension, and that younger adolescents may have less knowledge and experience pertaining to eating and body image,

causing them to find prevention messages less persuasive than older adolescents (Paxton et al., 2002). The results of the current study (that the age of adolescents with eating disorders was unrelated to their responses to the prevention messages), were therefore interpreted with caution, given the significant group differences in age and the possibility that this was a confounding variable.

Based on the participant characteristics of our two groups, we included mood (positive and negative affect), self-esteem, and ethnicity in our analyses of the message ratings. Interestingly, we found that self-esteem played a role in adolescents' intention to diet following their exposure to the prevention messages. Specifically, our analyses suggested that adolescents with lower self-esteem (appearance and performance self-esteem) did not change their intention to diet after viewing the prevention messages, whereas adolescents with higher self-esteem (appearance and performance) were less likely to diet following exposure to the prevention messages. This is consistent with research by Durkin and colleagues' (2005), who also found that adolescents with higher self-esteem reported that they were less likely to diet after viewing prevention messages. It is possible that a greater sense of self-esteem allowed adolescents to view themselves as capable of making positive behavioural changes upon watching the prevention videos. Although adolescents viewed themselves as less likely to diet, they did not view themselves as less likely to make body comparisons. They reported more confidence in their ability to stop their behaviour (i.e., dieting) than to stop their thoughts (i.e., body comparisons). These results are consistent with the literature on the treatment of anorexia nervosa, which describes behavioural change (i.e., eating and weight restoration) as the first step in treatment, prior to addressing problematic body-related thoughts (Carter et al., 2009; Guarda, 2008). The majority of adolescent females in our clinical group were diagnosed with anorexia

nervosa, and in various stages of weight restoration. Thus, it is likely that they were experiencing some degree of ambivalence around changing their behaviours and/or thoughts.

The current study found that adolescents with an eating disorder responded less positively to eating disorder prevention messages (i.e., rated them as less persuasive) than did adolescents without an eating disorder. These findings appear to contradict some research examining eating disorder prevention programs, which has demonstrated that high-risk participants (e.g., individuals with initial signs or symptoms of an eating disorder) respond more positively to prevention efforts than do low-risk participants (Stice, Shaw, & Marti, 2007; Stice, Rohde, Gau, & Shaw, 2012). However, there are some possible explanations for this discrepancy in research findings. The first explanation involves methodological differences, as our study examined the persuasiveness of eating disorder prevention themes, whereas the aforementioned research examined the effectiveness of full-scale prevention programs in reducing risk factors and symptoms. Furthermore, the current study examined the responses of adolescents with clinically diagnosed eating disorders, whereas previous research into prevention programs examined the responses of “high risk” adolescents (e.g., adolescents demonstrating internalization of the thin-body ideal, body dissatisfaction, and negative affect). It is possible that there is a qualitative difference between adolescents who are at high-risk and those with a clinical diagnosis. Low motivation for change or even an outright denial of the problem is common in the diagnosis and treatment of eating disorders (Treasure et al., 2010; Vitousek et al., 1998); however, it is possible that high-risk adolescents have not yet developed this aspect of denial or resistance to change. They may remain slightly more open to prevention messages than are adolescents who have already been clinically diagnosed with (and are in treatment for) an eating disorder.

Alternatively, these differences in research findings across studies may have pertained to a confounding variable between the two groups in our study: age. Despite our finding that age was unrelated to message ratings within the clinical group, it remains a possibility that age was responsible for the difference in clinical and non-clinical participants' responses to the prevention messages, which would partially explain the discrepant findings between the current study and research into full-scale prevention programs.

Adolescents in the current study were also asked to evaluate the presenter of the prevention messages. There were no group differences in ratings of presenter attractiveness; however, adolescents with an eating disorder rated the presenter as less credible and larger in body size and shape than did adolescents without an eating disorder. Although previous research has focused on the self-criticism and self-appraisal of individuals with eating disorders (e.g., Trottier, Olmsted, & McFarlane, 2013), there is little research examining how these individuals evaluate others. Vocks, Legenbauer, and Peters (2007) examined how individuals with an eating disorder evaluate their therapists' appearance. They examined the importance of therapist body size and shape to individuals with eating disorders as compared to individuals with anxiety disorders, and found that therapist figure was significantly more important to those with eating disorders. They also found that both groups favored an "average weight" therapist (i.e., based on participants' silhouette selections on the Contour Drawing Rating Scale). In an experimental study, Trottier, McFarlane, Olmsted, and Polivy (2005) examined whether individuals with an eating disorder made weight-related evaluations of a person described as "overweight." They found that individuals with an eating disorder viewed the target person as significantly less attractive, less popular, and less intelligent than a person described as "slender." Continued research into how individuals with an eating disorder perceive the body of others (e.g., family

members, peers, health professionals involved in treatment), and how this relates to their overall assessment of others (e.g., intelligence, credibility, likeability), may inform ongoing treatment and prevention efforts. The current study suggests that adolescents with an eating disorder may make weight-related evaluations of others by assessing them as larger in body size and shape, and as less credible than do adolescents without an eating disorder.

We also examined whether adolescents' evaluations of our presenter were correlated with their ratings of message persuasiveness. Across both groups, higher ratings of presenter attractiveness and credibility were correlated with lower ratings of message persuasiveness. It is not clear why stronger presenter ratings on these variables were related to weaker message ratings, as one would expect that characteristics such as attractiveness and credibility would lead to more convincing prevention messages. One possible explanation is that study participants did not believe that the presenter was speaking genuinely (i.e., that she herself did not believe in the messages she was presenting). If this were the case, it is likely that participants who rated the presenter positively (i.e., as attractive and credible) would have been more persuaded by the presenter's non-verbal cues and given the prevention messages more negative persuasiveness ratings. Another possible explanation is that participants who viewed the presenter as attractive and credible also viewed her as less relatable; they may have perceived her as very different from themselves, and thus been less likely to find her convincing. Presenter characteristics, including the degree to which message recipients view a presenter as relatable and similar to themselves, are further addressed in subsequent paragraphs.

Although we found that our presenter's attractiveness and credibility were related to message ratings, there was no relationship between ratings of the presenter's body size/shape and overall message persuasiveness. Though unexpected, this finding is in fact consistent with

research by Sperry and colleagues (2005). In their study, they experimentally manipulated their presenter's weight by using three digital images of a person, and found that their three weight conditions did not differentially impact a body dissatisfaction intervention. They suggested that study participants were motivated to use the central route to persuasion (due to the personal relevance of the information presented), and therefore relied less on peripheral cues such as presenter appearance. If this was the case in the current study, it is unclear why presenter attractiveness, but not body size and shape, related to message persuasiveness, as both of these variables were appearance-related and could be considered peripheral cues.

In the final part of our study, participants responded to a series of questions about how to maximize the persuasiveness of future eating disorder prevention efforts. Participants with and without an eating disorder were asked to indicate the characteristics of the message source, message recipients, and message location that would make for the most persuasive prevention message. Both groups indicated that a female peer who had previously recovered from an eating disorder would make the most persuasive message source. This preference for a peer is supported a substantive body of research suggesting that for adolescents, peer influence can be extremely powerful, and is often stronger than that of adults (e.g., Bennett & Westera, 1994; Cleveland, Feinberg, & Jones, 2012; Salafia & Gondoli, 2011; Solomon & Knafo, 2007). Research into smoking prevention describes the transition from elementary to middle school (i.e., sixth or seventh grade) as a time of particular vulnerability to smoking, as adolescents are more likely to experiment with their peers and initiate smoking during this time (Glynn, 1989). Likewise, research into the prevention of dating abuse indicates that adolescents during middle school (i.e., approximately age 13) are highly vulnerable, as they are transitioning into a time of greater influence from their peers, and less influence from parents and other adults (Foshee &

Reyes, 2009). Extending these findings to the field of eating disorder prevention, it may be that this period of transition increases adolescents' exposure to peer influences around body satisfaction, dieting, and the internalization of the thin ideal. Mills and Miller (2007) examined the impact of weight-related feedback on young women, and found that participants were significantly more affected by weight-related feedback coming from a perceived peer than from a perceived non-peer. Thus, it could be that an individual who is perceived as close in age and social status would positively impact the extent to which adolescents are persuaded by eating disorder prevention messages. In contrast, our finding differs from research by Heinze and colleagues (2000), which found that the identity of the presenter (i.e., recovered anorexic, peer, expert, and no identity) did not influence participant responses to a prevention videotape. These contradictory findings could be due to methodological differences, as our study asked adolescents whom they predicted would be most persuasive rather than experimentally testing the question – it is possible that the adolescents in our study did not accurately predict the benefit of having a peer present the prevention messages. In sum, our findings are consistent with strong albeit not unanimous support for the idea that peer influence is especially strong for young women, and could play a valuable role in eating disorder prevention efforts.

Peer influence could also help to explain the unexpected finding (noted above) that the more “credible” the presenter, the less persuasive the message. It is possible that participants judged the presenter (a woman in her twenties) to be a figure of authority, rather than a peer, and therefore felt less persuaded by the prevention messages despite viewing her as more credible. It is difficult to know the exact basis on which participants formed an opinion of the presenter's “credibility”, but it is worth following up with future research whether it is the extent to which

the source is seen as a “peer” that is the most important factor in determining whether he or she is considered persuasive.

In terms of the ideal target age for message recipients, adolescents with an eating disorder chose a significantly younger target age (i.e., 10 years) than did adolescents without an eating disorder (i.e., 12 years). This difference could have arisen due to the (unanticipated) age difference between the two groups themselves, or from their clinical versus non-clinical grouping. Despite the two-year difference in the ideal target ages chosen by the two groups, adolescents generally agreed that future eating disorder prevention efforts should target younger adolescents. Further research into the ideal target age for eating disorder prevention programs is needed, as this issue is still under debate in the research literature. However, based on the current findings, a young adolescent target age is best in the eyes of adolescents themselves.

Finally, both groups of adolescents indicated that a school setting would be the best context for future prevention efforts. This could be related to the role of peer influence at this developmental stage. Given that adolescents are likely to hold similar values and beliefs to their peers (Nelson & DeBacker, 2008; Solomon & Knafo, 2007), participants might have predicted that adolescents would be more persuaded in their peer groups (i.e., in a school or classroom setting) than individually. Thus, it seems that the ideal combination for the presentation of eating disorder prevention messages, indicated by both clinical and non-clinical participants, is to have a peer who has recovered from an eating disorder to present in a school setting.

#### *Methodological Limitations*

There are a number of limitations in the current study that should be noted. Our study examined the responses of adolescents who were in treatment for an eating disorder, a challenging population to access due to hospital policies and procedures, parental consent, and

treatment schedules; our comparison group was a sample of convenience made up of female adolescents who were in first-year university. We believe that the inclusion of a clinical group in our study was a strength. Nevertheless, the clinical and non-clinical groups were not formally matched on age, and the analysis revealed that there was a significant age difference, and little overlap, between the two samples. Despite the fact that we found no relationship between age and message ratings within the clinical sample, the possible confounding of age and eating disorder diagnosis remains a limitation.

Another challenge encountered with our clinical group pertained to sample size. Due to the unforeseen circumstances mentioned previously, our rate of data collection for the clinical group was slower than anticipated. Thus, our clinical sample size was smaller than anticipated, and did not match our non-clinical sample. Although we attempted to account for this with the statistical analyses chosen, statistical power represents a second limitation to the study.

With regards to the non-clinical group, a single question was used to screen study participants and determine whether they had any history or current symptoms of an eating disorder. Screening for past or present eating disorder symptoms therefore relied on participant self-report rather than more formal testing or evaluation (e.g., Eating Attitudes Test, Eating Disorder Inventory). Consequently, it is possible that inaccurate reporting on the part of non-clinical participants could have influenced the findings of this study.

In terms of the delivery of the prevention messages, all five prevention messages in the current study were presented by the same speaker in a monologue in video format. Although this enabled the comparison of message content and ensured presentation consistency (Paxton et al., 2002), it did not allow for an interactive experience, which previous prevention research has demonstrated is more effective than a didactic approach (Stice, Shaw, & Marti, 2007). However,

it could be argued that an interactive experience was not relevant to the current study, as the goal was to identify the most persuasive prevention themes rather than to prevent the development of eating disorders.

Finally, this study included five specific prevention themes that are commonly used in eating disorder prevention programs. It is possible, however, that other themes would have been perceived as more or less persuasive, or that there would have been a different pattern in adolescent responses if different themes had been used. The generalizability of our findings are therefore limited to the specific themes that we examined. Along these lines, the inclusion of a control message would have allowed us to determine whether the five prevention messages were more persuasive than a baseline message. In their study examining adolescent responses to dieting prevention messages, Paxton and colleagues (2002) included a control message answering the question, “What is a diet?”. Although this message was not technically a persuasive message, it was related to eating and body image. Likewise, in the current study, it would have been difficult to create a persuasive control message that did not simply act as an additional prevention message.

#### *Future directions*

Future research that compares formally age-matched samples of adolescents (with and without an eating disorder) would be very useful to attempt to replicate and extend the findings of the current study. Given that the impact of age on adolescents’ ratings of the eating disorder prevention messages was inconclusive, it would be important to clarify the role that age, or developmental stage, plays in how adolescents respond to different prevention themes. Further studies could examine the responses of both younger (i.e., ages 10-14) and older (i.e., ages 15-19) adolescents, with and without eating disorders, to establish whether there are differences in

how adolescents in specific age ranges or developmental stages (e.g., high school versus university) rate the persuasiveness of different prevention themes.

Social psychological theories of persuasion have been useful in conceptualizing eating disorder prevention efforts. More specifically, the Elaboration Likelihood Model has the potential to provide a valuable theoretical framework within which to examine eating disorder prevention. One possibility for future research includes further examination of how the developmental aspects of this model relate to eating disorder prevention. Petty and Cacioppo (1986) describe an “elaboration continuum” in which the process of attitude change matures as children transition through adolescence and into adulthood. The authors explain how as children grow, they become increasingly motivated to express opinions that are correct, and gradually rely less on simplistic cognitive rules (e.g., “My mother knows what is right,” or “Repeat behaviour for which I receive attention”), focusing instead on their developing ability to process issue-relevant material. Adolescent eating disorder prevention programs stand to benefit from such developmental considerations. For instance, it might be important to determine whether certain cognitive rules are present in younger adolescents, and if so, to develop methods of identifying and addressing these rules rather than relying on higher-level, issue-relevant information processing in eating disorder prevention programs. Given that the current study found that younger adolescents with eating disorders were less likely to find our five prevention messages persuasive, it could be that certain cognitive rules pertaining to peer acceptance were at play (e.g., “I must be similar to my peers to be liked”, “dieting is what girls my age do”). Further research in this area could thus clarify the role that age or developmental stage plays in the persuasion process.

The focus of the current study was to assess adolescents' reactions to eating disorder prevention messages. In essence, our study attempted to identify some of the elements of eating disorder prevention (e.g., message content, presenter characteristics, participant characteristics) that adolescents believe are most important and relevant to ongoing prevention efforts. Future research should investigate whether specific adolescent perspectives (e.g., using specific prevention messages, having a peer who has recovered from an eating disorder present the prevention material) lead to the increased effectiveness of eating disorder prevention programs in terms of whether exposure to such messages can prevent the onset of disordered eating.

### *Clinical Implications*

In the current study, participants with and without an eating disorder indicated that they believed prevention programs should target individuals in early adolescence (i.e., 10 to 12 years), a perspective that is supported by previous experimental research (e.g., Wilksch & Wade, 2009). They further indicated that a school setting would be the best location in which to present prevention programs. Research has demonstrated that adolescents are strongly influenced by their peer group (e.g., Solomon & Knafo, 2007), which suggests that a school setting would be a good fit for prevention programs, assuming that adolescents would be talking about and reinforcing the different concepts presented in the programs. Along these same lines, participants with and without an eating disorder selected a peer rather than an adult as their preferred program presenter. More specifically, participants selected a peer who had previously recovered from an eating disorder over a peer with no history of an eating disorder. As mentioned previously, this perspective stands in contrast to previous research indicating that a peer presenter who has recovered from an eating disorder provides no benefit over a peer presenter with no history of an eating disorder, an expert presenter, or an unidentified presenter

(Heinze et al., 2000). However, our findings suggest that further research into presenter identity is warranted in order to examine how it impacts (or does not impact) adolescents' responses to eating disorder prevention messages.

Group differences were found in the current study that also have clinical implications. First, clinical participants (i.e., young adolescents with an eating disorder) evaluated our presenter as less credible and larger in body size and shape than did non-clinical participants (i.e., older adolescents without an eating disorder). This finding highlights the relevance of presenter characteristics (i.e., appearance, identity) to some adolescents, and raises the question (stated previously) as to whether presenter characteristics are important to the effectiveness of ongoing eating disorder prevention programs. Another group difference pertained to mood and self-esteem. Clinical participants reported lower mood and self-esteem than did non-clinical participants, and these variables related to adolescents' ratings of overall message persuasiveness. If low mood and low self-esteem negatively impact the persuasiveness of eating disorder prevention messages, it might be useful to influence these variables prior to exposing them to prevention stimuli (e.g., have participants read a series of inspirational quotes, watch a humorous video clip, or reflect on three areas of personal strength). Research in the field of consumer psychology has shown that manipulating mood can influence the persuasion process. DeCarlo and Barone (2009) found that showing participants a humorous video clip prior to exposing them to persuasion situations (i.e., sales agents) "neutralized" participants' suspicion and led to increased persuasion (i.e., greater purchase intentions). Thus, even temporary increases in mood and self-esteem could have a positive impact on adolescents' receptivity to eating disorder prevention messages.

Presumably, the more receptive participants are to prevention messages, the higher the likelihood of prevention programs having beneficial short- and long-term effects on the trajectory of their symptoms. Interestingly, there are a number of studies examining adolescents' subjective appraisals of different kinds of prevention messages such as smoking prevention (Struik, Bottoroff, Jung, & Budgen, 2012), alcohol abuse prevention (Pinkleton, Austin, & Van de Vord, 2010), and eating disorder prevention (Durkin et al., 2005), yet no studies examining the effectiveness of these same messages. Research into the effectiveness of these specific messages would help to clarify whether a positive response from adolescents (e.g., high persuasiveness ratings) is related to more successful prevention efforts.

### *Conclusions*

Adolescents in the current study rated the persuasiveness of five different eating disorder prevention messages that are commonly used in prevention programs. They also identified message features (e.g., presenter characteristics, message location) that they believed would be useful in future prevention programs. Differences were found among the responses of adolescents with and without eating disorders, which suggests that these groups can provide unique contributions to new theory and research within the field of prevention. It was unclear in the current study as to whether these group differences were driven by eating disorder status, or if participant age played a role in their prevention message ratings, as there was an unanticipated age difference between the clinical and non-clinical groups. Continued research into the perspectives of adolescents both with and without eating disorders is encouraged as these individuals have the potential to greatly inform future treatment and prevention initiatives.

## References

- Agency for Healthcare Research and Quality. Eating disorders sending more Americans to the hospital. *AHRQ News and Numbers*. April 1, 2009. Available at: [www.ahrq.gov/news/nn/nn040109.htm](http://www.ahrq.gov/news/nn/nn040109.htm). Accessed June 17, 2013.
- Alonso, A.T.V., Rodriguez, M.A.R., Alonso, J.E.L., Carretero, G.R., & Martin, M.F. (2005). Eating disorders: Prevalence and risk profile among secondary school students. *Social psychiatry and psychiatric epidemiology*, *40*, 980-987.
- American Psychiatric Association (2006). Treatment of patients with eating disorders (3<sup>rd</sup> ed.). *American Journal of Psychiatry*, *163*, 4-54.
- Arroyo, A., & Harwood, J. (2012). Exploring the causes and consequences of engaging in fat talk. *Journal of Applied Communication Research*, *40*, 167-187.
- Bair, C.E., Kelly, N.R., Serdar, K.L., & Mazzeo, S.E. (2012). Does the internet function like magazines? An exploration of image-focused media, eating pathology, and body dissatisfaction. *Eating Behaviors*, *13*, 398-401.
- Barwick, A., Bazzini, D.G., Martz, D.M., Rocheleau, C.A., & Curtin L.A. (2012). Testing the norm to fat talk for women of varying size: What's weight got to do with it? *Body Image*, *9*, 176-179.
- Bennett, L.R., & Westera, D. (1994). The primacy of relationships for teens: Issues and responses. *Family & Community Health: The Journal of Health Promotion & Maintenance*, *17*, 60-69.
- Birmingham, C.L., Su, J., Hlynsky, J.A., Goldner, E.M., & Gao, M. (2005). The mortality rate from anorexia nervosa. *International Journal of Eating Disorders*, *38*, 143-146.

- Borzekowski, D.L., & Bayer, A.M. (2005). Body image and media use among adolescents. *Adolescent Medicine Clinics, 16*, 289-313.
- Britton, L.E., Martz, D.M., Bazzini, D.G., Curtin, L.A., & LeaShomb A. (2006). Fat talk and self-presentation of body image: Is there a social norm for women to self-degrade? *Body Image, 3*, 247-254.
- Bucchianeri, M.M., Arikian, A.J., Hannan, P.J., Eisenberg, M.E., & Neumark-Sztainer, D. (2013). Body dissatisfaction from adolescence to young adulthood: Findings from a 10-year longitudinal study. *Body Image, 10*, 1-7.
- Bulik, C. (2002). Eating disorders in adolescents and young adults. *Child and Adolescent Psychiatric Clinics of North America, 11*, 201-218.
- Carter, J.C., McFarlane, T.L., Bewell, C., Olmstead, M.P., Woodside, D.B., Kaplan, A.S., & Crosby, R.D. (2009). Maintenance treatment for anorexia nervosa: A comparison of cognitive behavior therapy and treatment as usual. *International Journal of Eating Disorders, 42*, 202-207.
- Carter, J.C., Stewart, D.A., Dunn, V.J., & Fairburn, C.G. (1997). Primary prevention of eating disorders: Might it do more harm than good? *International Journal of Eating Disorders, 22*, 167-172.
- Celio, A.A., Bryson, S., Killen, J.D., & Taylor, C.B. (2003). Are adolescents harmed when asked risky weight control behavior and attitude questions? Implications for consent procedures. *Eating Disorders, 34*, 251-254.
- Celio, A.A., Winzelberg, A.J., Wilfley, D.E., Eppstein-Herald, D., Springer, E.A., Dev, P., & Taylor, C.B. (2000). Reducing risk factors for eating disorders: Comparison of an

- internet- and a classroom-delivered psychoeducational program. *Journal of Consulting and Clinical Psychology, 68*, 650-657.
- Chang, Y.J., Lin, W., & Wong, Y. (2011). Survey on eating disorders-related thoughts, behaviours, and their relationship with food intake and nutritional status in female high school students in Taiwan. *Journal of the American College of Nutrition, 30*, 39–48.
- Chisuwa, N., & O’Dea, J.A. (2010). Body image and eating disorders amongst Japanese adolescents: A review of the literature. *Appetite, 54*, 5-15.
- Ciao, A.C., & Latner, J.D. (2011). Reducing obesity stigma: The effectiveness of cognitive dissonance and social consensus interventions. *Obesity, 19*, 1768-1774.
- Ciarrochi, J., Heaven, P.C.L., & Davies, F. (2007). The impact of hope, self-esteem, and attributional style on adolescents’ school grades and emotional well-being: A longitudinal study. *Journal of Research in Personality, 41*, 1161-1178.
- Clark L., & Tiggemann, M. (2006). Appearance culture in nine to 12-year old girls: Media and peer influences on body dissatisfaction. *Social Development, 15*, 628-643.
- Cleveland, M.J., Feinberg, M.E., & Jones, D.E. (2012). Predicting alcohol use across adolescence: Relative strength of individual, family, peer, and contextual risk and protective factors. *Psychology of Addictive Behaviors, 26*, 703-713.
- Compton, J.A., & Pfau, M.W. (2005). Inoculation theory of resistance to influence at maturity: Recent progress in theory development and application and suggestions for future research. In, P.J. Kalbfleisch (Ed.), *Communication yearbook 29* (pp. 97-145). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- Corning, A.F., Krumm, A.J., & Smitham, L.A. (2006). Differential social comparison processes in women with and without eating disorder symptoms. *Journal of Counselling*

- Psychology*, 53, 338-349.
- Courtney, E.A., Gamboz, J., & Johnson, J.G. (2008). Problematic eating behaviors in adolescents with low self-esteem and elevated depressive symptoms. *Eating Behaviors*, 9, 408-414,
- Crow, S., Praus, B., & Thuras, P. (1999). Mortality from eating disorders: A 5- to 10-year record linkage study. *International Journal of Eating Disorders*, 26, 97-101.
- Davison, K.K., Markey, C.N., & Birch, L.L. (2003). A longitudinal examination of patterns in girls' weight concerns and body dissatisfaction from ages 5 to 9 years. *International Journal of Eating Disorders*, 33, 320-332.
- DeCarlo, T.E., & Barone, M.J. (2009). With suspicious (but happy) minds: Mood's ability to neutralize the effects of suspicion on persuasion. *Journal of Consumer Psychology*, 19, 326-333.
- Dinoff, B.L., & Kowalski, R.M. (1999). Reducing AIDS risk behaviour: The combined efficacy of protection motivation theory and the Elaboration Likelihood Model. *Journal of Social and Clinical Psychology*, 18, 23-239.
- Durkin, S.J., Paxton, S.J., & Sorbello, M. (2007). An integrative model of the impact of exposure to idealized female images on adolescent girls' body satisfaction. *Journal of Applied Social Psychology*, 37, 1092-1117.
- Durkin, S.J., Paxton, S.J., & Wertheim, E.H. (2005). How do adolescent girls evaluate body dissatisfaction prevention messages? *Journal of Adolescent Health*, 37, 381-390.
- Eapen, V., Mabrouk, A.A., & Bin-Othman, S. (2006). Disordered eating attitudes and symptomatology among adolescent girls in the United Arab Emirates. *Eating Behaviors*, 7, 53-60.

- Espeset, E.M.S., Gulliksen, K.S., Nordbø, R.H.S., Skårderud, F., & Holte, A. (2012). The link between negative emotions and eating disorder behaviour in patients with anorexia nervosa. *European Eating Disorders Review, 20*, 451-460.
- Evans, E., Toveé, M., Boothroyd, L.G., & Drewett, R. (2013). Body dissatisfaction and disordered eating attitudes in 7- to 11-year-old girls: Testing a sociocultural model. *Body Image, 10*, 8-15.
- Ferguson, C.J., Muñoz, M.E., Garza, A., & Galindo, M. (in press). Concurrent and prospective analyses of peer, television and social media influences on body dissatisfaction, eating disorder symptoms and life satisfaction in adolescent girls. *Journal of Youth and Adolescence, Jan 24, 2013*.
- Fernandez, S., & Pritchard, M. (2012). Relationships between self-esteem, media influence, and drive for thinness. *Eating Behaviors, 13*, 321-325.
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*, 117-140.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford, CA: Stanford University Press.
- Fingeret, M.C., Warren, C.S., Cepeda-Benito, A., & Gleaves, D.H. (2006). Eating disorder prevention research: A meta-analysis. *Eating Disorders: The Journal of Treatment and Prevention, 14*, 191-213.
- Fitzsimmons-Craft, E.E. (2011). Social psychological theories of disordered eating in college women: Review and integration. *Clinical Psychology Review, 31*, 1224-1237.
- Flynn, B.S., Worden J.K., Bunn, J.Y., Connolly, S.W., & Dorwaldt, A.L. (2011). Evaluation of smoking prevention television messages based on the Elaboration Likelihood Model. *Health Education Research, 26*, 976-987.

- Foshee, V.A., & Reyes, H.L.M. (2009). Primary prevention of adolescent dating abuse perpetration: When to begin, whom to target, and how to do it. In, D.J. Whitaker & J.R. Lutzker (Eds.), *Preventing Partner Violence: Research and Evidence-Based Intervention Strategies* (pp. 141-168). Washington, DC: American Psychological Association.
- Franko, D.L., Coen, E.J., Roehrig, J.P., Rodgers, R.F., Jenkins, A., Lovering, M.E., & Dela Cruz, S. (2012). Considering J.Lo and Ugly Betty: A qualitative examination of risk factors and prevention targets for body dissatisfaction, eating disorders, and obesity in young Latina women. *Body Image, 9*, 381-387.
- Franzoi, S.L., & Klaiber, J.R. (2007). Body use and reference group impact: With whom do we compare our bodies? *Sex Roles, 56*, 205-214.
- Garfinkel, P.E., Lin, E., Goering, P., Spegg, C. Goldbloom D.S., Kennedy, S., ... Woodside, D.B. (1995). Bulimia nervosa in a Canadian community sample: Prevalence and comparison of subgroups. *American Journal of Psychiatry, 152*, 1052-1058.
- Garfinkel, P.E., Lin, E., Goering, P., Spegg, C. Goldbloom D.S., Kennedy, S., ... Woodside, D.B. (1996). Should amenorrhoea be necessary for the diagnosis of anorexia nervosa? Evidence from a Canadian community sample. *British Journal of Psychiatry, 168*, 500-506.
- Glynn, T.J. (1989). Essential elements of school-based smoking prevention programs. *Journal of School Health, 59*, 181-189.
- Grabe, S., Ward, L.M., & Hyde, J.S. (2008). The role of the media in body image concerns among women: A meta-analysis of experimental and correlational studies. *Psychological Bulletin, 134*, 460-476.

- Groesz, L.M., Levine, M.P., & Murnen, S.K. (2002). The effect of experimental presentation of thin media images on body satisfaction: A meta-analytic review. *International Journal of Eating Disorders, 31*, 1-16.
- Gilliam, W.P., Burns, J.W., Gagnon, C., Stanos, S., Matsuura, J., & Beckman, N. (2012). Strategic self-presentation may enhance effects of interdisciplinary chronic pain treatment. *Health Psychology, 32*, 156-163.
- Gordon, R.S. (1983). An operational classification system of disease prevention. *Public Health Reports, 98*, 107–109.
- Guarda, A.S. (2008). Treatment of anorexia nervosa: Insights and obstacles. *Physiology and Behaviour, 94*, 113-120.
- Harris, E.C., & Barraclough, B. (1998). Excess mortality of mental disorder. *British Journal of Psychiatry, 173*, 11-53.
- Hausenblas, H.A., Campbell, A., Menzel, J.E., Doughty, J., Levine, M., & Thompson, J.K. (2013). Media effects of experimental presentation of the ideal physique on eating disorder symptoms: A meta-analysis of laboratory studies. *Clinical Psychology Review, 33*, 168-181.
- Hawkins, N., Richards, P.S., Granley, H.M., & Stein, D.M. (2004). The impact of exposure to the thin-ideal media image on women. *Eating Disorders: The Journal of Treatment and Prevention, 12*, 35-50.
- Heatherton, T.F. & Polivy, J. (1991). Development and validation of a scale for measuring state self-esteem. *Journal of Personality and Social Psychology, 60*, 895-910.
- Heinze, V., Wertheim, E.H., & Kashima, Y. (2000). An evaluation of the importance of message source and age of recipient in a primary prevention program for eating disorders. *Eating*

- Disorders: The Journal of Treatment and Prevention*, 8, 131-145.
- Hoek, H.W. (2006). Incidence, prevalence and mortality of anorexia nervosa and other eating disorders. *Current Opinion in Psychiatry*, 19, 389-394.
- Johnston, J.M. (2004). Eating disorders and childhood obesity: Who are the real gluttons? *Canadian Medical Association Journal*, 171, 1459-1460.
- Keel, P.K., Leon, G.R., & Fulkerson, J.A. (2001). Vulnerability to eating disorders in childhood and adolescence. In, R.E. Ingram & J.M. Price (Eds.), *Vulnerability to psychopathology: Risk across the lifespan* (pp. 389-411). New York, NY: Guilford Press.
- Keel, P.K., Mitchell, J.E., Miller, K.B., Davis, T.L., & Crow, S.J. (1999). Long-term outcome of bulimia nervosa. *Archives of General Psychiatry*, 56, 63-69.
- Kendler, K.S., MacLean, C., Neale, M., Kessler, R.C., Heath, A., & Eaves, L. (1991). The genetic epidemiology of bulimia nervosa. *American Journal of Psychiatry*, 148, 1627-1637.
- Kilbourne, J. (1999). *Deadly persuasion: Why women and girls must fight the addictive power of advertising*. New York, NY: Simon and Shuster.
- Leahy, T.H., Crowther, J.H., & Michelson, K.D. (2007). The frequency, nature, and effects of naturally occurring appearance-focused social comparisons. *Behavior Therapy*, 38, 132-143.
- Levine, M.P., & Piran, N. (2004). The role of body image in the prevention of eating disorders. *Body Image*, 1, 57-70.
- Levine, M.P., & Smolak, L. (1996). Media as a context for the development of disordered eating. In, L. Smolak, M.P. Levine, & R. Striegel-Moore (Eds.), *The developmental psychopathology of eating disorders: Implications for research, prevention, and*

- treatment* (pp. 235-257). Hillsdale, NJ, England: Lawrence Erlbaum and Associates, Inc.
- Levine, M.P., & Smolak, L.M. (2006). *The prevention of eating problems and eating disorders: Theory, research and practice*. Mahwah, NJ, England: Lawrence Erlbaum and Associates, Inc.
- Levine, M.P., Smolak, L.M., & Hayden, H. (1994). The relation of sociocultural factors to eating attitudes and behaviours among middle school girls. *Journal of Early Adolescence, 14*, 471-490.
- Linton, K.E., & Marriott, R.G. (1996). Self-esteem in adolescents: Validation of the State Self-Esteem Scale. *Personality and Individual Differences, 21*, 85-90.
- Loth, K.A., Neumark-Sztainer, D., & Croll, J.K. (2009). Informing family approaches to eating disorder prevention: Perspectives of those who have been there. *International Journal of Eating Disorders, 42*, 146-152.
- Mann, T., Nolen-Hoeksema, S., Huang, K., Burgard, D., Wright, A., & Hanson, K. (1997). Are two interventions worse than none? Joint primary and secondary prevention of eating disorders in college females. *Health Psychology, 16*, 215-225.
- McCabe, R.E., McFarlane, T., Polivy, J., & Olmsted, M.P. (2001). Eating disorders, dieting, and the accuracy of self-reported weight. *International Journal of Eating Disorder, 29*, 59-64.
- McLean, S.A., Paxton, S.J., & Wertheim, E.H. (in press). Mediators of the relationship between media literacy and body dissatisfaction in early adolescent girls: Implications for prevention. *Body Image (2013)*, <http://dx.doi.org/10.1016/j.bodyim.2013.01.009>.
- McNally, A.M., Palfai, T.P., & Kahler, C.W. (2005). Motivational interventions for heavy drinking college students: Examining the role of discrepancy-related psychological processes. *Psychology of Addictive Behaviors, 19*, 79-87.

- McVey, G.L., Pepler, D., Davis, R., Flett, G.L., & Abdolell, M. (2002). Risk and protective factors associated with disordered eating during early adolescence. *Journal of Early Adolescence, 22*, 75-95.
- McVey, G., Tweed, S., & Blackmore, E. (2004). Dieting among preadolescent and young adolescent females. *Canadian Medical Association Journal, 170*, 1559-1561.
- McVey, G., Tweed, S., & Blackmore, E. (2007). Healthy Schools – Healthy Kids: A controlled evaluation of a comprehensive universal eating disorder prevention program. *Body Image, 4*, 115-136.
- Mills, J.S., Jadd, R., & Key, B.L. (2012). Wanting a body that's better than average: The effect of manipulated body norms on ideal body size perception. *Body Image, 9*, 365-372.
- Mills, J.S., & Miller, J.L. (2007). Experimental effects of receiving negative weight-related feedback: A weight guessing study. *Body Image, 4*, 309-316.
- Mills, J.S., Polivy, J., McFarlane, T.L., & Crosby, R.D. (2012). The natural course of eating pathology in female university students. *Eating Behaviors, 13*, 297-304.
- Morris, A.M., & Katzman, D.K. (2003). The impact of the media on eating disorders in children and adolescents. *Paediatrics and Child Health, 8*, 287-289.
- Mousa, T.Y., Al-Domi, H.A., Mashal, R.H., & Jibri, M.A. (2010). Eating disturbances among adolescent school girls in Jordan. *Appetite, 54*, 196–201.
- Murphy, M.J., Edwards, K.E., Merrill, J., & Gidycz, C.A. (2011). Undergraduate women's reactions to body image and eating disorder research. *Accountability in Research, 18*, 55-69.
- Musaiger, A.O., Al-Mannai, M., Tayyem, R., Al-Lalla, O., Ali, E.Y., Kalam, F., ... Chirane, M. (2013). Risk of disordered eating attitudes among adolescents in seven Arab countries by

- gender and obesity: A cross-cultural study. *Appetite*, 60, 162-167.
- Neimeyer, G.J., & Guy, J.M. (1989). Changing attitudes regarding the treatment of disordered eating: An application of the Elaboration Likelihood Model. *Journal of Social and Clinical Psychology*, 8, 70-86.
- Nelson, M.R., & DeBacker, T.K. (2008). Achievement motivation in adolescents: The role of peer climate and best friends. *Journal of Experimental Education*, 76, 170-189.
- Neumark-Sztainer, D., Bauer, K.W., Friend, S., Hannan, P.J., Story, M., & Berge, J.M. (2010). Family weight talk and dieting: How much do they matter for body dissatisfaction and disordered eating behaviors in adolescent girls? *Journal of Adolescent Health*, 47, 270-276.
- Nicholls, D.E. & Viner, R.M. (2009). Childhood risk factors for lifetime anorexia nervosa by age 30 in a national birth cohort. *Journal of the American Academy of Child & Adolescent Psychiatry*, 48, 791-799.
- Nichter, M. & Vuckovic, N. (1994). Fat talk: Body image among adolescent girls. In N. Sault (Ed.), *Many mirrors* (pp. 109–131). New Brunswick, NJ: Rutgers University Press.
- Nordbø, R.H.S., Espeset, E.M.S., Gulliksen, K.S., Skårderud, F., Geller, J., & Holte, A. (2012). Reluctance to recover in anorexia nervosa. *European Eating Disorders Review*, 20, 60-67.
- Noordenbos, G. (2011). Which criteria for recovery are relevant according to eating disorder patients and therapists? *Eating Disorders*, 19, 441-451.
- O’Dea, J.A., & Abraham, S. (1999). Onset of disordered eating attitudes and behaviors in early adolescence: Interplay of pubertal status, gender, weight, and age. *Adolescence*, 34, 671-679.

- O'Keefe, D.J. (2002). *Persuasion: Theory and Research, second edition*. Thousand Oaks, CA: Sage Publications.
- Ousley, L., Cordero, E.D., & White, S. (2008). Eating disorders and body image of undergraduate men. *Journal of American College Health, 56*, 617-622.
- Owen, P.R., & Laurel-Seller, E. (2000). Weight and shape ideals: Thin is dangerously in. *Journal of Applied Sociology, 30*, 979-990.
- Paxton, S.J. (1996). Prevention implications of peer influences on body image dissatisfaction and disturbed eating in adolescent girls. *Eating Disorders, 4*, 334-347.
- Paxton, S.J., Norris, M., Wertheim, E.H., Durkin, S.J., & Anderson, J. (2005). Body dissatisfaction, dating, and importance of thinness to attractiveness in adolescent girls. *Sex Roles: A Journal of Research, 53*, 663-675.
- Paxton, S.J., Wertheim, E.H., Pilawski, A., Durkin, S., & Holt, T. (2002). Evaluations of dieting prevention messages by adolescent girls. *Preventive Medicine, 35*, 474-491.
- Peebles, R., Wilson, J.L., & Locke, J.D. (2006). How do children with eating disorders differ from adolescents with eating disorders at initial evaluation? *Journal of Adolescent Health, 39*, 800-805.
- Petty, R.E., & Cacioppo, J.T. (1986). *Communication and persuasion: Central and peripheral routes to attitude change*. New York, NY: Springer-Verlag.
- Petty, R. E., Cacioppo, J. T., Strathman, A. J., & Priester, J. R. (2005). To think or not to think: Exploring two routes to persuasion. In S. Shavitt & T. C. Brock (Eds.), *Persuasion: Psychological insights and perspectives, 2nd edition* (pp. 81-116). New York, NY: Allyn & Bacon.
- Pinkleton, B.E., Austin, E.W., & Van de Vord, R. (2010). The role of realism, similarity, and

- expectancies in adolescents' interpretation of abuse-prevention messages. *Health Communication, 25*, 258-265.
- Piran, N., Levine, M., & Irving, L. (2000). "GO GIRLS!" Media literacy, activism, and advocacy project. *Healthy Weight Journal, 14*, 89-90.
- Polivy, J., & Herman, C.P. (2002). Causes of eating disorders. *Annual Review of Psychology, 53*, 187-213.
- Polivy, J., Herman, C.P., Mills, J.S., & Wheeler, H.B. (2003). Eating disorders in adolescence. In G.R. Adams & M.D. Berzonsky (Eds.), *Blackwell Handbook of Adolescence; Blackwell handbooks of developmental psychology* (pp. 523-549). Malden, MA: Blackwell Publishing.
- Pratt, H.D., Philips, E.L., Greydanus, D.E., & Patel, D.R. (2003). Eating disorders in the adolescent population: Future directions. *Journal of Adolescent Research, 18*, 297-317.
- Raich, R.M., Portell, M., & Peláez-Fernández, M.A. (2010). Evaluation of a school-based programme of universal eating disorders prevention: Is it more effective in girls at risk? *European Eating Disorders Review, 18*, 49-57.
- Reiersen, A.R., & Houlihan, D.D. (2008). Childhood onset of anorexia nervosa. *Gundersen Lutheran Medical Journal, 5*, 9-12.
- Reijonen, J.H., Pratt, H.D., Patel, D.R., & Greydanus, D.E. (2003). Eating disorders in the adolescent population: An overview. *Journal of Adolescent Research, 18*, 209-222.
- Rodgers, R.F., Paxton, S.J., & Chabrol, H. (2009). Effects of parental comments on body dissatisfaction and eating disturbance in young adults: A sociocultural model. *Body Image, 6*, 171-177.

- Rosen, D.S., (2003). Eating disorders in children and young adolescents: Etiology, classification, clinical features, and treatment. *Adolescent Medicine, 14*, 49-59.
- Salafia, E.H.B., & Gondoli, D.M. (2011). A 4-year longitudinal investigation of the processes by which parents and peers influence the development of early adolescent girls' bulimic symptoms. *Journal of Early Adolescence, 31*, 390-414.
- Salk, R., & Engeln-Maddox, R. (2011). "If you're fat then I'm humongous!": Content and impact of fat talk among college women. *Psychology of Women Quarterly, 35*, 8-28.
- Shisslak, C.M., Crago, M., & Estes, L.S. (1995). The spectrum of eating disturbances. *International Journal of Eating Disorders, 18*, 209-219.
- Shuttlesworth, M.E. & Zotter, D. (2011). Disordered eating in African American and Caucasian women: The role of ethnic identity. *Journal of Black Studies, 42*, 906-922.
- Smolak, L., & Levine, M.P. (1996). Adolescent transitions and the development of eating problems. In, L. Smolak, M.P. Levine, & R. Striegel-Moore (Eds.), *The developmental psychopathology of eating disorders: Implications for research, prevention, and treatment* (pp. 207-233). Hillsdale, NJ, England: Lawrence Erlbaum Associates, Inc.
- Solomon, S., & Knafo, A. (2007). Value similarity in adolescent friendships. In, T.C. Rhodes (Ed.), *Focus on adolescent behavior research* (pp. 133-155). Hauppauge, NY: Nova Science Publishers.
- Sperry, S., Thompson, J. K., Roehrig, M., & Vandello, J. (2005). The influence of communicator weight on psycho-educational message acceptance in females with high vs. low levels of body image disturbance. *Eating Behaviors, 6*, 247-258.

- Stephens, P.C., Sloboda, Z., Grey, S., Stephens, R., Hammond, A., Hawthorne, R., ... Williams, J. (2009). Is the receptivity of substance abuse prevention programming affected by students' perceptions of the instructor? *Health Education & Behavior, 36*, 724-745.
- Stice, E. (2002). Risk and maintenance factors for eating pathology: A meta-analytic review. *Psychological Bulletin, 128*, 825-848.
- Stice, E. (1994). A review of evidence for a sociocultural model of bulimia nervosa and an exploration of the mechanisms of action. *Clinical Psychology Review, 14*, 633-661.
- Stice, E. (2001). A prospective test of the dual-pathway model of bulimic pathology: Mediating effects of dieting and negative affect. *Journal of Abnormal Psychology, 110*, 124-135.
- Stice, E., & Agras, W.S. (1998). Predicting onset and cessation of bulimic behaviors during adolescence: A longitudinal grouping analyses. *Behavior Therapy, 29*, 257-276.
- Stice, E., Chase, A., Stormer, S., & Appel, A. (2001). A randomized trial of a dissonance-based eating disorder prevention program. *International Journal of Eating Disorders, 29*, 247-262.
- Stice, E., Killen, J.D., Hayward, C., & Taylor, C.B. (1998). Age of onset for binge eating and purging during late adolescence: A 4-year survival analysis. *Journal of Abnormal Psychology, 107*, 671-675.
- Stice, E., Marti, C.N., & Durant, S. (2011). Risk factors for onset of eating disorders: Evidence of multiple risk pathways from an 8-year prospective study. *Behaviour Research and Therapy, 49*, 622-627.
- Stice, E., Marti, C.N., Shaw, H., & Jaconis, M. (2009). An 8-year longitudinal study of the natural history of threshold, subthreshold, and partial eating disorders from a community sample of adolescents. *Journal of Abnormal Psychology, 118*, 587-597.

- Stice, E., Maxfield, J., & Wells T. (2003). Adverse effects of social pressure to be thin on young women: An experimental investigation of the effects of 'fat talk'. *International Journal of Eating Disorders, 34*, 108–117.
- Stice, E., Mazotti, L., Weibel, D., & Agras, W.S. (2000). Dissonance prevention program decreases thin-ideal internalization, body dissatisfaction, dieting, negative affect, and bulimic symptoms: A preliminary experiment. *International Journal of Eating Disorders, 27*, 206-217.
- Stice, E., Rohde, P., Durant, S., & Shaw, H. (2012). A preliminary trial of a prototype internet dissonance-based eating disorder prevention program for young women with body image concerns. *Journal of Consulting and Clinical Psychology, 80*, 907-916.
- Stice, E., Rohde, P., Gau, J., & Shaw, H. (2012). Effect of a dissonance-based prevention program on risk for eating disorder onset in the context of eating disorder risk factors. *Prevention Science, 13*, 129-139.
- Stice, E., Rohde, P., Shaw, H., & Gau, J. (2011). An effectiveness trial of a selected dissonance-based eating disorder prevention program for female high school students: Long-term effects. *Journal of Consulting and Clinical Psychology, 79*, 500-508.
- Stice, E., Rohde, P., Shaw, H., & Marti, C.N. (2013). Efficacy Trial of a Selective Prevention Program Targeting Both Eating Disorders and Obesity Among Female College Students: 1- and 2-Year Follow-Up Effects. *Journal of Consulting and Clinical Psychology, 81*, 183-189.
- Stice, E., Schupak-Neuberg, E., Shaw, H.E., & Stein R.I. (1994). Relation of media exposure to eating disorder symptomatology: An examination of mediating mechanisms. *Journal of Abnormal Psychology, 4*, 836-840.

- Stice, E., & Shaw, H. (2004). Eating disorder prevention programs: A meta-analytic review. *Psychological Bulletin, 130*, 206-227.
- Stice, E., Shaw, H., Becker, C.B., & Rohde, P. (2008). Dissonance-based interventions for the prevention of eating disorders: Using persuasion principles to promote health. *Prevention Science, 9*, 114-128.
- Stice, E., Shaw, H., Burton, E., & Wade, E. (2006). Dissonance and healthy weight eating disorder prevention programs: A randomized efficacy trial. *Journal of Consulting and Clinical Psychology, 74*, 263-275.
- Stice, E., Shaw, H., & Marti, C.N. (2007). A meta-analytic review of eating disorder prevention programs: Encouraging findings. *Annual Review of Clinical Psychology, 2*, 207-231.
- Stice, E., Trost, A., & Chase, A. (2003). Healthy weight control and dissonance-based eating disorder prevention programs: Results from a controlled trial. *International Journal of Eating Disorders, 33*, 10-21.
- Stone, J., Aronson, E., Crain, A.L., Winslow, M.P., & Fried, C.B. (1994). Inducing hypocrisy as a means of encouraging young adults to use condoms. *Personality and Social Psychology Bulletin, 20*, 116-128.
- Strahan, E.J., Buote, V.M., & Wilson, A.E. (2012). Selling beauty: The hidden cost to women's self-worth, relationships, and behavior. In, L.J. Shrum (Ed.), *The psychology of entertainment media: Blurring the lines between entertainment and persuasion, 2nd edition* (pp. 249-269). New York, NY: Routledge/Taylor & Francis Group.
- Strahan, E.J., Wilson, A.E., Cressman, K.E., & Buote, V.M. (2006). Comparing to perfection: How cultural norms for appearance affect social comparisons and self-image. *Body Image, 3*, 211-227.

- Strober, M., Freeman, R., & Morrell, W. (1997). The long-term course of severe anorexia nervosa in adolescents: Survival analysis of recovery, relapse, and outcome predictors over 10-15 years in a prospective study. *International Journal of Eating Disorders, 22*, 339-360.
- Struik, L.L., Botoroff, J.L., Jung, M., & Budgen, C. (2012). Reaching adolescent girls through social networking: A new avenue for smoking prevention messages. *Canadian Journal of Nursing Research, 44*, 84-103.
- Sullivan, P.F. (1995). Mortality in anorexia nervosa. *American Journal of Psychiatry, 152*, 1073–1074.
- Swami, V., & Tovée, M. J. (2007). Perceptions of female body weight and shape among indigenous and urban Europeans. *Scandinavian Journal of Psychology, 48*(1), 43-50.
- Swami, V., Neto, F., Tovée, M. J., & Furnham, A. (2007). Preferences for female body weight and shape in three European countries. *European Psychologist, 12*(3), 220-228.
- Sypeck, M. F., Gray, J. J., & Ahrens, A. H. (2004). No longer just a pretty face: Fashion magazines' depictions of ideal female beauty from 1959 to 1999. *International Journal of Eating Disorders, 36*, 342-347.
- Tabachnick, B.G., & Fidell, L.S. (2001). *Using multivariate analysis, 4<sup>th</sup> edition*. Boston, MA: Allyn and Bacon.
- Thompson J.K., & Heinberg, L.J. (1999). The media's influence on body image disturbance and eating disorders: We've reviled them, now can we rehabilitate them? *Journal of Social Issues, 55*, 339-353.

- Thompson, C., Russell-Mayhew, S., & Saraceni, R. (2012). Evaluating the effects of a peer-supported model: Reducing negative body esteem and disordered eating attitudes and behaviours in grade eight girls. *Eating Disorders, 20*, 113-126.
- Tiggemann M., & McGill, B. (2004). The role of social comparison in the effect of magazine advertisements on women's mood and body dissatisfaction. *Journal of Social and Clinical Psychology, 23*, 23-44.
- Tiggemann M., & Slater, A. (2004). Thin ideals in music television: A source of social comparison and body dissatisfaction. *International Journal of Eating Disorders, 35*, 48-58.
- Toro, J., Gomez-Peresmitre, G., Sentis, J., Valles, A., Casula, V., et al. (2006). Eating disorders and body image in Spanish and Mexican female adolescents. *Social Psychiatry and Psychiatric Epidemiology, 41*, 556-565.
- Treasure, J., & Schmidt, U. (2010). Motivational interviewing in the management of eating disorders. In, H. Arkowitz, H.A. Westra, W.R. Miller, & S. Rollnick, (Eds.), *Motivational Interviewing in the Treatment of Psychological Problems* (pp. 194-224). New York, NY: The Guilford Press.
- Varnado-Sullivan, P.J., & Horton, R.A. (2006). Acceptability of programs for the prevention of eating disorders. *Journal of Clinical Psychology, 62*, 687-703.
- Vella-Zarb, R.A., & Mills, J.S. (2011). Weight criticalness of others in restrained and unrestrained eaters. *Body Image, 8*, 157-162.
- Vitousek, K., Watson, S., & Wilson, G.T. (1998). Enhancing motivation for change in treatment-resistant eating disorders. *Clinical Psychology Review, 18*, 391-420.

- Vocks, S., Legenbauer, T., & Peters, I. (2007). Does shape matter? Preferences for a female therapist's figure among patients with eating disorders. *Psychotherapy Research, 17*, 416-422.
- Wade, T.D., Davidson, S., & O'Dea, J.A. (2003). A preliminary controlled evaluation of a school-based media literacy program and self-esteem program for reducing eating disorder risk factors. *International Journal of Eating Disorders, 33*, 371-383.
- Walters, E.E. & Kendler, K.S. (1995). Anorexia nervosa and anorexic-like syndromes in a population-based female twin sample. *American Journal of Psychiatry, 152*, 64-71.
- Warren, C.S., Holland, S., Billings, H., & Parker, A. (2012). The relationship between fat talk, body dissatisfaction, and drive for thinness: Perceived stress as a moderator. *Body Image, 9*, 358-364.
- Watson, D. & Clark, L.A. (1994). The PANAS-X: manual for the positive and negative affect schedule – expanded form. Department of Psychology, University of Iowa.
- Watson, H.J., Allen, K., Fursland, A., Byrne, S.M., & Nathan, P.R. (2012). Does enhanced cognitive behaviour therapy for eating disorders improve quality of life? *European Eating Disorders Review, 20*, 393-399.
- Welch, E., & Ghaderi, A. (2013). Eating disorders and self-esteem. In, A.K. Andershed (Ed.), *Girls at Risk: Swedish Longitudinal Research on Adjustment* (pp. 35-56), New York, NY: Springer Science & Business Media.
- Widom, C.S., & Czaja, S.J. (2005). Reactions to research participation in vulnerable subgroups. *Accountability in Research: Policies and Quality Assurance, 12*, 115-138.

- Wilksch, S. (2010). Universal school-based eating disorder prevention: Benefits to both high- and low-risk participants on the core cognitive feature of eating disorders. *Clinical Psychologist, 14*, 62-69.
- Wilksch, S.M., Tiggemann, M., & Wade, T.D. (2006). Impact of interactive school-based media literacy lessons for reducing internalization of media ideals in young adolescent girls and boys. *International Journal of Eating Disorders, 39*, 385-393.
- Wilksch, S.M., & Wade, T.D. (2009). Reduction of shape and weight concern in young adolescents: A 30-month controlled evaluation of a media literacy program. *Journal of the American Academy of Child and Adolescent Psychiatry, 48*, 652-661.
- Withers, G.F., & Wertheim, E.H. (2004). Applying the Elaboration Likelihood Model of Persuasion to a videotape-based eating disorders primary prevention program for adolescent girls. *Eating Disorders: The Journal of Treatment & Prevention, 12*, 103-124.
- Withers, G.F., Twigg, K., Wertheim, E.H., & Paxton, S.J. (2002). A controlled evaluation of an eating disorders primary prevention videotape using the Elaboration Likelihood Model of Persuasion. *Journal of Psychosomatic Research, 53*, 1021-1027.
- Weiss, K., & Wertheim, E.H. (2005). An evaluation of a prevention program for disordered eating in adolescent girls: Examining responses of high- and low-risk girls. *Eating Disorders: The Journal of Treatment and Prevention, 13*, 143-156.
- Witton, N.S., Leichner, P., Sandhu-Sahota, P., Filipelli, D. (2007). The Research Directions Survey: Patient and parent perspectives of eating disorder research. *Eating Disorders: The Journal of Treatment and Prevention, 15*, 205-216.

## Appendix A

 <p><b>YORK</b> UNIVERSITÉ UNIVERSITY</p>	Psychology Graduate Office Behavioural Sciences Building, 297 4700 Keele Street Toronto, ON M3J 1P3
<p><b>Department of Psychology, Faculty of Health</b></p>	Telephone: 416-736-5290 Fax: 416-736-5814

### Student Consent Form

Which Eating Disorder Prevention Messages Are Most Effective? Input from a Sample of Adolescents with Eating Disorders.

#### **Study Coordinator:**

**Nicole Witton, M.A.**  
Doctoral Student, Psychology  
York University  
Contact: 604-619-7369  
Email: nicolesw@yorku.ca

#### **Faculty Supervisor:**

**Jennifer Mills, Ph.D.**  
Registered Psychologist  
Associate Professor  
York University  
Contact: 416-736-5115, ext 33153

#### **Purpose of the Study**

Eating disorder prevention programs play an important role in preventing disordered eating in young women. However, there is a lack of research evidence to suggest which prevention messages are most effective. Up to this point, no study has ever examined the reactions of individuals actually suffering from eating disorders to different types of prevention messages. Yet these individuals have first-hand experience with the symptoms of eating disorders, and have the potential to provide researchers with important information about which prevention messages might be most successful in preventing eating disorder symptoms.

This study will compare the responses of individuals with eating disorders to the responses of undergraduate students such as yourself. We will ask you for your opinion of five different eating disorder prevention messages. We want to know which message you think is most likely to work, and why? As a group, adolescent patients' opinions of five different prevention messages will be examined and compared to the opinions of York undergraduate students without eating disorders. This study is a required part of the Study Coordinator's Ph.D. in Clinical Psychology.

## **Study Procedures**

This research study will examine your opinion of video messages that are commonly used in eating disorder prevention programs. During your session, you will view five different video clips, each containing a different prevention message. Following each video clip, you will be asked to complete a questionnaire describing your reaction to the message. The entire session should take approximately 45 minutes. Participation in this study is being offered through the Undergraduate Research Participant Pool (URPP) at York University. You will receive one credit toward your final grade in an introductory psychology course. (Note: credit is only offered through courses participating in the URPP).

## **Potential Risks**

There are no expected risks to this study. However, it does involve a sensitive topic (i.e., eating disorders) that may cause you to feel upset. If you have any questions or concerns following your participation, please speak to the Study Coordinator.

## **Potential Benefits**

There are a number of possible benefits to participating in this study. You may learn important information about yourself, eating disorders, and/or psychological research. Also, your participation in this study may benefit others who are at-risk for developing disordered eating.

## **Confidentiality**

Please note that *your identity and responses will remain strictly confidential*. Any data collected from you (e.g., rating scales, questionnaires, researcher notes) will be identified only by a code number. Also, the data will be kept in a locked filing cabinet, and computer files will be password protected. The data will be stored for up to five years, at which point it will be securely archived at York University. Confidentiality will therefore be provided to the fullest extent possible by law.

## **Further Information**

The results of this study will be available to participants upon its completion. If you have any questions or would like further information about this study, please contact the Primary Investigator by telephone (604-619-7369) or email (nicolesw@yorku.ca). You may also contact Dr. Mills by telephone (416-736-5115, extension 33153) or email (jsmills@yorku.ca).

## **Questions About the Research**

This research has been reviewed by the Human Participants in Research Committee, York University's Ethics Review Board, and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines. If you have any questions about this process, or about your rights as a participant in the study, please contact Ms. Alison Collins-Mrakas, Manager, Office of Research

Ethics, York Research Tower, 5<sup>th</sup> Floor, York University, by telephone (416-736-5914) or email (acollins@yorku.ca).

**Voluntary Participation**

Your participation in this study is completely voluntary, and you may withdraw from the study at any time without jeopardizing your right to receive course credit. Your decision to stop participating, or to refuse to answer particular questions, will not affect your relationship with the researchers, York University, or any other group associated with this project. Furthermore, should you decide to withdraw from the study, all associated data that has been collected from you will immediately be destroyed.

Your signature below indicates that you consent to participating in this study. It also indicates that you have received a copy of this consent form for your own records.

I \_\_\_\_\_, on this day, \_\_\_\_\_, consent  
Participant's Name (please print) Day/Month/Year

to participate in this study.

\_\_\_\_\_  
Participant's Signature

\_\_\_\_\_  
Student Number

\_\_\_\_\_  
Date

\_\_\_\_\_  
Study Coordinator's Signature

## Appendix B

 <b>CHILDREN'S &amp; WOMEN'S HEALTH CENTRE OF BRITISH COLUMBIA Mental Health Programs</b>	<b>EATING DISORDERS PROGRAM</b> Tel: 604-875-2200 Fax: 604-875-2468
<b>Department of Psychiatry, Division of Child Psychiatry</b>	Address: Children's & Women's Health Centre of BC Box #178, Level P3 – 4500 Oak Street Vancouver, BC V6H 3N1

### Parent Consent Form

Which Eating Disorder Prevention Messages Are Most Effective? Input from a Sample of Adolescents with Eating Disorders.

#### Principal Investigator:

**Ronald S. Manley, Ph.D.**

Psychologist  
Provincial Specialized Eating Disorders Program  
BC Children's Hospital  
Assistant Clinical Professor  
Department of Psychiatry  
University of British Columbia  
Contact: 604-875-2200, ext 2783

#### Co-Investigator:

**Nicole Witton, M.A.**

Doctoral Student, Psychology  
York University  
BC Children's Hospital  
Contact: 604-619-7369

#### Purpose of the Study

Eating disorder prevention programs are an important and effective strategy used to combat the development of disordered eating in young women. However, the content of such programs varies, and there is a lack of research evidence indicating which prevention messages are most effective. To date, no study has examined the reactions of adolescents with eating disorders to different prevention messages. However, these individuals have first-hand experience with the symptoms of eating disorders, and therefore have the potential to provide valuable insight into the appropriateness and effectiveness of such prevention messages.

This study will examine your daughter's opinion of five different eating disorder prevention messages that are frequently used in prevention programs. We want to know which message she thinks is most likely to work, and why? As a group, adolescent patients' impressions and evaluations of these messages will be examined and compared to those of adolescents without an eating disorder. This research is part of the co-investigator's doctoral dissertation, a required component of a doctoral degree in Clinical Psychology.

## **Study Procedures**

This research study will examine your daughter's opinion of different video messages intended to help prevent eating disorders. During the study session, she will view five different video segments, each containing a specific eating disorder prevention message. These messages are representative of those used in national and international eating disorder prevention campaigns. Following each segment, she will be asked to complete a questionnaire that has been designed to elicit her reactions to each message. The entire session should take no longer than 45 minutes of her time. Participation in this study is being offered through the Eating Disorders Program at BC Children's Hospital:

- a. Inpatients will be invited to participate as part of their daily program of activities. If they choose not to participate, they are welcome to watch the prevention videos without filling in the questionnaires provided by the researcher.
- b. Outpatients will be informed of the study and invited to participate by their pediatrician or nurse during a regular clinic appointment.

## **Potential Risks**

There are no expected risks to participating in this study. However, the study does involve a sensitive topic (i.e., eating disorders) that could cause distress in some research participants. Please note that all patients have access to a number of mental health and health care professionals (i.e., psychologists, psychiatrists, nurses, pediatricians) through the Eating Disorders Program at BC Children's Hospital.

## **Potential Benefits**

There are a number of anticipated benefits as a result of participation in this study, including the possibility that patients will learn valuable information about themselves, their eating disorder, and/or psychological research. Furthermore, the results of this research may benefit other adolescents who are at-risk for developing disordered eating. Study results can be made available to all participants and their parents through the Eating Disorders Program at BC Children's Hospital once the study has been completed.

## **Confidentiality**

Upon participating in this study, *your daughter's identity and responses will remain strictly confidential*. Any data collected from her (e.g., video ratings, questionnaires, researcher's notes) will be identified only by a code number. Furthermore, the data will be kept in a locked filing cabinet, and computer files will be password protected. The data will be stored for up to five years, at which point it will be securely archived at BC Children's Hospital.

## **Further Information**

This research has been reviewed and approved by the Human Participants Review Subcommittee of York University and conforms to the standards of the Canadian Tri-Council

Research Ethics guidelines. If you have any additional questions or desire further information with respect to this study, please contact Nicole Witton (co-investigator) at 604-619-7369.

**Rights of Research Participants**

If you have any concerns about your child’s treatment or rights as a research participant, you may contact the Research Subject Information Line in the UBC Office of Research Services at 604-822-8598, or by e-mail at [RSIL@ors.ubc.ca](mailto:RSIL@ors.ubc.ca).

**Informed Consent**

Your child’s participation in this study is entirely voluntary and she may refuse to participate or withdraw from the study at any time without jeopardy to her care in the Eating Disorders Program at BC Children’s Hospital. Should she decide to withdraw from the study, all associated data that has been collected from her will immediately be destroyed.

Your signature below indicates that you consent to having your child participate in this study. It also indicates that you have received a copy of this consent form for your own records.

I consent / I do not consent (*circle one*) to my child's participation in this study.

\_\_\_\_\_  
Parent/Guardian Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name of Parent/Guardian

\_\_\_\_\_  
Relationship to Minor

## Appendix C

 <b>CHILDREN'S &amp; WOMEN'S HEALTH CENTRE OF BRITISH COLUMBIA Mental Health Programs</b>	<b>EATING DISORDERS PROGRAM</b> Tel: 604-875-2200 Fax: 604-875-2468
<b>Department of Psychiatry, Division of Child Psychiatry</b>	Address: Children's & Women's Health Centre of BC Box #178, Level P3 – 4500 Oak Street Vancouver, BC V6H 3N1

### Patient Assent Form

Which Eating Disorder Prevention Messages Are Most Effective? Input from a Sample of Adolescents with Eating Disorders.

#### Principal Investigator:

**Ronald Manley, Ph.D.**

Psychologist  
Provincial Specialized Eating Disorders Program  
BC Children's Hospital  
Assistant Clinical Professor  
University of British Columbia  
Contact: 604-875-2200, extension 2783

#### Co-Investigator:

**Nicole Witton, M.A.**

Doctoral Student, Psychology  
York University  
BC Children's Hospital  
Contact: 604-619-7369

#### Purpose of the Study

Eating disorder prevention programs play an important role in preventing disordered eating in young women. However, there is a lack of research evidence to suggest which prevention messages are most effective. Up to this point, no study has examined the reactions of adolescents with eating disorders to different prevention messages. Yet these individuals have first-hand experience with the symptoms of eating disorders, and have the potential to provide researchers with important information about which prevention messages might be most successful in preventing eating disorder symptoms.

This study asks for your opinion of five different eating disorder prevention messages. We want to know which message you think is most likely to work, and why? As a group, adolescent patients' opinions of the prevention messages will be examined and compared to the opinions of adolescents without an eating disorder. This study is a required part of the co-investigator's Ph.D. in Clinical Psychology.

## **Study Procedures**

This research study will examine your opinion of video messages that are commonly used to prevent eating disorders. During the study session, you will view five different video clips, each containing a different prevention message. Following each video clip, you will be asked to complete a questionnaire to describe your reaction to the prevention message. The entire session should take about 45 minutes. Participation in the study is being offered through the Eating Disorders Program at BC Children's Hospital:

- c. Inpatients are invited to take part during their daily program of activities. If you choose not to participate, you are welcome to watch the prevention videos without filling in the questionnaires.
- d. Outpatients will be invited to take part by their pediatrician or nurse during a regular clinic appointment.

## **Potential Risks**

There are no expected risks to this study. However, the study does involve a sensitive topic (i.e., eating disorders) that may cause you to feel upset. Please remember that you are welcome to speak to any number of health care professionals (i.e., psychologists, psychiatrists, nurses, pediatricians) in the Eating Disorders Program at BC Children's Hospital.

## **Potential Benefits**

There are a number of possible benefits to participating in this study. You may learn important information about yourself, your eating disorder, and/or psychological research. Also, your participation in this study may benefit other adolescents who are at-risk for developing disordered eating. The results of this study can be available to all patients and parents through the Eating Disorders Program at BC Children's Hospital when the study is completed.

## **Confidentiality**

Please note that *your identity and responses will remain strictly confidential*. Any data collected from you (e.g., rating scales, questionnaires, researcher notes) will be identified only by a code number. Also, the data will be kept in a locked filing cabinet, and computer files will be password protected. The data will be stored for up to five years, at which point it will be securely archived at BC Children's Hospital.

## **Further Information**

This research has been reviewed and approved by the Human Participants Review Subcommittee of York University and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines. If you have any other questions or would like further information about this study, please contact the co-investigator at 604-619-7369.

**Rights of Research Participants**

If you have any concerns about your treatment or rights as a research participant, you may contact the Research Subject Information Line in the UBC Office of Research Services at 604-822-8598, or by e-mail at RSIL@ors.ubc.ca.

**Informed Assent**

Your participation in this study is completely voluntary and you may refuse to participate or withdraw from the study at any time, without any change in your care in the Eating Disorders Program at BC Children’s Hospital. Should you decide to withdraw from the study, all associated data that has been collected from you will immediately be destroyed.

Your signature below indicates that you assent to participating in this study. It also indicates that you have received a copy of this assent form for your own records.

I assent / I do not assent (*circle one*) to participate in this study.

\_\_\_\_\_  
Participant’s Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name of Participant

## Appendix D

### Eating Disorder Prevention Messages (Scripts)

#### **Message 1: Media Images Are Not Real**

Do you think the images of women you see in magazines and on TV are real? If your answer is yes, then think again! No person in everyday life can look like these girls and women... because these images are not real.

First, the girls in these photos are made to look attractive and glamorous by the clothes they are given to wear. They are dressed in the latest fashions, and in jewelry that is not their own, both of which are designed to make them look successful and alluring. Did you also know that if the clothes that are chosen for them don't fit properly, they use safety pins and tape to hold the back of a dress together, or to make a skirt fit?

Second, models and TV stars spend hours in a make-up room before being photographed or before shooting a TV scene. The make-up artists cover them with lipstick, foundation, eye make-up (the works!), to hide all of their blemishes, and make their facial features stand out. Even the "natural look" requires hours in the make-up room!

Third, the lighting and locations where the photos and scenes are shot, have been specially designed to make people look glamorous and beautiful. The lighting experts choose soft lights that make the skin look "just right". The set designer chooses a location like a nightclub, a beach, a flashy office setting, or a nice big house, which makes the model or TV star appear as though she and her surroundings are flawless. After all of that, magazine editors look through dozens of photos and only choose one or two of them, where everything looks perfect! The same thing happens for TV. Directors shoot the same scene over and over again, but you only see the best scenes.

On top of all this, magazine images and TV scenes are frequently altered by computers so that any natural curves, bumps or blemishes these girls and women may have are erased. Almost all of the images you see in fashion magazines, and many TV scenes have been computer altered. Airbrushing is a computer technique used by magazine editors to alter their images, where the editor can actually shave away or erase parts of the model's body and make it look like those aspects of her body were never there in the first place. This can mean that a model's waist is made to look a lot thinner than it actually is, or that the outer parts of her hips have been erased.

Stretching is another computer technique that editors use to alter the images, or parts of a photo. They can do this to an entire photo so that every part of the model looks taller and thinner. Or they can do it to specific parts of her body, so that the model's legs or arms look longer and thinner. All this computer alteration is done after the real model or TV star has already spent hours in the make-up room and shooting and re-shooting a photo or TV scene!

These images are not real. If you are looking at them as examples of how you 'should' be, then you are kidding yourself! No real person in everyday life can look like these fake images of women. You will always feel bad about yourself if you choose to compare yourself with these images. This kind of comparison is completely unfair, and unrealistic.

### **Message 2: Don't Fall Into the Comparison Trap**

You may recognize this scene. You are standing in the hallway at school, and down the hall you see one of the girls in school that you would really like to look like. You look at her, and start to feel bad about yourself. Many girls feel bad after comparing themselves with other girls their age. But hold on... are you being fair?

What aspects of yourself are you comparing? Usually when we compare ourselves to others, we only compare specific aspects of ourselves – usually the parts we are unsure about. When we do this, we are falling into the comparison trap.

In the comparison trap, we pick out things that we don't like about our appearance, and find people to compare ourselves with, who we feel are better in that particular area. For example, if you are worried that you are too short, you may find yourself only looking at girls who are taller than you. If you think your stomach is too big, you will only compare yourself to girls with small stomachs. At the same time, the girl you are comparing yourself with may dislike her nose and be comparing it with your nose, and with all the other people who have noses that she thinks are better. And one of the girls she is comparing herself with, may wish that she could be as fun and as good company as another girl.... You can see that it is really ridiculous that we do this to ourselves. When we do this, we are being unfair to ourselves, and just making ourselves feel bad.

To get out of the comparison trap, we need to look at everyone who is the same as us, and perhaps worse than us, and to focus on the things we like about ourselves... and that other people like about us. For example, if you were worried about your height, remind yourself to look at girls who are the same height and shorter than you. Even better, you could try to focus instead on all your positives. Remind yourself of times like when your friend commented about how funny you are, or when someone told you they loved your hair. By only focusing on and comparing the things that we don't like about ourselves, we make ourselves feel jealous and depressed. We can get out of this trap by being fair to ourselves, and reminding ourselves of the things that we, and other people really like about us. Watch out - steer clear of the comparison trap!

### **Message 3: The Ideal Body Shape Changes Through History and Between Cultures**

It is very interesting to observe how what is considered beautiful has changed over time. If we go back in history, we can see that the fashion models who are popular now are not the same as the models who were fashionable in the olden days. In the 18 and 1900s, curvy, round women were considered the ideal shape. If you look at the paintings in museums, you see these women everywhere. Looking back in recent history, we can see that in just 50 years there have been many different body shapes that have been considered the most beautiful. In the 1950s, the curvaceous figure of Marilyn Monroe was the body that every woman wanted, and then in the 1980s, a taller, thinner body shape was considered the best kind of body.

A very thin body seems to be fashionable right now. But there is nothing about thinness that, by itself, is very special. It is just that society likes this particular body shape at this moment in time. Another body shape will be considered the most beautiful body type in 5 or 10 or 30 years time.

We can see that people's notions of what is ideal can also vary according to which country they live in, and which culture they belong to. For example, it is considered a sign of beauty to have a stretched neck in Burma. Women's necks can reach up to 30 cm long, and the longer their necks, the more attractive they are considered. In India, larger, rounder women are considered more desirable and seen as more successful than thinner, smaller women. So you can see that there is great variation in how beauty is defined by different cultures.

It seems obvious that we are very influenced by the society, and the time that we live in. These days, we are especially influenced by societal definitions of beauty, because we are constantly shown and told what the "body of the moment" is, through magazines and TV and movies and the internet, which are all around us almost all of the time. When we don't fit into

the particular body shape that is fashionable at this point in time, we can feel bad about ourselves... like we are not good enough. But we are being unfair to ourselves!

Imagine living through all the ages, and all the cultures. It would be pretty hard to try and keep changing ourselves to fit into all of the different “ideal” bodies. We are unique people, with unique bodies that are almost never going to match the “ideal” of the moment.

What we need to remember, is that real and lasting beauty comes from a person being whom they naturally are. Real beauty exists in all different shapes and sizes, no matter what body size is considered fashionable at the time. The true ideal shape for each person is the one that is natural to them. Don’t be fooled by the ideal... be yourself!

#### **Message 4: Fat Talk – Don’t Create It, Deflate It!**

Do you and your friends ever say, “I’m so fat...”? Sometimes people say that because they want to be reassured about themselves. It often happens among friends at school, and it almost always ends up with everyone feeling bad at the end of the conversation. When friends talk about this kind of thing, they automatically begin comparing their body sizes and shapes, and ending up thinking, “if she thinks she’s fat, then I must be fat too!”

This kind of conversation can make us feel bad about our bodies. Friends often respond to comments like this by saying, “Oh no, you’re not fat, I’m much fatter than you! I’m the one who needs to lose weight!” The problem with this type of conversation is that it ends up making everyone feel bad about their bodies. Everybody becomes focused on their appearance, and it suddenly feels like it’s really important to be thin, and that this is how to be liked by your friends.

I’ve talked about this with girls who have had these conversations, and all of them have said that they ended up feeling bad about their bodies – and these girls were all very different

body sizes and shapes! Even the thinner girls felt bad after talking about how they looked.

Talking with your friends about body size and shape often starts off because someone feels a bit insecure, and wants to hear from a friend that she is fine. However, a lot of the time, this “fat talk” can make all of your friends feel bad about their bodies, even if that wasn’t the intention! The next time you find yourself involved in one of these “fat talk” conversations, you may want to remind your friends that there is no “right” body shape or size, and that each of you have unique characteristics that make you special.

The next time one of your friends says, “I’m so fat...”, try telling her that she looks like she is the right weight for her shape, and remind her of something unique and special about her that doesn’t have anything to do with appearance. This way the conversation can turn away from hurting you and your friends, and become a conversation that helps boost each of you, making you feel a lot more positive and happy. Fat talk hurts you and your friends, so don’t create it – deflate it!

### **Message 5: Appearance Doesn’t Equal How Valuable or Likeable You Are**

Do you think that you need to look a certain way to be liked, accepted, and valued as a person? Many of us feel this way, but it just isn’t true. When you think of some of the people that you love to be around, those who you admire, it is often the unique things about them that you love and admire, not the way they look. People don’t usually say, “She’s a really special friend... mostly because she’s thin”. You may like one of your friends because she is caring, enthusiastic, or has a great sense of humour. Or maybe she is very loyal and giving. You may admire her for her devotion to her family, her passion for physics and chemistry, or her outgoing personality and flare for the dramatic. Just like we love and admire the unique and positive

things about other people, they love and admire the unique and positive things about us.

Remember, your appearance simply does not determine how likeable you are!

We all have wonderful aspects of ourselves that make us valuable people. Sometimes it is hard to see what these characteristics are in ourselves, but that is because we aren't used to looking for them. Imagine you are one of your good friends – what would she say she especially liked about you? What about your family? What would they say is unique and positive about you? When you start to think about the things that are most important to you, you come to recognize and remember what is so special about yourself. Once you place enough emphasis on your special qualities, you begin to realize that appearance is not as important as you originally thought. Don't be fooled... your appearance does not determine how valuable you are!

Appendix E

Message Evaluation Questionnaire

 <p><b>CHILDREN'S &amp; WOMEN'S HEALTH CENTRE OF BRITISH COLUMBIA Mental Health Programs</b></p>	<p><b>EATING DISORDERS PROGRAM</b> Tel: 604-875-2200 Fax: 604-875-2468</p>
<p><b>Department of Psychiatry, Division of Child Psychiatry</b></p>	<p>Address: Children's &amp; Women's Health Centre of BC Box #178, Level P3 – 4500 Oak Street Vancouver, BC V6H 3N1</p>

**Questionnaire A**

**Please circle the response that best describes your reaction to the video segment you just watched.**

**1. This message is....**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
not at all important to me	mostly unimportant to me	slightly important to me	mostly important to me	very important to me

**2. This message is....**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
completely boring to me	mostly boring to me	slightly interesting to me	mostly interesting to me	very interesting to me

**3. How new is the information in this message to you?**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
I've heard all this information before	I've heard most of this information before	some of the information is new and some is not new	most of this information is new to me	all of this information is new to me

**4. How much do you believe this message?**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
I don't believe it at all	I mostly don't believe it	I neither believe nor don't believe it	I mostly believe it	I completely believe it

**5. How much do you think this message was convincing to you?**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
completely unconvincing	mostly unconvincing	neither unconvincing nor convincing	mostly convincing	completely convincing

**6. I could....**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
NOT understand this message at all	NOT understand most of this message	NOT understand some of this message	understand most of this message	completely understand this message

**7. Hearing this message made me....**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
feel much less happy about myself as I am right now	feel a little less happy about myself as I am right now	feel no change in how happy I am about myself as I am right now	feel a little more happy about myself as I am right now	feel much more happy about myself as I am right now

**8. Hearing this message made me....**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
much more likely to worry about my weight	somewhat more likely to worry about my weight	no change in the likelihood of worrying about my weight	somewhat less likely to worry about my weight	much less likely to worry about my weight

**9. Hearing this message in the video made me....**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
much worse about my body	a little worse about my body	no change in how I feel about my body	a little better about my body	much better about my body

**10. Hearing this message made me....**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
much more likely to go on a diet	somewhat more likely to go on a diet	no change	somewhat less likely to go on a diet	much less likely to go on a diet

**11. Hearing this message made me....**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
much more likely to compare myself to others	somewhat more likely to compare myself to others	no change in the likelihood of comparing myself to others	somewhat less likely to compare myself to others	much less likely to compare myself to others

**Please write down some of the thoughts that you had while you were watching the video.**

**Is there anything you didn't like in the message?**

**Is there anything that you really liked about the message?**

**Other thoughts...**

## Appendix F

### Presenter Evaluation Questionnaire

 <b>CHILDREN'S &amp; WOMEN'S HEALTH CENTRE OF BRITISH COLUMBIA</b> <b>Mental Health Programs</b>	<b>EATING DISORDERS PROGRAM</b> Tel: 604-875-2200 Fax: 604-875-2468  Address: Children's & Women's Health Centre of BC Box #178, Level P3 – 4500 Oak Street Vancouver, BC V6H 3N1
<b>Department of Psychiatry, Division of Child Psychiatry</b>	

### Questionnaire B

**Please circle the response that best describes your reaction to the five video segments you just watched.**

**1. How attractive did you find the individual who presented the messages in these videos?**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
very attractive	somewhat attractive	neither attractive nor unattractive	somewhat unattractive	very unattractive

**2. How much do you think attractiveness matters in presenting these messages?**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
it matters a great deal	it matters somewhat	neutral	it doesn't matter very much	it doesn't matter at all

**3. How credible (or reliable) did you find the individual who presented these messages?**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
very reliable	somewhat reliable	neutral	somewhat unreliable	very unreliable

**4. How much do you think credibility (or reliability) matters in presenting these messages?**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
it matters a great deal	it matters somewhat	neutral	it doesn't matter very much	it doesn't matter at all

**5. How do you recall the presenter's weight/shape?**

Please mark a vertical line on the continuum below.

Small/thin |-----| Big/curvy

**6. Who do you think should present this kind of message?**

Please circle your answer(s). If you choose more than one answer, please rank order them using numbers.

- a. Medical professional (e.g., doctor, nurse)
- b. Mental health professional (e.g., psychologist, social worker)
- c. Teacher
- d. Parent
- e. Peer
- f. Recovered eating disorder patient
- g. Other (please specify): \_\_\_\_\_

**7. Which gender do you think would be most convincing in presenting these messages?**

Please circle your answer.

Male

Female

**8. Who do you think would be the ideal target audience for these messages?**

Please indicate your answers below.

- a. Age(s): \_\_\_\_\_
- b. Grade/Education Level(s): \_\_\_\_\_
- c. Gender(s):                      Male              Female              Both
- d. Other: \_\_\_\_\_

**9. Where do you think these messages would be most effective?**

Please circle your answer(s). If you choose more than one answer below, please rank order them using numbers.

- a. Schools
- b. Community programs
- c. Parents
- d. Doctor's office
- e. Other (please specify): \_\_\_\_\_

**Please write down any other thoughts you had about the videos and/or the messages (continue on reverse page).**

Appendix G

Demographic Questionnaire

 <b>CHILDREN'S &amp; WOMEN'S HEALTH CENTRE OF BRITISH COLUMBIA Mental Health Programs</b>	<b>EATING DISORDERS PROGRAM</b> Tel: 604-875-2200 Fax: 604-875-2468
<b>Department of Psychiatry, Division of Child Psychiatry</b>	Address: Children's & Women's Health Centre of BC Box #178, Level P3 – 4500 Oak Street Vancouver, BC V6H 3N1

**Questionnaire C**

**Please answer the following questions to the best of your ability.**

1. Birth date: \_\_\_\_\_
2. Grade level (or equivalent): \_\_\_\_\_
3. Do you typically attend a public or private school? \_\_\_\_\_
4. Eating disorder diagnosis (if known): \_\_\_\_\_
5. Duration of eating disorder: \_\_\_\_\_
6. Length of time in the Eating Disorders Program (inpatient & outpatient):  
\_\_\_\_\_
7. Number of inpatient admissions: \_\_\_\_\_
8. With who do you usually live? (Please list each member in household):  
\_\_\_\_\_  
\_\_\_\_\_
9. Relationship status (e.g., single, dating, etc.): \_\_\_\_\_
10. Ethnicity: \_\_\_\_\_
11. If you were not born in Canada, please indicate the number of years you have lived in this country: \_\_\_\_\_
12. Current height: \_\_\_\_\_
13. Current weight: \_\_\_\_\_

14. Stage of change / Motivation to recover (please circle one):

- a. Precontemplation
- b. Contemplation
- c. Preparation
- d. Action
- e. Maintenance

15. How quickly did you expect to recover from your ED upon entering this program?

---

16. Have you had previous exposure to ED prevention messages? If so, please describe the details (e.g., what, when, where)?

17. Is there anything else you would like to add (e.g., comments, ideas, experiences)?

Appendix H

 <p>YORK UNIVERSITÉ UNIVERSITY</p>	Psychology Graduate Office Behavioural Sciences Building, Rm 297 4700 Keele Street Toronto, ON M3J 1P3  Telephone: 416-736-5290 Fax: 416-736-5814
<p><b>Department of Psychology, Faculty of Health</b></p>	

**Questionnaire C**

**Please answer the following questions to the best of your ability.**

1. Birth date: \_\_\_\_\_  
(day/month/year)

2. Year of University: \_\_\_\_\_

3. Major (if known): \_\_\_\_\_

4. With who do you usually live? (Please list each member in household):

\_\_\_\_\_

\_\_\_\_\_

5. Relationship status (e.g., single, dating, etc.): \_\_\_\_\_

6. Ethnicity: \_\_\_\_\_

7. If you were not born in Canada, please indicate the number of years you have lived in this country: \_\_\_\_\_

8. Current height: \_\_\_\_\_

9. Current weight: \_\_\_\_\_

10. What interested you about this particular URPP study?

---

---

11. Have you had previous exposure to ED prevention messages? If so, please describe the details (e.g., what, when, where)?

12. Is there anything else you would like to add (e.g., comments, ideas, experiences)?

## Appendix I

### PANAS-X

This scale consists of a number of words and phrases that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way *right now*. Use the following scale to record your answers:

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
very slightly or not at all	a little	moderately	quite a bit	extremely

- |                               |                   |
|-------------------------------|-------------------|
| 1. _____ cheerful             | 23. _____ timid   |
| 2. _____ disgusted            | 24. _____ alone   |
| 3. _____ attentive            | 25. _____ alert   |
| 4. _____ bashful              | 26. _____ upset   |
| 5. _____ sluggish             | 27. _____ angry   |
| 6. _____ daring               | 28. _____ bold    |
| 7. _____ surprised            | 29. _____ blue    |
| 8. _____ strong               | 30. _____ shy     |
| 9. _____ scornful             | 31. _____ active  |
| 10. _____ relaxed             | 32. _____ guilty  |
| 11. _____ irritable           | 33. _____ joyful  |
| 12. _____ delighted           | 34. _____ nervous |
| 13. _____ inspired            | 35. _____ lonely  |
| 14. _____ fearless            | 36. _____ sleepy  |
| 15. _____ disgusted with self | 37. _____ excited |
| 16. _____ sad                 | 38. _____ hostile |
| 17. _____ calm                | 39. _____ proud   |
| 18. _____ afraid              | 40. _____ jittery |
| 19. _____ tired               | 41. _____ lively  |
| 20. _____ amazed              | 42. _____ ashamed |
| 21. _____ shaky               | 43. _____ at ease |
| 22. _____ happy               | 44. _____ scared  |

45. \_\_\_\_\_ drowsy
46. \_\_\_\_\_ angry at self
47. \_\_\_\_\_ enthusiastic
48. \_\_\_\_\_ downhearted
49. \_\_\_\_\_ sheepish
50. \_\_\_\_\_ distressed
51. \_\_\_\_\_ blameworthy
52. \_\_\_\_\_ determined
53. \_\_\_\_\_ frightened
54. \_\_\_\_\_ astonished
55. \_\_\_\_\_ interested
56. \_\_\_\_\_ loathing
57. \_\_\_\_\_ confident
58. \_\_\_\_\_ energetic
59. \_\_\_\_\_ concentrating
60. \_\_\_\_\_ dissatisfied with self

## Appendix J

### SSES (“Current Thoughts Scale”)

This is a questionnaire designed to measure what you are thinking at this moment. There is, of course, no right answer for any statement. The best answer is what you feel is true of yourself at this moment. Be sure to answer all of the items, even if you are not certain of the best answer. Again, answer these questions as they are true for you RIGHT NOW.

Using the following scale, place a number in the box to the right of the statement that indicates what is true for you at this moment:

- 1 = not at all
- 2 = a little bit
- 3 = somewhat
- 4 = very much
- 5 = extremely

1. I feel confident about my abilities.
2. I am worried about whether I am regarded as a success or failure.
3. I feel satisfied with the way my body looks right now.
4. I feel frustrated or rattled about my performance.
5. I feel that I am having trouble understanding things that I read.
6. I feel that others respect and admire me.
7. I am dissatisfied with my weight.
8. I feel self-conscious.
9. I feel as smart as others.
10. I feel displeased with myself.
11. I feel good about myself.
12. I am pleased with my appearance right now.
13. I am worried about what other people think of me.
14. I feel confident that I understand things.
15. I feel inferior to others at this moment.
16. I feel unattractive.
17. I feel concerned about the impression I am making.
18. I feel that I have less scholastic ability right now than others.
19. I feel like I'm not doing well.
20. I am worried about looking foolish.