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Eating Disorder and Obesity Prevention Aimed at Shared Risk Factors: Does Sequence of Addressing Risk Factors Influence Intervention Effectiveness?

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Eating Disorder and Obesity Prevention Aimed at Shared Risk Factors: Does Sequence of
Addressing Risk Factors Influence Intervention Effectiveness?

by

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A THESIS

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Abstract

This study investigated a school-based prevention program aimed at five shared risk factors of eating disorders and obesity (body image, media, self-esteem, dieting, and weight-based teasing), and its effect on developmental assets. Developmental assets have been found to protect against disordered eating attitudes and behaviours. Activities corresponding to each of the shared risk factors were provided to junior high school students by trained teachers; five different intervention sequences were tested. Over two years, 255 students in total completed the Developmental Assets Profile (DAP) at three time points: before, immediately after, and two to five months following the interventions. Doubly multivariate analyses demonstrated that one sequence was most effective. In year one there were significant increases for this sequence on the internal DAP subscales. In year two these trends persisted, though were not significant. These findings suggest intervention order may be an important aspect of effective obesity and eating disorder prevention.

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Eating Disorder and Obesity Prevention Aimed at Shared Risk Factors: Does Sequence of Addressing Risk Factors Influence Intervention Effectiveness

CHAPTER 1: INTRODUCTION

The study discussed in this paper investigated the efficacy of interventions aimed at the concurrent prevention of eating disorders and obesity. Specifically, the sequence effects of five interventions, each made up of activities targeting five shared risk factors of obesity and eating disorders were examined. In this chapter, different approaches to problem prevention and youth development are outlined in order to orient the reader to the specific approach taken in the present study.

Small and Memmo (2004) distinguish three separate but overlapping contemporary approaches to problem prevention and youth development. These include prevention, resilience, and positive youth development. Each approach provides a distinct contribution to our understanding of youth development, adaptation, and coping. The aim of these approaches is to decrease problem behaviour and improve competence in youth. These approaches are constructed on the basic principles of risk, protection, and assets, but they differ in their emphasis on each of these. The present study integrates all three of these approaches in the concurrent prevention of eating disorders and obesity. In this chapter these three approaches are discussed, and their integration for the purposes of the current study is outlined. Important distinctions between terms such as prevention, risk factors, protective factors, resiliency, and developmental assets are also made here.

Prevention Approaches

The modern prevention movement emerged out of the recognition that it is often more efficient and cost-effective to prevent issues from occurring initially rather than treat

them after they occur. Prevention approaches emerged in the early 1900s (Durlak, 1997), but the modern prevention movement, related to the well-being of youth specifically, began 35 years ago (Small & Memmo, 2004). The movement was largely influenced by the mental health field, specifically the work on schizophrenia and other mental illness (Caplan, 1964; Cicchetti & Garnezy, 1993).

Recently, it has been recommended that prevention be divided into three subcategories: universal, selective, and indicated (Durlak, 1997; Institute of Medicine, 1994; Munoz, Mrazek, & Haggerty, 1996). Universal prevention targets an entire population and is aimed at preventing the initial occurrence of a problem. An older term for universal prevention is “primary prevention” (Caplan, 1964). Selective prevention targets a subgroup of a population which is at risk of problem development, but is not yet demonstrating any difficulties. An older term for universal prevention is “secondary prevention” (Caplan). Finally, indicated prevention targets a subgroup of a population which is at high-risk and is already exhibiting some symptoms of a problem. The third type of prevention associated with the terms “primary” and “secondary” prevention referred to above, is “tertiary prevention.” Tertiary prevention refers to the reduction of an issue among a specific group of people who are already experiencing the issue. This definition differs from that of “indicated prevention” in that the group targeted is not only experiencing preliminary symptoms, but is experiencing the actual issue (e.g. a diagnosable eating disorder). Some authors have argued that tertiary prevention should be regarded as a form of treatment, and is not interchangeable with the term “indicated prevention” (e.g. Durlak, 1997; Institute of Medicine, 1994). The current study employs a primary

prevention approach in that it targets an entire population and is aimed at averting the initial occurrence of an issue.

There are three strategies utilized by the prevention approaches, as outlined by Small and Memmo (2004): (a) diminishing or eradicating risk factors; (b) enhancing or promoting protective factors; and (c) increasing the competencies, skills, and/or strengths of the target population in order to improve coping abilities in reaction to challenges or stress which could potentially lead to problems in the future (Durlak, 1997). Risk factors are indicators of a higher likelihood that a specific subgroup of a population will experience a certain problem (Bronfenbrenner, 1979). Protective factors are safeguards that promote an individual's ability to resist hazards, risks, and/or stressful events and enhance both competency and adaptation (Rutter, 1987). By definition, protective factors can only be present when a risk factor is also present. A protective factor guards against risk factors, but does not necessarily improve a youth's potential in other areas of her/his life (Small & Memmo).

The present study utilized two of the above strategies. The first is (a) diminishing or eradicating risk factors. The current study did this by addressing shared risk factors of obesity and eating disorders. However, a limitation of the prevention approach which has been recognized by multiple researchers (e.g. Benson, 1997; Pittman & Cahill, 1991; Small & Memmo, 2004) is that it tends to be deficit-focused, accentuating youth problems, and resulting in an orientation towards weakness as opposed to strengths. This can be an issue because it potentially leads to stigmatization, undermining the target population, and/or deterring youth from becoming involved in programs (Small & Memmo). The prevention approach does not generally focus on how to advance normative youth development.

In order to counterbalance this deficit-focus, the current study also utilized the third strategy described above: (c) increasing the competencies, skills, and/or strengths of the target population in order to improve coping abilities in reaction to challenge or stress which could potentially lead to problems in the future. This strategy moves away from the deficit-focus towards a strength-focus, avoids stigmatization, and supports the target population instead of undermining them. This strategy is also oriented towards the promotion of youth development, which is discussed later in this chapter.

Resilience Approaches

A second approach to addressing youth problems and enhancing youth development is the resilience approach. Research on resilience developed from the field of universal/primary prevention when it was recognized that the majority of youth who experience developmental challenges did not develop problematic outcomes (Garmezy, 1993). The chief aim of resilience research has been to identify and understand factors which differentiate youth who exhibit adaptation in reaction to adversity from those who experience problem behaviours (Small & Memmo, 2004). Most researchers assert that resilience can only exist when two conditions are present: (a) multiple stressors, and (b) competence in spite of stressors (Bartelt, 1994; Masten, 2001; Rutter, 1987; Werner, 1993). It is important to note that resilience is separate from coping. Coping emphasizes the identification of cognitive and behavioural efforts utilized to manage stress (Ayers, Sandler, & Twohey, 1998). Resilience, on the other hand, emphasizes the identification of stable qualities (in the youth or environment) that aid youth in enduring stress or support adaptation or recovery subsequent to stress (Masten).

Small and Memmo (2004) describe four processes through which resiliency functions. These include: (a) protective processes, (b) specific exceptional personal qualities such as sociability or intelligence, (c) successful recovery from a stressful situation, and (d) steeling. Protective processes are often contextual and function to eliminate risk before problems occur. Exceptional personal characteristics allow the youth to access supplementary resources. Recovery processes occur subsequent to a crisis event and can include decreasing demands, utilizing coping strategies, and/or changing the meaning assigned to a situation (McCubbin, McCubbin, Thompson, Han, & Allen, 1997). Finally, steeling occurs when a difficult situation strengthens an individuals' capacity to weather subsequent challenging experiences (Rutter, 1981; Rutter & Maughan, 1997). The present study focuses on the second process listed here: enhancing certain exceptional personal characteristics in youth in order to promote resiliency.

These characteristics are described as natural abilities or temperaments. These assets enable youth to access the resources they need to flourish developmentally and to recognize and avoid risks which could lead to problematic outcomes (Small & Memmo, 2004). This process of resilience via personal qualities is akin to the second prevention approach strategy employed by this study outlined above: increasing the competencies, skills, and/or strengths of the target population in order to successfully manage stress that could result in future problems. This is an example of the overlap between the three overarching approaches outlined in this chapter.

Positive Youth Development Approaches

A third approach to addressing youth problems and enhancing youth development is the positive youth development approach. This approach is a relatively recent

development. In comparison to prevention approaches, positive youth development emphasizes the enhancement of positive development and the conditions that contribute to youth well-being and health. This approach stresses that problem prevention falls short of preparing youth for adulthood (Roth, Brooks-Gunn, Murray, & Foster, 1998).

The term “positive youth development” has been defined at last three different ways (Whitlock & Hamilton, 2001): (a) as a natural process of development; (b) as a group of organizations and/or programs which promote youth development; and (c) as a philosophy characterized by a positive, asset-building orientation that promotes strengths rather than grouping youth according to deficits. For the purposes of the present study, positive youth development will be defined by the last definition outlined here. Again, this is in order to focus on the strengths of youth, as opposed to only the problems.

The positive youth development approach is based on four assumptions (Connell, Gambone, & Smith, 1998; Pittman & Irby, 1996; Pittman & Zeldin, 1995; Roth et al., 1998). These include: (a) aiding youth in realizing their full potential is the most effective way to prevent them from experiencing problems, (b) youth need supports and opportunities to thrive, (c) communities need to construct the capacity to support positive youth development, and (d) youth should not be viewed as problems to be repaired but as partners to be developed. The current study focuses on the first assumption of positive youth development, that helping youth to achieve their potential is the best way to prevent problems.

In support of this assumption, Small and Memmo (2001) found that as the number of developmental assets a youth possessed increased, the likelihood of problem behaviours decreased. Developmental assets are qualities which improve and promote outcomes that

demonstrate competence in youth (Small & Memmo, 2004). It is important to note that developmental assets are distinct from protective factors. As mentioned above, protective factors can only be present alongside risk factors, but developmental assets can exist in the absence of risk factors.

One of the most prevalent and influential positive youth development frameworks is the Search Institute's developmental assets model (Benson, 1997). As compared to other positive youth development models, the developmental assets model has been more extensively written about, is more detailed, and involves a survey process that can identify assets in a specific community. It is also easy to both comprehend and apply.

The developmental assets model is constructed around 40 developmental assets that are defined as building blocks which are critical for enhancing healthy youth development and well-being (Benson, Leffert, Scales, & Blyth, 1998). These assets refer to the patterns of interactions, norms, social environments, and relationships that are essential to promoting youth development. The assets are divided into internal and external categories. The present study focuses on the promotion of internal assets which have been demonstrated to be the assets which are the strongest protectors against disordered eating attitudes and behaviours (French, Leffert, et al., 2001).

Operational Definitions

Developmental assets: qualities which improve and promote outcomes that demonstrate competence in youth.

Disordered eating: unhealthy eating behaviours such as over-restrictive dieting, overeating and/or binge eating, and self-induced vomiting.

Eating disorders: psychiatric disorders characterized by extreme disturbances in attitudes and behaviours surrounding eating, fear of fat, preoccupation with weight, and a sense of self that is overly influenced by shape and weight.

Indicated prevention: targets a subgroup of a population which is at high-risk for an issue and is already exhibiting some symptoms of the problem.

Obesity: a state of excess body fat in relation to lean body mass.

Protective factors: safeguards that promote an individual's ability to resist hazards, risks, and/or stressful events and enhance both competency and adaptation.

Resilience: the ability to react to adversity with adaptation as opposed to experiencing problem behaviours.

Risk factors: indicators of a higher likelihood that a specific subgroup of a population will experience a certain problem.

Selective/secondary prevention: targets a subgroup of a population which is at risk of problem development, but is not yet demonstrating any difficulties.

Universal/primary prevention: targets an entire population and is aimed at preventing the initial occurrence of a problem.

Summary

A new approach to the prevention of eating disorders and obesity is to target shared risk factors, as well as enhance developmental assets. The aim of the current study is to investigate sequence effects of intervention activities addressing shared risk factors for eating disorders and obesity from a positive youth development approach. Sequences which are successful in enhancing internal developmental assets will be considered

effective. This promotion of developmental assets of the positive youth development approach is relevant to all youth, not just certain targeted groups.

Prevention has been applied to a wide variety of physical and mental health issues. The present study focuses on the prevention of weight-related issues specifically. The weight-related issues commonly recognized in the Western world currently are obesity and eating disorders, as well as subclinical variants of both of these issues.

CHAPTER 2: LITERATURE REVIEW

Obesity and Eating Disorders

Both obesity and eating disorders are issues which affect people today in part due to the current obesogenic environment coupled with an extremely thin/lean ideal (Steiger & Bruce, 2007). Eating disorders, including bulimia nervosa and anorexia nervosa, have been defined as psychiatric disorders characterized by extreme disturbances in attitudes and behaviours surrounding eating, fear of fat, preoccupation with weight, and a sense of self that is overly influenced by shape and weight (American Psychological Association, 1994). It is estimated that between 6 and 8% of the population experience eating disorders including anorexia nervosa, bulimia nervosa, and eating disorder not otherwise specified (Berkman et al., 2006; Garfinkel et al., 1995; Herzog & Delinsky, 2001; Hoek & vanHoeken, 2003; Hudson, Hiripi, Pope, & Kessler, R., 2007; Keski-Rahkonen et al., 2007; Woodside et al., 2001). The peak onset of anorexia nervosa is during adolescence (Peebles, Wilson, & Lock, 2006).

Obesity is a state of excess body fat in relation to lean body mass, with a a body mass index (BMI) of above 30kg/m² being considered obese (World Health Organization, 2000). The Canadian Community Health Survey found 23% of Canadian adults were obese (Lau et al., 2007; Tjepkema, 2005). In 2005, 10% of male and 9% of female Canadian children and adolescents were classified as obese (Shields, 2005). Both obesity and anorexia nervosa have been particularly challenging to treat (LeGrange & Loeb, 2007). For these reasons, preventing obesity and eating disorders before they occur may be an efficient way to address these issues. Additionally, beyond formal diagnostic categories, subclinical variants of obesity and eating disorders are experienced by a large portion of the population

(Jones, Bennett, Olmstead, Lawson & Rodin, 2001; Lau et al., 2007; McVey, Davis, et al., 2005). Canadian studies show that weight and shape concern, which commonly precedes disordered eating, begins early (e.g. 10 years of age) (McVey, Tweed, & Blackmore, 2004, 2005). Furthermore, the proportion of children/youth with disordered eating behaviours and attitudes increases throughout adolescence (Jones et al.).

Additional research demonstrates that adolescents specifically are an at-risk age group for partial-syndrome eating disorders. McVey and colleagues found that 10% of girls between 10 to 14 years of age reported using methods of extreme weight loss, such as vomiting, laxative use, and dieting (McVey, Tweed, et al., 2004, 2005). Data from a number of studies demonstrated that 16 to 25% of teen girls were engaging in at least one symptom of an eating disorder (e.g. self-induced vomiting, laxatives, fasting for more than 24 hours, and/or using diet medications) (Cook, MacPherson, & Langille, 2007; Jones et al., 2001). Individuals with such subthreshold disorders often experience psychopathology, psychological distress, physiological complications, and health impairment (LeGrange & Loeb, 2007). For example, binge eating and purging can cause cardiovascular, endocrine, gastrointestinal, oral, and renal complications, even if a diagnostic threshold of an eating disorder is not met (Burns & Gavey, 2004). Furthermore, it has been demonstrated that the earlier eating disorder symptoms occur, the more difficult the eating disorder is to treat (Safer, Lively, Telch, & Agras, 2002). These studies suggest that adolescence is a strategic demographic for which to implement intervention programs addressing unhealthy weight concern. This early intervention could prevent more extreme and persistent disordered eating behaviours and attitudes that normally would follow.

In addition to partial-syndrome eating disorders, the subthreshold variant of obesity in the form of overweight also affects many individuals. Overweight refers to individuals who have excess body fat in relation to lean body mass, but do not meet the 30kg/m² criterion of diagnosed obesity. The Canadian Community Health Survey found that 36% of Canadian adults were overweight (Lau et al., 2007; Tjepkema, 2005). Additionally, more than one quarter of Canadian children and youth, aged 2 to 17, were overweight (Lau et al., 2007). Individuals with higher body weights, even if they do not reach the obesity criterion, experience psychosocial issues as a result of weight-based stigmatization. These include experiences such as weight-based teasing and discrimination (Carr & Friedman, 2005; Haines, Neumark-Sztainer, Hannan, van den Berg, & Eisenberg, 2008; Wang, Brownell, & Wadden, 2004), and behaviours such as disordered eating (e.g. binge eating; Irving & Neumark-Sztainer, 2002; Neumark-Sztainer, 2003, 2005). These findings demonstrate that it is necessary to address not only diagnosable obesity, but its subthreshold variants as well.

Individuals with an earlier onset of excess weight gain are at a higher risk for continued weight gain and poor long-term health outcomes (Dubois, 2006; Flynn et al., 2006; Lau et al., 2007; Nader et al., 2006; O'Loughlin, Gray-Donald, & Paradis, 2000; Shaw, O'Rourke, Delmar, & Kenardy, 2007; Summerbell et al., 2005; Yanovski, 2003). For example, 86% of a sample of obese children was at risk for cardiovascular problems as compared to 21% of normal weight counterparts (Csabi, Torok, Jeges, & Molnar, 2000). These studies suggest that if early prevention¹ effectively avoids or delays excess weight

¹ For the purposes of the remainder of this paper the term “prevention” will refer to the action of precluding eating disorder and obesity symptoms, whereas the term “intervention” will refer to actual prevention programs.

gain, additional weight gain could be avoided and health may be sustained. Additional research indicates that early prevention during adolescence may be the best course of action to avoid both the onset of subclinical symptoms of obesity and eating disorders and the progression of symptoms to a diagnosable issue (Russell-Mayhew, 2006).

Research demonstrates that unhealthy weight control behaviours are prevalent in adolescents. A Canadian study found that one third of girls and a quarter of boys aged 10 to 14 were dieting to lose weight despite being within a healthy weight range (McVey, Tweed, et al., 2005). These and other findings provide further evidence that unhealthy dieting behaviours are common in adolescents (Austin, 2001; Dae et al, 2002; Woodruff, Hanning, Lambraki, Storey, & McCargar, 2008).

Iatrogenic Effects

Prevention programs aimed at obesity have been criticized for endorsing antecedents of eating disorders. For example, shape and weight obsession can be triggered by the monitoring of weight (O’Dea, 2005b; Striegel-Moore, 2001). A study which investigated the effects of a nation-wide “Trim and Fit” program implemented in Singapore (Lee, Lee, Pathy & Chan, 2005) demonstrated the potential for iatrogenic effects. This after-school physical activity program was compulsory for students who were identified as overweight or obese. The “Trim and Fit” program was ultimately deemed effective, as the percentage of overweight students dropped from 13.1% in 1996 to 9.4% in 1997; however, an investigation of anorexia nervosa in Singapore from 1994 to 2002 identified possible negative effects of the program. Case records of patients with anorexia nervosa demonstrated that 11% had participated in the program and seven patients (47% of the 11%) had identified the program as a clear precipitant of their disordered eating.

Additional concern surrounding iatrogenic effects of well-meant interventions targeted at adolescents rises from prospective observational data (e.g. Field et al., 2003; Neumark-Sztainer, van den Berg, Hannan, & Story, 2006). These studies have shown that frequent self-weighing and dieting did not predict a decrease in obesity, but rather predicted increased weight and disordered eating over time while adjusting for baseline variables (Field et al., 2003; Neumark-Sztainer, van den Berg, et al., 2006). These findings exhibit the potential dangers of obesity interventions. On the other hand, preventative interventions implemented for eating disorders which promote size, weight, and shape acceptance may encourage complacency about the importance of healthy weight (Russell-Mayhew, Arthur, & Ewashen, 2008). While there is not the same empirical support for this potential, the risk of sending conflicting or mixed messages is important to consider.

Integrative Approach

Recently, researchers, practitioners and policymakers from both the eating disorder and obesity fields have discussed implementing an integrative approach that addresses both issues simultaneously; an approach that would both increase efficiency of implementation and decrease iatrogenic effects (McVey et al., 2008; Neumark-Sztainer, Wall, Haines, Story, Sherwood, et al., 2007; Russell-Mayhew, 2006). Considering the minimal amount of time schools can afford to allot health, the practical and economic advantages of addressing both issues simultaneously are important (Adair et al., 2007). Shared risk factors between the issues are a starting place for potential concurrent prevention (McVey, 2007; Neumark-Sztainer, 2005; Neumark-Sztainer, Levine, et al., 2006; Neumark-Sztainer et al., 2007; Russell-Mayhew, 2006). Five risk factors associated with both of these weight-related

disorders include dieting, media use, body image satisfaction, weight-related teasing, and self-esteem (Haines & Neumark-Sztainer, 2006; O'Dea, 2005b).

Five Shared Risk Factors

Body Image

Neumark-Sztainer and colleagues found that 46% (n = 1084) and 25% (n = 594) of girls and boys respectively described experiencing significant stress around the size and shape of their bodies (Neumark-Sztainer, Story, Hannan, Perry, & Irving, 2002). Body image dissatisfaction is one of the strongest risk factors identified for eating disorders (Adolescent Health Committee, Canadian Paediatric Society, 2004; Stice, 2002) and is associated with decreased physical activity (Neumark-Sztainer, Paxton, Hannan, Haines, & Story, 2006) and binge eating (Johnson & Wardle, 2005). A recent body image intervention aimed at female adolescents demonstrated positive impact on dietary restraint, self-esteem, and body satisfaction (Richardson & Paxton, 2010). The success of this intervention in these three areas reinforces that body image is an important risk factor to attend to.

Media

The internalization of the thin/lean beauty standard promoted in media is an established risk factor for eating disorders (Saraceni & Russell-Mayhew, 2007). Body image dissatisfaction has been found to increase significantly after exposure to thin images and these effects were more prominent in younger people (Groesz & Levine, 2002). This study and others demonstrate that the internalization of the media beauty standard promotes body image dissatisfaction and provides a motivation for disordered eating (Adolescent Health Committee, Canadian Paediatric Society, 2004; Battle & Brownell, 1996; Burns &

Gavey, 2004; Orbach, 2006; Plotnikoff, Bercovitz, Rhodes, Loucaides, & Karunamuni, 2006).

There is also a positive association between media use and BMI as well as fat mass, demonstrated by prospective and cross-sectional data (Jackson, Djafarian, Stewart, & Speakman, 2009; Utter, Neumark-Sztainer, Jeffery, & Story, 2003). Studies have shown that T.V. viewing specifically increases consumption of unhealthy food advertised on T.V. and decreases energy expenditure (French, Story, Neumark-Sztainer, Fulkerson, & Hannan, 2001; Wiecha et al., 2006). Furthermore, other research has demonstrated that individuals who use media while consuming lunch feel less full and subsequently eat more as compared to individuals who do not use media during lunch (Oldham-Cooper, Hardman, Nicoll, Rogers, & Brunstrom, 2011).

Self-esteem

Adolescents who are overweight or perceive themselves to be overweight have been found to have lower self-esteem than those who are not overweight or do not perceive themselves as overweight (Patton, Johnson-Sabine, Wood, Mann, & Wakeling, 1990; Perrin, Boone-Heinonen, Field, Coyne-Beasley, & Gordon-Larsen, 2009). Cross-sectional data has found self-esteem to be a robust risk factor in distinguishing youth who engage in disordered eating behaviours from those who do not (Courtney, Gamboz, & Johnson, 2008; Croll, Neumark-Sztainer, Story, & Ireland, 2002). Adolescents with eating disorders have been found to have lower self-esteem than those without (Gila, Castro, Gomez, & Toro, 2005) and prospective data have shown lower self-esteem to predict the development of eating disorders (e.g., individuals with the lowest self esteem were eight times more likely to develop eating problems than those with the highest self esteem) (Button, Sonuga-Barke,

Davies, & Thomson, 1996). Specific aspects of self-esteem including high importance of social acceptance by peers and low competence for physical activity have been associated with disordered eating (McVey, Pepler, Davis, Flett, & Abdollell, 2002). Past prevention programs targeting adolescent self-esteem have shown decreases in disordered eating and increases in body satisfaction (O'Dea, 2005b).

Dieting

Woodruff et al. (2008) found that adolescents who were dieting to lose weight and were concerned about a high weight were more likely to have a lower diet quality. Furthermore, self-reported dieting in adolescents has been found to be causally related to both eating disorders and obesity (Field et al., 2003; Stice, 2001). Dieting was found to predict disordered eating behaviours (Stice) and increases in BMI three years later (Field et al.). Retrospective results indicate that people experiencing eating disorders describe dieting as a precursor (Bulik, Sullivan, Carter, & Joyce, 1997). Cross-sectional data have demonstrated a positive correlation between dieting and BMI in adolescents (Boutelle, Neumark-Sztainer, Story, & Resnick, 2002). Finally, prospective studies show that dieting predicts greater weight gain and disordered eating behaviours in adolescents (Field et al.; Neumark-Sztainer, Wall, et al., 2006; Stice, 2001). The longitudinal relationship between dieting and BMI increase was found to be partially mediated by binge eating, decreased breakfast intake, and decreased vegetable and fruit consumption (Neumark-Sztainer, Wall, Haines, Story, & Eisenberg, 2007). These studies demonstrate that an increase in knowledge concerning the effects of dieting and/or healthy alternatives to dieting may positively influence both obesity and eating disorders.

Weight-Based Teasing

One quarter of an adolescent sample including non-overweight and overweight individuals reported experiencing weight-based teasing during adolescence (Haines et al., 2008). Another sample including overweight youth reported experiencing more teasing than average-weight peers (Hayden-Wade et al., 2005; Neumark-Sztainer, Falkner, et al., 2002). Case-control and cross-sectional data have shown an association between teasing and higher levels of disordered eating behaviour (Brown, Cash, & Lewis, 1989; Keery, Boutelle, van den Berg, & Thompson, 2005; Neumark-Sztainer, Story, et al., 2002). Furthermore, prospective data has demonstrated that weight-based teasing is predictive of disordered eating in both female and male adolescents (Haines, Neumark-Sztainer, Eisenberg, & Hannan, 2006; Wertheim, Koerner, & Paxton, 2001). Comprehensive clinical practice guidelines for management of obese adolescents that have been recently published in Canada emphasize the importance of a non-judgemental approach to the issue (Lau et al., 2007). These studies exemplify how weight-based teasing may inhibit overweight youth from adopting healthy behaviours.

Sequence Effects

These five shared risk factors have been addressed to varying degrees and in different combinations in eating disorder and obesity prevention studies (e.g. McVey, Tweed, & Blackmore, 2007; Richardson & Paxton, 2010). One aspect of these risk factors which has not yet been studied is order of best fit. That is, does implementation sequence of interventions addressing these five shared risk factors influence their effectiveness? Neumark-Sztainer (2005) has suggested the future investigation of a similar question

around whether addressing one risk factor may subsequently impact another. The following describes the rationale for investigating sequence effects.

It is conceivable that an individual with a negative body image would be more resistant to an intervention aimed at dieting as compared to an individual with a positive body image, since the former likely desires to change their body via dieting. This could mean that an intervention aimed at dieting provided to adolescents with negative body image would be ineffective. However, if a body image intervention was provided prior to the intervention aimed at dieting, effectiveness may be increased.

Interventions aimed at dieting have been relatively unsuccessful (Paxton, Wertheim, Pilawski, Durkin, & Holt, 2002). Specifically, a long-term, controlled study which investigated prevention aimed only at dieting and sociocultural influence, not body image, proved ineffective in changing unhealthy eating attitudes and weight regulation in 11 to 13 year olds (Killen et al, 1993), a population which is at risk for body image issues because of the pubertal transition (Pugliese et al., 1983). These results persisted even though participants demonstrated significant knowledge increase. A second study which also looked at an intervention aimed only at dieting, not body image, showed the same non-significant results (Buddeberg-Fischer & Buddeberg, 1998).

However, intervention studies which target body image fare differently. A recent study showed that an intervention targeting body image not only caused subsequent improvements in body image, but also decreases in unhealthy dieting (Richardson & Paxton, 2010). This finding demonstrates that improvements in body image can lead to openness to decreasing unhealthy dieting behaviour. Finally, results from a study investigating interventions targeting both body image and unhealthy dieting demonstrated

effectiveness in improving both of these risk factors (McVey, Davis, Tweed, & Shaw, 2004). Taken together, the above studies suggest the possibility of an intervention aimed at unhealthy dieting being more effective if it is primed by a body image intervention.

Interestingly, the body image intervention studied by Richardson and Paxton (2010) not only demonstrated improvements in dieting, but also self-esteem. Recent research has investigated this relationship between body image and self-esteem. Trottier, McFarlane, and Olmsted (2012) found that body image predicted weight-based self-evaluation (WBSE, also known as “overvalued ideas” or “undue influence”), which subsequently predicted self-esteem, after controlling for body image. Fairburn, Cooper, and Shafran (2003) have hypothesized WBSE to be the primary maladaptive cognitive schema in eating disorders. It is possible that the body image improvements which occurred in Richardson and Paxton’s study minimized WBSE which subsequently lead to the increase in self-esteem. These findings are not surprising considering the current appearance-focused culture however, they demonstrate the interconnectedness of certain eating disorder and obesity risk factors, and suggest possible utility in addressing body image prior to self-esteem.

Media intervention may also be a powerful primer for other risk factors. For example, research shows that media intervention preceding self-esteem intervention may be beneficial. Wade, Davidson, and O’Dea (2003) found that addressing self-esteem alone was ineffective in changing weight concern in female and male adolescents. However, recent studies by Richardson, Paxton, and Thomson (2009) and O’Dea (2005b) demonstrated the effectiveness of interventions which target both media literacy and self-esteem. Together, these findings suggest that attempting to improve self-esteem in today’s Western youth without addressing media literacy is virtually futile.

One possible explanation for the importance of addressing media literacy is that youth who experience disordered eating often base their self-esteem on social acceptance by peers (McVey et al., 2002). In turn, social acceptance by adolescent peers is largely based on physical ideals which are constructed by the media, as demonstrated by the prominence of weight-based teasing (Haines, et al., 2008). It is possible that effective self-esteem intervention around eating disorders and obesity is primed by fostering an understanding in youth that this thin/lean ideal is not an absolute truth, but rather is something that is both created and perpetuated principally by media. Essentially, media literacy intervention may weaken the thin/lean ideal subscribed to by adolescents, and decrease the importance of this ideal in terms of self-esteem.

Media may also be a useful primer for weight-based teasing interventions. Unfortunately, the majority of the few interventions targeting weight-based teasing have been ineffective in changing teasing behaviour (e.g. Irving, 2000; Smolak, Levine, & Schermer, 1998). These unsuccessful interventions have also targeted dieting, body image, and/or self-esteem. Interestingly, however, a weight-based teasing intervention which also addressed media (and body image) proved effective in decreasing teasing among students (Haines, Neumark-Sztainer, Perry, Hannan, & Levine, 2006). It follows that an initial intervention promoting an understanding of how fat prejudice is constructed in the media could potentially improve the effectiveness of a subsequent weight-related teasing intervention. Hence, media intervention may serve to prime weight-based teasing intervention via a similar process to the priming of self-esteem intervention. Furthermore, it is possible that in this study the media and body image interventions interacted to provide a strong foundation on which to build the effective weight-related teasing intervention.

These studies on weight-related teasing and studies concerning the other shared risk factors suggest that although these five factors have been identified independently of one another, the sequence in which they are addressed may play a significant role in overall intervention effectiveness. Although the research points to this possibility, it is currently unclear which sequence may be the most effective. To investigate these possible sequence effects, the present study compared the effectiveness of different intervention sequences made up of five activities, each targeting one of the risk factors discussed above.

As discussed in chapter one, the intervention activities employed in the current study simultaneously targeted risk factors and developmental assets. This approach was taken for the purposes of avoiding a purely deficit-focus, and to promote strengths in youth. Developmental assets are discussed in the next section.

Developmental Assets

Alongside risk factors, an essential aspect of minimizing unhealthy attitudes and behaviours in youth is through fortifying protective factors (Hawkins, Catalano, & Miller, 1992; Resnick et al., 1997) and assets (Pittman & Irby, 1996). This asset approach has been termed positive youth development and focuses on the conditions which advance healthy development in young people. The positive youth development framework is based on the assumption that aiding adolescents to fulfill their potential is the most effective way to prevent them from experiencing problems (Pittman & Irby). This approach emphasizes that problem prevention and a focus on minimizing risk is insufficient for preparing youth for the future (Pittman & Irby; Roth et al., 1998). From the perspective of the positive youth development approach, an effective prevention program increases developmental assets in youth.

A prevalent and significant positive youth development framework has been created by the Search Institute (1997) and is termed the Developmental Assets model. The framework consists of 40 factors called developmental assets. Youth with more assets have been found to be physically, emotionally, and psychologically healthier as compared to those with less (Scales, 1999). These assets have been grouped into internal and external categories. Internal assets refer to competencies, skills, and values that exist within the individual whereas external assets refer to strengths which arise from relationships youth partake in, as well as assets that arise from youth's environment (e.g. school) (Benson, 1997). In particular, one study demonstrated that the three internal assets of positive values, social competencies, and positive identity protect against disordered eating attitudes and behaviours most strongly (French, Leffert, et al., 2001). To the author's knowledge, this is the only study that has investigated the relationship between developmental assets and disordered eating attitudes and behaviours. Based on the positive youth development approach, the current study considered significant increases in developmental assets following intervention implementation to demonstrate effective intervention sequences. No existing research known to the author has explored the impact of concurrent eating disorder and obesity prevention efforts on internal developmental assets.

Ecological Model

Past obesity and eating disorder prevention efforts aimed at individuals have been minimally effective in changing behaviours (Pratt & Woolfenden, 2006; Summerbell et al., 2005). Assumptions underlying this approaches which only target the individual level of influence can needlessly pathologize a person experiencing either of these issues. Although it is possible that obesity and eating disorders originate from different individual

psychological and biological vulnerabilities in interaction with unique micro-environments (e.g. family and/or peers), they are also both highly influenced by the macro-environment (e.g. neighbourhood, community, and/or society) (Adair et al., 2007).

Furthermore, a purely individual approach will not be able to induce the amount of change needed, healthcare resources will never be able to cope with the current need, and the problem will not disappear on its own unless interventions address the environmental causes (Battle & Brownell, 1996; Kumanyika, 2007). Battle and Brownell (1996) describe the current environmental situation aptly:

It is difficult to envision an environment more effective than ours for producing nearly universal body dissatisfaction, preoccupation with eating and weight, clinical cases of eating disorders, and obesity. The damaging paradox is that while an extremely lean, contoured, and sculpted body is the ideal, and that repeated compelling exposure to this unrealistic ideal is the norm, the environment provides access to and encourages consumption of a diet that is high in fat, high in calories, delicious, widely available and low in cost. (p. 761)

Along with the promotion of overeating, restrictive dieting is also somewhat contradictorily encouraged by the current culture (Battle & Brownell, 1996). Additionally, there is a strong sociocultural message that fitness and health are equated with this “lean, contoured, and sculpted body” which can be devaluing for individuals who are healthy but cannot or do not achieve this body type (Burns & Gavey, 2004; Rice, 2007).

Many authors have discussed the impact of the current sociocultural environment on the development of eating disorders (e.g. Paxton, 1996; Paquette & Raine, 2004) and obesity (e.g. Caballero, 2007; Frank & DiRuggiero, 2003; Kim & Popkin, 2006; Raine,

2004; Summerbell et al., 2005). The need for ecological and holistic interventions that take into account this environment in order to address eating disorders and obesity have been recognized by many (e.g. Austin, 2000; McVey et al., 2004; Moulding, 2007; Neumark-Sztainer, 2003; Neumark-Sztainer, Levine, et al., 2006; O’Dea, 2005a). Having said this, few ecological prevention efforts addressing these issues have been tested empirically.

An Integrative Ecological Approach

The current study investigated the efficacy of an integrative and ecological intervention. The intervention was school-based and focused on five shared risk factors of obesity and eating disorders; namely, body image, media, self-esteem, dieting, and weight-based teasing. The integrative focus on shared risk factors recognizes the complexity of the interaction between the individual and the sociocultural environment, particular to weight-based issues like eating disorders and obesity.

Present Study

Larger Research Study

The current study was part of a SSHRC funded project entitled “Integrating Eating Disorders and Obesity Prevention: A Study of School-Based Activities Aimed at Shared Risk Factors”. Five schools in Calgary, Alberta, Canada, were recruited for this project, with preference given to those with no prior obesity and/or eating disorder prevention experience. The schools were studied over three years. In addition to parent and teacher in-services, schools were given an intervention which includes five activities that separately address the five shared risk factors for eating disorders and obesity discussed above for teachers to implement in their classrooms.

Current Research Study

The research discussed in this paper took place during the last two years of the larger project described above, where findings from two of the participating schools (a separate school each year) were examined. The purpose of this research was to investigate the sequence effect of intervention activities addressing the five shared risk factors for eating disorders and obesity outlined previously: (1) body image, (2) media, (3) self-esteem, (4) dieting, and (5) weight-based teasing. A quasi-experimental research design was used, as distinct conditions (e.g. sequences) were not randomly assigned. The rationale for this approach was ease of implementation for teachers; specifically that teachers could provide interventions to their pre-existing class of students. This maximized convenience for the teachers and schools at large.

Specifically, the current research question was: Which intervention sequence or sequences account(s) for the most positive change in internal developmental assets? A significant difference in effectiveness of intervention sequences was hypothesized. Given the exploratory nature of the present study, a more specific hypothesis was not developed prior to analysis. Although some academic camps consider hypothesis-driven methods to be the only useful or reliable means of scientific progress, others have recognized the complementarity of data-driven methods to such hypothesis-driven methods (Kell & Oliver, 2004). The exploratory nature of the current study complements the plethora of hypothesis-driven studies completed recently that have investigated eating disorder and obesity prevention programs.

To date, sequence effect has not been empirically tested in another study to the author's knowledge. This study will potentially provide an important addition to the

present research literature concerning eating disorder and obesity prevention aimed at shared risk factors. Specifically, it has the potential to speak to why certain past interventions may not have been effective, and how future intervention effectiveness may be improved.

In the first year, five different sequences of the five interventions were tested in one school. Sequences were determined by randomly assigning one intervention activity to each of the five spaces in the sequence utilizing Latin squares (Fisher & Yates, 1934); for example, where each number represents an intervention: 12345, 45321, 24153, etcetera. Table 3 lists the five sequences tested in this study. The two sequences found to have the largest positive effect on developmental assets in the first year were retested in the second year in a second school.

Summary

In summary, obesity and eating disorders are serious issues for which prevention is indicated. Past research points to targeting shared risk factors between eating disorders and obesity in order to avoid iatrogenic effects. Though prevention programs aimed at different combinations of these risk factors have been studied in the past, the results have varied in effectiveness. The present study investigated possible sequence effects, which may provide useful knowledge around improving the efficacy of such programs.

CHAPTER THREE: METHODS

Introduction

This chapter outlines participant information, measures used, research design, procedures, and analyses utilized for the current study. This study investigated whether the intervention sequences of activities concurrently targeting obesity and eating disorders had more or less effect dependent upon the order in which the activities were delivered. Five different intervention sequences were tested. Specifically, the research question was: Are there intervention sequences of activities that increase internal developmental assets? If so, what specific sequences increase internal developmental assets more than others?

Participants

A number of junior high schools (grades 7-9) in Calgary, Alberta, Canada, were invited to participate in the study. Two of the schools who agreed to participate were used for the present study. All students in the schools were invited to participate, but only those who gave signed assent and whose parents gave appropriate signed consent were asked to fill out the questionnaires at three time points (pre-test, post-test, and follow-up). Since both the schools and students were self-selected in that they had to agree to participate in the study, it was a convenience sample, not a random sample. Data was collected by classroom, as this was the most convenient for the schools.

In year one, 173 students from one school participated in the study. From pre-test to follow-up, 14 cases (8%) were lost due to attrition, resulting in 159 cases. Due to the nature of the analysis used for this study, only data from students who completed the DAP at all three time points were used. This resulted in the exclusion of the data from 40 of the 159 students. An additional case was determined to be an outlier, resulting in the exclusion of

41 cases total. Therefore, the final sample for the first year data included 118 adolescents ($M = 12.44$ years, range 11 – 14 years, 52.2% female, 40.3% male, and 7.5% did not report). Unfortunately, age was a confound with group as group one was the only grade 7 class included in year one of the study (all other classes were grades 8 or 9), and was significantly younger than all other groups, $F(4) = 7.15, p < .001$. Year one participant demographic characteristics are described in Table 1.

In year two, 82 students from a second school participated. From pre-test to follow-up, three cases (4%) were lost due to attrition, resulting in 79 cases. Again, due to the nature of the analysis used for this study, only data from students who completed the DAP at all three time points were used. This resulted in the exclusion of the data from 36 of the 79 students.

An additional case was missing more than six responses on the DAP questionnaire. The DAP Manual (Search, 2005) states that such cases can lead to significantly distorted scaled scores resulting in invalid results, and should not be scored. In accordance with the DAP Manual, this case was also excluded from analysis. Therefore, the final sample for the second year data included 42 adolescents ($M = 12.86$ years, range 11 – 15 years, 45.2% female, 52.4% male, and 2.4% did not report). Experimental groups did not differ significantly in age $t(17.98) = .77, p > .05$. Year two participant demographic characteristics are described in Table 2.

Dealing with Missing Data

A doubly multivariate repeated measures analysis was used for this study (see Analysis section below). This analysis is based on listwise deletion (Gueorguieva & Krystal, 2004). If a subject is missing data at one time point, the whole case of this subject

is eliminated from the analysis. For this reason, only data from students who completed the DAP at all three time points were utilized.

Replacing the missing data with the mean score of the each variable in this case is not good practice for two reasons. First, mean substitution is not recommended unless the percentage of missing data is very small (Tabachnik & Fidell, 1996). This was not the case for the dataset utilized for the present study. Second, such replacement would be too artificial. The time effect cannot be evaluated for a participant who is missing data at any time point. This is a disadvantage of the classical rMANOVA, but such listwise deletion allows for a true reflection of what is happening in the data. This is a preliminary study, which will provide information of the effect sizes of each factor for future study.

Measures

Developmental assets were measured with the Developmental Assets Profile (DAP) (Search Institute, 1997; see Appendix A for the link to a sample of the DAP), a self-report questionnaire. The questionnaire is designed to evaluate adolescents' social and personal experiences in a variety of contexts. Developmental assets are positive qualities and experiences which have been identified as being necessary for healthy social and psychological development (Benson et al., 1998). They embody positive values, skills, opportunities, and relationships which advance the positive development of all adolescents. The DAP is designed to identify changes in these aspects over time.

The DAP includes 58 items and is rated on a 4-point scale ranging from "Not at All or Rarely" to "Extremely or Almost Always." This questionnaire is typically completed in 10 minutes, and was filled out within a larger package of questionnaires which was completed in approximately 45 minutes total.

Developmental assets can be considered in two different ways, categorically and contextually. The context organization includes five groupings: (a) personal, (b) social, (c) family, (d) school, and (e) community. The category organization includes two groups: (a) internal, and (b) external. The current study utilized the category classification of the DAP since three of these specific internal assets have been demonstrated to mitigate disordered eating behaviours and attitudes (positive identity, positive values, and social competencies) (French, Leffert, et al., 2001). The DAP measures qualities and experiences which influence behaviour across these categories. The internal and external categories are each divided into four subgroups. The internal category consists of positive values, positive identity, social competencies, and commitment to learning. The external category consists of support, empowerment, boundaries and expectations, and constructive use of time.

The three internal assets which were identified to be associated with eating attitudes and behaviours include positive values, positive identity, and social competencies (French, Leffert, et al., 2001). The positive values asset includes personal characteristics such as restraint, integrity, responsibility, honesty, caring for others, and working for social justice and equality. The positive identity asset entails self-esteem, internal locus of control, optimism, and a sense of purpose. Finally, the social competencies asset is made up of conflict resolution skills, resisting negative peer pressure, ability to build friendships, planning and decision-making, and cultural competence.

Studies of the validity and reliability of the DAP are in progress. Internal item consistency alpha coefficients for the eight categories average between .72 to .81 (Brady, 2006; Search Institute, 2005). Internal consistency for the eight categories assessed by a composite Spearman-Brown coefficient reflect a mean of .84 (Brady). Internal

consistencies for internal, external, and total assets were .93, .95, and .97, respectively (Search Institute). Internal consistencies for positive values, social competencies, and positive identity were excellent with average values of .86, .81, and .82, respectively. Two-week test-retest coefficients for internal, external, and total assets were .86, .84, and .87, respectively. Two-week test-retest coefficients for positive values, social competencies, and positive identity were .80, .81, and .78, respectively (Search Institute).

Convergent validity was demonstrated by the correlation between DAP internal, external, and total assets and the Search Institute 40 Developmental Assets (Attitudes and Behaviors survey). These values were .80, .76, and .83, respectively (Search Institute, 2005). The same test was conducted with a Hispanic population which found almost identical values of .80, .76, and .82, respectively (De Carvalho, 2007). The correlation between total assets and risk behaviours was -.45, and total assets and thriving score, .65 (Search Institute). Correlations between positive values, social competencies, and positive identity as measured by the DAP and the Attitudes and Behaviors Survey were .67, .66, and .63, respectively. Scores on the DAP positive identity scale significantly correlated with Rosenberg's Self-Esteem Scale (.70) and Harter's Global Self-Worth Scale (.72). Finally, youth from one school which was judged independently to have a higher level of developmental assets than a second school scored significantly higher on every DAP scale ($p < 0.001$) (Search Institute).

The DAP's sensitivity to change over time has not been specifically experimentally tested, but high stability coefficients (which represent relatively low measurement error) imply that its sensitivity can detect authentic change. Overall, the DAP has been found to be valid and to have good reliability estimates.

Research Design

A two-way repeated measures design was used for the current study where time and intervention activity sequence were the within and between subjects factors, respectively. The DAP was administered at three points over time: (a) pre-test (prior to intervention administration), (b) post-test (immediately following intervention administration), and (c) follow-up (two to five months after intervention administration). DAP score was the dependent variable while intervention activity sequences and time were the independent variables.

Possible threats to the internal validity of this design include repeated testing, classroom as a confounding variable with intervention sequence, maturation, instrumentality, and differential attrition. External validity is threatened because of the small sample which originated from a single geographic location.

In year one, classes in one school were assigned to one of five different intervention activity sequences. The different sequences were determined via randomly assigning a specific intervention activity to each of the five spaces in the sequence using Latin squares (Fisher & Yates, 1934); for example, where each number represents an intervention: 12345, 45321, 24153, etcetera. Table 3 lists the five intervention activity sequences which were administered to the five separate groups in the first school. See Appendix B for research design diagrams.

In year two, participants from an alternate school went through a similar process as those from year one, except only the two most effective intervention activity sequences identified from the previous year were tested. This is described in more detail below.

Procedure

Consent/Ethics

Informed consent was obtained from parents of students via the form included in Appendix C. This represented consent for the student to fill out appropriate questionnaire packages. Students also gave their assent on this form. This study was approved by the University of Calgary Conjoint Faculties Research Ethics Board (CFREB). The interventions implemented for the purposes of this study are approved by Alberta Education, therefore all students took part in them. However, only consenting students completed the DAP at the three time points.

The DAP was completed by consenting students prior to any implementation of classroom interventions. These were administered by trained research assistants and served as the pre-test. After filling out the pre-test questionnaires, the intervention activity sequences were provided by teachers to the appropriate classes in the assigned Latin square order over a 3 month period (see Appendix D for activity descriptions as provided to teachers).

Teachers were trained by the principal investigator of the larger study and trained research assistants. Two training sessions were provided to teachers who implemented the intervention activities. The first session was provided by the principal investigator of the larger study, and involved a two to three hour workshop provided to all teachers in the school on a professional development day. This workshop entitled “Integrating Eating Disorder and Obesity Prevention Through Shared Risk Factors” was interactive and focused on eating disorders, obesity, weight bias, the spectrum of eating issues, the continuum of health promotion to treatment, the emerging integrative approach between

obesity and eating disorders, and the complexity of the issue. The five shared risk factors based on the literature and the role teachers play in each of these risk factors was discussed. Weight was also discussed as being seen as equal to health, but not equal to health. A self-reflection activity was included around how the teachers' own body image has been impacted throughout their lives. Some of the items from the intervention activities were used to demonstrate the idea of the research project to the teachers, and the research designed was also introduced. Finally, a related montage and story were shown and read to the teachers.

The second training session was one and a half to two hours and focused on training teachers in the lesson plans associated with each activity, which were aligned with health curriculum outcomes. Secondly, teachers were trained on the order of research, their role in the research, and the data they would be collecting. The training sessions occurred on different days for different schools.

Teachers were free to implement the ordered intervention activities as was convenient within the three month time period. Participant schools were welcomed to keep the intervention materials for future use. Trained research assistants administered the DAP a second time immediately following the completion of the intervention activity sequence (post-test) and again two to five months later (follow-up).

Analyses

The research question for the present study was: What sequence(s) of intervention activities increase internal developmental assets more than others? It was hypothesized that there would be a significant difference in the effectiveness of the five intervention sequences strengthening three internal developmental assets.

Given the conceptual relatedness and potential interdependence of the three internal developmental assets, a two-way doubly multivariate analysis of variance was utilized to compare scores for the intervention sequence groups. A doubly MANOVA has a between groups independent variable (intervention sequence), a within groups repeated measures independent variable (time), and two or more quantitative dependent variables (internal developmental assets). This analysis enables the detection of: (a) possible time by intervention sequence interaction, (b) time effect, and (c) intervention sequence effect, by considering all three internal developmental assets simultaneously. This serves to answer the research question of whether intervention sequences differ in effectiveness.

Assumptions underlying the MANOVA include: (a) multivariate normality and (b) homogeneity of variance-covariance matrices. Multivariate normality implies that the sampling distributions of means of the dependent variables in each cell (internal developmental assets), and all linear combinations of these variables are normally distributed (Tabachnick & Fidell, 1996). The central limit theorem suggests that, with large samples, the sampling distribution of means approximates normality, even if raw scores do not. *F* is robust to moderate violations of normality if they are not due to outliers (Tabachnick & Fidell). All outliers for this data set were deleted. Furthermore, a sample size which allows for 20 degrees of freedom for error should ensure robustness of this test (Tabachnick & Fidell). All degrees of freedom for error for the present study were 35 or higher. Therefore, the assumption of multivariate normality for this data was met.

Homogeneity of variance-covariance matrices can be tested with Box's *M* test through SPSS MANOVA. However, this is an infamously sensitive test of homogeneity. For this reason, if Box's *M* test is not significant at the $p < 0.001$ level, then robustness can

be assumed (Tabachnick & Fidell, 1996). The Box's M test was $p = 0.031$ for year one, and $p = 0.324$ for year two. Therefore, the assumption of homogeneity of variance-covariance matrices for this data was met.

Data from the internal developmental assets was analyzed via the Statistical Package for the Social Sciences (SPSS™). All data entry was completed by trained research assistants. In order to ensure reliability of the data set, research assistants checked 100 percent of their own data entry. Additionally, ten percent of the data was verified by a second research assistant to serve as the quality control measure. Descriptive statistics were examined to identify errors.

Summary scores were computed for each of the three internal DAP categories: (a) positive values, (b) positive identity, and (c) social competencies. These scores were obtained as per the DAP manual (Search Institute, 2005) by averaging student responses on items comprising a category (possible item scores range between zero and three). This value was multiplied by 10 and rounded to the nearest whole number, with final summary scores ranging from 0 to 30. Any significant increases (at the $p < 0.05$ level) on the three internal assets over time were considered to demonstrate effectiveness of intervention sequence. The two most effective sequences identified in year one were subsequently tested in year two.

CHAPTER 4: RESULTS

A doubly multivariate analysis of repeated measures was used to determine if there were significant interactions between sequence and time in both year one and year two. Simple effects tests were subsequently used to examine specific differences (a) across groups over time, and (b) between groups at specific time points.

Year One

Initial investigation of the normality (e.g. skewness and kurtosis) of the year one data revealed that all skewness and kurtosis values fell within the $-1/+1$ range (see Tables 4 through 6). The Kolmogorov-Smirnov Normality Test also demonstrated that the data was normal (see Table 10 for values).

The doubly multivariate analysis of repeated measures demonstrated a significant multivariate interaction effect of sequence and time among the three subscales in year one, Wilk's $\Lambda = 0.649$, $F(24, 377.98) = 2.074$, $p = 0.002$, partial eta squared = .102. The two-way repeated measures ANOVAs (sequence, time) demonstrated a significant interaction effect of sequence and time on the positive values and social competencies subscales (see Table 12 for values). The interaction effect was not significant for the positive identity subscale (see Table 12 for values).

Significant Differences at Pre-Test

Group three scored significantly higher than group five on the positive values subscale at pre-test (Bonferroni adjusted $p = 0.029$, see Table 14 for group means on positive values across all times in year one). Any significant differences in the same direction identified at post-test and/or follow-up between group three and five on the

positive values subscale cannot be attributed to intervention sequence since this pre-existing significant difference was present.

Also at pre-test, group two scored significantly higher than group five on the positive identity subscale (Bonferroni adjusted $p = 0.009$, see Table 15 for group means for positive identity across all times in year one). Any significant differences in the same direction identified at post-test and/or follow-up, between group two and five on the positive identity subscale cannot be attributed to intervention sequence since this pre-existing significant difference was present. No other significant differences were identified between groups at pre-test on any of the three subscales.

Significant Differences over Time by Group

A simple effects test demonstrated that group one positive values scores significantly increased from pre-test to follow-up (Bonferroni adjusted $p < 0.001$), and from post-test to follow-up (Bonferroni adjusted $p = 0.036$). Group two positive values scores also significantly increased between pre-test and post-test (Bonferroni adjusted $p = 0.002$). No other group significantly increased over time on the positive values subscale. In other words, groups one and two were the only groups that significantly increased on the positive values subscale after experiencing their specific intervention activity sequence.

A simple effects test demonstrated that group one positive identity scores increased significantly between pre-test and follow-up (Bonferroni adjusted $p = 0.001$). In other words, group one significantly increased on the positive identity subscale after experiencing an intervention sequence. No other group significantly increased over time on the positive identity subscale.

For the social competencies subscale, a simple effects test did not demonstrate any significant changes over time on any of the three subscales (see Table 16 for group means for social competencies across all times in year one). However, group one social competencies scores did increase over time. Group two and three social competencies scores also increased from pre-test to post-test.

Significant Differences between Groups at Post-Test and Follow-Up

For the positive values subscale, a simple effects test demonstrated that at follow-up, group one scored significantly higher than groups four (Bonferroni adjusted $p = 0.034$) and five (Bonferroni adjusted $p = 0.044$). These differences were not significant at any other time point. In other words, group one (which increased significantly over time on the positive values subscale, as mentioned above) scored significantly higher than groups four and five on the positive values subscale after experiencing the intervention activity sequence.

Also for the positive values subscale, a simple effects test demonstrated that at post-test, group two scored significantly higher than group four (Bonferroni adjusted $p = 0.001$). This difference was not significant at any other time point. Group two also scored significantly higher than group five at both post-test and follow-up (Bonferroni adjusted $p < 0.001$). In other words, group two (which increased significantly over time on the positive values subscale, as mentioned above) scored significantly higher than groups four and five on the positive values subscale after experiencing their intervention activity sequence. No other significant differences were identified by the simple effects test for this subscale.

For the positive identity subscale, a simple effects test demonstrated that group two scored significantly higher than group four at post-test (Bonferroni adjusted $p = 0.008$). This difference was not significant at any other time point. Group two also scored significantly higher than group five at post-test (Bonferroni adjusted $p = 0.012$). As mentioned above, this difference was already present at pre-test and therefore cannot be attributed to intervention sequence effect. No other significant simple effects were found for this subscale. In other words, the meaningful finding for the positive identity subscale is that group two scored significantly higher than group four on the positive identity subscale after experiencing the intervention activity sequence.

For the social competencies subscale, a simple effects test demonstrated that group two scored significantly higher than group five at post-test (Bonferroni adjusted $p = 0.020$). This difference was not present at any other time point. In other words, group two scored significantly higher than group five on the social competencies subscale after experiencing the intervention activity sequence. No other significant differences were identified by the simple effects test for this subscale.

Summary of Year One

In summary, after experiencing the intervention activity sequence, groups one and two significantly increased on the positive values subscale, and group one also significantly increased on the positive identity subscale. No other groups demonstrated significant increases on any subscale over time. Furthermore, after experiencing the intervention activity sequence, groups one and two scored significantly higher than a variety of other groups on all three subscales. No other groups scored significantly higher than another on any of the three subscales. Taken together, this data demonstrates that the intervention

activity sequences associated with groups one and two may be the most effective in increasing internal developmental assets which have been demonstrated to protect against disordered eating attitudes and behaviours (French, Leffert, et al., 2001). For this reason, and as mentioned earlier, the intervention activity sequences associated with groups one and two were re-tested in year two.

Year Two

Initial investigation of the normality (e.g. skewness and kurtosis) of the year two data revealed that some kurtosis values fell outside the $-1/+1$ range (see Tables 7 through 9). Specifically, the kurtosis values for social competencies and positive values subscales at follow-up were platykurtic with values of -1.144 and -1.069 , respectively. Multivariate outliers were identified and deleted in attempt to decrease these values, though unsuccessfully. Fortunately, the Kolmogorov-Smirnov Normality Test demonstrated that the data was normal in spite of these kurtosis values (see Table 11 for values).

The doubly multivariate analysis of repeated measures did not demonstrate a significant multivariate interaction effect of sequence and time among the three subscales in year two, Wilk's $\Lambda = 0.809$, $F(6, 35) = 1.374$, $p = 0.252$, partial eta square = 0.191 . The two-way repeated measures ANOVAs (sequence, time) did not demonstrate a significant interaction effect for any of the three internal DAP subscales in year two (see Table 13 for values). However, a trend of group one scores either increasing or remaining stable over time, and group two scores decreasing over time, did persist for all three subscales (see Tables 17 through 19 for group means for positive values, positive identity, and social competencies, respectively, across all times in year two).

CHAPTER 5: DISCUSSION

In year one, the results of the doubly multivariate repeated measures analysis indicated that sequence one (body image, media, self-esteem, dieting, and weight-related teasing) and sequence two (dieting, weight-related teasing, self-esteem, media, and body image) were more effective in improving the three internal developmental assets of positive values, positive identity, and social competencies in comparison to the three other sequences tested. This finding was consistent with the hypothesized sequence effect. Specifically, sequence one was effective in improving (a) positive values and (b) positive identity, over time, and in comparison to groups four (media, body image, dieting, self-esteem, and weight-related teasing) and five (weight-related teasing, dieting, self-esteem, media, and body image). Sequence two was effective in strengthening only one asset: (a) positive values, over time, and in comparison to groups four and five. Sequence two also scored higher on social competencies as compared to group five over time, but the increase on this subscale from pre-test to post-test for group two was not statistically significant.

In year two, when sequences one and two were retested in a second school, the results for sequence two were not replicated. In fact, there was an overall decreasing trend on the three internal developmental assets for sequence two (though not statistically significant). Sequence one continued to demonstrate an overall increasing trend on all three of the developmental assets (though also not statistically significant). In summary, sequence one was demonstrated to be more effective than sequence two in both years, and more effective than all other sequences in year one. Taken together, these two years of

data suggest that sequence one is the most effective in increasing the three internal developmental assets of the five sequences tested.

Although the effect sizes in year one for the significant differences between sequences ranged from small to moderate, and in year two no significant increases (or decreases) were identified between sequences, it is important to note that developmental assets for the age group included in the present study are generally decreasing over time (Search Institute, 2005). This is important because this could mean that a stable level of developmental assets over time in this age group (as opposed to the “normal” decrease of developmental assets) could actually represent effectiveness of interventions. In other words, the practical significance of these findings is likely greater than the statistical significance as a result of the nature of developmental assets.

The current chapter will discuss the potential processes at work behind the effectiveness of sequence one. This discussion will occur in light of previous research pertaining to the five shared risk factors addressed in the present study, and will involve the comparison of sequence one to the other four, less effective, sequences. The concept of some activities serving to prime others will be used to understand the superiority of sequence one to other sequences. Priming refers to one activity serving to prepare an individual for a second activity. Specifically, one activity primes an individual by changing their cognitions, and thereby providing the opportunity for the effectiveness of a subsequent activity. For example, a body image activity may improve the way someone thinks about their body, and will therefore provide the opportunity for a successful activity aimed at dieting subsequently. Priming has been used in other areas of research, such as priming for positive or negative role models (Lockwood, Jordan, & Kunda, 2002).

In the context of Lockwood and colleagues' study, participants were primed to think in terms of promotion or prevention, which significantly impacted their preference for positive or negative role models.

Activities will also be conceptualized from a cognitive versus behavioural point of view to shed light on the differing effectiveness of the sequences investigated in the present study. Essentially, cognitive activities refer to those which primarily target thoughts, while behavioural activities refer to those which primarily target actions or behaviours (Irving & Berel, 2001; Neumark-Sztainer, Falkner, et al., 2002; O'Dea, 2005b; Rosen, Orosan, & Reiter, 1995; Stice, Mazotti, Weibel, & Agras, 2000). Body image, media influence, and self-esteem are activities which target cognitions (Irving & Berel; O'Dea; Rosen et al.), while dieting and weight-related teasing target behaviours (Neumark-Sztainer, Falkner, et al.; Stice et al.).

Body Image before Self-Esteem

Recent research has indicated that negative body image may precede low self-esteem (Tiggemann, 2005). Specifically, Tiggemann found that body dissatisfaction predicted self-esteem when pre-test self-esteem was controlled for, while self-esteem did not predict body dissatisfaction when pre-test body dissatisfaction was controlled for. Similarly, Dohnt and Tiggemann (2006) found that young girls' body dissatisfaction, as indicated by desire for thinness, temporally preceded low self-esteem. These findings demonstrate that body dissatisfaction may lead to low self-esteem, but low self-esteem is less likely to lead to body dissatisfaction.

The relationship between body dissatisfaction and self-esteem has been demonstrated to be mediated by weight-based self-evaluation (WBSE) (Trottier, et al.,

2012). The cognitive conceptualization of WBSE views self-esteem as being lowered based on negative evaluations of body shape and weight via the WBSE schema. Trottier and colleagues found that body dissatisfaction significantly predicted WBSE, and WBSE significantly predicted global self-esteem after controlling for body dissatisfaction. The relational coefficient between body dissatisfaction and self-esteem decreased after controlling for WBSE, but remained significant. Fairburn and colleagues (2003) have hypothesized that WBSE might even be the primary maladaptive cognitive schema in eating disorders.

Considering these findings, activities addressing self-esteem may be most effective when they are preceded by activities addressing body image. Self-esteem activities highlight the importance of focusing on the positive and having affirmative attitudes and feelings about the self. However, if an individual's self-esteem is unduly influenced by their body's approximation to the thin/lean ideal, focusing on the positive may not be enough. This is why it may be necessary to address body image prior to self-esteem.

Many body image activities promote an understanding of the influences that impact the way people feel about their bodies. These activities focus on strategies that can be implemented to counteract negative influences. For example, a successful body image activity studied by Richardson and Paxton (2010) communicated messages that fight against negative body image such as "don't fall into the comparison trap" and discussed the importance of eradicating "fat-talk." Theoretically, improving body image prior to self-esteem with these strategies would minimize WBSE, which in turn could create a foundation for building self-esteem.

When body image is improved, a subsequent self-esteem activity which helps a person to foster positive attitudes and feelings towards themselves will have the potential to be more effective as their self-esteem may no longer be as influenced by their body image. Results from the present study support this hypothesis. In sequence one, the body image activity preceded the self-esteem activity. The body image activity did not precede self-esteem in sequences two or five.

Media Influence before Self-Esteem

Previous research has also indicated that stand alone self-esteem activities have been ineffective in changing weight concern in adolescents (e.g. Wade et al., 2003), while those paired with media activities have been more effective (e.g. O’Dea, 2005b; Richardson et al., 2009). For example, O’Dea outlines a collection of studies which point to the likelihood of media activities functioning to improve self-esteem.

Media activities help youth recognize the amount and intensity of media messages they are bombarded with, and to critically analyze these messages (e.g. Neumark-Sztainer, Butler, & Palti, 1995; Wilksch, Tiggemann, & Wade, 2006). Specifically, media activities typically discussed in the literature aim to educate youth about how media ideals detrimentally affect body image. Media activities often encourage youth’s consideration of the different industries that advertise products and/or services related to body image (e.g. diet industry, fitness industry, etc.).

Promoting media literacy in adolescents can help youth to recognize that the thin/lean ideal is a construction perpetuated principally by the media. This perspective can break down adolescents’ subscription to the thin/lean ideal, and thereby decrease the relationship of this ideal to self-esteem (O’Dea, 2005b). In other words, media activities

may help decrease WBSE, similar to the hypothesized effect of body image activities. This decrease in WBSE frees adolescents to build a healthy self-esteem, based on characteristics that are external to appearance.

In sequence one both the media influence and body image activities, preceded the self-esteem activity. The body image and media influence activities likely combined to prime the self-esteem activity. The body image and media influence activities directly preceded the self-esteem activity only in sequence one.

Media Influence before Weight-related Teasing

Media activities may also be necessary to prime other risk factors. Previous research has indicated that weight-based teasing activities may be maximized when they are preceded by media activities (Irving, 2000; Smolak, et al., 1998; Haines, et al., 2006). Along with the recognition of the construction of the thin/lean ideal, media activities also help youth to acknowledge the related construction of fat prejudice, which is similarly perpetuated by the media (e.g. Smolak et al.). This acknowledgement may improve the effectiveness of a subsequent weight-related teasing activity targeted at youth (Smolak et al.). In sequence one, the media influence activity preceded the weight-based teasing activity. This order was not present in sequence two or five.

Body Image before Dieting

Previous research has also indicated that some prevention programs aimed at dieting have been unsuccessful in changing unhealthy eating attitudes and weight regulation in adolescents (Buddeberg-Fischer & Buddeberg, 1998; Killen et al., 1993). However, other studies which address body image prior to dieting have demonstrated success in improving both of these risk factors (e.g. McVey, Davis, et al., 2004). The

different outcomes of these studies may be more clearly understood when considering the concept of the body image-specific dimension of negative affect, termed body dissatisfaction (Johnson & Wardle, 2005). Past research has demonstrated that such negative affect can lead to binge eating in restrained eaters or dieters (Lowe, 2002). When body image is addressed, the negative affect of body dissatisfaction is minimized, which in turn minimizes binge eating. Past findings by Neumark-Sztainer, Wall, Haines, Story, Sherwood, and van den Berg (2007) support this idea that positive body image works against binge eating, as their findings suggest that body satisfaction protects against weight gain.

Additionally, addressing body dissatisfaction via body image activities may also eliminate the initial restrained eating or dieting, and lead individuals to be more open to activities which encourage healthy eating and active living in place of dieting (McVey, Davis, et al., 2004). Taken together, these studies suggest the probable importance of improving body image before addressing dieting. Results from the current study demonstrate this pattern. The body image activity precedes the dieting activity in sequence one. This sequence is not found in sequence two, three (media, dieting, body image, weight-related teasing, and self-esteem), or five.

Cognitive Activities before Behavioural Activities

In summary, thus far in the explanation of the effectiveness of sequence one in comparison to all other sequences, it has been argued that: (a) body image should precede self esteem, (b) media influence should precede self esteem, (c) body image should precede dieting, and (d) media influence should precede weight-related teasing. However, these isolated sequences were not unique to sequence one, but also occurred in sequences

three and/or four. This illustrates that the effective process which lies behind sequence one must be attributed to something beyond these four isolated sequences.

Consider sequence one, three, and four:

1	Body Image	Media Influence	Self-esteem	Dieting	Weight-related Teasing
3	Media Influence	Dieting	Body Image	Weight-related Teasing	Self-esteem
4	Media Influence	Body Image	Dieting	Self-esteem	Weight-related Teasing

When these three sequences are considered through the cognitive activity versus behavioural activity lens, sequence one differs fundamentally from three and four.

Arguably, body image, media influence, and self-esteem activities all target cognitions (Irving & Berel, 2001; O’Dea, 2005b; Rosen et al., 1995). Body image refers to the way adolescents think about their physical bodies (Cash, 2002), media influence refers to external pressures which can impact the way adolescents think about their bodies (Irving & Berel, 2001), and self-esteem refers to the way that adolescents think about themselves as a whole (O’Dea).

On the other hand, dieting and weight-related teasing are both activities which target behaviours. Dieting refers to the behavioural choices that adolescents make about what they put into their bodies (Stice et al., 2000). Weight-related teasing refers to the behavioural choices that adolescents make about how to interact with peers, especially those whose bodies may be smaller, larger, or different than perceived norms (Neumark-Sztainer, Falkner, et al., 2002).

According to Beck's cognitive theory, changes in human thought precede changes in human behaviour (Beck, 1964). From this perspective, changing adolescents' thoughts through the combination of body image, media influence, and self-esteem activities sets the stage for the subsequent implementation of effective activities which target behaviours. Sequence one was the only activity for which all three cognitive activities (body image, media influence, and self-esteem) preceded both behavioural activities (dieting and weight-related teasing).

Though some cognitive activities preceded some behavioural activities in both sequences three and four, these sequences were not effective in significantly improving the internal developmental assets. This demonstrates that all three cognitive activities may interact to provide the necessary foundation for behavioural activities, and for this reason, all three cognitive activities should precede both of these behavioural activities. In summary, this study points to the possibility that addressing (a) body image, (b) media influence, and (c) self-esteem, prior to addressing (d) dieting and (e) weight-related teasing leads to the subsequent improvement of internal developmental assets.

Summary of Sequence Recommendations

Overall, four recommendations for effective activity sequences involving the five shared risk factors in this study have been identified. These four recommendations are interconnected, they depend on each other, and it is integral that they are taken together, as a whole. The four recommendations are as follows: (1) body image and media influence activities precede self-esteem activities, (2) body image activities precede dieting activities, (3) media influence activities precede weight-based teasing activities,

and (4) all cognitive activities (body image, media influence, and self-esteem) precede all behavioural activities (dieting and weight-related teasing).

Developmental Assets

Thus far it has been argued that sequence one was effective in increasing the three internal developmental assets of positive identity, positive values, and social competencies because of its specific activity order as compared to all other sequences. In this section the relationship between the specific risk factors and developmental assets will be discussed. The interventions investigated in the present study were informed by the developmental assets model.

Positive Identity

The positive identity developmental asset reflects several strengths in an adolescent's emerging identity including self-esteem, optimism, internal locus of control, and a growing sense of purpose in life (Search Institute, 2005). Some items associated with this asset are self-esteem-specific, such as "I feel good about myself" and "I feel good about my future." It is likely that the self-esteem aspect of the positive identity developmental asset was improved in part via the activity addressing the self-esteem risk factor.

Other items associated with the positive identity developmental asset are more applicable to dieting and body image, such as "I overcome challenges in positive ways," and "I deal with frustration in positive ways." French, Leffert, and colleagues (2001) found that the absence of dieting was associated with higher positive identity. Effective dieting activities often include discussion around how to meet the challenge of healthy

living (e.g. healthy eating and active living) without dieting (e.g. McVey, Davis, et al., 2004). The dieting activity likely contributed to increasing positive identity in this way.

Furthermore, the body image activity in this study discussed positive strategies that can be utilized to overcome the challenges that are experienced around body image as a result of the current sociocultural environment. Other successful body image activities have discussed similar strategies, such as reducing fat-talk (Richardson & Paxton, 2010). It is likely that the body image activity served to improve the positive identity asset through the promotion of these strategies.

Positive Values

The positive values developmental asset includes personal virtues such as integrity, restraint, and caring about others (Search Institute, 2005). Some items associated with this asset are specific to teasing, such as “I am developing respect for other people,” and “I think it is important to help other people.” The weight-based teasing activity in the present study discussed different ways to react to teasing situations as a bystander (e.g. intervene, problem solve, get help, etc.). Other effective activities targeting weight-based teasing have included similar messages (e.g. Haines, Neumark-Sztainer, Perry, et al., 2006). This type of message communicates the importance of helping and respecting other people (regardless of body size or shape), and may have contributed to improving the positive value asset.

Other items associated with the positive values asset are specific to dieting, such as “I am developing good health habits.” French, Leffert, and colleagues (2001) found that the absence of dieting was associated with higher scores on positive values. As mentioned above, effective activities targeting dieting often include discussion around

how to develop healthy living habits (e.g. McVey, Davis, et al., 2004). The dieting activity likely contributed to increasing positive values in this way.

Social Competencies

Finally, the social competencies developmental asset includes social skills such as the ability to build friendships, resist negative peer pressure, and resolve conflicts peacefully (Search Institute, 2005). Some items associated with this asset are specific to teasing, such as “I am sensitive to the needs and feelings of others,” and “I accept people who are different from me.” The weight-based teasing activity in the present study discussed how differences can enrich our lives, and the importance of paying attention to other people’s feelings. Other effective activities targeting weight-based teasing have included similar messages around acceptance of different body shapes (e.g. Irving, 2000). This type of message communicates the importance of accepting people who are different from ourselves, and the importance of being sensitive to others. Weight-based teasing activities may contribute to improving the social competencies asset in this way.

Other items associated with this asset are specific to media, such as “I resist bad influences.” The media influence activity in the present study discussed ways in which youth can cope with the pressures of the media. Other effective media activities have emphasized the importance of resisting the media’s emphasis on attractiveness as a measure of success (Richardson & Paxton, 2010). This type of message communicates the importance of pushing against negative influences. Activities which target media in this way may contribute to improving the social competencies asset.

Still other items associated with the social competencies asset are related to dieting, such as “I avoid things that are dangerous or unhealthy,” and “I plan ahead and

make good choices.” French, Leffert, and colleagues (2001) found that the absence of dieting was associated with higher scores on social competencies. Again, as mentioned earlier, effective activities targeting dieting often include discussion around how to avoid dangerous or unhealthy dieting and to develop healthy living habits instead (e.g. McVey, Davis, et al., 2004). The dieting activity likely contributed to increasing social competencies in this way.

Limitations

This study has eight principal limitations First, classroom confounded with intervention sequence. For this reason the sequence effects identified in this study may be attributable to differences between the teacher and/or class of youth as opposed to the order of intervention activities.

Second, repeated testing or testing effects may have influenced the youth’s responses to the DAP. For example, participants may have remembered their previous answers on the DAP, which could have influenced their responses at post-test or follow-up. Alternatively, the knowledge that they were participating in a study also may have influenced their responses.

Third, instrumentality may have changed the experiment in the sense that responding to the DAP could potentially have altered the way youth thought about developmental assets, and therefore the way they experienced and reported their assets.

Fourth, given the nature of the analyses utilized to understand the data, a substantial amount of the available data could not be analyzed. The necessity of using only those cases which had data at all three time points resulted in 41 and 37 lost cases in

year one and year two, respectively. The loss of these cases lead to decreased power in the analysis, and therefore a lower confidence in the generalizability of conclusions.

Fifth, there is a possible selectivity bias concerning the participant data that was used for this study. There are two reasons for this potential selectivity. First, as mentioned above, only those cases which had data at all three time points were analyzed in the present study. There is the potential that those adolescents who filled out the questionnaires at all three time points differed systematically from those who did not. Second, schools, parents, and adolescents had to agree, consent, and assent, respectively, to participate in the study. Similarly, there is the possibility that those schools, parents, and adolescents who agreed to participate in the study differed systematically from those who did not. This possibility for systematic differences decreases the generalizability of the results.

Sixth, the sample used for this study was not a random sample, but a convenience sample, as is common for school-based research. Findings resulting from such samples do not provide population estimates with specifiable confidence limits. Rather, these results suggest statistical characteristics about the population. Having said this, the use of such samples has been defended by Gall, Borg, and Gall (2007), who have suggested that much research would not occur if random sampling was the only option, and that a study with a convenience sample is better than no study.

Seventh, although the validity and reliability of the DAP have been demonstrated, the majority of these tests have been completed by the developers of the DAP, the Search Institute. Tests of the validity and reliability of the DAP conducted by researchers not invested in The Search Institute would further strengthen these findings, and allow

researchers utilizing the DAP to be more confident in the reliability and validity of the measure.

Finally, teachers implemented the interventions without direct supervision from those involved in the research project. For this reason, the fidelity of the sequences and lesson plans was entrusted to the teachers in accurately following instructions. It is possible that the interventions implemented may have differed from instructions given.

Recommendations for Prevention

The findings from this study provide important information on possible order effects of five shared risk factors of eating disorder and obesity. These risk factors include body image, media influence, self-esteem, dieting, and weight-based teasing. Although many past prevention programs have covered multiple content topics, the order effects of these multiple topics have never been tested. The results from the present study indicate that the sequence in which activities are implemented may have a profound influence on the effectiveness of the said activities. The sequence effects identified in the current study potentially have important implications for prevention groups in schools and published manuals aimed at prevention (i.e. “Girl Talk”, McVey, Lieberman, Voorberg, Wardrope, & Blackmore, 2003).

It is important to note that, aside from sequence one, all other sequences incorporating the five activities were not consistently effective in increasing developmental assets. In fact, three of the four less effective sequences were not found to significantly increase developmental assets at all. It is hypothesized that this was due to the sequence effect. These findings could mean that attempting to address these risk factors in certain sequences is futile, and is potentially a waste of valuable resources.

Prevention groups in schools and published prevention manuals could incorporate these findings in order to improve the effectiveness of future prevention programs.

This study also has important implications for asset development and resiliency. These findings demonstrate an association between risk factors and developmental assets. Specifically, that addressing risk factors from a strengths-based orientation can lead to improvements in developmental assets and resiliency. The activities investigated in this study addressed concurrent risk factors of eating disorders and obesity while simultaneously targeting developmental assets demonstrated to protect against these issues. The findings of the present study demonstrate that addressing these risk factors in a particular sequence may be imperative to effectively increasing developmental assets that protect against eating disorders and obesity.

Overall, four recommendations are offered based on the findings from this study. These recommendations apply to intervention sequences involving the five shared risk factors of body image, media influence, self-esteem, dieting, and weight-based teasing. These recommendations should be taken together.

The four recommendations are: (1) body image and media influence activity precedes self-esteem activity, (2) body image activity precedes dieting activity, (3) media influence activity precedes weight-based teasing activity, and (4) all cognitive activities (body image, media influence, and self-esteem) precede all behavioural activities (dieting and weight-related teasing).

Potential Implications for Treatment

The results of this study have important implications for the field of counselling psychology. The findings speak to how professionals might be able to maximize their

effectiveness in working with individuals with body image, self-esteem, weight, and/or eating issues. First, the results of this study point to the potential importance of assessing for WBSE in individuals presenting with low self-esteem. Attempting to change low self-esteem in an individual experiencing WBSE is likely to be futile without first addressing body image issues and media literacy.

Second, these findings demonstrate the possible importance of addressing body image issues prior to behavioural changes in the case of individuals experiencing weight and/or eating issues, as well as individuals who are experiencing disordered eating behaviours.

Third, this study points to the probable utility of providing psychoeducation around the influence of media, and the constructs of the thin/lean ideal and fat prejudice that it perpetuates. This would likely be helpful for clients experiencing body image, self-esteem (WBSE-specific), weight, and/or eating issues. This psychoeducation would likely be the most effective alongside addressing body image issues.

Finally, the findings of this study indicate that after addressing body image and media, it is important to build self-esteem before moving into behavioural activities around eating and potentially exercise.

Future Directions

The present study was an investigation of sequence effects in the concurrent prevention of eating disorders and obesity. Although the results indicated that a specific sequence (body image, media, self esteem, dieting, and weight-based teasing) was more effective than other sequences, not all possible sequences were tested, and therefore another untested sequence may be more effective than sequence one. Future research

could extend these findings by comparing the most effective sequence identified in this study to other sequences not investigated in this study. Specifically, it may be useful to compare the effectiveness of a sequence where self esteem precedes body image to a sequence where body image precedes self esteem. Research on the causal relationship between body image and self esteem is mixed (O’Dea, 2004; Tiggemann, 2005), and such research may shed light on the relationship between these two risk factors.

It may also be useful to compare the effectiveness of a sequence where media precedes body image and self esteem, to a sequence where it does not. This could be an important question as it may be helpful for youth to understand how unrealistic the body ideals perpetuated by the media are prior to addressing body image.

Finally, it could also be useful to compare the effectiveness of a sequence where weight-based teasing directly follows the three cognitive activities (media, body image, and self-esteem). Since weight-based teasing is based on the idea of a culturally ideal body (media), and teasing generally is an attempt to make the teaser feel better about themselves (self-esteem and body image), it may be helpful to address weight-based teasing directly after these three cognitive activities (media, body image, and self esteem).

Furthermore, future research could more closely investigate the processes hypothesized to be at work in the most effective sequence identified by this study. Additionally, future research could investigate the effectiveness of incorporating other concurrent risk factors of eating disorders and obesity into the sequence. Another important aspect to future research would be including a control group in order to gain a better understanding of the true impact of the intervention sequences.

A second line of future research could extend the findings reported in this study into an investigation of the most effective sequence's utility with an older population (e.g. high school or university aged individuals), and/or with a younger population (e.g. pre-adolescent). As the DAP is appropriate for use with individuals 11-18 years of age, a comparable follow-up study of youth aged 16-18 would allow for the exploration of the potential effectiveness with an older age group. This follow-up study would provide insight into a potential developmental component of responsiveness to such an intervention, and would aid in the identification of the most effective time to implement such a prevention program.

Conclusion

To date, past prevention efforts addressing eating disorders and obesity have had variable success. In attempt to shed light on how the efficacy of future prevention efforts might be improved, the present study investigated the sequence effects among five shared risk of eating disorders and obesity.

A specific sequence was demonstrated to be significantly more effective in increasing three internal developmental assets (which have been demonstrated to protect against disordered eating attitudes and behaviours) as compared to all other sequences tested. Important potential processes functioning behind this most effective sequence were discussed in light of past literature pertaining to the five risk factors. These processes suggest that the following guidelines may increase the effectiveness of future eating disorder and obesity interventions: addressing (a) body image and media before self esteem, (b) body image before dieting, (c) media before weight-related teasing, and (d) cognitive activities before behavioural activities.

To the author's knowledge, sequence effects in this field have not previously been explored. This study has significant practical implications for future prevention efforts in this area. The hope is that incorporating these findings into eating disorder and obesity interventions will improve the effectiveness of such interventions.

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Table 1. Intervention Sequences

Group	Intervention				
1	Body Image	Media Influence	Self-esteem	Dieting	Weight-related Teasing
2	Dieting	Weight-related Teasing	Self-esteem	Media Influence	Body Image
3	Media Influence	Dieting	Body Image	Weight-related Teasing	Self-esteem
4	Media Influence	Body Image	Dieting	Self-esteem	Weight-related Teasing
5	Weight-related Teasing	Dieting	Self-esteem	Media Influence	Body Image

Table 2. Year One Participant Demographic Information

Group	Age	Gender (% female)	Gender (% male)	Gender (% did not report)
1 (n = 28)	11.83 +/- 0.46	44.1	44.1	11.8
2 (n = 26)	12.30 +/- 0.98	54.3	40.0	5.7
3 (n = 22)	12.59 +/- 1.19	52.5	40.0	7.5
4 (n = 20)	12.90 +/- 0.34	52.0	44.0	4.0
5 (n = 22)	12.74 +/- 0.45	60.0	32.0	8.0
Total Sample (n = 118)				

Table 3. Year Two Participant Demographic Information

Group	Age	Gender (% female)	Gender (% male)	Gender (% did not report)
1 (n = 31)	13.19 +/- 0.83	48.4	48.4	3.2
2 (n = 11)	11.91 +/- 0.30	36.4	63.6	0.0
Total Sample (n = 42)				

Table 4. Descriptive Data for the DAP Subscales Year One Pre-Test

Subscale	Mean	Standard Deviation	N	Skewness	Kurtosis
Positive Values	21.16	4.08	118	-0.294	-0.318
Positive Identity	20.91	4.69	118	-0.232	0.478
Social Competencies	22.96	3.72	118	-0.368	-0.528

Table 5. Descriptive Data for the DAP Subscales Year One Post-Test

Subscale	Mean	Standard Deviation	N	Skewness	Kurtosis
Positive Values	22.15	3.87	118	-0.219	-0.369
Positive Identity	21.89	5.09	118	-0.410	0.268
Social Competencies	23.39	4.19	118	-0.256	-0.842

Table 6. Descriptive Data for the DAP Subscales Year One Follow-Up

Subscale	Mean	Standard Deviation	N	Skewness	Kurtosis
Positive Values	22.11	5.36	118	-0.032	-0.520
Positive Identity	22.11	5.45	118	-0.327	-0.711
Social Competencies	23.29	4.51	118	-0.628	-0.711

Table 7. Descriptive Data for the DAP Subscales Year Two Pre-Test

Subscale	Mean	Standard Deviation	N	Skewness	Kurtosis
Positive Values	20.91	5.03	42	-0.653	-0.408
Positive Identity	21.83	5.08	42	-0.522	0.152
Social Competencies	22.43	4.89	42	-0.374	-0.921

Table 8. Descriptive Data for the DAP Subscales Year Two Post-Test

Subscale	Mean	Standard Deviation	N	Skewness	Kurtosis
Positive Values	20.99	5.18	42	-0.104	-0.784
Positive Identity	21.15	5.23	42	-0.467	0.025
Social Competencies	21.87	4.35	42	-0.019	-0.566

Table 9. Descriptive Data for the DAP Subscales Year Two Follow-Up

Subscale	Mean	Standard Deviation	N	Skewness	Kurtosis
Positive Values	21.96	5.49	42	-0.098	-1.069
Positive Identity	21.74	6.46	42	-0.473	-0.946
Social Competencies	22.26	5.41	42	-0.124	-1.144

Table 10. Kolmogorov-Smirnov Normality Test Values, Year One

Internal Subscale	Pre-Test	Post-Test	Follow-Up
Positive Values	0.159	0.064	0.118
Positive Identity	0.271	0.504	0.657
Social Competencies	0.127	0.159	0.186

Table 11. Kolmogorov-Smirnov Normality Test Values, Year Two

Internal Subscale	Pre-Test	Post-Test	Follow-Up
Positive Values	0.244	0.641	0.222
Positive Identity	0.218	0.954	0.779
Social Competencies	0.437	0.658	0.472

Table 12. Year One ANOVA Results for Interaction Effects

Internal Subscale	F	Degrees of Freedom	Probability	Partial Eta Squared
Positive Values	3.80	(8, 226)	<0.001	0.119
Positive Identity	1.57	(8, 226)	0.135	0.074
Social Competencies	2.27	(8, 226)	0.023	0.053

Table 13. Year Two ANOVA Results for Interaction Effects

Internal Subscale	F	Degrees of Freedom	Probability	Partial Eta Squared
Positive Values	1.34	(2, 80)	0.269	0.032
Positive Identity	2.64	(2, 80)	0.078	0.046
Social Competencies	1.92	(1.55, 61.96)	0.163	0.062

Table 14. Year One Group Means for Positive Values at all Times

Group	Pre-Test			Post-Test			Follow-Up		
	Mean	SD	N	Mean	SD	N	Mean	SD	N
1	21.25	3.18	28	22.40	3.57	28	23.97	3.84	28
2	22.33	4.28	26	24.72	3.57	26	23.57	3.57	26
3	22.77	3.16	22	22.49	2.83	22	21.04	2.71	22
4	19.91	3.74	20	20.50	4.46	20	20.68	3.60	20
5	19.17	5.03	22	19.96	3.13	22	20.41	4.72	22

Table 15. Year One Group Means for Positive Identity at all Times

Group	Pre-Test			Post-Test			Follow-Up		
	Mean	SD	N	Mean	SD	N	Mean	SD	N
1	20.37	3.19	28	22.32	3.91	28	23.45	4.33	28
2	23.65	4.78	26	24.74	4.29	26	23.974	4.45	26
3	20.62	5.05	22	21.74	4.38	22	20.56	4.68	22
4	20.28	5.60	20	19.75	5.39	20	21.42	5.95	20
5	19.20	3.88	22	20.08	6.29	22	20.38	6.76	22

Table 16. Year One Group Means for Social Competencies at all Times

<u>Group</u>	<u>Pre-Test</u>			<u>Post-Test</u>			<u>Follow-Up</u>		
	Mean	SD	N	Mean	SD	N	Mean	SD	N
1	22.74	4.34	28	23.57	3.74	28	24.55	4.16	28
2	24.53	3.05	26	25.24	4.60	26	23.61	4.99	26
3	22.99	2.75	22	23.92	3.02	22	22.27	3.08	22
4	22.38	3.89	20	22.19	3.89	20	23.75	4.16	20
5	21.88	4.00	22	21.53	4.73	22	21.93	5.573	22

Table 17. Year Two Group Means for Positive Values at all Times

<u>Group</u>	<u>Pre-Test</u>			<u>Post-Test</u>			<u>Follow-Up</u>		
	Mean	SD	N	Mean	SD	N	Mean	SD	N
1	20.47	5.46	31	21.19	5.51	31	22.14	5.81	31
2	22.15	3.48	11	20.41	4.29	11	21.46	4.68	11

Table 18. Year Two Group Means for Positive Identity at all Times

<u>Group</u>	<u>Pre-Test</u>			<u>Post-Test</u>			<u>Follow-Up</u>		
	Mean	SD	N	Mean	SD	N	Mean	SD	N
1	20.91	5.29	31	20.81	5.79	31	21.99	7.01	31
2	24.39	3.52	11	22.12	3.17	11	21.06	4.79	11

Table 19. Year Two Group Means for Social Competencies at all Times

<u>Group</u>	<u>Pre-Test</u>			<u>Post-Test</u>			<u>Follow-Up</u>		
	Mean	SD	N	Mean	SD	N	Mean	SD	N
1	22.20	5.43	31	21.89	4.82	31	22.86	5.73	31
2	23.07	3.03	11	21.82	2.82	11	20.57	4.16	11

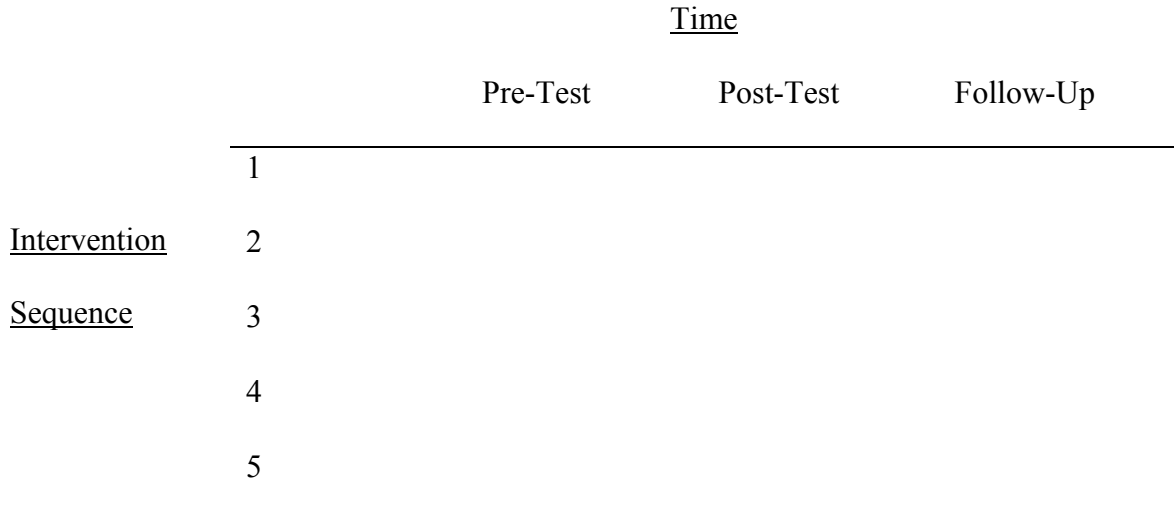
Appendix A: Link to a Sample of the DAP

For a sample of the DAP see:

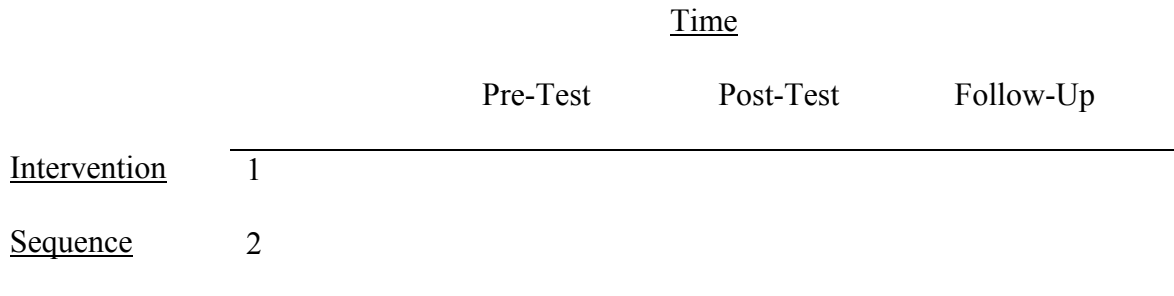
<http://www.searchinstitute.org/system/files/DAPsamplePageOne.pdf>

Appendix B: Research Design Diagrams

Year one.



Year two.



Appendix C: Consent Form

Name of Researcher, Faculty, Department, Telephone & Email:

*Dr. Shelly Russell-Mayhew, Assistant Professor
Division of Applied Psychology
403-220-8375
mkrussel@ucalgary.ca*

Title of Project:

Integrating Eating Disorder and Obesity Prevention: A Study of School-Based Activities Aimed at Shared Risk and Protective Factors

Parent Permission for Student Participation

This consent form, a copy of which has been given to you, is only part of the process of informed consent. If you want more details about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

The University of Calgary Conjoint Faculties Research Ethics Board has approved this research study.

Purpose of the Study

I am conducting a research project about ways to promote healthy body image and personal attitudes in adolescents. We are writing to provide information regarding the research project so that you can make an informed decision regarding the participation of your child and yourself.

The program involves the use of educational activities that address issues such as body image, media, and teasing. The research will measure your child's perceptions about how the activities changed the way they feel about themselves, others and the school. We hope that results from this study can be used to plan future school-based programs for children's health.

What are the Activities?

Each activity comes with a teacher guide with appropriate background information. Each activity is approved by Alberta Education and will be used in the school throughout this year. Please note that I am also the co-developer of the activities and co-director of the company that distributes them. As such, appropriate strategies have been implemented to ensure the research remains unbiased and informative.

What is the Research?

This letter is a request to have your child participate in the voluntary research portion of the program that is separate from participating in the Activities. Your child may use and see the activity without participating in the research study. Permission to conduct the research

study within your child's school has been obtained from your school district and the Activities have received Alberta Education approval as an appropriate resource.

What will your child do in the research?

Your child will be asked to complete demographic questions about themselves as well as a series of questionnaires. The questionnaire series measures assets, body satisfaction, size acceptance, eating attitudes and behaviors, and weight loss/gain behaviors, self-concept, and personal attitudes. The questionnaires will be given to your child during the school day and **will take approximately 45 minutes** to complete each time. Also, your child will be asked to fill out a 5 minute questionnaire in response to each activity they participate in the classroom.

What happens to the information my child provides?

Because the questionnaires are likely to be completed in the classroom, anonymity is limited because the questionnaires will be completed in a group setting. Questionnaires completed by your child will be kept in a locked filing cabinet in a locked research office and only the researcher and appropriate research assistants will have access to the data. The name of your child will be removed and replaced with number codes once all data for the research project is collected. No personal information will be stored electronically. Only group results will be reported in any published studies. The raw data will be kept in a locked file cabinet and destroyed by shredding five years after completion of the study.

What information will I receive?

At a future date, a newsletter will be sent out through your school with information about the general findings of the study. No individual scores will be reported. A list of resources is provided at the end of this document should you wish to seek further information or counselling about topics related to this study.

What are my rights?

Signing this form indicates that you understand the above information. You have legal rights and the researchers and institutions involved also have legal and professional responsibilities. You are free to withdraw your child from the study at any time. You are free to discontinue participation at any time during the study. Should you choose to withdraw from the study, all identifying information will be eliminated from the data already collected, but this data may still be used in the study. Only group information will be summarized for any presentation or publication of results. You can ask for clarification about this study at any time.

Signatures (written consent)

Your signature on this form indicates that you 1) understand to your satisfaction the information provided to you about your child's participation in this research project, and 2) agree to your child participating as a research subject.

In no way does this waive your legal rights nor release the investigators, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from this research project at any time. You should feel free to ask for clarification or new information throughout your participation.

Please sign this form to indicate your consent for your child to participate.

Name of parent or guardian (please print)

Signature of parent or guardian

Date

We would also like your child to agree to participate.

Name of child (please print)

Child's Signature

Researcher's Name: (please print) Dr. Shelly Russell-Mayhew

Researcher's Signature: _____ Date: _____

Children's Demographic Information:

	Child
Age	
Gender	
Weight	
Height	
Grade	
Ethnicity	

Questions/Concerns

If you have any further questions or want clarification regarding this research and/or your participation, please contact:

Dr. Shelly Russell-Mayhew, R. Psych.

403-220-8375

mkrussel@ucalgary.ca

If you have any concerns about the way you've been treated as a participant, please contact Bonnie Scherrer, Ethics Resource Officer, Research Services Office, University of Calgary at (403) 220-3782; email bonnie.scherrer@ucalgary.ca

A copy of this consent form has been given to you to keep for your records and reference. The investigator has kept a copy of the consent form.

Community Mental Health Resources and Information about Eating Disorders

Clinical Services	Contact Information
Family physicians	Yellow pages
Psychiatrists	Yellow pages
Psychologists	Yellow pages
Calgary Health Region Calgary Eating Disorder Program*	May need referral from G.P. 403-955-8700
Access Mental Health	403-943-1500
Calgary Counselling Centre**	403-265-4980
Calgary Association of Self-Help	403-266-8711
Calgary Family Services	403-269-9888
Catholic Family Services	403-233-2360
Jewish Family Services	403-287-3510
Calgary Catholic Immigration Society	403-298-4111

*Consultants are available to provide information about eating disorders and treatment options.

**Provides individual, couple, family, & group counselling for individuals with an eating disorder. Offers sliding scale fees according to family size and income.

Distress and Crisis Resources	Contact Information
Emergency Services	Dial 911
Distress Centre	266-1605
Men's Line	266-HELP (4357)
Teen Line	264-TEEN (8336)
Calgary Mental Health Crisis and Emergency Services Mobile Response Team	266-1605
Canadian Mental Health Association Suicide Services (available 8:30 am to 4:30 pm)	297-1744
Calgary Health Region Mental Health Line	943-1500

Organizations	Contact Information
Psychologists Association of Alberta (referrals)	1-888-424-0297
Canadian Mental Health Association (Calgary Office)	297-1700
Canadian Psychological Association	www.cpa.ca
National Eating Disorder Information Centre	www.nedic.ca
Calgary Eating Disorder Program	943-7700 www.crha-health.ab.ca/eatingdis
Eating Disorder Education Organization (Edmonton)	www.edeo.org
National Eating Disorders Association (U.S.)	www.edap.org
Other eating disorder-related web sites	www.anred.com www.anad.org http://eatingdisorders.mentalhelp.net/

Appendix D: Activity Descriptions

The intervention activities used in the present study were based on an educational resource called the Body Image Kits, created by Body Image Works, Inc. The kits are Alberta Learning Approved teaching resources. The kits contain a facilitator's guide with appropriate background information, manuals, videos, transparencies, and interactive classroom activities that aim to build resiliency and promote the acceptance of oneself and others. The following describes each of the activities aimed at the five shared risk factors of body image, media, self-esteem, dieting, and weight-based teasing.

Body image. Using a worksheet, transparencies, a worksheet, and a variety of objects such as dolls, an apple, a running shoe etc., how we feel about our bodies is discussed and debated.

Media. Magazines, songs, and other media sources as well as a worksheet, answer key and discussion guide highlight the impact of the media on lifestyle choices. The activity concludes with a 'gallery walk' where prominent industries such as the food, fashion, and music industries are featured for discussion and debate.

Self-esteem. Using a disco ball, dolls, posters, and a special 'reflective' mirror, youth are invited to articulate a 'reflection' as they look in the mirror which affirms their potential as human beings, beyond appearance. Discussion about positive self-talk and self-esteem enhancing strategies are encouraged.

Dieting. In an interactive game format featuring riddles, making points, rank and file, multiple choice, and yellow-light behaviors, student teams are challenged by fictions and facts pertaining to dieting, exercise, and energy.

Teasing/discrimination based on weight. Using definitions of terms such as ‘stereotypes’ and ‘name-calling,’ signs posted around the room, and scenario cards, the students are invited to problem solve common examples of ‘weightism’. This activity helps develop an understanding of how unfair it is to judge people based on external factors and promotes discussion of different possible ways to deal with teasing.

The following is an example of a lesson plan provided to teachers for the weight-based teasing intervention:

Teasing and Discrimination Based on Weight

Objective

Participants will:

- become aware of discrimination, prejudiced attitudes, and the unfair treatment of others.
- recognize how we judge people without knowing them.
- understand how differences can enrich our lives.

Materials

-Sheets of Terms, Definitions and Examples (Teacher to copy & cut)

-Terms, Definitions and Examples Answer Key

-Signs placed around the room: “Join In, Ignore Situation, Get Help, Intervene, Problem-Solve” (located in binder)

-Transparency

Lesson Plan

I. Introduction

- Review Ground Rules. (Transparency #1)
- Introduce today's lesson. E.g. "In this session we are going to discuss how we treat and interact with others."
- Mention that in our culture, there is a distinct emphasis on appearance, acknowledging that we even make judgments about athletic ability, intelligence, etc. based on appearance.
- Question participants about the fairness of making judgments based on this single characteristic.
- Point out that this lack of tolerance hurts people.
- Elaborate that being picked-on, rejected, or excluded because of how you look can sometimes leave scars that last a lifetime.

II. Defining Terms

- Inform participants that there are a number of behaviors that people engage in that hurt others.
- Ask for 7 volunteers to come to the front of the room.
- Randomly give each of those volunteers a "term" card (jokes, name-calling etc.) and instruct them to stand in order with the other terms from least to most offensive.
- Instruct them to remain in line.
- Ask for feedback from the remaining participants if they agree with the progression.
- Ask for an additional 7 volunteers to come to the front of the room.

- Distribute the “definitions” cards to the next set of volunteers and instruct them to stand beside the term they define.
- Have these volunteers read out their definition that they have matched with each term.
- Ask for feedback from the remaining participants if they agree with the matched definitions and if not, have volunteers move accordingly.
- Instruct them to remain in line as well.
- Ask for an additional 7 volunteers to come to the front of the room.
- Distribute the “examples” cards to the next set of volunteers and instruct them to stand beside the term and definition they match the best.
- Have these volunteers read out the “examples” they have matched with each term.
- Ask for feedback from the remaining participants if they agree with the matches and if not, have volunteers move accordingly.

III. Take a Stand

- Inform participants that the challenge in talking about discrimination is not in knowing the terminology, but in recognizing the impact of our behavior and hopefully altering it.
- Point out the signs placed around the room and inform participants that they are possible responses to incidents of discrimination.
- Let participants know that in the next activity they are to stand beside the sign that best describes how people their age would respond to the given situations.
- Read out the situations one at a time.

- Allow sufficient time for participants to stand beside the sign that best depicts their response. Question each group as to why they are standing where they are and discuss their responses as appropriate.

Situations

1. A friend's younger siblings confide in you that the kids at the park call them names and tease them so badly that they never want to go back.
2. You are standing in a group of people that you have just met with your best friend whose parents are of mixed race. This group begins to make fun of someone walking by that shares the same ethnic background as your friend.
3. Your friends make rude comments about the appearance of your lab partner.
4. A large student, Chris, is walking out of the last class before lunch. A group of students walk past laughing and say that they'd better hurry and get to the cafeteria before Chris does so there's something left to eat.

IV. Conclusion

- Conclude the lesson by stating that when we treat people differently because of how they look, it has the potential to affect us all. Inform participants that we do ourselves a disservice by discounting people because of their appearance when in the long run it isn't what we value most.

Terms, Definitions, and Examples Answer Key

1. Term: Jokes

Definition: The use of humor in a way that puts something or someone down.

E.g. Blond Jokes

2. Term: Name-calling

Definition: The use of offensive names that put down a person or a group.

E.g. Four-Eyes, Beanpole, Chubbs

3. Term: Stereotype

Definition: An impression we have of a group of people that doesn't account for individual differences.

E.g. All fat people are lazy.

4. Term: Prejudice

Definition: Negative attitudes or opinions formed beforehand about an individual or group.

E.g. People who are physically challenged aren't good athletes.

5. Term: Harassment

Definition: The act or practice of singling out or bullying those who are different.

E.g. Pushing someone around because they are smaller than you.

6. Term: Scapegoat

Definition: An individual (or group) who is the object of blame for no apparent reason.

E.g. Food was taken; it must be the fat kid.

7. Term: Weightism

Definition: Negative attitudes and practices against larger people.

E.g. You never see images in the media that look like you.

Note: Weightism is a relatively new term that could also serve as an example of a number of the other terms used. In some ways, it's placement is somewhat arbitrary which in itself may lead to interesting discussion.