

Université de Montréal

Associations between Exposure to Socio-Cultural Influences in Proximal Environments
and Weight Concerns among Urban-Dwelling Women

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Mémoire présenté à la Faculté des études supérieures et postdoctorales
en vue de l'obtention du grade de Maîtrise en Santé Communautaire

Août, 2008

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Université de Montréal
Faculté des études supérieures et postdoctorales

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Ce mémoire intitulé:

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Résumé

Les préoccupations et comportements alimentaires entourant le poids sont omniprésentes chez les jeunes adolescentes et femmes qui habitent dans les cultures occidentales où les formes corporelles sont orientées vers un idéal ultra-mince. L'objectif de cette étude est d'examiner si une plus grande exposition aux endroits faisant la promotion de la minceur est associée à des préoccupations pour le poids plus élevées chez les femmes.

Cette étude fait partie d'un projet intitulé "Social, cultural, and economic disparities and disordered eating: Understanding the contribution of neighbourhood and individual level factors" (Gauvin, Steiger, & Brodeur, 2009). Un échantillon de 1288 femmes âgées entre 20 et 40 ans et résidant à Montréal depuis au moins 12 mois ont répondu à un sondage téléphonique. Des régressions logistiques ont comparé les femmes se situant dans le quintile le plus élevé des préoccupations de poids avec les femmes dans les autres quintiles en fonction de leur exposition 15 jours ou plus dans des endroits faisant la promotion de la minceur. De plus, une analyse de sensibilité a vérifié si l'association demeurerait significative à d'autres niveaux d'exposition. Les facteurs confondants ont été contrôlés statistiquement.

Les résultats démontrent qu'une fréquentation d'au moins 15 jours par mois d'endroits faisant la promotion de la minceur est associée à des préoccupations plus élevées pour le poids. Aussi, fréquenter ces lieux entre 15 et 20 jours/mois est aussi associé à des préoccupations de poids élevées. Des interventions de santé publique pourraient viser la diminution des pressions socioculturelles vers la minceur.

Mots-clés : perceptions de poids, obésité, comportements alimentaires, minceur, média, environnement sociale, enquête populationnelle, femmes.

Abstract

Weight and eating-related disorders and behaviours are common among adolescent girls and young women in Western societies, where thin bodies are highly valued. The goal of this study was to examine whether or not more frequent exposure to places promoting thinness is associated with greater weight concerns among women.

This study was part of a larger investigation entitled "Social, cultural, and economic disparities and disordered eating: Understanding the contribution of neighbourhood and individual level factors" (Gauvin, Steiger, & Brodeur, 2009). A sample of 1288 women aged 20 to 40 years and living in Montreal for at least 12 months responded to a telephone survey. Logistic regression analyses were performed comparing women in the highest quintile of weight concerns to women in other quintiles on frequentations of thin-promoting places 15 days or more. Further, a sensitivity analysis was performed to verify whether or not an association exists between high weight concerns and different levels of exposure to places promoting socio-cultural standards for thinness. A series of confounding variables were statistically controlled.

Results showed that exposure to places promoting socio-cultural standards for thinness at least 15 days per month was significantly associated with greater weight concerns among women despite controlling for confounding variables. Further, going to places promoting thinness between at least 15 through 20 days/month was also associated greater weight concerns among women. Public health interventions could aim at reducing societal pressures to thinness.

MeSH Key words: Weight perceptions, obesity, eating disorders, thinness, mass media, social environments, women, population-based study.

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List of Abbreviations

AN: Anorexia nervosa

APA: American Psychiatric Association

BED: Binge eating disorder

BMI: Body mass index

BN: Bulimia nervosa

CI: Confidence interval

ED: Eating Disorder

HLM: Hierarchical linear modelling

OR: Odds ratio

SPSS: Statistical package for social sciences

WHO: World Health Organization

Acknowledgments

I would sincerely like to thank Dr. Lise Gauvin for her guidance as my research supervisor throughout the process of my master's degree. Her advice, support, and constructive criticism gave me insight on how to constantly improve my work to the best. I am grateful to have had the opportunity to work with a great mentor. It was a great pleasure to work with you.

I would also like to thank Dr. Jean-Marc Brodeur for his advice and support throughout this process. It was greatly appreciated.

Finally, I would like to thank my parents, my sister, Jennifer, and my dog, Spike for their unconditional love, support, guidance, and constant interest throughout this journey. Thank you also for your words of wisdom and encouragement.

This has been an unforgettable journey that has taught me many things, but most importantly, that I can achieve anything. This is a great accomplishment and I look forward to future endeavours.

Lastly, thank you for this great and memorable learning experience. Aristotle said it best: "Pleasure in the job puts perfection in the work."

Preface

My personal reasons have led me to conduct a research project on examining the relation between social pressures to be thin and weight concerns among women. I felt that living in Montreal and being exposed to various influences of thin images, in the different places that I visit, have impacted me at some level such as experiencing some dissatisfaction with my body and having some concerns with my weight. I had often wondered if other women had felt the same way as I did. Through this process of researching, reading, reflecting, and writing my thesis, I have come to terms with who I am and appreciate my body the way it is. It is a challenging situation when faced with the constant exposure of ultra-thin body images, but learning how to be critical of such images and understanding that the images are unrealistic (i.e., they are perfected with computerized imaging software) led me to develop my own mini intervention with rewarding outcomes and a better outlook on life. Knowing that I can change my own perceptions on body image and become more aware of this issue leads me to believe that I can make a difference in society by encouraging other young women to appreciate their body regardless of shape and size, promote healthy behaviours, as well as positive attitudes and perceptions of body images and finally to help others overcome the challenges of societal pressures.

I. INTRODUCTION

Weight and eating-related conditions and disorders, such as obesity, eating disorders, and disordered eating are major public health problems that have resulted from the interaction of multiple biological, psychological, and socio-environmental factors. Socio-cultural factors play an important role in the development of such prevalent health issues. Western culture's emphasis on thinness as the core element of feminist beauty, achievement and success (Mussel et al. 2000) leads women to express concerns with weight, shape and body image, and body dissatisfaction (Morry & Staska, 2001; Tiggemann & Pennington, 1990). In an effort to contribute to an understanding of this phenomenon, the current thesis explores how exposure to places promoting thin-ideal images in proximal environments are associated to weight concerns among women living in Montreal, Quebec, Canada.

The prevalence and incidence of obesity have escalated at a very fast pace and have tripled over the past two decades among adults (Bessessen, 2008; Hossain et al., 2007). In Canada, in 2000-01, an estimated 3 million adults were obese and a surplus of 6 million were overweight (Le Petit and Berthelot, Catalogue no. 82-618-MWE2005003). Having an excess of weight, such as being overweight or obese, are physical health issues that have resulted mainly from an environment that promotes sedentary lifestyle choices such as excessive consumption of high dense foods and lack of physical activity (Hill & Peters, 1998). The obesity epidemic affects many population strata but research shows that the burden is greater among less affluent populations living in industrialised nations and among more affluent populations living in developing nations (McLaren, 2007;

Hossain et al., 2007; Keski-Rahkonen, 2005; Bryan & Walsh, 2004). One possible explanation for this obesity trend in developing nations is that these countries seemed to have adopted an aspect of the Western culture of overeating and reduction in physical activity (Hossain et al., 2007; Keski-Rahkonen, 2005; Bryan & Walsh, 2004).

Living in a cultural context that is submerged with sedentary choices, an abundance of food as well as dealing with strong cultural values towards thinness may possibly influence the increasing prevalence rates of eating disorders and disordered eating behaviours in young women (Derenne and Beresin, 2006; Striegel-Moore, 1997). In Western societies, thinness is the most valued physical body characteristic of female beauty (Mussell et al., 2000). Mass media, perhaps the most powerful source of communication, projects thin-ideal images to society as the ideal-body shape for women. Although these ideal-body figures are unrealistic and difficult to achieve (Kjaerbye-Thygesen et al., 2004; Field et al., 1999), research has shown that women perceive the thin ideal to be associated with attractiveness, success, wealth, assertiveness, and self-discipline (Young, McFatter, & Clopton, 2001; Kjaerbye-Thygesen et al., 2004).

In today's modern world, individuals are faced with many changes and challenges. Advancements, improvements, and new discoveries are constantly being introduced into society as "something new to try" targeting primarily young children and adolescents and a secondary audience of adults (Striegel-Moore, 1997). Given that thinness is highly valued in our cultural context, it is not surprising that many young adolescents tend to engage in unhealthy dieting and weight loss strategies (Striegel-Moore, 1997; Tiggemann and Pennington, 1990). Many of these young girls struggle to achieve this stereotypical ideal figure (Colabianchi et al., 2006). From an historical

perspective, one can see how the roles of survival have changed: from “survival of the fittest” to now “survival of the thinnest”. Where ever you go, read or watch, tall and slender images of women are ubiquitous in Western society.

1. Research question

Given these influences in contemporary society, the current thesis explores whether or not the environment is associated with women’s weight concerns. The research question was: “Does greater exposure to places that promote thinness influence women to have greater weight concerns? Images and messages about beauty, specifically those directed towards thinness, not only exist in magazines and on television but also are present in the locations people frequent in their residential neighbourhoods. Thus greater frequentation of such locations might lead to greater weight concerns. Prior to examining the main question - whether or not an association exists between weight concerns and the environment - an overview of the literature on eating and weight-related behaviours and disorders and their association with weight concerns, risk factors, and socio-cultural factors will be performed.

II. LITERATURE REVIEW

1. Methodology of retrieval of articles

In order to locate research articles for this literature review as well as for a greater understanding of the phenomenon studied (e.g., the influence of socio-cultural pressures to thinness on weight concerns among women), electronic searches of databases including Medline and PsycInfo were conducted from the period spanning from 1980 to 2008. This time range was selected because eating disorders, especially bulimia nervosa, are considered fairly recent disorders having emerged in the last 30 years (Stiegel-Moore and Cachelin, 2001). The key words used in the data base searches were: *weight concerns, correlates of weight concerns, eating pathology, eating disorders, disordered eating behaviours, obesity, overweight, body dissatisfaction, body image, thinness, socio-cultural standards* (also used synonyms as *pressures* and *norms*) *for thinness, societal norms, exposure to mass media, prevalence rates of eating disorders*, and multiple combinations of terms used such as *thinness and body dissatisfaction; weight concerns and media influences; weight concerns and disordered eating behaviours, body image and obesity* and *weight concerns and thinness*. Since the current study focuses on adult women (20 to 40 years old), I intended to only include women of age 18 and older in the inclusion criteria for the studies and with greater focus on weight concerns. However, numerous studies involved children and young adolescents as sample participants and there were very few studies with only adult female participants. Studies of weight concerns are over-represented in the literature for teenage girls in comparison to adult women. Therefore, the criteria were extended to include studies that recruited sample

participants as children and adolescents. Also, studies with both genders (e.g., young girls and boys, teenage girls and boys, and adult males and females) were included in the literature review. The exclusion criteria for studies were: adult males only; pregnant women; older and senior women (50 years and above); athletes (including the sport of gymnastics); dancers (e.g. ballerinas); biological studies concerning genetic influences, twin studies, and maternal studies; and neurobiological studies regarding brain receptors (e.g. dopamine, serotonin). Further, article searches were conducted several times beginning from September 2007 through July 2008 to ensure that I obtained the most recent articles, and obtained a variety of articles. With the established inclusion criteria in hand, the process of selecting articles was: 1) to read title of study, and if applicable to inclusion criteria, 2) then read the abstract, if still applicable to criteria, 3) then briefly read the article. All articles were re-read several times for a deeper understanding and further clarification of the study. Further, the reference sections of articles were examined to select any relevant studies regarding the research topic and followed the same article selection process as indicated above.

This article selection process resulted in 105 journal articles. Articles and studies were categorized into the four subsequent sections: 1) history of body image ideals; 2) weight concerns; 3) eating and weight-related behaviours and disorders which was further divided into five subcategories as: i) eating disorders, ii) onset of eating disorders, iii) disordered eating, iv) overweight and obesity, v) overlap of eating disorders and obesity; and 4) social and cultural factors with three subgroups: i) mass media exposure, ii) other influences and iii) the interaction between media influences and locations. Also included in the sections on weight concerns and weight and eating-related conditions

were prevalence studies, characteristics of the conditions, associated risk factors, and health complications. The overlapping of articles with other sections such as articles on media exposure and weight concerns was observed. Another observation was the lack of research relating to weight concerns and weight and eating-related behaviours and disorders that will be discussed at the end of this section. Since the present study focuses on exposure to socio-cultural factors, emphasis was directed towards the influences of and exposure to thin-ideal images in print media and television and among women.

2. Review of Body Image Ideals

In the 21st century, Western countries, such as Canada and the United States, there has been a substantial increase in preoccupation with socio-cultural norms towards thinness and body image to the point that individuals are saturated by thin-ideal images almost everywhere they go.

Throughout the historical context, the roles of women in Western society and the ideal female body shape have changed dramatically (Derenne & Beresin, 2006; Stice, 2002; Gowers & Shore, 2001; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). There has been much fluctuation for the standard body shape and as to which body figures were considered socially acceptable, attractive, and fashionable for each time period. Dating back to the 1400 to 1700, a large body physique was highly desirable for women (Derenne & Beresin, 2006; Thompson et al., 1999). But by the 19th century, a voluptuous shape was desired emphasizing the hourglass figure for women (Thompson et al., 1999). The standard then shifted to flat-chested ideals during the 1920's (Thompson et al., 1999) leading to elevated concerns with weight and shape. It was during this period

that the first concerns towards eating disorders occurred (Thompson et al., 1999). However, during the Second World War, strong-like and physically competent body shapes for women were valued as women undertook the roles and responsibilities of the men who embarked for war (Derenne & Beresin, 2006). After the war ended, the cultural ideals returned to traditional family and gender roles and women were expected to return to the conventional female roles (Derenne & Beresin, 2006). A curvaceous figure like that of Marilyn Monroe was introduced into society (Derenne & Beresin, 2006). A few years later, in the 1960's, changes in the traditional gender work roles were established as women began fighting for freedom, and for equality in both in the workplace and at home (Derenne & Beresin, 2006). It has been only in recent decades that the body image for women has drifted towards ultra thin ideals such as icons like Twiggy, promoting slenderness, or body figures like Barbie, introducing a body shape with a larger chest and a smaller waist (Derenne & Beresin, 2006).

Today, the thin-ideal body silhouette is widely accepted in Western societies (Striegel-Moore, 1997) as it places greater social pressure on women to achieve this ideal. Women today are faced with numerous role expectations such as motherhood, having a successful career, keeping fit, healthy and beautiful, having a positive self-identity, being a caregiver, and, finally, struggling to achieve society's ideal body (Derenne & Beresin, 2006; Mussell et al., 2000; Striegel-Moore, 1997). With all of these expectations to fulfill and the unrealistic ideals enforced by society, it is common for women to become dissatisfied with their body (Mussell et al., 2000).

3. Weight Concerns

Looking through the lens of the sociocultural context for women, preoccupations with weight and shape are important factors for the development of eating disorders (Mussell et al., 2000; Field et al., 1999). Weight concerns are associated with a number of factors including young females (Field et al., 1999), higher body mass index (Field et al., 2005; Boutelle et al., 2002), social stigma related to obesity (Burrows and Cooper, 2002), societal pressures towards thinness (Colabianchi et al., 2006), and disordered eating behaviours (Neumark-Sztainer, Story, Hannan, Perry & Irving, 2002). Media images of unrealistic body shapes can foster women to show weight and shape concerns, feel compelled to engage in unhealthy weight control methods, develop problems related to eating behaviours, and perceive themselves as overweight (Morry & Staska, 2001; Tiggemann & Pennington, 1990). Similarly, in one Canadian study, Cook et al. (2007) found that adolescent girls (in grades 10 to 12) who were underweight or overweight engaged in unhealthy weight loss practices such as excessive exercising, eating less, fasting, use of diet pills or laxatives, and vomiting. Another study showed that adolescent girls who were perceived as being more attractive had higher weight concerns than girls who were rated as less attractive (Colabianchi et al., 2006). This finding is consistent with literature that the thin-ideal symbolizes youthfulness, attractiveness, and success (Young et al., 2001).

Research indicates that the development of weight concerns begins as early as childhood and gradually progress in severity into the stages of adolescence and adulthood (Jones et al., 2001). For example, a community-based study in the United States showed that the prevalence of weight and shape concerns among 11 to 16 year-old teenage girls

was 18.9%, suggesting a high frequency of thoughts about weight and shape starting at a young age (Cooper & Goodyer, 1997). The findings of this study also imply that the frequency of concerns about weight and shape increase with age suggesting a continuous age trend among women (Cooper & Goodyer, 1997). One could speculate that weight concerns would eventually reach a plateau point at a certain age, for example at around 40 or 50 years old, and then begin to gradually decrease, but further research would be needed to verify this assumption. A recent study suggested that older women may have less body dissatisfaction since images of thinness in magazines are mostly directed towards younger girls of smaller and slimmer bodies (Bessenoff & Del Priore, 2007). Although the results of this study appear reasonable, additional research investigating whether or not weight concerns vary across the lifespan of women is required.

Weight concerns play a key role in the development of eating and weight-related behaviours. Regardless of age, shape or size, all women will be faced with persuasive thin-promoting messages from the media (Bessenoff & Del Priore, 2007). The next section will explore health conditions where weight concerns are present and discuss potential related factors.

4. Eating and Weight-Related Disorders and Behaviours

4.1 Eating Disorders

Socio-cultural factors play an important role in the development of maladaptive eating attitudes and behaviour including weight concerns (Haines & Neumark-Sztainer, 2006; Gowers & Shore, 2001; Stice, 2001). Today, eating disorders are one of the most

common psychiatric problems faced by young women (Stice, 2001; Stice, 2002). The most well defined eating disorders are anorexia nervosa (AN), bulimia nervosa (BN), and binge eating disorder (BED). Eating disorders (EDs) are severe, complex, and multi-dimensional chronic health problems resulting from the interaction of various risk factors. Described in the Diagnostic and Statistical Manual, Fourth Edition, Revised, eating disorders are defined as mental health illnesses marked by severe preoccupations for eating, weight and body-image, disturbance in or risky eating behaviours such as very large food intake or massive bingeing, recurrent vomiting, use of laxatives or diet pills, and severe psychiatric problems (e.g., depression, substance abuse, anxiety issues, etc.) (American Psychiatric Association (APA), 2000). Anorexia nervosa is characterized as identified by acute weight loss, intense fear of weight gain, amenorrhea and distorted perception of body size (Gauvin, Steiger, & Brodeur, 2009; APA, 2000). As a consequence of their highly intense fear of gaining weight, anorexics compel to starvation episodes and weight loss (Hetherington, 2000). Bulimia nervosa is recognized as binge eating events followed by compensatory behaviours such as purging, vomiting or use of laxatives to prevent weight gain (Gauvin, Steiger, & Brodeur, 2009; APA, 2000). Binge eating behaviour is akin to bulimia nervosa. Due to their pathological fear of weight gain (Hetherington, 2000), individuals diagnosed with anorexia nervosa or bulimia nervosa have severe weight and shape concerns (Becker et al., 1999). Excessive weight concerns are a feature of eating disorders but it doesn't imply that an individual with weight issues has an eating disorder. Binge Eating Disorder is marked by repeated binge eating episodes in the absence of compensatory behaviours (Gauvin, Steiger, & Brodeur, 2009). Individuals with eating disorders can experience severe health

complications such as: dental caries, amenorrhea, delays in puberty, osteoporosis, obesity, infertility, dry skin and hair, hair loss, gastrointestinal problems and peripheral neuropathy (Cook et al., 2007; Becker et al., 1999). Further, associated problems linked with eating disorders are depression, substance abuse and suicidal thoughts (Cook et al., 2007).

Young girls and women are predominantly at higher risk for developing an eating disorder than men (Mussell, Binford, & Fulkerson, 2000). In fact, they are ten times more likely to develop an eating disorder than young boys and men (Mussell et al., 2000). In Canada, prevalence studies on eating disorders are very scarce. In one population-based study, Gauvin and colleagues (2009) determined the prevalence of eating disorders and maladaptive behaviours among adult women living in Montreal, Quebec. They found that none of the participants met the full criteria of anorexia nervosa, whereas the prevalence of bulimia nervosa was found to be 0.6%, and the prevalence of binge-eating disorder warranting a diagnosis was at 3.8% among women between the ages of 20 to 40 years old (Gauvin, et al., 2009). Further, in another community study based in Ontario, Garfinkel and colleagues (1995) found that the lifetime prevalence of bulimia nervosa was 1.1% for women aged 15 to 65 years. Eating disorders is more common in developed than in industrializing countries (Becker et al., 1999; Walsh & Devlin, 1998). The usual stereotypical individuals of eating disorders are young women of white, upper-middle class backgrounds (Derenne & Beresin, 2006; Harrison & Cantor, 1997).

4.2 Onset of Eating Disorders

The development of eating disorders usually begins in adolescence (Mussell et al., 2000; Becker et al., 1999) suggesting that weight concerns and body dissatisfaction can also develop as early as childhood, adolescence and continue to grow in adulthood (Thygesen et al., 2003). Most research indicates that adolescents are at the highest risk for developing eating disorders, either for anorexia nervosa or bulimia nervosa (Striegel-Moore et al., 2003; McVey et al., 2002; Mussell, et al., 2000). However, Favaro and colleagues (2003) estimated the average age of onset for anorexia nervosa was between 15 to 18 years old and for bulimia nervosa was between 18 to 21 years old for women. This finding denotes that the onset of eating disorders can occur in late adolescence and/or in early adulthood. Other research suggests that the development of binge eating disorder appears to occur also later in life or after the age of 21 years (Striegel-Moore et al., 2003). Explanations for this vulnerable group are that teenagers are in the most critical period of their stages of development such as puberty, early menarche, hormonal changes, and physical changes (Stice, 2002; Gowers & Shore, 2001).

Also, during this time period, such changes lead many girls to increased adipose tissue (Stice, 2002; Mussell, 2000). Therefore, it is normal for young adolescents to move away from the ideal body shape, a process researchers in Western societies call “normative discontent” (Stice, 2002; Hetherington, 2000; Mussell et al., 2000; Tiggemann & Pennington, 1990). In the course of this growth stage, numerous teenage girls develop body dissatisfaction (Hetherington, 2000; Mussell et al., 2000), enhanced concerns about eating and weight (Stice, 2002; Gowers & Shore, 2001, Mussell et al., 2000), and body image concerns (Morry & Staska, 2001). Early menarche is suggested to

be a risk factor for eating disorders but evidence to support this is unclear (Stice, 2001). Although body dissatisfaction is a relevant factor linked with eating disorders, researchers suggest that it is possible for individuals to be dissatisfied with one's body without developing an eating disorder (Soh et al., 2006). In parallel, not every young girl that progresses through the "normative discontent" stage will develop weight concerns or symptoms of eating disorders. Therefore, it is crucial to identify the risk factors associated to eating and weight-related conditions so that proper interventions can be implemented.

4.3 Disordered Eating

Disordered eating is characterized by a broad variety of unhealthy eating behaviours, maladaptive eating attitudes, and unhealthy weight loss strategies (Pereira & Alvarenga, 2007). Further, a disordered eating behaviour can be defined as one or a combination of compensatory behaviours such as fasting (for 24 hours and more), binge-eating, purging, restriction of food intake, vigorous exercise, use of laxatives, diuretics or diet pills, and self-induced vomiting for the prevention of weight gain (Cook et al., 2007; Jones et al. 2001). Individuals with disordered eating attitudes and behaviours tend to exhibit problems related to food, body image, weight and shape concerns. Although, individuals with disordered eating do not meet the diagnosis of eating disorders, it is still considered a serious and complex health problem, even life-threatening if behaviours and symptoms persist, and should not be ignored or disregarded by health professionals, family and friends (Pereira & Alvarenga, 2007).

Research indicates that the prevalence of disordered eating behaviours is increasing among adolescents and young women in Western countries (Jones et al., 2001). For example, in one school-based study in Ontario, researchers examined the prevalence of disordered eating behaviours among adolescent girls aged 12-18 years and found that binge eating or purging behaviours were prevalent at 18.8% among the girls under 15 years old, and 26.3% of girls over 15 years of age (Jones et al., 2001). Further, health professionals are paying more attention to disordered eating among middle-aged and older adults (Pereira & Alvarenga, 2007). Therefore, it is possible for adults around the age of 40 years to develop disordered eating attitudes and behaviours whether or not it is a reoccurrence of a previous eating disorder (i.e., from when they were young) or developing an eating disorder for the first time (Becker et al., 1999).

4.4 Obesity and Overweight

Obesity is an increasingly serious health problem worldwide, especially in developing countries (Bessesen, 2008). Currently, there are over 1.7 billion people who are overweight and at least 310 million of them are obese worldwide (Bessesen, 2008). In addition, childhood obesity is becoming an epidemic on its own. Globally, there are approximately 22 million children under the age of five years that are estimated to be overweight (World Health Organization, 2007).

Defined as having a body mass index (weight in kg divided by the squared value of height in meters) over 30 (Health Canada), obesity is one of the most alarming public health problems. Obesity is a highly complex chronic disease that has resulted from the interaction of a diversity of factors including genetic predisposition, over consumption of

high dense foods, lack of physical activity, poor lifestyle choices, and technology (Bryan & Walsh, 2004). Hill and Peters (1998) suggest that obesity occurs more often in environments where an abundance of food is available. Due to the evolutionary biological processes of the human body, individuals have weak defence systems against the build-up of excess food or energy stores but have strong systems against the depletion of energy stores (Hill & Peters, 1998). This may explain why it is easier to gain weight than it is to lose weight. Further, it also might help explain why diets don't often work. Accordingly, obesity also leads to many adverse health complications such as diabetes, coronary heart disease, hypertension, certain cancers, osteoarthritis, and sleep apnea (Bessesen, 2008; Hossain et al., 2007; Bryan & Walsh, 2004).

Obesity across childhood, adolescence and adulthood can have detrimental behavioural and psychological consequences affecting their daily activities. For example, obese children can develop negative body image and low self-esteem (Bryan & Walsh, 2004). Being overweight is associated to body dissatisfaction and disordered eating behaviours (Blowers et al., 2003). Similarly, many individuals can suffer from numerous weight-related issues such as teasing, name calling, and stigmatization leading to psychosocial outcomes such as low self-esteem, social isolation, body dissatisfaction, and feelings of embarrassment, guilt, and shame (Annis et al., 2004; Boutelle et al., 2002). For example, research suggests that overweight and obese adolescents are susceptible to being teased by their peers in which the teasing can cause them to experience negative sentiments about their body weight and shape which in turn may lead to the onset of disordered eating attitudes and behaviours (Young et al., 2001).

4.5 Overlap between Eating Disorders and Obesity

Cross-sectional studies suggest that eating and weight-related disorders such as eating disorders and obesity can co-occur simultaneously in the same person (Haines & Neumark-Sztainer, 2006; Irving & Neumark-Sztainer, 2002) and increase in severity over time (Neumark-Sztainer et al., 2007). This observation implies that an obese individual can also suffer from binge eating disorder and exhibit disordered weight-related behaviours such as dieting or purging – common behavioural symptoms to both types of eating and weight-related problems (Striegel-Moore et al., 2003). Likewise, childhood obesity is a risk factor for later onset of bulimia nervosa and binge eating disorder (Burrows & Cooper, 2002). For example, in their study, Burrows and Cooper (2002) found that overweight children were more likely to show weight, shape, and eating concerns and engage in dieting than average weight girls. Therefore, it is also possible for overweight, obese, and eating disordered women to experience shared psychological and behavioural outcomes such as low self-esteem, negative body image as well as weight dissatisfaction and, shape and weight concerns (Haines & Neumark-Sztainer, 2006; Burrows & Cooper, 2002). It is evident that an overlap exists between the behaviours and symptoms of overweight, obesity, eating disorders, and disordered eating attitudes/behaviours which may help in understanding their onset and evolution. Another commonality is the role socio-cultural influences among these eating and weight disorders. The remainder of this literature review will take a closer look at the socio-cultural factors associated with eating and weight-related disorders.

5. Social and Cultural Factors

5.1 Mass Media Exposure

“...Society wants women to be “Slenderallas”.” (Paquette & Raine, 2004)

Today, one of the most salient socio-cultural influences appears to be the media as it has numerous effects on people and society. Media, used in communication and marketing strategies, is recognized as a way to connect to people and influence consumers' choices regarding different products. In the context of media-portrayed images of thinness, media also encourages consumer behaviour and interpersonal interactions in order to achieve ideal bodies linked to feminine beauty. Mass media provides information on education, health, nutrition, politics, and entertainment (Derenne & Beresin, 2006; Thompson et al., 1999) as it generates influential messages on values, norms, and image standards (Paquette & Raine, 2004; Thompson et al., 1999; Harrison & Cantor, 1997). These messages are disseminated through diverse sources of communication including television, Internet, magazines, newspapers, art, and theatre, and can be seen in various establishments (i.e., publicity, advertisements, billboards, etc.) as well as in the behaviour exchanges and interactions of individuals in the environment (actions, words, affect, and perceptions). In essence, individuals are exposed daily to socio-cultural messages whether it's reading a magazine or watching television, walking in the neighbourhoods, or going to different commercial or work establishments.

It is apparent that Western societies excessively emphasize thin bodies as the ideal of female beauty. Over the years, awareness of women has increased as a result of media's recurrent use of female role portrayals and idealization of physical attractiveness in advertisements (Derenne & Beresin, 2006). For example, in the cultural context of Western society, media highlights thinness as the greatest attribute of the standard body of beauty and physical attractiveness (Jung & Lennon, 2003; Mussell, 2001).

The Western media plays a crucial role on women's thinking process regarding beauty. The persuasive nature of media messages pressure women to conform to thin body shapes (Haines & Neumark-Sztainer, 2006) fostering an internalization of the thin-ideal which are strong beliefs that one needs to be thin in order to be attractive and successful (Stice, 2001). Internalization of the thin-ideal and increased pressures from society (e.g., from family, peers and media) to be thin lead to body dissatisfaction (Anschutz et al., 2007; Haines & Neumark-Sztainer, 2006; Stice, 2001). Therefore, the underlying messages from media implies to women that they are not thin enough and should engage in dieting practices in order to achieve the ideal body (Irving & Neumark-Sztainer, 2002; Stice, 2001). This may well explain why women have a tendency to perceive themselves as overweight (Tiggemann & Pennington, 1990), express body discontentment, and show concerns with body image (Morry et al., 2001). Further, research proposes that frequent exposure and consumption of mass media is likely to increase body dissatisfaction in women (Blowers et al., 2003). Body dissatisfaction in turn leads to dieting and negative affect (e.g., anxiety, depression) which fosters disordered eating behaviours (Stice, 2001). Stice, a pioneer in eating pathology research,

proposed this dual-pathway model (2001) implicating the process of socio-cultural and media influences on eating disorders.

Portrayal of negative images and associated social stigma of individuals with excess body weight are present in society (Neumark-Sztainer, Falkner, Story, Perry, Hannan & Mulert, 2002). The perception and labelling formation of such body figures create social and economic burdens for both men and women (Neumark-Sztainer, Falkner, Story, Perry, Hannan & Mulert, 2002). For example, obese individuals are projected through the lens of the media and of the public as ugly, lazy, and personal failures (Annis et al., 2004). The meaning of these words can have lasting psychological and emotional consequences such as having an undesirable body image and experiencing unpleasant outcomes such as disordered eating, social anxiety, lower self-esteem, lower confidence, low self-efficacy, poor coping strategies and depression (Annis et al., 2004; Byrne, 2002). Conversely, little stigmatization is directed at ultra slim individuals, perhaps because modern society has favoured and valued thinner bodies instead of accepting what they actually look like. Society and the media shape knowledge, beliefs, and perceptions of individuals who don't fit into the standard body size. As a result of these false perceptions on body image, actions such as the stigmatization of obese individuals are developed.

5.2 Other factors associated with weight-related attitudes and behaviours

As seen above, it is evident that socio-cultural and media influences play a pivotal role in the onset of weight and eating-related behaviours in young girls and young women. Socio-cultural influences pressuring women to be thin can also stem from other

environmental sources such as family remarks and perceptions, peer norms, culture, and displayed in the school and work context (Stice, 2002; Gowers & Shore, 2001; Field et al., 2001; Stice, 2001). Further, the interaction between media pressures, dieting, socio-economic status, acculturation, and related risk factors will be explored.

Media exposure to thin-ideal images leads young female adolescents and women to experience reduced psychological well-being. As a consequence of media's intense emphasis on appearance, women are likely to engage in social comparisons that are of an upward nature which entails comparing one's body to superior bodies (Blowers et al., 2003). Therefore, women who see a difference between their bodies and body images in media are more likely to be dissatisfied with their body and can possibly lead to them engage in disordered eating behaviours (Bessenoff & Del Priore, 2007; Blowers et al., 2003). Further, socio-cultural messages may also cultivate a drive for thinness which is closely tied to perfectionism (Ruggiero et al., 2003) among girls pursuing the ideal body (Stice, 2002) by seeking unhealthy weight loss practices (Irving & Neumark-Sztainer, 2002; Mussell et al., 2000). Harrison and Cantor (1997) examined the relation between media consumption and disordered eating behaviours and found that more extensive magazine reading was a significant predictor of greater drive for thinness among women. Although the thin-ideal is difficult to achieve (Blowers et al., 2003), both drive for thinness and perfectionism foster dieting and are also risk factors for the onset of eating disorders (Stice, 2002; Mussell et al., 2000).

It is noteworthy to mention that not all women who diet will develop an eating disorder, therefore, dieting is not a cause but rather a risk factor for the onset and maintenance of eating disorders (Hetherington, 2000). Dieting behaviours appear to be

widespread among women regardless of age and weight status (Hetherington, 2000). The underlying notion of dieting believed by many young girls is to prevent increases in fat and to achieve the goal of being one step closer to the ideal body. Similarly, fear of fatness leads to restrictive eating and appears to be a central behaviour of dieting (Hetherington, 2000). As a result of their higher body weight, obese women experience unhealthy health complications such as heart disease or high cholesterol (Bryan & Walsh, 2004). Often obese persons will diet, deprive themselves of food, or try quick weight loss methods to lose the extra weight as compensations for over-eating (Stice, 2002; Stice, Presnell & Spangler, 2002). Likewise, overweight girls are more likely to diet, have low self-esteem, and become frustrated with losing weight in a society that stigmatizes fatness and highlights thinness as a healthy and ideal body (Hetherington, 2000).

It is speculated in research that higher socio-economic position is correlated with eating disorders, implicating that women of this social class place great importance on appearance (Gowers & Shore, 2001) and are more likely to engage in dieting practices (Soh et al., 2006). As a consequence to the increased adherence to media's over-concern with appearance and weight, women with eating disorders usually develop disturbed body image, weight and shape preoccupations, body dissatisfaction, and a fixation of thoughts of the thin-ideal (Irving & Neumark-Sztainer, 2002; Striegel-Moore, 1997). However, some studies indicate that income status does not have an effect on the development of eating disorders. For example, Striegel-Moore and colleagues (2003) examined the prevalence of eating disorders (anorexia nervosa, bulimia nervosa, and binge eating disorder) in a community-based sample of young white and black women

aged between the ages of 19 and 24 years. They found that white and black women with eating disorders did not differ from white and black women without eating disorders on parental education or family income (Striegel-Moore et al., 2003). Similarly, another study showed that social factors such as higher educational level and higher social class were not associated to an increased likelihood of developing eating disorders in a sample of women 18 to 25 years old (Favaro et al., 2003). Research on whether or not higher socio-economic position is a potential risk factor for eating disorders remains unclear and further studies are needed to investigate whether or not women of higher socio-economic status are more prone to eating disorders.

In the literature, there is debate as to whether or not eating disorders are more prevalent among women in industrialized countries or among Caucasian women (Mitchell & Bulik, 2006; Soh et al., 2006; Mussell et al., 2000; Striegel-Moore, 1997). However, it has been speculated in research that eating disorders occur more frequently in Western societies since they are often associated with stereotypical media-depicted women as young, white, well-educated, and from upper socio-economic class (Harrison & Cantor, 1997) suggesting it to be a “Westernized syndrome” (Soh et al., 2006).

Regarding the influence of exposure to Western media and body image-ideals among different cultures, acculturation may be a contributing factor (Striegel-Moore & Cachelin, 2001). The term acculturation refers to the change of culture of an individual or group of people as a consequence of exposure to new cultures (Keski-Rahkonen, 2005). Individuals who experience acculturation also experience culture shock as a result of visiting or living long-term in countries where different body ideals exist. Learning about the new culture and behavioural changes are required for the adaptation to the new

culture including becoming accustomed to foods, nutrition, values, standards, and body image ideals (Keski-Rahkonen, 2005). For example, this concept of culture transformation can be seen in the study by Becker and colleagues (2002) where they examined the effects of increased exposure to Western television on eating disordered behaviours and attitudes among ethnic Fijian teenage girls. The researchers selected Fiji because of its exceptionally low prevalence of eating disorders, extremely low dieting practices, and the limited exposure to television viewing (Becker et al., 2002). Further, in the Fijian culture, robust and physically strong body types for women are valued (Becker et al., 2002) as they symbolize wealth and the ability to nurture and protect one's family (Derenne & Beresin, 2006). It is apparent that the Fijian culture is different from Western culture. Findings of the study demonstrated that after prolonged exposure to Western television, disordered eating behaviours, dieting to lose weight, feelings of being too "fat" were observed among the Fijian adolescent population (Becker et al., 2002). This study represents one of few studies showing the impact of exposure of Western media on other populations, and thus, additional research is needed to investigate and understand the interplay between socio-cultural influences to be thin, eating disordered behaviours and conditions among different cultures.

5.3 The interaction between media influences and places in the environment

In understanding determinants of health outcomes, it is important to examine characteristics and influences in individuals' proximal environments such as their neighbourhoods, social places, and other contextual areas (McLaren & Gauvin, 2002; Diez-Roux, 2001) in addition to individual characteristics. It is believed that these

environmental attributes can affect individuals' lifestyle behaviours, attitudes, choices and opportunities (Diez-Roux, 2001). Individuals residing in the same neighbourhoods are likely to have similar health outcomes or status partially because they are exposed to similar environmental influences (Merlo et al., 2005). For example, people living in high income areas may be more subjected to and influenced by media's over-concern with appearance and may, as a result, experience more body dissatisfaction than persons living in a lower income areas (McLaren & Gauvin, 2002).

As stated previously, media messages may have strong influences on individual's perceptions, attitudes, beliefs, values, consumer behaviours, and interpersonal relations which can all be observed in the social milieu. However, messages about thinness are not only circulated by the media but are omnipresent in the locations that people frequent in their day to day lives. No research has examined this issue.

6. Gaps in the Literature

Although, a vast amount of research has been completed to investigate the risk, causal and protective factors, complications, and fluidity of eating pathology among women (Stice, 2004; McVey, Pepler, Davis, Flett, & Abdoell, 2002; Mussell et al, 2000), there still exist many gaps in the literature. There are limited prevalence and incidence studies on eating disorders in North America and especially in Canada and among each province. To date, few studies on prevalence of eating disorders in Canada exist such as, a community-based study from Ontario by Garfinkel and colleagues (1995) and another population-based study from Quebec conducted by Gauvin and colleagues

(2009) (as previously described). Also, there is a shortage of prevalence studies on weight concerns and its' development among young teenage girls and female adults. Relatively few studies have investigated this concept. Knowledge of the onset of weight concerns and associated behaviours would help in future prevention designed to reduce these concerns and behaviours (e.g., dieting, purging). Furthermore, there is little research examining risk factors linked to weight concerns in women, especially since weight concerns are such dominant symptoms in eating disorders (Mussell et al., 2000).

Finally, there is very limited research examining contextual influences. In particular, at the neighbourhood level, the extent to which women frequent different establishments that might promote thin body ideals including shopping malls, stores, gym, fitness centres, hair salons, and many others are unknown. Places are also influenced by media and thin-ideal images of models and celebrities in the form of print media via posters or advertisements, billboards, and as individuals come in contact with other individuals wearing the latest fashion clothes. Therefore, exposure to social pressures to be thin is not only seen in magazines or on television, but it also can be observed on a daily basis in the different places we go. For these reasons, more research is needed to examine the influences of and the degree of exposure to places promoting thin ideals and images in proximal environments and the role of impact among women.

III. METHODOLOGY

1. Objective and Hypothesis of the Current Study

The objective of the present investigation was to examine whether or not an association exists between greater exposure to socio-cultural standards for thinness in proximal places in the environment and higher weight concerns among urban dwelling adult women. It was hypothesized that greater exposure to locations where socio-cultural pressures promoting thinness are present would be related to more severe weight concerns among adult women. This was a quantitative, cross-sectional, and population-based study. In order to achieve this objective, secondary analyses of an existing data set created in the context of a larger project (see below) were performed.

2. Overview

This current investigation is part of a larger investigation led by Lise Gauvin, Howard Steiger, and Jean-Marc Brodeur entitled "Social, cultural, and economic disparities and disordered eating: Understanding the contribution of neighbourhood and individual level factors" and funded through the Canadian Institutes for Health Research (# 200103MOP-90554). The objective of this study was to estimate the prevalence of eating disorders and unhealthy eating behaviours among urban-dwelling adult women and to determine the relation between unhealthy eating behaviours and self-reported mental and physical health.

A random-digit dialling survey was conducted. Prior to the data collection process, all interviewers were trained by a research team to become familiarized with the

questionnaire. Also, all interviewers were females. A survey of eating patterns based on the Eating Disorder Examination Questionnaire (Fairburn & Cooper, 1993) and lifestyle habits were used in a telephone interview that lasted for approximately 20 minutes. Participants were recruited through the method of random digit dialling by a recognized polling firm which resulted in a sample of 1501 female participants. From responses to this survey, indicators regarding the frequency of visits to places that promote thinness as well as weight concerns were developed.

3. Sample

Inclusion criteria for the current set of analyses were as follows: being between the ages of 20 to 40 years old, having lived at their present address on the Island of Montreal for at least 12 months, not being pregnant, and having the ability to answer questions either in English or in French. After excluding participants who were pregnant ($n = 117$) and had missing data on numerous variables ($n = 96$), analyses were conducted on a subsample of 1288 women (85.8% of 1501).

4. Measurement Tool and Variables

Weight concerns were assessed from the Eating Disorder Examination Questionnaire (EDE-Q). The EDE-Q derived from the Eating Disorder Examination interview (EDE; Fairburn & Cooper, 1993) is regarded as the “gold standard” for assessing eating pathology including behaviours of eating disorders, disordered eating, the frequency of overeating, extreme weight loss methods, and body image attitudes (Luce et al., 2008; Fairburn & Cooper, 1993). Because the EDE is well-known for its psychometric properties (Luce, et al., 2008), the EDE-Q is widely used and is a well-

validated questionnaire for detecting eating pathology (Mitchell & Bulik, 2006; Stice et al., 2001; Fairburn et al., 1998). Comprised of four subscales namely Eating Restraint, Eating Concerns, Weight Concerns, and Shape Concerns, the EDE-Q is the best tool to measure weight concerns because it has specific detection items for this type of concern (Fairburn & Cooper, 1993). The EDE-Q focuses on a time period of the past 3-months to assess eating pathology behaviours (Fairburn & Cooper, 1993) but in the current study we used a previous 28-day timeframe. The other subscales of the EDE-Q assessing shape concerns, dietary restraint, and eating concerns were not used for this thesis because weight concerns were the targeted outcome variable of interest.

4.1 Dependent variable

In this study, the main outcome variable was weight concerns which can be defined operationally as the frequency of thoughts and concerns about weight over the previous 28 days. Specific weight concern indicators obtained from the EDE-Q focused on the following items: *focusing on the importance of weight, expressing a reaction to prescribed weighing, having preoccupation with weight or shape such as spending time thinking about shape/weight, or having thoughts about weight that are interfering with your ability to concentrate, experiencing dissatisfaction with weight and having a desire to lose weight* (Fairburn & Cooper, 1993, pp. 319; 348-350; 352). Participants were asked to rate their behaviours/feelings related to weight concerns for each the weight items (see Table 1, page 61). Responses were averaged to obtain an overall score (internal consistency reliability = 0.79). The continuous score was dichotomized (highest quintile of scores versus the other four quintiles).

4.2 Independent variable

The main exposure variable, degree of exposure to socio-cultural standards for thinness in places, was operationalised by the frequency which people visited places that promote thinness in the previous month. Questions concerning the number of times in the previous month that the following five places were visited by the participant: fitness centers, weight loss centers, beauty salon or hair dressers, clothes or shoe stores, and bars or discotheques. Participants were asked a series questions on the frequency of going to these locations (see Table 2, page 62). Responses were transformed into monthly estimates and then were summed to obtain an overall number of days per month that at least one place was visited (internal consistency reliability = 0.74). This summed score was dichotomized (<15 days per month vs. \geq 15 days per month).

4.3 Confounding variables

Prior to data analyses, all socio-demographic variables were transformed into categorical variables. Confounding variables such as the socio-demographic variables were considered potential risk factors for weight concerns and thus were controlled for in the analyses. Creating proper categories for the variables used this study was found to be an essential part of the analyses as it also help to understand the sample. Note that reference category for each variable is italicized. Age was categorized into two groups such as *younger women* (20-30 years old) and older women (aged 31-40 years old). Income status was classified as low family income (\leq \$ 20 000), *medium family income* (\$20 000 to \$79 999), high family income (\geq \$80 000) and a category for response of "does not know or refusal" was created for those who did not wish to answer the family

income status question. Education level was arranged into three groups: high school education as completing elementary and high school (12 years of schooling), *college education* (13-15 years of schooling) and university education (16 years of schooling and more). Employment status was categorized into two groups: *not employed* which included being a student, retired, stay-home full-time person, or unemployed and looking for a job and the employed group included working full-time and part-time. Marital status was divided into two groups such as married (common-law marriage) and *single* (divorced, separated, widowed, or single). Language spoken at home was classified into three categories as *French*, English, and Allophone (language other than French or English). Smoking status was categorized based on whether the participant smoked or not, thus categories of smokers and *non-smokers* were created. Alcohol status was grouped according to the frequency of alcohol consumed per week such that having drinks 2 to 6 times a week or more was referred to as frequent drinkers and less than twice a week to rarely as *infrequent drinkers*. The level of physical activity was referred to episodes of 20 minutes or more/week of physical activity or practicing a sport, such that performing physical activity 2 to 6 times a week and more was categorized as an active person and less than twice a week as a *non-active* individual.

5. Statistical Analysis

Before beginning the analyses, descriptive statistics and frequencies were obtained to get a profile of the distributions. The frequencies of the dependent and independent variables were non-normal and followed Poisson distributions. An adaptation of item response theory was used to determine internal consistencies of the

scale of responses for weight concerns and place indicators, and were found to have values of 0.79 and 0.74 respectively. SPSS version 15.0 software program was used to analyse the data. Logistic regression analyses were used to quantify the associations between weight concerns (highest quintile vs. others) as the outcome variable and exposure to socio-cultural standards for thinness as a main predictor (15 days or more of visiting places) with odds ratio and 95% confidence intervals. Further, a sensitivity analysis was performed to verify whether or not the association between weight concerns and socio-cultural exposure of visiting places remained statistically significant across different levels of exposure (with odds ratio and 95% confidence interval). The following levels of exposure to thinness among going to the places were (days/per month): 5 days and less, 10 days and more, and 20 days and more. Confounding variables were controlled for in successive blocks as follows: in Block 1: age and body mass index category; in Block 2: family income status; education level, employment status, marital status, and language spoken at home; and in Block 3: smoking status, alcohol status and the level of involvement in physical activity.

IV. SUMMARY

Over the past four decades, changes in the ideal body images have created a new set of socio-cultural factors that play a crucial role in increasing the prevalence of weight and eating-related behaviours and disorders among adolescents and young adult women (Haines & Neumark-Sztainer, 2006; Gowers & Shore, 2001; Stice, 2001; Harrison & Cantor, 1997). Today, in Western societies, mass media (e.g., magazines and television)

highlight thinness as a highly valued characteristic of female bodies (Jung & Lennon, 2003; Mussell, 2001) symbolizing youth, beauty, wealth, and success (Young et al., 2001). Exposure of images and messages from mass media promoting thin-ideal body figures leads to many risky eating behaviours, concerns with weight, shape and appearance, and undesirable social consequences among women (Annis et al., 2004; Neumark-Sztainer, Falkner, Story, Perry, Hannan & Mulert 2002; Morry & Staska, 2001; Striegel-Moore, 1997).

Over the past 30 years, research has shown that eating disorders and behaviours have been correlated with a number of risk factors including female gender (Mussell et al, 2000;), body mass index (Neumark-Sztainer, Falkner, Story, Perry, Hannan & Mulert, 2002), high socio-economic status (Gowers & Shore, 2001; Mussell et al, 2000), weight concerns (Mussell et al, 2000), obesity (Derenne et al, 2006; Stice & Shaw, 2004; Stice, 2002); dieting (Stice, 2002; Gowers & Shore, 2001), family remarks and beliefs (Gowers & Shore, 2001) depressive disorders, suicide attempts (Cook et al, 2007; Striegel-Moore et al., 2003; Stice, 2002), anxiety disorders, substance abuse (Stice, 2002), and socio-cultural pressures to be thin (Stice, 2002; Gowers & Shore, 2001; Mussell et al, 2000).

Thus, the present study examined whether or not greater frequentation of places promoting thin ideals in proximal residential environments are associated with the health outcomes such as weight concerns of Canadian women. The study is presented in the form of an article entitled “Associations between Exposure to Socio-Cultural Influences in Proximal Environments and Weight Concerns among Urban-Dwelling Women” and appears in the next section.

V. ARTICLE

Title of article:

Associations between Exposure to Socio-Cultural Influences in Proximal Environments and Weight Concerns among Urban-Dwelling Women

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Specific Contributions

The current study examining whether or not an association exists between greater exposure to socio-cultural standards for thinness in proximal places in the environment and higher weight concerns among women was part of a larger investigation led by Dr. Lise Gauvin, Dr. Howard Steiger, and Dr. Jean-Marc Brodeur (2009). Specific contributions to the current study were to review the literature, contribute to developing the idea for study, conduct all analyses, interpret the findings, and write the article and the thesis. This work was performed under the supervision of Dr. Lise Gauvin.

Abstract

Objective: The purpose of this study was to examine whether or not an association exists between exposure to socio-cultural standards for thinness in proximal places in the environment and higher weight concerns. It was hypothesized that greater frequentation of places promoting thinness would be related to more severe weight concerns among adult women.

Method: A sample among of 1288 urban dwelling women aged 20 to 40 years were recruited through random digit dialling to participate in a survey. Logistic regression was used to analyse the associations between weight concerns (highest quintile vs. others) as the outcome variable and exposure to socio-cultural pressures towards thinness as a main predictor (15 days or more visiting places). Further, a sensitivity analysis was conducted to verify whether or not an association existed between greater weight concerns and different levels of exposure to socio-cultural standards for thinness in places. A series of confounding variables were statistically controlled.

Results: Results indicated that greater frequentation of places promoting thinness was significantly associated with higher weight concerns among women despite controlling for a wide range of confounding variables. Further, visitations to places between 15 and 20 days/month were associated with greater weight concerns among women.

Conclusion: This study shows that greater exposure to Western influences in proximal environments is associated with greater weight concerns. We concluded that visitations to places promoting thin ideals and images 15 days/month or more is a contributing factor to more severe weight concerns among women aged between 20 to 40 years.

MeSH Key words: weight perceptions, body image, thinness, mass media, social environments, women.

Introduction

Weight and eating-related behaviours and disorders, including eating disorder, disordered eating and obesity, are prevalent and major public health conditions. Weight concerns play a central role in eating and weight-related disorders among adolescents and young women in Western countries where thin body shapes are highly valued (Cook et al., 2007; Cooper & Goodyer, 1997). It is known that weight concerns are associated with female gender (Burrows & Cooper, 2002; Mussell et al, 2000), age (Jones et al., 2001; Cooper & Goodyer, 1997), higher socio-economic status (Gowers & Shore, 2001; Mussell et al, 2000;), greater body mass index (Field et al., 2005; Boutelle et al., 2002; Burrows & Cooper, 2002), family remarks and perceptions (Gowers & Shore, 2001;), and greater socio-cultural pressures towards thinness (Haines & Neumark-Sztainer, 2006; Stice, 2002; Mussell et al., 2000; Gowers & Shore, 2001).

Despite availability of this information, little is known about how proximal environments, such as residential neighbourhoods, are associated with weight concerns. Furthermore, limited research has examined the link between weight concerns to influences such as socio-cultural components, the prevalence of weight concerns, potential risk factors and the effect on women. This is unfortunate because this type of information would allow for greater understanding of the role of social pressures towards thinness among women and for the development of relevant public health interventions. Further, knowledge of the risk factors associated with the onset of weight concerns would aid the planning and implementation of proper prevention strategies targeting vulnerable groups such as young teenage girls and young adult women. We examined the association between weight concerns and frequency of visiting places promoting

thinness. For this study, weight concerns refer to having frequent thoughts, beliefs, and preoccupations based on one's weight and body shape and can be expressed in the form of body dissatisfaction, disturbed body image, rigid thoughts about and beliefs of weight and shape, and having a strong desire to lose weight (Fairburn & Cooper, 1993).

Review of Literature

Obesity, eating disorders (anorexia nervosa, bulimia nervosa, binge eating disorder), and disordered eating are major public health problems that result in significant individual and societal burdens (Must et al., 1999). Major determinants of obesity are associated with genetic predisposition, over-eating of high-energy dense foods, physical inactivity, poor lifestyle choices, and technology (Bryan & Walsh, 2004). Many individuals who are overweight or obese develop weight and shape concerns, partially due to strong emphasis on thin-ideal bodies and the expectation to live up to this norm (Field et al., 2001). Further, stigmatization and the meanings associated with the stigma of an overweight or obese person can foster body dissatisfaction which in turn may lead to body image insecurities (Morry & Staska, 2001), common symptoms of individuals who suffer from an eating disorder such as bulimia nervosa or disordered eating behaviours such as binge eating.

Researchers have hypothesized that greater exposure and adherence to socio-cultural standards for thinness promote disordered eating and attitudes, and possibly eating disorders among women (Anschutz et al., 2007; Park, 2005). Exposure to thin-ideal images has been linked with body image disturbances, body dissatisfaction, dieting, obesity, social anxiety, and low self-esteem among young girls or women. (Derenne &

Beresin, 2006; Low et al., 2003). There is a significant amount of research to support that print media (magazines and television) has a strong influence on disordered eating behaviours, internalization of thin-ideals, weight concerns (e.g., body dissatisfaction). For example, Morry and colleagues (2001) demonstrated that women who read beauty and fitness magazines more often tend to exhibit greater concern for their physical appearance and show more disordered eating behaviours than those who read magazines infrequently. Likewise, Field and colleagues (1999) conducted a cross-sectional study examining the influence of print media on weight and shape beliefs from 5th through 12th grade adolescent girls and found that pictures in magazines had strong effects on the weight and shape perceptions of the young girls. Other findings demonstrated that frequency of reading fashion magazines among older teenage girls was related to dieting more often to prevent weight gain, exercising to lose weight or to improve body shape, and deciding to engage in exercise because of the influence of a magazine article (Field et al., 1999). Further, reading magazines appears to be more influential than television viewing in the promotion of eating disordered behaviours. Tiggemann (2003) showed that reading fashion magazines was associated with internalization of the thin-ideal but not with television watching among women aged between 17 and 26 years old. Further, women watching television were less likely to be concerned with socio-cultural body image ideals (Tiggemann, 2003). In parallel, Harrison and Cantor (1997) investigated the link between media exposure and disordered eating among college students and found that magazine reading among women was related to eating disorder symptomatology rather than television watching. Taken together, these studies provide support for the notion that mass media has a strong influence on women's behaviours, attitudes, perceptions of their

bodies, and concerns with body weight and shape. It is evident that socio-cultural standards for thinness have an impact on women, however, it is not known yet to what extent these socio-cultural influences produce disordered eating behaviours in women.

Little is known about the influences of thinness in various places in the proximal environment among women. To date, only a few population-based studies investigating neighbourhood level influences and the impact on women's behaviours. For instance, one study led by McLaren and Gauvin (2002) investigated neighbourhood influences on body dissatisfaction among women between the ages of 24 to 56 years old living across Canada. They found that women with an average body mass index were more likely to report body dissatisfaction in affluent neighbourhoods than in average neighbourhoods. Moreover, because relatively few or no studies have tested whether or not there exists an association between societal influences to thinness in various places and weight preoccupations, we investigated this relationship in the present study.

The Current Investigation

The purpose of this study was to examine whether or not an association exists between greater exposure to socio-cultural standards for thinness in proximal places in the environment and higher weight concerns. Most research examines weight concerns in children, adolescents, or in adults under 20 years old. In this study, we investigated weight concerns in a sample of young and middle-aged adult women. Further, we examined participants' perceptions of neighbourhood influences and frequency (e.g., number of days per month) of going to different thin-promoting places in the neighbourhood. A diversity of places exists in one's proximal environment (e.g.,

restaurants, schools, workplace, stores, shopping malls, hair dressers, beauty centres, fitness centres, bars, or clubs) which promote socio-cultural influences to thinness. Yet, exposure to these influences in places has never been systematically investigated. We examined whether or not going to different places in the environment, hence being exposed to different levels of socio-cultural pressures, is linked to women's preoccupation with their weight.

We hypothesized that more frequent visits to places which promote socio-cultural norms for thinness were associated with more severe weight concerns even after controlling for known risk factors for greater weight concerns (e.g., overweight and obesity) and other potential confounding factors. In other words, the more often individuals visited places with messages promoting thinness, the greater the likelihood of higher weight concerns. The design of this study was cross-sectional with a population-based sample from the Island of Montreal, Quebec.

Research Methods and Procedures

Participants

The data used in this study were part of an existing data set created in the context of a larger project (CIHR Grant # 200103MOP-90554). The procedures are described in detail elsewhere (Gauvin, Steiger, & Brodeur, 2009) but are summarized briefly below. Participants were recruited to respond to a 20-minute telephone survey on disordered eating and community influences through random digit dialling resulting in the recruitment of a sample of 1501 women (response rate 40.6%). Inclusion criteria for the current set of analyses were: being between 20 to 40 years old, having lived at their

present address on the Island of Montreal for at least 12 months, not being pregnant, and having the ability to answer questions either in English or in French. After excluding participants who were pregnant ($n = 117$) and had missing data on numerous variables ($n = 96$), analyses were conducted on a subsample of 1288 women (85.8% of 1501).

Measures

Weight Concerns. The main outcome variable for this investigation was weight concerns which was assessed from the Eating Disorder Examination Questionnaire (EDE-Q). The EDE-Q is derived from the Eating Disorder Examination interview (EDE; Fairburn & Cooper, 1993). The EDE-Q is widely used and is a well-validated questionnaire for detecting eating pathology and eating disorders (Mitchell & Bulik, 2006; Stice et al., 2001; Fairburn et al., 1998). In this study, weight concerns were defined as the frequency of thoughts and concerns about weight over the past 28 days. Participants were asked to rate their behaviours related to weight concerns for each item: “focusing on the importance of weight”, “expressing a reaction to prescribed weighing”, “having preoccupation with weight or shape”, “experiencing dissatisfaction with weight” and “having a desire to lose weight” (Fairburn & Cooper, 1993, pp. 319; 348-350; 352; see Table 1, page 61). The scale of responses ranged from 0 (none) to 6 (highest) for the first two questions. The category of responses was coded as follows: 0 = none, 1 = 1 to 5 days, 2 = 6 to 12 days, 3 = 13 to 15 days, 4 = 16 to 22 days, 5 = 23 to 27 days, or 6 = everyday. For the 3 other items’ responses were originally coded as: 1 = markedly, 2 = moderately, 3 = slightly, 0 = not at all, and were recoded as follows: 6 = markedly, 4 = moderately, 2 = slightly, and 0 = not at all. Responses for these items were recoded from

0 (lowest) to 6 (highest) to keep consistency for the range. Due to the direction of the response scales, higher scores indicated higher severity of weight concerns.

In order to establish the internal consistency of the scale, we used item-response theory (IRT) (Reeve et al., 2007). ITR is based on the assumption that an individual's response to an item is a function of the individual's level or amount of the trait measured and is not accounted by other factors (Reeve et al., 2007). Therefore, an individual with higher weight concerns is more likely to correspond to items higher on the response scale than an individual with low weight concerns.

From the original data set, two datasets were created: an aggregated data set which stacked repeated measure obtained from each participant and a second data set which included individual characteristics. A series of dummy variables was created to contrast 5 of the 6 items to the reference item. Then a multilevel model for Poisson data was performed included only the 5 dummy variables as level-1 predictors. The weight concern scale showed good reliability at 0.79. Once the testing for internal consistencies was obtained, residual files for both stacked and aggregated data were created in HLM and imported into SPSS. Empirical Bayes estimates from the residual file were compared to the summed values of the scale. Given the high correlation ($r = 0.94$, $p < 0.01$), we used the sum of the variables as the indicator of weight concerns. For purposes of analysis and because the distribution was highly skewed, we created a dichotomous outcome measure by contrasting those in the highest quintile (top 20% of sample) of weight concerns to those in the four other quintiles.

Frequency of visiting places. The main exposure variable, degree of exposure to places, was operationalised by the frequency which people visited places that promote socio-cultural images and messages for thinness in the previous month. We used questions concerning the number of times in the previous month that the following five places were visited by the participant: fitness centers, weight loss centers, beauty salon or hair dressers, clothes or shoe stores, and bars or discotheques. Participants were asked a series questions on the frequency of going to thin-promoting places (see Table 2, page 62). Categories of responses were originally coded as: 1 = never, 2 = 1 to 3 times during the last month, 3 = once per week, 4 = 2 to 3 times per week, 5 = more than 3 times per week, or 9 = does not know/refusal. These responses were recoded into the number of days per month: 0 = never, 2 = 1 to 3 times during the last month, 4 = once per week, 10 = 2 to 3 times per week, 16 = more than 3 times per week, or 9 = does not know/refusal. Using a procedure parallel to that used to examine the internal consistency of the weight concern scale, we observed that reliability of the frequency of visits to places was 0.74. Given the high correlation between the empirical Bayes estimate and the sum ($r = 0.94$, $p < 0.01$), we used the sum of these items to assess the frequency with which individuals indicated that they visited the establishments in the self-reported questionnaire. This summed score was dichotomized into less than 15 days/month and more than 15 days/month. We chose to contrast persons in the highest quintile (top 20% of sample) of weight concerns to the rest of the sample.

Socio-demographic variables. Prior to data analyses, all socio-demographic variables were transformed into categorical variables. Confounding variables such as the socio-demographic variables were considered potential risk factors for weight concerns

and thus were controlled for in the analyses. Reference categories are italicized. Age was categorized into two groups such as *younger women* (20-30 years old) and older women (aged 31 to 40 years old). Income status was classified as low family income (\leq \$ 20 000), *medium family income* (\$20 000 to \$79 999), high family income (\geq \$80 000) and a category for response of "does not know or refusal" was created for those who did not wish to answer the family income status question. Education level was arranged into three groups: high school education as completing elementary and high school (12 years of schooling), *college education* (13-15 years of schooling) and university education (16 years of schooling and more). Employment status was categorized into two groups: *not employed* which included being a student, retired, stay-home full-time person, or unemployed and looking for a job and the employed group included working full-time and part-time. Marital status was divided into two groups such as married (common-law marriage) and *single* (divorced, separated, widowed, or single). Language spoken at home was classified into three categories as *French*, English, and Allophone (language other than French or English). Smoking status was categorized based on whether the participant smoked or not, thus categories of smokers and *non-smokers* were created. Alcohol status was grouped according to the frequency of alcohol consumed per week such that having drinks 2 to 6 times a week or more was referred to as frequent drinkers and less than twice a week to rarely as *infrequent drinkers*. The level of physical activity was referred to episodes of 20 minutes or more/week of physical activity or practicing a sport, such that performing physical activity 2 to 6 times a week and more was categorized as an active person and less than twice a week as a *non-active* individual.

Body Mass Index. Participants' height and weight were self-reported and body mass index was estimated using the formula of weight in kg divided by the squared value of height in metres. Values were then re-categorized into 4 groups: underweight (18.5 and under), normal weight (18.5- 24.99), overweight (25.0-29.99) and obese (30 and over) which are consistent with body mass index cut-offs from Health Canada (site: http://www.hc-sc.gc.ca/fn-an/nutrition/weights-poids/guide-ld-adult/bmi_chart_java-graph_imc_java_e.html). Due to the small proportion of respondents who were underweight (3.6%), they were pooled with the normal weight group as reference category for data analyses.

Statistical analysis

SPSS version 15.0 software program was used to analyse the data. Before beginning the analyses, descriptive statistics and frequencies were obtained to get a profile of the distributions. We used logistic regression to analyse the associations between weight concerns (highest quintile vs. others) as the outcome variable and exposure to socio-cultural standards for thinness as a main predictor (15 days or more visiting places). Then we controlled for the following confounding variables in successive blocks: in Block 1: age and BMI; in Block 2: family income status; education level, employment status, marital status, and language spoken at home; and in Block 3: smoking status, alcohol status and the level of involvement in physical activity. In an effort to examine the extent to which the exposure variable was associated with the outcome, we conducted a sensitivity analysis to verify whether or not the association between weight concerns and different exposure levels of going to places remained

statistically significant across different levels of exposure. We tested the following levels of exposure of places per month: 5 days and less, 10 days and more, and 20 days and more.

Results

Characteristics of the sample, weight concerns and of places are presented in Tables 3, 4, and 5 respectively (see pages 63-65). The mean age of the participants in the sample was 31.2 years old (SD= 6.2 years), with 594 (46.1%) women between ages of 20 to 30 years and 694 (53.9%) women aged 31 to 40 years. Weight status of women was as follows: 47 (3.6%) participants revealed that they were underweight, 867 (67.3%) were of normal weight, 262 (20.3%) were overweight, and 112 (8.7%) were obese. Income status was reported by participants as follows: 11.4% was accounted in low income, 58.9% in moderate income, 18.0% in high income and 11.6% did not know or refused to answer the question. In addition, the majority of respondents (73.4%) were born in Canada.

In Table 6 (pages 66-67), the associations between going to places promoting images of thinness 15 days or more/month and higher weight concerns when controlling for the blocks of variables are presented with odds ratio and 95% confidence intervals. Odds ratios above 1 indicate the exposure variable is a risk factor for the outcome variable, whereas odds ratio below 1 imply that the exposure variable is a protective factor for the outcome variable. We found that this association was significant (OR = 1.48; 95% CI: 1.03, 2.15) and it remained statistically significant despite controlling for the broad series of confounding variables (OR = 1.80; 95% CI: 1.18, 2.74). For the first block of variables, exposure of going to places (15 days or more/month) was related to

higher weight concerns. This association stayed statistically and independently significant even when we controlled for age and body mass index (OR = 1.65; 95% CI: 1.11, 2.45). Furthermore, a higher body mass index, specifically for respondents who were overweight (OR = 3.38; 95% CI: 2.38, 4.81) and obese (OR = 7.66; 95% CI: 4.89, 11.9) were associated with higher weight concerns. Further, these results indicate that being overweight and obese are risk factors for severe weight concerns. Moreover, association between higher weight concerns and age (31 to 40 years) was found to be significant (OR = 0.71; 95% CI: 0.52, 0.97) indicating that older women may be protected from developing strong weight concerns. However, this result became non-significant for the remaining blocks of variables (OR = 0.75; 95% CI: 0.54, 1.04). For Block 2, the association was found to be significant and stayed independently significant (OR = 1.73; 95% CI: 1.25, 2.59) even after controlling for income status, education level, employment status, marital status and language status. No other significant associations were obtained in this block. Finally, for Block 3, despite controlling for smoking status, alcohol status, and level of physical activity, the relation remained significant (OR = 1.80; 95% CI: 1.18, 2.74). We observed that the odds ratio gradually increased for the relation between going to places 15 days or more and higher weight concerns in each block of variables.

Table 7 (page 68) depicts the sensitivity analysis for the association between different frequentations to places and higher weight concerns even after controlling for all of the confounding variables. For example, the relation between going to places 20 days or more per month (OR = 2.20; 95% CI: 1.29, 3.76) and stronger weight concerns was found significant. Other results indicated that lower exposure to socio-cultural influences

promoting thinness in the establishments was not associated to elevated weight concerns. The link between going to places 5 days and less per month and higher weight concerns was not significant. Moreover, there was no association between going to places 10 days and more (OR = 1.36; 95% CI: 0.96, 1.92) and higher weight concerns suggesting that lower exposure to thinness influences don't have an effect on the weight concerns of adult women. Finally, we tested for going to places 22 days or more but found that the result was non significant mainly due to the relatively small sample of women who went to the places. This proportion of participants was not large enough to properly test for the association of frequency of going to places and severe weight concerns.

Discussion

The purpose of this study was to examine whether or not an association exists between greater exposure to places in the environment and higher weight concerns. It was hypothesized that greater exposure to socio-cultural pressures promoting thinness was related to more severe weight concerns among adult women. Supporting our hypothesis, women who visited places frequently (OR=1.80, 95% CI: 1.18, 2.74, $p=0.006$) were more likely to have greater weight concerns than other women who visited places less often. This study suggests that by going to places more often, individuals are faced with greater exposure to Western culture's of thinness, over-concern with appearance evaluation and the promotion of ultra-slim body figures. As a consequence of this adherence to social pressures to be thin, many young girls are dissatisfied with their body shape and weight and engage in dieting in order to gain control over their weight status (Hetherington, 2000). This finding is consistent with other studies implying that

greater adherence to these ideals leads to body dissatisfaction and eating disordered behaviours such as dieting (Anschutz et al., 2007; Park, 2005).

Other findings suggest that weight status (e.g., BMI) was associated to weight concerns. Likewise, overweight participants (OR = 3.38, 95% CI: 2.38, 4.81; $p=0.001$) and obese participants (OR = 7.66, 95% CI: 4.89, 11.9; $p=0.001$) were more likely to show greater weight concerns than those in normal weight status group. This finding is consistent with literature. Regarding a younger generation of women, overweight adolescent girls are more likely have weight dissatisfaction and tend to engage in dieting (Boutelle et al., 2002). In this study, overweight and obese women reported greater weight concerns indicating that body dissatisfaction increases in relation with weight (Field et al., 2005). Living in a Western country, such as Canada, it is not surprising that many women deviate from the norm body shape, which can certainly lead individuals feeling unhappy with their body weight and shape and in turn lead to unhealthy weight loss strategies. Therefore, possible explanations for this result are that overweight and obese women tend to be more dissatisfied with their current weight because they move away from their ideal body weight, a process referred to as “normative discontent” (Hetherington, 2000). Moreover, living in a cultural society that stigmatizes larger body figures and glamorizes thin-ideal bodies should also be taken into account. Women with mature figures (e.g., those who are overweight or curvaceous) and obese women are often seen and treated in a different way than slender women which can create negative social consequences such as discomfort (Neumark-Sztainer, Falkner, Story, Perry, Hannan & Mulert, 2002). As a result of this stigma, overweight and obese individuals are more

likely to express weight dissatisfaction and become more self-conscious of their bodies (Burrows and Cooper, 2002).

A significant relation was established for going to places 15 days/month and more (OR = 1.73; 95% CI: 1.25, 2.59) and greater weight concerns despite controlling for a wide range of confounding variables including family income status, education level, employment status, marital status and language status. Consistent with findings from other studies (Colabianchi et al., 2006; Favaro et al., 2003; and Striegel-Moore, 2003), there were no associations found in the present study between weight concerns and family income status; educational level; or employment status. This result indicates that regardless of these factors, there still exists a strong relation between the societal influences in the environment and weight concerns. Likewise, regardless of language spoken at home and marital status, a link was obtained between going to places 15 days/month and more and greater weight concerns. These findings continue to show that the environment has a strong influence on weight concerns. Finally, the relation remained significant between frequency of going to various establishments (OR = 1.80; 95% CI: 1.18, 2.74) and weight concerns even when smoking status, alcohol status, and level of physical activity were controlled. No additional associations were found between greater weight concerns and smoking alcohol and physical activity status. This result signifies that going to places in the proximal neighbourhood environments 15 days or more/month has a strong impact on women's weight concerns. Based on these findings, we can conclude that visitations to places 15 days or more is a contributing factor for severe weight concerns among women.

Sensitivity Analysis

We also decided to conduct a sensitivity analysis to examine whether or not the association between different levels of exposure to cultural influences for thinness in the places and higher weight concerns remained statistically significant or not. We tested various exposure levels of going to places promoting thin-ideal images and messages (days/month) which are as follows: 5 days/month and less; 10 days/ month and more; 15 days/month and more; and 20 days/month and more in the past 28 days. There were no associations between going to such places 5 days/month and less and weight concerns. Therefore, little exposure has no effect on weight concerns which means that participants who visited the places less than approximately 5 days per month exhibit little or no differential weight concerns. It is not surprising that relatively little exposure to influences of thinness is not related to weight concerns since higher exposure appears to stimulate high weight concerns among women. Similarly, we also tested the relation between going to places 10 days/month or more and higher weight concerns in which we found no significant relation. This finding indicates that going to places at approximately one third of the time also has little influence on weight concerns.

Furthermore, the results showed that higher frequency of going to places was related to higher weight concerns. The association of going to 15 days/month or more with higher weight concerns was discussed above. When at 20 days/month of exposure to places was used, the association remained statistically significant implying that women showed strong weight concerns even when going to the places at least 20 days/month. These findings are consistent with the literature suggesting that greater exposure to thin-ideals images and messages promote disordered eating attitudes and possibly eating

disorders among women (Anschutz et al., 2007; Park, 2005; Young et al., 2001). In parallel, frequent exposure and consumption to mass media (e.g., magazines and television) is likely to increase body dissatisfaction in women which is an indicator of weight concerns (Blowers et al., 2003).

The results of this study imply that the environment has a significant influence on women's weight concerns in which this result provides important public health implications for future interventions. Based on the results, participants continued to show a trend of increased weight concerns between 15 and 20 days/month. Therefore, in order for the environment to have a significant effect on women's weight concerns, the range of exposure to societal pressures to thinness throughout the places varies between 15 and 20 days per month. It is speculated that visitations to places 21 days/month and more would also have a strong impact on weight concerns; however, more research is needed to verify this assumption.

Strengths and Limitations

Although previous studies have shown that exposure to thin-ideals in magazines and television is related to body dissatisfaction or disordered eating behaviours (Morry et al., 2001; Stice et al., 2001; Field et al., 1999; Harrison & Cantor, 1997), the present study is one the first that we are aware of to investigate the influence of social pressures to be thin in proximal environments on weight concerns in adult women. Only a few studies have examined the link between neighbourhood influences to women's behaviours such as weight concerns or body dissatisfaction (McLaren & Gauvin, 2002). This study offers support for important associations and for future interventions.

Strengths of this study should be acknowledged. This study included a reliable and clean dataset, a large sample of the population ($N = 1501$) as well as a large subsample for this specific investigation ($n = 1288$). Also, since most investigations include children or adolescents, age of participants such as adult women 20 to 40 years old provided a great strength for this study. Further, we obtained diverse questions concerning behaviours and perceptions of participants including frequency of times places were visited which allowed us to examine environmental influences. Another important strength of the current study is that the findings showed that places in proximal neighbourhoods can manifest strong weight concerns for women. Therefore, studies examining whether and how neighbourhood factors have an effect on health leads to successful public health intervention strategies (Diez-Roux, 2001).

Limitations of the current study should be considered. This was a cross-sectional study which indicates that there are no cause and effect inferences that can be drawn. However important associations were observed. Although we know that 73% of the participants were born in Canada, we do not know the ethnicity of individuals not born in Canada. Research suggests that ethnicity may be a protective factor against eating disorders and behaviours (Mussell et al., 2000). Consequently, knowledge of the ethnic minorities or cultural backgrounds such as Asians, Hispanics, or Aboriginal Canadians might have provided additional insights in knowing their perceptions and attitudes regarding body image for the study. Another limitation to the study was that the locations of the places visited by the women may or may not have been in the participants' immediate environment. Further, information on which neighbourhoods involved the highest publicity to media images of thin-ideal bodies could have guided us to potential

interventions in aims of reducing these unhealthy influences. The issues of the neighbourhoods with greatest exposure to social pressures to be thin and whether or not the places visited were in close proximity or not to the participants' residence could not be addressed in the present study. A final limitation of the study pertains to the fact that some women may have been exposed to these images not by choice but rather by obligation because they held employment in the different places promoting thinness. The issue of unscrambling the contribution of frequenting places that promote socio-cultural pressures to be thin by choice or by obligation should be addressed in future research.

Future research

Findings from the current study provide enriched knowledge and direction for future interventions addressing issues relating to eating and weight-related behaviours and problems and weight concerns, and decreasing the social pressures of thinness in the contextual areas such as places in the environment. Moreover, future research could aim to investigate whether or not visiting places frequently have short or long term effects on women's weight concerns, the perception of their body, and developing strategies to minimize weight concerns among young girls and women and across different ethnic backgrounds. Exposure to socio-cultural pressures to thinness does not only exist in magazines or seen on television, therefore researchers could also expand their research to examine the influences in various establishments in the neighbourhood environments in which there may be other important contextual influences relating to the health outcomes of women. In essence, interventions should be tailored to increasing body satisfaction, enhancing positive body image, self-esteem and self-identity, improving physical and

mental health and quality of life among women. Lastly, society should encourage women to appreciate and enjoy their body shape whether it is of normal or mature figure.

Conclusion

Weight and eating-related problems and behaviours are prevalent among young girls and women in Western societies. This study demonstrated that going to social places in proximal environments and being exposed to media messages on appearance have an effect on weight concerns for women and for those who are overweight or obese. Public health and mass media sectors could join together to change the media's messages on thinness and promote healthy and real images of women. In addition, public health experts need to educate the public by addressing issues related to acceptance different body shapes and sizes, positive sense of identity, and healthy outlooks on body image. Finally, we need to increase awareness by providing positive and constructive messages for women and society.

References

Anschutz, D.J., Engels, R.C.M.E. & Van Strien, T. (2008). Susceptibility for thin ideal media and eating styles. *Body Image*. 5; 70-79.

Blowers, L.C., Loxton, N.J., Grady-Flessner, M., Occhipiniti, S. & Dawe, S. (2003). The relationship between sociocultural pressure to be thin and body dissatisfaction in preadolescent girls. *Eating Behaviors*. 4; 229-224.

Boutelle, K., Neumark-Sztainer, D., Story, M. & Resnick, M. (2002). Weight Control Behaviors Among Obese, Overweight, and Nonoverweight Adolescents. *Journal of Pediatric Psychology*, 27(6); 531-540.

Burrows, A. & Cooper, M. (2002). Possible risk factors in the development of eating disorders in overweight pre-adolescent girls. *International Journal of Obesity*. 26; 1268-1273.

Colabianchi, N., Ievers-Landis, C.E., Borawski, E.A. (2006). Weight Preoccupation as a Function of Observed Physical Attractiveness: Ethnic differences Among Normal-Weight Adolescent Females. *Journal of Pediatric Psychology*. 31(8); 803-812.

Cook, S.J., MacPherson, K. & Langille, D.B. (2007). Far from ideal. *Canadian Family Physician*, 53; 687-684.

Cooper, P.J. & Goodyer, I. (1997). Prevalence and significance of weight and shape concerns in girls aged 11-16 years. *The British Journal of Psychiatry*. 171: 542-544.

Diez-Roux, A.V. (2001). Investigating Neighborhood and Area Effects on Health. *American Journal of Public Health*. 91(11); 1783-1789.

Fairburn, C.G. & Cooper, Z. (1993). The Eating Disorders Examination (12th Edition). In C.G. Fairburn, G.T. Wilson (Eds.)

Fairburn, C.G., Doll, H.A., Welch, S.L., Hay, P.J., Davies, B.A. & O'Connor, M.E. (1998). Risk Factors for Binge Eating Disorder. *Arch Gen Psychiatry*. 55:425-432.

Favaro, A., Ferrara, S. & Santonastaso, P. (2003). The Spectrum of Eating Disorders in Young Women : A Prevalence Study in a General Population Sample. *Psychosomatic Medicine*. 65:701-708.

Field, A.E., Austin, S.B., Camargo, C.A., Taylor, Jr. C.B., Striegel-Moore, R.H., Loud, K.J. & Colditz, G.A. (2005). Exposure to Mass Media, Body Shape Concerns, and Use of Supplements to Improve Weight and Shape Among Male and Female Adolescents. *Pediatrics*. 116: 214-220.

Field, A.E., Camargo, C.A., Taylor, C.B., Berkey, C.S., Roberts, S.B. & Colditz, G.A. (2001). Peer, Parent and Media Influences on the Development of Weight Concerns and Frequent Dieting Among Preadolescent and Adolescent Girls and Boys. *Pediatrics*. 107(1);54-60.

Field, A.E., Cheung, L., Wolf, A.M, Hersog, D.B., Gotmaker, S.L. & Colditz, G.A. (1999). Exposure to the Mass Media and Weight Concerns Among Girls. *Pediatrics*. 103 (3);E36.

Gauvin, L., Steiger, H., & Brodeur, J.-M. (2009). Eating-Disorder Symptoms and Syndromes in a Sample of Urban-Dwelling Canadian Women: Contributions toward a Population Health Perspective. *International Journal of Eating Disorders* 42 : 158-165.

Gowers, S.G. & Shore, A. (2001). Development of weight and shape concerns in the aetiology of eating disorders. *British Journal of Psychiatry*, 179: 236-242.

Harrison, K., & Cantor, J. (1997). The relationship between media consumption and eating disorders. *Journal of Communication*. 47(1); 40-67.

Haines, J. & Neumark-Sztainer, D. (2006). Prevention of obesity and eating disorders: a consideration of shared risk factors. *Health Education Research*. 21(6); 770-782.

Health Canada site: http://www.hc-sc.gc.ca/fn-an/nutrition/weights-poids/guide-ld-adult/bmi_chart_java-graph_imc_java_e.html. Visited December 2007.

Hetherington, M. (2000). Eating Disorders: Diagnosis, Etiology, and Prevention. *Nutrition*. 16(7/8); 547-551.

Jones, J.M., Bennett, S., Olmsted, M.P., Laswon, M.L. & Rodin, G. (2001). Disordered eating attitudes and behaviours in teenaged girls: a school-based study. *CMAJ*. 165(5); 547-552.

Low, K.G., Charanasomboon, S., Brown, C., Hiltunen, G., Long, K. & Reinhalter, K. (2003). Internalization of the thin ideal, weight and body image concerns. *Social Behaviour and Personality*. 31(1); 81-90.

Luce, K.H., Crowther, J.H. & Pole, M. (2008). Eating Disorder Examination Questionnaire (EDE-Q): Norms for Undergraduate Women. *International Journal of Eating Disorders*. 41(3); 273-276.

McLaren, L. & Gauvin, L. (2002). Neighbourhood level versus individual level correlates of women's body dissatisfaction: Toward a multilevel understanding of the role of affluence. *J of Epidemiol & Community Health*. 56:193-199.

Morry, M & Staska, S.L. (2001). Magazine exposure: Internalization, self-objectification, eating attitudes, and body satisfaction in male and female university students. *Canadian Journal of Behavioural Sciences*. 33(4):269-279.

Mussell, M.P., Binford, R., & Fulkerson, J.A. (2000). Eating Disorders: Summary of Risk Factors, Prevention Programming and Prevention Research. *The Counselling Psychologist*. 28: 764-796.

Must, A., Spadano, J., Coakley, E.H., Field, A., Colditz, G. & Dietz, W.H. (1999). The Disease Burden Associated With Overweight and Obesity. *JAMA*. 282(16); 1523-1529.

Neumark-Sztainer, D., Falkner, N., Story, M., Perry, C., Hannan, P.J. & Mulert, S. (2002). Weight-teasing among adolescents: correlations with weight status and disordered eating behaviors. *International Journal of Obesity*. 26: 123–131.

Neumark-Sztainer, D. & Hannan, P.J. (2000). Weight-Related Behaviors Among Adolescent Girls and Boys. *Arch Pediatr Adolesc Med*. 154: 569-574.

Neumark-Sztainer, D., Story, M., Hannan, P.J., Perry, C.L. & Irving, L.M. (2002). Weight-Related Concerns and Behaviors Among Overweight and Nonoverweight Adolescents. *Arch Pediatr Adolesc Med*. 156: 171-178.

Ogden, C.L., Carroll, M.D., Curtin, L.R., McDowell, M.A., Tabak, C.J., & Flegal, K.M. (2006). Prevalence of Overweight and Obesity in the United States, 1999-2004. *JAMA*. 295(13);1549-1555

Park, S-Y. (2005). The Influence of Presumed Media Influence on Women's Desire to Be Thin. *Communication Research*. 32(5);594-614.

Reeve, B.B., Hays, R.D., Bjorner, J.B., Cook, K.F., Crane, P.K., Teresi, J.A., Thissen, D., Revicki, D.A., Weiss, D.J., Hambleton, R.K., Liu, H., Gershon, R., Reise, S.P., Lai, J. & Cella, D. (2007). Psychometric Evaluation and Calibration of Health-Related Quality of Life Item Banks. *Medical Care*. 45(5); S22–S31.

Stice, E. (2001). A Prospective Test of the Dual-Pathway Model of Bulimic Pathology: Mediating Effects of Dieting and Negative Affect. *Journal of Abnormal Psychology*. 110(1);124-135.

Stice, E. (2002). Risk and Maintenance Factors for Eating Pathology: A Meta-Analytic Review. *Psychological Bulletin*, 128(5); 825-848.

Stice, E. & Shaw, H. (2004). Eating disorder Prevention Programs: A Meta-Analytic Review. *Psychological Bulletin*, 130(2); 206-227.

Stice, E., Spangler, D. & Agras, W.S. (2001). Exposure to media-portrayed thin-ideal images adversely affects vulnerable girls: A longitudinal experiment. *Journal of Social and Clinical Psychology*. 20(3); 270-288.

Striegel-Moore, R.H., Dohm, F.A., Kraemer, H.C., Taylor, C.B., Daniels, S., Crawford, P.B. & Schreiber, G.B. (2003). Eating Disorders in White and Black Women. *Am J Psychiatry*. 160(7); 1326-1331.

Young, E.A., McFatter, R. & Clopton, J.R. (2001). Family functioning, peer influence, and media influence as predictors of bulimic behavior. *Eating Behaviors*. 2, 323-337.

Table 1: Questions and responses for the indicators of weight concern

| Indicators | Questions | Responses and Scales |
|--------------------------------|---|---|
| Thoughts about weight | “Over the past 28 days, has thinking about shape or weight made it more difficult to concentrate on things you are interested in: for example read, watch TV, or follow a conversation? Would you say that this happened on...” | None (0), 1 to 5 days (1), 6 to 12 days (2), 13 to 15 days (3), 16 to 22 days (4), 23 to 27 days (5), or everyday (6), and does not know/refusal. |
| Desire to lose weight | “Over the past 28 days, have you had a strong desire to lose weight? Would you say this happened on...” | None (0), 1 to 5 days (1), 6 to 12 days (2), 13 to 15 days (3), 16 to 22 days (4), 23 to 27 days (5), or everyday (6), and does not know/refusal. |
| Preoccupation to weight | “Over the past four weeks (28 days), has your weight influenced how you think about (judge) yourself as a person? Would you say...” | Markedly (6), moderately (4), slightly (2), not at all (0), or does not know/refusal. |
| Distress with weight | “Over the past four weeks, how much would it upset you if you had to weigh yourself once a week for the next four weeks? Would you say...” | Markedly (6), moderately (4), slightly (2), not at all (0), or does not know/refusal. |
| Dissatisfaction to lose weight | “Over the past four weeks, how dissatisfied have you felt about your weight? Would you say...” | Markedly (6), moderately (4), slightly (2), not at all (0), or does not know/refusal. |

Table 2: Questions and responses for places

| Indicators of Places visited | Question | Possible Responses |
|---------------------------------|--|--|
| - Fitness centers | “Over the past four weeks, how many times have you entered or used any of the following establishments?” | Never (1); |
| - Weight loss centers | | 1 to 3 times during the last month |
| - Beauty salon or hair dressers | | (2); |
| - Clothes or shoe stores | | Once per week (3); |
| - Bar or discotheque | | 2 to 3 times per week (4); More than 3 times per week (5); or Does not know or refusal. |

Table 3: Characteristics of the sample (n=1288)

| Variable | Indicator | Number of participants | % of participants |
|--------------------------------------|---|------------------------|-------------------|
| Age (years) | Young (20-30) | 594 | 46.1 |
| | Older (31-40) | 694 | 53.9 |
| Body Mass Index (kg/m ²) | Underweight (<18.5) | 47 | 3.6 |
| | Normal (18.5 – 24.99) | 867 | 67.3 |
| | Overweight (25.0 – 29.99) | 262 | 20.3 |
| | Obese (30 and above) | 112 | 8.7 |
| Family Income | Low (< \$20 000) | 147 | 11.4 |
| | Moderate (\$20 000-\$79 999) | 759 | 58.9 |
| | High (≥ than \$80 000) | 232 | 18.0 |
| | Does Not Know/Refusal | 150 | 11.6 |
| Education Status | High School (7 years) | 253 | 19.6 |
| | College (13-15 years) | 386 | 30.0 |
| | University (≥16 years) | 649 | 50.4 |
| Employment Status | Employed | 900 | 69.9 |
| | Not Employed | 388 | 30.1 |
| Marital Status | Married | 739 | 57.3 |
| | Not Married | 549 | 42.6 |
| Smoking Status | Smokers | 363 | 28.1 |
| | Non-Smokers | 925 | 71.8 |
| Alcohol Status | Frequent drinkers (≥ 2 drinks/week) | 301 | 23.4 |
| | Infrequent drinkers (< 2 drinks/week) | 987 | 76.6 |
| Physical Activity (PA) Status | Active (≥ 2 times/week of 20 minute-episodes of PA) | 678 | 52.6 |
| | Non-Active (< 2 times/week of 20 minute-episodes of PA) | 610 | 47.4 |
| Language spoken | French | 895 | 69.5 |
| | English | 244 | 18.9 |
| | Allophone | 149 | 11.6 |
| Immigrant Status | Born in Canada | 946 | 73.4 |
| | Born elsewhere | 189 | 14.7 |

Table 4: Proportion of participants with weight concerns (% of participants)

| Variable | Indicators | Number of participants | % of participants | |
|------------------------|-------------------------------|------------------------|-------------------|------|
| Weight Concern | Thoughts about weight concern | | | |
| | None | 1229 | 95.4 | |
| | 1-5 days | 28 | 2.2 | |
| | 6-12 days | 8 | 0.6 | |
| | 13-15 days | 7 | 0.5 | |
| | 16-22 days | 4 | 0.3 | |
| | 23-27 days | 2 | 0.2 | |
| | Everyday | 9 | 0.7 | |
| | Do not know/Refusal | 1 | - | |
| | Strong desire to lose weight | None | 798 | 62.0 |
| 1-5 days | | 131 | 10.2 | |
| 6-12 days | | 89 | 6.9 | |
| 13-15 days | | 43 | 3.3 | |
| 16-22 days | | 22 | 1.7 | |
| 23-27 days | | 19 | 1.5 | |
| Everyday | | 185 | 14.4 | |
| Do not know/Refusal | | 1 | - | |
| Weight preoccupation | | Markedly | 69 | 5.4 |
| | | Moderately | 298 | 23.1 |
| | Slightly | 412 | 32.0 | |
| | Not at all | 498 | 38.7 | |
| | Do not know/Refusal | 2 | - | |
| Distress with weight | Markedly | 61 | 4.7 | |
| | Moderately | 141 | 11.0 | |
| | Slightly | 342 | 26.6 | |
| | Not at all | 731 | 56.8 | |
| | Do not know/Refusal | 13 | - | |
| Weight Dissatisfaction | Markedly | 131 | 10.2 | |
| | Moderately | 336 | 26.1 | |
| | Slightly | 371 | 28.8 | |
| | Not at all | 442 | 34.3 | |
| | Do not know/Refusal | 8 | - | |

Table 5: Proportion of participants going to different places (% of participants)

| Variable | Indicators | Number of participants | % of participants |
|------------------------|------------------------------|------------------------|-------------------|
| Places visited | Fitness centres | | |
| | 0 days | 943 | 73.2 |
| | 2 days/month | 59 | 4.6 |
| | 4 days/month | 75 | 5.8 |
| | 10 days/month | 166 | 12.9 |
| | 16 days/month | 45 | 3.5 |
| | Weight loss centres | | |
| | 0 days | 1257 | 97.6 |
| | 2 days/month | 9 | 0.7 |
| | 4 days/month | 17 | 1.3 |
| | 10 days/month | 4 | 0.3 |
| | 16 days/month | 0 | - |
| | Do not know/Refusal | 1 | - |
| | Beauty salon or hair dresser | | |
| | 0 days | 597 | 46.4 |
| | 2 days/month | 637 | 49.5 |
| | 4 days/month | 39 | 3.0 |
| 10 days/month | 3 | 0.2 | |
| 16 days/month | 10 | 0.8 | |
| Do not know/Refusal | 2 | - | |
| Clothes or shoe stores | | | |
| 0 days | 229 | 17.8 | |
| 2 days/month | 655 | 50.9 | |
| 4 days/month | 266 | 20.7 | |
| 10 days/month | 93 | 7.2 | |
| 16 days/month | 44 | 3.4 | |
| Do not know/Refusal | 1 | - | |
| Bar or discotheque | | | |
| 0 days | 807 | 62.7 | |
| 2 days/month | 364 | 28.3 | |
| 4 days/month | 88 | 6.8 | |
| 10 days/month | 24 | 1.9 | |
| 16 days/month | 4 | 0.3 | |
| Do not know/Refusal | 1 | - | |

Table 6: Odds Ratios (OR) and 95 % CI for the associations between going to places 15 days or more/month and higher weight concerns

| | | Model 1 | Model 2 | Model 3 | Model 4 |
|------------------------------|--------------------------|-----------------------|------------------------|------------------------|------------------------|
| Variables | Indicator | OR (95% CI) | OR (95% CI) | OR (95% CI) | OR (95% CI) |
| Frequency of going to places | < 15 days/month | 1.00 | 1.00 | 1.00 | 1.00 |
| | ≥ 15 days/month | 1.48* (1.03, 2.15) | 1.65* (1.11, 2.44) | 1.73* (1.15, 2.59) | 1.80* (1.18, 2.74) |
| Age | 20 to 30 years | | 1.00 | 1.00 | 1.00 |
| | 31 to 40 years | | 0.71 (0.52, 0.97) | 0.74 (0.53, 1.03) | 0.75 (0.54, 1.04) |
| BMI (kg/m2) | < 25.0 | | 1.00 | 1.00 | 1.00 |
| | 25.0-29.99 | | 3.58** (2.54, 5.06) | 3.46** (2.44, 4.92) | 3.38** (2.38, 4.81) |
| | 30 and up | | 8.61** (5.56, 13.3) | 7.96** (5.09, 12.4) | 7.66** (4.89, 11.9) |
| Family Income | < \$20 000 | | | 1.09 (0.67, 1.79) | 1.08 (0.66, 1.78) |
| | \$20 000 – \$79 999 | | | 1.00 | 1.00 |
| | ≥ than \$80 000 | | | 0.77 (0.48, 1.23) | 0.77 (0.48, 1.24) |
| | Refusal or Does not know | | | 0.97 (0.60, 1.59) | 0.98 (0.60, 1.59) |
| Education Status | 12 years | | | 1.01 (0.66, 1.55) | 0.99 (0.65, 1.52) |
| | 13 to 15 years | | | 1.00 | 1.00 |
| | ≥ 16 years | | | 0.89 (0.62, 1.27) | 0.91 (0.63, 1.30) |

| | | | |
|--------------------------|--------------------|----------------------|----------------------|
| Employment Status | Not employed | 1.00 | 1.00 |
| | Employed | 0.85 (0.60, 1.19) | 0.85 (0.60, 1.20) |
| Marital Status | Not married | 1.00 | 1.00 |
| | Married | 1.07 (0.76, 1.49) | 1.05 (0.75, 1.46) |
| Language spoken at home | French | 1.00 | 1.00 |
| | English | 1.09 (0.74, 1.61) | 1.06 (0.72, 1.57) |
| | Allophone | 0.93 (0.57, 1.52) | 0.87 (0.53, 1.43) |
| Smoking Status | Non-smoker | | 1.00 |
| | Smoker | | 0.98 (0.69, 1.39) |
| Alcohol Status | Infrequent drinker | | 1.00 |
| | Frequent drinker | | 0.73 (0.48, 1.10) |
| Physical Activity Status | Non-active | | 1.00 |
| | Active | | 0.91 (0.66, 1.25) |

Variables included in each model:

Model 1: 15 days/month or more

Model 2: age and BMI

Model 3: family income status, education status, employment status, marital status, language spoken at home

Model 4: smoking status, alcohol status and physical activity status

Significant at:

* p = 0.05

** p = 0.01

Table 7: Sensitivity analysis for the association between different frequencies of going to places and higher weight concerns

| Variables for different frequentations to places | OR (95% CI) (Model 1) | OR (95% CI) (Model 2) | OR (95% CI) (Model 3) | OR (95% CI) (Model 4) |
|--|-----------------------|-----------------------|-----------------------|-----------------------|
| ≤ 5 days/month | 0.93 (0.70, 1.25) | 0.88 (0.65, 1.20) | 0.85 (0.62, 1.16) | 0.84 (0.61, 1.15) |
| ≥ 10 days/month | 1.22 (0.90, 1.65) | 1.27 (0.92, 1.75) | 1.30 (0.94, 1.81) | 1.36 (0.96, 1.92) |
| ≥20 days/month | 1.65* (1.02, 2.66) | 1.96* (1.18, 3.25) | 2.10* (1.25, 3.54) | 2.20* (1.28, 3.76) |

Significant at:

* p = 0.05

VI. DISCUSSION

1. Discussion of Results

The purpose of this thesis was to examine whether or not an association exists between greater exposure to socio-cultural standards for thinness in proximal places in the environment and higher weight concerns. It was hypothesized that greater exposure to socio-cultural pressures promoting thinness was related to more severe weight concerns among adult women.

The review of literature showed that socio-cultural factors play a major role on individual's body perceptions, attitudes, and beliefs. The media is a very influential aspect of people's daily life. Print media and television can have both positive and negative influences on thoughts and eating patterns. Present in Western societies, messages on thin body shapes imply to women that they are not thin enough (Irving & Neumark-Sztainer, 2002; Stice, 2001) and will not profit from the virtues associated with thinness (e.g., success, healthiness, youth, or wealth) (Young et al., 2001). Consequently, many young girls diet and engage in other unhealthy weight loss methods to achieve this ideal look (Colabianchi et al., 2006; Tiggemann & Pennington, 1990). Though weight concerns are predominantly features of eating disorders (Mussell et al., 2000), namely anorexia nervosa and bulimia nervosa, overweight and obese individuals can also show concerns and dissatisfaction with their weight status (Field et al., 2005; Boutelle et al., 2002). Research suggests that weight and eating-related problems share behaviours and symptoms of obesity and eating disorders (Neumark-Sztainer et al., 2007; Haines &

Neumark-Sztainer, 2006; Irving & Neumark-Sztainer, 2002) which may lead to potential interventions aiming to reduce the common symptoms of the health problems.

The study demonstrated that women going to places 15 days/month or more reported greater weight concerns. Similar results were obtained among women with higher body mass index, such that overweight and obese women showed higher weight concerns which are consistent with research (Field et al., 2005; Boutelle et al., 2002). One possible explanation is that women of overweight or obese weight status may move farther away from achieving their ideal weight and shape (Hetherington, 2000). Given society's emphasis on thin-ideal images in Western countries, social stigma and discrimination should also be considered. Often seen on television, media depicts individuals of larger figures as unattractive or unsuccessful (Young et al., 2001) which contribute to the negative association to obese and overweight individuals. It is appalling that media and society have such a negative stigma among people with excess weight and that other individuals tease, mock or name call overweight and/or obese individuals. Though the stigma words are hurtful to hear, these stigmatizing experiences are present in society, and among family and peers. It is suggested that overweight adolescents are more likely to develop body dissatisfaction, lower self-esteem and are teased more often than their friends of normal weight (Boutelle et al., 2002; Young et al., 2001). Therefore, it is important to understand the underlying mechanisms contributing to obesity and the interaction with the environment for the implementation of future effective interventions.

Another finding to be taken into account is among women of low weight status. This group of participants (3.6%) was not large enough, so these women were combined with respondents of normal weight status as reference category. Due to the small sample

of women, it is not plausible to conclude from the results that underweight women did not experience weight concerns or that they did show weight concerns. If these women did show weight concerns, perhaps the association between underweight women and weight concerns was not strong enough to show among the results. One would assume that underweight women would report severe weight concerns since weight concerns and low body mass index (low body weight) are key features of the onset of eating disorders, namely anorexia nervosa (APA, 2000; Mussell et al., 2000). Therefore, it is likely that underweight women would report severe weight concerns but additional research would be needed to verify this assumption. However, I cannot draw any conclusions about underweight women and weight concerns from the results, but can only speculate.

Limitations of the study should be noted. The design of this study was cross-sectional study implying that cause and effect inferences cannot be made. However, important associations can be supported and are useful for future research. Another limitation of this investigation lies among the places visited. We do not know whether the places visited were located close to or distant from participants' residence as this information would have been useful in knowing whether participants went to places because they were near or far from their homes. Knowledge of this information might have provided us with additional insights. For example, if a participant lived close to a shopping mall, would she go more often than if she lived further away? The willingness to go to places sometimes depends on the distance needed to travel to the places.

2. Implications for Public Health

Public health plays a central role in studying various diseases, disorders, and behaviours among populations. The study provided several important public health implications which will be explored. The findings of this study indicated that going to places promoting thin-ideals images and messages more frequently as well as being exposed to increased pressures from media showed higher weight concerns among adult women. Knowing that increased exposure to media images of thin-ideals can lead to elevated weight concerns provides direction that interventions should target contextual areas such places in the environment and should aim to reduce media's messages on thin-ideals. It would be a positive change to incorporate, into society, images of real, healthy-looking women of different shapes and sizes (e.g., tall, short, curvy, normal body figures, mature silhouettes, etc.) throughout diverse establishments, in print media (e.g., posters in the malls or fitness centers, magazines) and on television. Perhaps seeing images of real women would reduce the pressures to conform to thinness and strengthen body image securities. Implications for society should focus on decreasing the negative perceptions and stigma associated with overweight and obese women and allow for acceptance of various shapes and sizes. In essence, public health implications should direct attention to developing intervention strategies towards the promotion of positive, realistic and healthy body shapes, improving physical and mental health and enhancing quality of life.

3. Future Research Directions

Eating disorders, its variants, and obesity are multifaceted public health conditions prevalent in today's society. Extensive research has investigated factors leading to the development of eating and weight-related behaviours and disorders from

the biological, psychological and socio-environmental dimensions. Knowledge and the understanding of the risk and protective factors and health complications associated with weight and eating-related behaviours and conditions would aid in development of strong and effective intervention strategies.

Future studies should be tailored to conducting longitudinal population or community-based studies on young girls and to follow them from an initial phase (i.e., onset of body dissatisfaction as seen in adolescent years) over a period of either five, ten, fifteen or twenty years to fully explore and understand the interaction of risk factors on weight concerns, and the development of eating disorders, disordered eating behaviours or obesity. In addition, it would be feasible to observe the short and long term effects of weight concerns. Also, following these individuals and tracking what they read, where they go, their family and environment influences would provide a profound understanding of the process of how one becomes dissatisfied with one's weight or the development of an eating disorder. Public health interventions should address related-issues on reducing the socio-cultural and media influences leading to such eating and weight-related behaviours as well as encouraging healthy eating and weight loss behaviours. Furthermore, researchers should aim to develop prospective strategies targeting vulnerable populations such as individuals at higher risk for weight concerns (i.e., young adolescent girls, overweight or obese girls and women), contextual areas (i.e., schools, workplace, homes, neighbourhoods, shopping malls, etc.) and to identify potential risk factors.

Furthermore, public health and media sectors could join together to build stronger and healthful environments that encourages positive self-esteem, body image, and

portrayals of various body shapes and sizes in society, places, in print media, and on television. In addition, to educate young girls and adolescents about body image, encouraging them to cultivate a positive sense of self-identity and teaching strategies to critique such images could be implemented in schools. Research shows that having a strong sense of identity, therefore knowing the importance of one's values, is a protective factor against eating disorders (Becker et al., 2002). Further, by understanding that thin-ideal images seen in magazines and on television are unrealistic and difficult to achieve (Kjaerbye-Thygesen et al., 2004), perhaps attempts to engage in unhealthy weight loss and dieting methods can be reduced. It has been acknowledged in research of the importance of neighbourhood surroundings which help shape people's lives and opportunities (Diez-Roux, 2001). Therefore, knowledge of risk and protective factors as well as comprehending the interplay of factors for eating disorders and behaviours in proximal places among young girls and women can lead to successful environmental interventions.

In efforts to decrease the onset and prevalence of eating and weight-related problems, a multi-disciplinary team of health professionals including public health experts, psychologists, nutritionists, biologists, physicians, policy-makers and health law experts could work together for the planning and implementation of intervention strategies. Due to the challenging aspects of eating and weight-related conditions, a team of specialists is needed to fight the increasing prevalence and incidence rates of these health conditions. Though these investigations may be costly, the benefits of learning novel information, strengthening of existing knowledge, and decreasing prevalence and

incidence rates of these health problems would be far greater than any of the disadvantages.

VII. CONCLUSION

Many individuals struggle with obstacles and life challenges that lie in their immediate environment. Society's emphasis on thin-ideal bodies as fashionable and desirable body shapes (Hetherington, 2000) for women poses as such a challenge. However, for many, it is how they cope and deal with such pressures from society that differentiates their susceptibility to diseases, disorders and unhealthy behaviours. For others, the development of eating disorders among women may depend on the attributes of biological and/or psychological vulnerabilities such as pre-disposition or body mass index, or physical maltreatments such as depression, child and/or sexual abuse (Hetherington, 2000). And for many other individuals, it may depend on the culture of a population where values and standards are emphasized and enforced by that society.

In Westernized societies, the ultra thin-ideal represents a hallmark feature of the female body (Mussell et al., 2000) leading women to unhealthy behaviours and undesirable health outcomes. Although numerous factors are associated to weight and eating-related problems, socio-cultural factors play a leading role relating to the onset of these health problems which are also common among female young adolescents and adults. Findings of the study demonstrated that the environment has an effect on the weight concerns of women, and among those who are overweight or obese. These results provide guidance for future researchers for the development of fundamental and

upcoming interventions. It also offers stepping stone to increase awareness on the effects of the environment and weight preoccupations among adult women.

In conclusion, future public health researchers need to create safe and healthy environments with positive messages so adaptive and healthy weight and eating-related behaviours can be implemented into society. Despite the challenging circumstances that individuals face, Western societies need to promote healthier environments with greater emphasis on enhancing quality of life, positive outlooks on life, and embrace the joys that life brings.

References

- American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR). Arlington, VA : The Author, 2000.
- Annis, N.M., Cash, T.F. & Hrabosky, J.I. (2004). Body image and psychosocial differences among stable average weight, currently overweight and formerly overweight women: the role of stigmatizing experiences. *Body Image*. 1, 155-167.
- Anschutz, D.J., Engels, R.C.M.E. & Van Strien, T. (2008). Susceptibility for thin ideal media and eating styles. *Body Image*. 5; 70-79.
- Becker, A.E., Grinspoon, S.K., Klibanski, A. & Herzog, D.B. (1999). Eating Disorders. *The New England Journal of Medicine*. 340(14);1092-1098.
- Becker, A.E., Burwell, R.A., Gilman, S.E., Herzog, D.B. & Hamburg, P. (2002). Eating behaviours and attitudes following prolonged exposure to television among ethnic Fijian adolescent girls. *British Journal of Psychiatry*. 180:509-514.
- Bessenoff, G.R. & Del Priore, R.E. (2007). Women, Weight, and Age: Social Comparison to Magazine Images Across the Lifespan. *Sex Roles*. 56:215-222.
- Bessesen, D. (2008). Update on Obesity. *J Clin Endocrinol Metab*. 93(6): 2027-2034.
- Blowers, L.C., Loxton, N.J., Grady-Flessner, M., Occhipiniti, S. & Dawe, S. (2003). The relationship between sociocultural pressure to be thin and body dissatisfaction in preadolescent girls. *Eating Behaviors*. 4:229-224.
- Bryan, S. & Walsh, P. (2004). Physical Activity and Obesity in Canadian Women. *BMC Women's Health*. 4(Suppl 1):S6.
- Colabianchi, N., Ievers-Landis, C.E., Borawski, E.A. (2006). Weight Preoccupation as a Function of Observed Physical Attractiveness: Ethnic differences Among Normal-Weight Adolescent Females. *Journal of Pediatric Psychology*. 31(8); 803-812.
- Cooper, P.J. & Goodyer, I. (1997). Prevalence and significance of weight and shape concerns in girls aged 11-16 years. *The British Journal of Psychiatry*. 171: 542-544.
- Derenne, J.L. & Beresin, E.V. (2006). Body Image, Media, and Eating Disorders. *Academic Psychiatry*. 30(3); 257-261.

Diez-Roux, A.V. (2001). Investigating Neighborhood and Area Effects on Health. *American Journal of Public Health*. 91(11); 1783-1789.

Favaro, A., Ferrara, S. & Santonastaso, P. (2003). The Spectrum of Eating Disorders in Young Women : A Prevalence Study in a General Population Sample. *Psychosomatic Medicine*. 65:701-708.

Field, A.E., Camargo, C.A., Taylor, C.B., Berkey, C.S., Roberts, S.B. & Colditz, G.A. (2001). Peer, Parent and Media Influences on the Development of Weight Concerns and Frequent Dieting Among Preadolescent and Adolescent Girls and Boys. *Pediatrics*. 107(1);54-60.

Field, A.E., Cheung, L., Wolf, A.M, Hersog, D.B., Gotmaker, S.L. & Colditz, G.A. (1999). Exposure to the Mass Media and Weight Concerns Among Girls. *Pediatrics*. 103 (3);E36.

Gauvin, L., Steiger, H., & Brodeur, J.-M. (2009). Eating-Disorder Symptoms and Syndromes in a Sample of Urban-Dwelling Canadian Women: Contributions toward a Population Health Perspective. *International Journal of Eating Disorders* 42 : 158-165 .

Golden, N.E. (2003). Eating disorders in adolescence and their sequelae. *Best Practice & Research Clinical Obstetrics and Gynaecology*. 17(1); 57-73.

Gowers, S.G. & Shore, A. (2001). Development of weight and shape concerns in the aetiology of eating disorders. *British Journal of Psychiatry*, 179; 236-242.

Harrison, K. & Cantor, J. (1997). The relationship between media consumption and eating disorders. *Journal of Communication*. 47 1); 40-67.

Hetherington, M. (2000). Eating Disorders: Diagnosis, Etiology, and Prevention. *Nutrition*. 16(7/8); 547-551.

Hossain, P., Kavar, B. & El Nahas, M. (2007). Obesity and Diabetes in the Developing World – A Growing Challenge. *New England Journal of Medicine*. 356(3).

Jones, J.M., Bennett, S., Olmsted, M.P., Laswon, M.L. & Rodin, G. (2001). Disordered eating attitudes and behaviours in teenaged girls: a school-based study. *CMAJ*. 165(5); 547-552.

Jung, J. & Lennon, S.J. (2003). Body Image, Appearance Self-Schema, and Media Images. *Family and Consumer Sciences Research Journal*. 32; 27-48.

Keski-Rahkonen, A. (2005). Acculturation, Obesity and Eating Disorders: Viewpoint. *European Eating Disorders Review*. 13, 297-300.

Kjaerbye-Thygesen, A., Munk, C., Ottesen, B. & Kjaer, S.K. (2004). Why Do Slim Women Consider Themselves Too Heavy? A Characterization of Adult Women Considering Their Body Weight as Too Heavy. *International Journal of Eating Disorders*. 35:275-285.

Lake, A.J., Staiger, P.K. & Glowinski, H. (2000). Effect of Western Culture on Women's Attitudes to Eating and Perceptions of Body Shape. *International Journal of Eating Disorders*. 27: 83-89.

Le Petit, C. & Berthelot, J-M. Obesity: a Growing Issue. Healthy today, healthy tomorrow? Findings from the National Population Health Survey. Component of Statistical Canada Catalogue no. 82-618-MWE2005003.

McLaren, L. & Gauvin, L. (2002). Neighbourhood level versus individual level correlates of women's body dissatisfaction: Toward a multilevel understanding of the role of affluence. *J of Epidemiol & Community Health*. 56:193-199.

McVey, G.L., Pepler, D., Davis, R., Flett, G.L. & Abdoell, M. (2002). Risk and Protective Factors Associated with Disordered Eating in Early Adolescence. *Journal of Early Adolescence*. 22 (1). 75-95.

Merlo, J., Yang, M., Chaix, B., Lynch, J. & Rastam, L. (2005). A brief conceptual tutorial on multilevel analysis in social epidemiology: investigating contextual phenomena in different groups of people. *Journal of Epidemiology and Community Health*. 59; 729-736.

Mitchell, A.M. & Bulik, C.M. (2006). Eating Disorder and Women's Health: An Update. *Journal of Midwifery & Women's Health*. 51(3):193-201.

Mussell, M.P., Binford, R. & Fulkerson, J.A. (2000). Eating Disorders: Summary of Risk Factors, Prevention Programming and Prevention Research. *The Counseling Psychologist*. 28; 764-796.

Neumark-Sztainer, D., Falkner, N., Story, M., Perry, C., Hannan, P.J. & Mulert, S. (2002). Weight-teasing among adolescents: correlations with weight status and disordered eating behaviors. *International Journal of Obesity*. 26, 123–131.

Neumark-Sztainer, D., Story, M., Hannan, P.J., Perry, C.L. & Irving, L.M. (2002). Weight-Related Concerns and Behaviors Among Overweight and Nonoverweight Adolescents. *Arch Pediatr Adolesc Med*. 156: 171-178.

Neumark-Sztainer, D.R., Wall, M.M., Haines, J.I., Story, M.T., Sherwood, N.E. & van den Berg, P.A. (2007). Shared Risk and Protective Factors for Overweight and Disordered Eating in Adolescents. *American Journal of Preventive Medicine*. 33(5):359 – 369.

Paquette, M-C. & Raine, K. (2004). Sociocultural context of women's body image. *Social Science and Medicine*. 1047-1058.

Pereira, R.F. & Alvarenga, M. (2007). Disordered Eating: Identifying, Treating, Preventing, and Differentiating it from Eating Disorders. *Diabetes Spectrum*. 20(3), 141-148.

Ruggiero, G.M., Levi, D., Ciuna, A. & Sassaroli, S. (2003). Stress Situations Reveals an Association between Perfectionism and Drive for Thinness. *International Journal of Eating Disorders*. 34(2): 220-226.

Soh, N.L., Touyz, S.W. & Surgenor, L.J. (2006). Eating and Body Image Disturbances Across Cultures: A Review.

Stice, E. (2001). A Prospective Test of the Dual-Pathway Model of Bulimic Pathology: Mediating Effects of Dieting and Negative Affect. *Journal of Abnormal Psychology*. 110(1), 124-135.

Stice, E. (2002). Risk and Maintenance Factors for Eating Pathology: A Meta-Analytic Review. *Psychological Bulletin*, 128(5), 825-848.

Stice, E., Presnell, K. & Spangler, D. (2002). Risk Factors for Binge Eating Onset in Adolescent Girls: A 2-Year Prospective Investigation. *Health Psychology*. 21(2); 131-138.

Stice, E. & Shaw, H. (2004). Eating disorder Prevention Programs: A Meta-Analytic Review. *Psychological Bulletin*, 130(2), 206-227.

Stice, E., Spangler, D. & Agras, W.S. (2001). Exposure to media-portrayed thin-ideal images adversely affects vulnerable girls: A longitudinal experiment. *Journal of Social and Clinical Psychology*. 20(3), 270-288.

Striegel-Moore, R. & Cachelin, F.M. (2001). Etiology of Eating Disorders in Women. *The Counseling Psychologist*. 29; 635-661.

Thompson, J.K, Heinberg, L.J., Altabe, M. & Tantleff-Dunn, S. (1999). Exacting Beauty: Theory, Assessment, and Treatment of Body Image Disturbance. Washington DC: American Psychological Association.

Tiggemann, M. & Pennington, B. (1990). The Development of Gender Differences in Body-Size Dissatisfaction. *Australian Psychologist*. 25:3, 306-313.

Von Korff, M, Koepsell, T., Curry, S. & Diehr, P. (1992). Multi-level Analysis in Epidemiology Research on Health Behaviors and Outcomes. *American Journal of Epidemiology*. 135 (10); 1077-1082.

World Health Organization (WHO), Childhood overweight and obesity (2008), consulted July 2008. Site: <http://www.who.int/dietphysicalactivity/childhood/en/>

Young, E.A., McFatter, R. & Clopton, J.R. (2001). Family functioning, peer influence, and media influence as predictors of bulimic behavior. *Eating Behaviors*, 2, 323-337.

Appendix I:

Survey Questions on Weight Concerns and Frequency of Places Visited

Survey Questions on Weight Concerns

10u. “Over the past 28 days, has thinking about shape or weight made it more difficult to concentrate on things you are interested in: for example read, watch TV, or follow a conversation?”

| | |
|------------------|---|
| Yes..... | 1 |
| No..... | 2 |
| DNK/refusal..... | 9 |

10v. “Would you say this happened on...”

| | |
|--------------------|---|
| 1 to 5 days..... | 1 |
| 6 to 12 days..... | 2 |
| 13 to 15 days..... | 3 |
| 16 to 22 days..... | 4 |
| 23 to 27 days..... | 5 |
| Or every day?..... | 6 |
| DKN/Refusal..... | 9 |

10aa. Over the past 28 days, have you had a strong desire to lose weight?

| | |
|------------------|---|
| Yes..... | 1 |
| No..... | 2 |
| DNK/refusal..... | 9 |

10bb. “Would you say this happened on...”

| | |
|--------------------|---|
| 1 to 5 days..... | 1 |
| 6 to 12 days..... | 2 |
| 13 to 15 days..... | 3 |
| 16 to 22 days..... | 4 |
| 23 to 27 days..... | 5 |
| Or every day?..... | 6 |
| DKN/Refusal..... | 9 |

14a. “Over the past four weeks (28 days), has your weight influenced how you think about (judge) yourself as a person? Would you say...”

| | |
|---------------------|---|
| Markedly..... | 1 |
| Moderately..... | 2 |
| Slightly..... | 3 |
| Or not at all?..... | 4 |
| DNK/Refusal..... | 9 |

14c. Over the past four weeks (28 days), how would it upset you if you had if you had to weigh yourself once a week for the next four weeks? Would you say...

| | |
|---------------------|---|
| Markedly..... | 1 |
| Moderately..... | 2 |
| Slightly..... | 3 |
| Or not at all?..... | 4 |
| DNK/Refusal..... | 9 |

14d. Over the past four weeks (28 days), how dissatisfied have you felt about your weight? Would you say...

| | |
|---------------------|---|
| Markedly..... | 1 |
| Moderately..... | 2 |
| Slightly..... | 3 |
| Or not at all?..... | 4 |
| DNK/Refusal..... | 9 |

Survey Questions on Frequency of Places Visited

7. Over the past four weeks, how many times have you entered or used any of the following establishments?

a) fitness centers

| | |
|---|---|
| Never..... | 1 |
| 1 to 3 times during the last month..... | 2 |
| Once per week..... | 3 |
| 2 to 3 times per week..... | 4 |
| Or more than 3 times per week?..... | 5 |
| DNK/Refusal..... | 9 |

7. Over the past four weeks, how many times have you entered or used any of the following establishments?

b) a weight loss centre?

| | |
|---|---|
| Never..... | 1 |
| 1 to 3 times during the last month..... | 2 |
| Once per week..... | 3 |
| 2 to 3 times per week..... | 4 |
| Or more than 3 times per week?..... | 5 |
| DNK/Refusal..... | 9 |

7. Over the past four weeks, how many times have you entered or used any of the following establishments?

c) a beauty salon or hair dresser?

| | |
|--|---|
| Never..... | 1 |
| 1 to 3 times during th last month..... | 2 |
| Once per week..... | 3 |
| 2 to 3 times per week..... | 4 |
| Or more than 3 times per week?..... | 5 |
| DNK/Refusal..... | 9 |

7. Over the past four weeks, how many times have you entered or used any of the following establishments?

d) a clothes or shoe store?

| | |
|---|---|
| Never..... | 1 |
| 1 to 3 times during the last month..... | 2 |
| Once per week..... | 3 |
| 2 to 3 times per week..... | 4 |
| Or more than 3 times per week?..... | 5 |
| DNK/Refusal..... | 9 |

7. Over the past four weeks, how many times have you entered or used any of the following establishments?

e) bar or a discothèque?

| | |
|---|---|
| Never..... | 1 |
| 1 to 3 times during the last month..... | 2 |
| Once per week..... | 3 |
| 2 to 3 times per week..... | 4 |
| Or more than 3 times per week?..... | 5 |
| DNK/Refusal..... | 9 |

