HEALTHY EATING, EXERCISE, WEIGHT AND BODY IMAGE: THE CLOSER I GET THE BETTER I FEEL

By

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Abstract

Many studies have found evidence showing that women are dissatisfied with their bodies. Self-discrepancy theory (Higgins, 1987) may be particularly applicable to this area of study due to the difference between the North American ideal of beauty and the reality of most women's bodies. Discrepancies may also be observed in areas related to healthy lifestyles such as eating and physical activity. In the present study, a sample of 121 undergraduate females were asked to rate their proximity to and valence of reaching their own definitions of healthy eating, body image, physical activity, and body weight. The participants were also asked to respond to questionnaires, which served as predictor variables. The present study had two main goals: (a) to determine what factors would predict proximity to the healthy definitions; and (b) to determine if valence of reaching these definitions would serve as a moderator variable. The results of hierarchical multiple regressions indicated that combinations of the nine predictor variables could predict the four different types of proximity. This study also found support in the areas of eating and body weight for the hypothesis that valence would moderate the relationship between the predictor variables and proximity. The overall results of this study indicated that the closer women are to reaching their healthy ideals, the more likely they are to also experience increased positive affect and better self-esteem.

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Introduction

There is a growing amount of evidence to suggest that women in North America are dissatisfied with their bodies. The weight loss industry has become a very profitable business on this continent due to this dissatisfaction. Advertisements for the latest and greatest weight loss diets, pills, and exercise equipment bombard virtually every medium, and it appears as if it they are on the rise (Snow & Harris, 1986; Klassen, Wauer & Cassel, 1991). It also appears as if the majority of these advertisements are aimed at women. According to one study, women's magazines contained 10.5 times as many advertisements and articles promoting weight loss as were in men's magazines (Andersen & DiDomenico, 1992).

It seems that women who are dissatisfied with their bodies are particularly susceptible to media campaigns for new weight loss products. One study found that even when women who are unhappy with their bodies were aware of the risks involved with a new weight loss product, they still intended to use the product more than women who were not unhappy with their bodies (Whisenhunt, Williams, Netemeyer & Andrews, 2003).

It is likely that a growing number of Canadian women will become dissatisfied with their bodies and turn to weight loss methods as the obesity rate continues to rise, and while the "ideal" female body continues to be very slender. A recent study found that nearly half of Canada's population is either overweight (Body Mass Index (BMI) 25 to 29.9) or obese (BMI $\geq$ 30) (Gilmore, 2001). Although it is not a new phenomenon for women to feel pressured to look a certain way, what is new is the growing discrepancy between the reality of female bodies and "ideal" female beauty portrayed in Western

culture. The media's emphasis on the very thin, almost tubular body as the idealized shape for women (Vandereycken, 2002) contrasts greatly with the reality of the growing obesity problem in Canada. Body dissatisfaction is common, with one study reporting that approximately 55% of adult women in the United States were dissatisfied with their bodies (Cash & Green, 1986). Women are getting bigger while the ideals women often feel they should embrace are getting smaller. In a well-known study, researchers calculated the average percentage of expected body weight of Miss America contestants and *Playboy* centrefolds up to 1989 and found that both on average were below 85% of their expected body weights for sex, age and height (Wiseman, Gray, Mosimann & Ahrens, 1992). According to the DSM-IV-TR, one of the diagnostic criteria for anorexia nervosa is having a body weight of 85% less than expected (APA, 2000), therefore the majority of these "ideal" women meet one of the criteria for this serious eating disorder. Females, therefore, are often feeling pressured to achieve a body size that would be considered unhealthy by most health professionals.

Studies have found that body dissatisfaction and poor body image are quite common among young adult and adolescent females in particular (Klemchuk, Hutchinson & Frank, 1990). One study examining college-aged females found that although the majority (94 %) were within an average weight range, 31 % classified themselves as either overweight or very overweight (Heatherton, Nichols, Mahamedi & Keel, 1995). In addition, this same study found that 71 % of the sample also felt that they needed to lose weight. Therefore, it is not just overweight women who are dissatisfied with their bodies: even women who are of a normal weight often feel they should weigh less.

In response to this dissatisfaction with their bodies, many young women turn to dieting and other harmful methods of losing weight. One study found that 52 % of females between the 9th and 12tn grades had engaged in some form of weight control behaviour (Neumark-Sztainer, Story, Dixon & Murray, 1998).

An Australian study reported that 47% of 14-17 year old females were currently trying to lose weight, and that 19% of underweight females, 56% of normal-weight girls, and 71% of overweight females were trying to lose weight at the time of the study (Grigg, Bowman & Redman, 1996). This again shows that many females who are of normal-weight or even under-weight are unhappy with their bodies. Dieting and other weight loss behaviours are also common among university-aged females. According to another study only 9% of female college freshmen could be considered non-dieters, while the other 91% ranged from casual dieters (26%) all the way through to probable bulimics (2%) (Kurth, Krahn, Nairn & Drewnowski, 1995).

A further study demonstrated that although dieting (44.1%) was a common weight-loss method among university females, exercise (52%) was an even more frequently used weight loss method (Nations, 1989). However, more unhealthy methods such as fasting (33 %), self-induced vomiting (9%), and laxative/diuretic misuse (4 %) were also not uncommon in this sample.

It appears then that many women are unhappy with their bodies and engage in dieting and other weight loss behaviours, such as exercise in response to this dissatisfaction. Many of these women are trying to achieve unrealistic goals, sometimes through unhealthy methods, because they want to look like the North American ideals of beauty.

Self-discrepancy theory may help to explain not only why so many women are unhappy with their bodies, but also why they are motivated to diet because of this dissatisfaction.

Self-Discrepancy Theory

Self-discrepancy theory was posited by Higgins (1987) in response to a long-standing knowledge in social psychology that people experience psychological discomfort if they believe they are not measuring up to prescribed standards. Higgins used this knowledge as a starting point for the systematic development of his self-discrepancy theory. According to Higgins' theory there are three different domains of the self : the actual self, the ideal self, and the ought self. The actual self is a person's interpretation of the qualities and attributes that a person believes he or she actually possesses. The ideal self represents the qualities a person ideally wishes to possess. Finally, the ought self represents the qualities and attributes a person believes he or she should possess, and typically is related to a person's moral standards and feelings of obligation. An example of these domains would be a woman who views herself as being normal weight (actual self), but would like to be thinner (ideal self), but also feels like she should accept her weight as it is (ought self).

Self-discrepancy theory proposes that these three perspectives of the self cannot only be considered from the person's own perspective but also how they believe other important people in their lives (e.g. parent, spouse, friend) perceive that person. For example, a husband may feel that his wife believes that he does possess a certain attribute (actual self), would ideally like him to possess an attribute (ideal self), and believes that he should possess a particular attribute (ought self). This theory argues therefore, that a

person's perceptions of what others think they should be like are also central to the development of self-discrepancies.

Higgins believed that these views of the self, whether from the person's own point of view or what he or she believes important other's think of them, could also be related to motivation as well as emotional states. Often, a person's view of their actual self in some attribute does not match what she or he would view as their ideal or ought selves. There is a discrepancy between how a person (or significant other) actually views his or herself and how he or she would ideally like to be or feel he or she ought to be. These discrepancies between actual, ideal, and/or ought selves have been hypothesized to lead to psychological discomfort (Higgins, 1987). It was theorized that when these kinds of discrepancies are activated and discomfort occurs, a person will become motivated to make their actual self correspond to their ideal and ought selves in order to decrease their discomfort. A student who is currently doing poorly in school, for example, may become motivated to work harder because he or she feels that their performance is not measuring up to their ideal and/or ought standards.

The type of emotional discomfort a person experiences, however, is theorized to be related to the type of discrepancy a person is encountering. A person who experiences a discrepancy between their actual and ideal selves is predicted to feel dissatisfied, dejected or disappointed because he or she feels that their goals are unattainable. Someone experiencing a discrepancy between their actual and ought selves is thought to feel guilty or agitated because the ought self is related to moral duties and obligations. It is also possible for people to experience different types of emotional discomfort if they feel they do not meet up to the wishes and expectations of an important person in their

lives. If a person believes their actual self does not meet the ideals another person wishes he or she could be, Higgins proposed that the person would experience feelings of shame or embarrassment because he or she may believe that the significant other has lost respect for him or her. When someone experiences a discrepancy between their actual self and what another significant person believes he or she ought to be, then the person may feel afraid because of possible repercussions for not meeting obligations.

In summary, Higgins' self-discrepancy theory involves two main components: discrepancy between actual, ideal, and/or ought perceptions of the self, and the emotional reaction a person may have in relation to these kinds of discrepancies. When a person experiences the emotional discomfort related to the discrepancy, the person will become motivated to change the actual self in order to meet the ideal or ought standards a person, or significant others, have set for himself or herself. This theory may be well suited to the study of body dissatisfaction and the thoughts and behaviours that accompany it. A woman who views her body as not measuring up to the ideals she herself would like to obtain as well as those prescribed by society may feel dissatisfied or unhappy, and become motivated to engage in weight loss behaviours to lessen the discrepancy between their actual body and their ideal body.

Self-Discrepancy Research

Since the inception of self-discrepancy theory by Higgins, a great deal of research in many different areas has been conducted in order to test his theory. One study appears to have confirmed that a person's own actual/ideal discrepancy is related to feelings of dejection, frustration and anger (Strauman & Higgins, 1988). This same study also found that a person's belief that he/she does not match up to what another person feels they

ought to be is related to feelings of resentment and social anxiety. Other studies have also examined the emotions involved in self-discrepancy theory with somewhat mixed results. In a study of university students who had been diagnosed with depression, anxiety, or both, those with depression did indeed show higher levels of actual/ideal discrepancies, while students with anxiety displayed higher levels of actual/ought discrepancies (Scott & O'Hara, 1993). A study examining sexual esteem found that participants who had discrepancies between their actual and ideal selves had poor sexual esteem as well as sexual depression (Garcia & Hoskins, 2001). These two studies do seem to support the idea that discrepancies are associated with specific emotions. However, another study found that while self-discrepancy scores were related to an overall negative emotional state, there were no specific emotions related to the different discrepancies (Ozgul, Heubeck, Ward & Wilkinson, 2003). A recent study found that ideal/own discrepancy was related to depressive affect and symptoms of clinical depression (Bruch, Rivet & Laurenti, 2000). This same study also found that actual/own and ought/other discrepancies were not related to anxiety, but instead to a general feeling of anhedonia. It appears, therefore, that although most studies find support for self-discrepancy leading to negative emotional states, there is disagreement as to whether or not different discrepancies lead to specific negative emotional states.

Not surprisingly, self-discrepancy theory has been invoked in the study of body image, body dissatisfaction, and weight loss behaviour. One study of female undergraduates found that own actual/ideal self-discrepancies were correlated with body dissatisfaction, and that bulimic symptoms were related to own actual/ideal discrepancies while anorexic symptoms were related to own actual/ought discrepancies (Strauman,

Vookles, Berenstein, Chaiken & Higgins, 1991). Another study also linked bulimic symptomatology to actual/ideal discrepancies from both the person's own ideal as well as the ideal of the participant's mother (Forston & Stanton, 1992). Other research has found that when there is a perceived discrepancy between the ideal image presented in the media and a woman's actual body, she experiences heightened weight concerns, independent of her self-esteem (Posavac & Posavac, 2002). Another study also found that high school students who perceived themselves to be either overweight or underweight experienced reduced life satisfaction compared to those who considered themselves to be average weight (Valois, Zullig, Huebner & Drane, 2003). A study of patients with Body Dysmorphic Disorder found that the patients displayed significant discrepancies between both their actual/ideal and actual/ought selves, leading the authors to suggest that these patients set unrealistic goals concerning how they should look (Veale, Kinderman, Riley & Lambrou, 2003).

Discrepancies also exist between actual behaviour and ideal/ought standards in the area of eating. One study that qualitatively examined what healthy eating means to adolescents found that they typically thought healthy eating involves eating healthy foods such as fruits and vegetables and avoiding foods high in fat and sugar (Croll, Neumark-Sztainer & Story, 2001). This study also found that although adolescents were very knowledgeable about healthy eating, many had difficulty actually sticking to healthy eating behaviour. This study would suggest that there is often discrepancy between our actual and ideal/ought selves in the area of eating behaviour.

Physical activity is another area where people often display discrepancies. Although the physical and psychological benefits of exercise are well documented, many

people still do not engage in regular physical activity. A study examining the physical activity levels of university students found that more than one-half of the participants were not active enough to benefit their health (Irwin, 2004). It does not appear however, that people are reluctant to engage in exercise because they are unaware of the benefits. One study found that inactive people were aware of the positive benefits of exercise, but still did not exercise on a regular basis (Cousins & Gillis, 2005). Another study of cardiac rehabilitation patients who were encouraged to exercise, found that there was an "intention-behaviour gap" between the patients' intention to exercise and their actual behaviour which was mediated by factors such as planning, maintenance and self-efficacy (Sniehotta, Scholz & Schwarzer, 2005). It appears then, that although healthy amounts of physical activity may be an ideal or ought goal, the actual behaviours of many people are not reflecting these ideals.

The Present Study

Self-discrepancy theory has been shown to be relevant in many facets of body image and disordered eating behaviour. A further question, however, is what factors predict the amount of discrepancy between our ideals and our actual behaviours? The present study sought to determine what factors predict proximity to our ideals of healthy behaviour in relation to eating, body image, physical activity, and body weight.

Participants in this study were asked to describe their own definition of various "healthy" and "unhealthy" aspects related to eating behaviour, body image, physical activity, and body weight. The participants were then asked to rate their proximity to their ideal "healthy" definition as well as the valence or importance of reaching their definition. Participants were also asked to respond to four questionnaires: Positive and

Negative Affective Schedule (PANAS; Watson & Clark, 1991), which gives an indication of their overall affective state; Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) to provide an overall measure of feelings of self-worth; Leisure Time Exercise Questionnaire (LTEQ; Godin & Shephard, 1985) to provide a measure of level of physical activity, and the Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994) to measure severity of disordered eating behaviours and body image concerns. These instruments, along with participants' body mass index (BMI), were used as predictors for proximity to the ideal healthy behaviours. From the perspective of self-discrepancy theory, it was hypothesized that those participants who show greater positive affect scores on the PANAS would rate their own behaviour as closer to their ideal "healthy" behaviour. It was also hypothesized that higher scores on the RSES and LTEQ, meaning higher levels of self-esteem and exercise, respectively, would also predict greater proximity to the healthy ideals. Higher scores on the subscales of the EDE-Q, meaning greater amounts of eating restraint and concern over eating, weight, and shape, were also hypothesized to predict less proximity to the ideals.

It was also questioned whether the valence or personal importance of meeting healthy goals would moderate the effects of the predictors of proximity. It would be expected that if a goal does not possess a high valence for a participant, then this would moderate the strength of the association between predictors and proximity. To test this hypothesis, the valence ratings from the participants were entered in the second block of a hierarchical regression analysis followed by a third block comprising interaction terms between valence and the predictor variables.

Method

Participants

Of two hundred and sixty questionnaires distributed, one hundred and twenty-one female students who were enrolled in the Introductory Psychology classes at Lakehead University participated in the study. The participants ranged in age from 18 to 46 years old, with a mean age of 21 years (SD=5.52 years). These students were given the opportunity to complete a questionnaire package. Participants who completed the study received one bonus percentage point in their Introductory Psychology class.

Procedure

Questionnaire package. Students in each of the Introductory Psychology classes were addressed in class by the experimenter and given information regarding the purpose of the project and the procedures used in the study. The questionnaire package along with informed consent sheets for the participants (as well as for parents/guardians if the participant is under the age of 18) were made available to the students, who were asked to return the completed package at the next class (see Appendix A and B). The participants received a package containing the following items: forms asking participants to provide written responses to their healthy and unhealthy descriptions of various behaviours as well as ratings of how they perceive their own behaviour in relation to this ideal (Appendix C), the Positive and Negative Affective Schedule (PANAS; Watson & Clark, 1991; Appendix D), the Rosenberg Self-Esteem Scale (Rosenberg; Appendix E), the Leisure Time Exercise Questionnaire (Godin & Shephard, 1985; Appendix F), and the Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin; Appendix G). This entire package took no more than 1 hour to complete, which the participants did on

their own time. After the completed questionnaires were collected, all names and identifying information were removed from the face sheet of the package and replaced with a unique numeric code. Only the researcher had access to the master list of names and their assigned codes.

Materials

Healthy/Unhealthy Forms and Proximity and Valence Ratings (Appendix C). These forms were created specifically for this study. Each page asked participants to give their own definition of what they consider to be healthy or unhealthy definitions of particular behaviours. After the participants described their definitions in a written format, they were then asked to rate their proximity to their own definitions of healthy behaviours as well as the valence for them to achieve their definition of healthy behaviour. Participants made a mark on a line measuring 100 mm in length to indicate their proximity to achieving their definition and the valence for them to achieve this goal. For example, a mark 77 mm down the line measured from left to right indicates that the participant is 77 % close to their healthy definition. This same method was also used for indicating the valence.

Due to a clerical error, however, the proximity and valence ratings for the body weight variable were not included in the questionnaire. To obtain ratings for this variable, participants were contacted through e-mail (Appendix D) and asked to give a percentage rating for their proximity to, and valence of, reaching their own definition of healthy body weight.

Positive and Negative Affective Schedule. (PANAS; Watson & Clark, 1991; Watson, Clark, & Tellegen, 1988; Appendix E). This scale consists of 18-items relating

to both positive and negative affect. This scale was used in the study to provide a measure of overall positive and negative affect. According to the authors of this instrument, Positive Affect (PA) refers to feelings of pleasure and alertness, while Negative Affect (NA) refers to feelings related to subjective distress, such as anger, guilt and fear. Participants were asked to rate how often they have felt a particular emotion during the past few weeks, on a 5-point scale ranging from "very slightly or not at all" to "extremely". For this study, an abbreviated version of the PANAS was used, in which two terms related to NA, "upset" and "distressed" were left off of this scale. In an initial study, the PANAS was found to be reliable for both NA ($\alpha = .91$) and PA ($\alpha = .85$) as well as valid (Watson, Clark, & Tellegen, 1988). A study of the validity of the PANAS scales, found that convergent correlations with other measures of affect ranged from .85 to .91(Watson & Clark, 1991).

*The Rosenberg Self-Esteem Scale (*RSES; Rosenberg, 1965; Appendix F*)* This scale consists of 10 items relating to attitudes towards the self, particularly feelings of self-worth, answered on a 4-point scale. This scale has been researched and found to be internally consistent as well as temporally stable (Shevlin, Bunting & Lewis, 1995).

Leisure Time Exercise Questionnaire (LTEQ; Godin & Shephard, 1985; Appendix G). This simple scale consists of two questions relating to the type (strenuous, moderate, mild) and intensity (how often they sweat during their physical activity) of exercise carried out over a 7-day time period. Using only the second question, this scale provided a measure of actual physical activity levels for the participants in this study. The authors report that the measure is both reliable and valid (Godin & Shephard, 1985).

The Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994; Appendix H). The EDE-Q is a 36-item questionnaire that assesses many different facets related to disordered eating behaviours and attitudes, particularly restraint behaviours and attitudes towards both weight and shape. The subscales of Restraint (RT), Eating Concern (EC), Shape Concern (SC) and Weight Concern (WC) were used as measures of actual body image and disordered eating behaviours. The majority of questions on this measure are answered in a 6-point scale ranging from "not at all" to "markedly", however some questions ask for number responses such as how often the participant has used vomiting in the past four weeks to control their weight or shape. The EDE-Q has been found to be reliable (Luce & Crowther, 1999). This measure is based on a semistructured interview, the Eating Disorder Examination (Cooper & Fairburn, 1987), which has been found to be a valid in evaluating eating disorders (Cooper, Cooper & Fairburn, 1989) Another study found that the EDE-Q has acceptable validity when correlated with the EDE interview, with subscales ranging from a low correlation of .68 for the EC scale to a high of .78 for the SC scale (Mond, Hay, Rogers, Owen & Beumont, 2004).

Data Analysis

Initial analysis. All information gathered from the questionnaires was entered into the Statistical package for the Social Sciences (SPSS). Before any of the main analyses were conducted the data was first evaluated for the precision of data entry through the DESCRIPTIVES procedure of SPSS. The minimum and maximum scores for each of the items was examined and any theoretically improbable items were corrected.

Missing values in the data were handled by two different methods. If items were missing on the EDE-Q, the participant's mean score on the rest of the items encompassing that subscale was used to substitute (i.e., prorate) for the missing data. Only 10 participants were missing data on the EDE-Q. Those who were missing data had no more than two items missing from the questionnaire. For all other analyses, the group mean was substituted for the missing value (Tabachnick & Fidell, 2001).

The initial analysis also examined the data for possible outliers. The criteria for an outlier was considered to be a z-score greater than ± 3.29 (Tabachnick & Fidell, 2001). Three outliers with scores of 1 were found on the body weight valence variable (M=75.13, *SD*=21.05) and a score of 1 was detected in the physical activity valence variable (M=74.04, *SD*=20.50). To determine whether these outliers had a significant impact, the data analysis was run twice, first including the outliers and then excluding those three participants. There was a significant difference in the results; therefore the outliers in both cases were changed to one unit smaller than the next smallest values of 25 and 10 respectively (Tabachnick & Fidell, 2001, p. 71).

Results

The results of the analyses are divided into four sections. The first section provides descriptive information and correlations for the proximity criterion variables and the valence moderator variables. The second section reports the descriptive information and alpha coefficients, means, standard deviations and theoretical ranges for the set of predictor variables. The third section examines the bivariate correlations between the predictor variables (NA, PA, RT, EC, SC, WC, RSE, LTEQ and BMI), the proximity criterion variables and the valence moderator variables for each of the idealized healthy

behaviours. The final section consists of the hierarchical multiple regression conducted to determine the relationship between the predictor variables and proximity to participants' own definition of healthy eating, body image, physical activity, and body weight. A moderator analysis using valence of meeting the goals of these healthy definitions was also conducted.

Description of the Criterion and Moderator Variables

The means and standard deviations were calculated for both the proximity criterion variables and the valence moderator variables (see Table 1). For the proximity criterion variables the mean score ranged from a low of 58.16 (*SD*=27.20) for physical activity to a high of 65.98 (*SD*=21.57) for body weight. The valence moderator variables ranged from a low mean score of 70.41 (*SD*=19.83) for eating to a high of 75.50 (*SD*=17.57) for body weight. In order to determine if there were significant differences within the participants' different ratings of proximity and valence, two within-subjects ANOVAs were conducted. The results of the ANOVAs did indicate that there were significant differences within groups for the proximity criterion variables F (3, 357)=6.06, $p < .001$ and the valence moderator variables F (3, 360)=3.21, $p = .023$. In order to determine which variables differed, paired t-tests were conducted for both the proximity and valence variables. The results of these comparisons indicate that body weight proximity had a significantly higher mean as compared to the three other proximity criterion variables, which did not significantly differ from one another. Regarding the valence moderator variables eating had a significantly lower mean than the other variables, which again were not significantly different from one another. In summary these results indicate that the valence moderator variables were given higher

mean ratings than the proximity variables. This would suggest that while participants place a fairly high degree of importance on meeting their definitions of ideal healthy behaviour, many do not feel they are currently as close to meeting these ideals as they would like. For these participants body weight was the most important ideal and it was also the ideal to which the participants believed they were the closest to achieving.

A Pearson *r* correlational analysis was also conducted between the proximity criterion variables and their corresponding valence moderator variable (e.g., body image proximity correlated with body image valence). There was a positive correlation between eating proximity and eating valence ($r = .41, p < .001$) as well as for physical activity proximity and valence ($r = .48, p < .001$). This result indicates that the closer participants feel they are to their healthy eating and physical activity ideals, the more likely they are to rate these goals as more important to them. There was not a significant correlation between proximity and valence for the body image and body weight variables. Although the correlations did not suggest a relationship, when examining the scatterplots there did appear to be a trend towards positive associations, however, a number of participants also had a negative association between proximity and valence, which may have resulted in the nonsignificant findings.

Description of the Psychometric Predictor Variables

The means, standard deviations and theoretical ranges of each of the predictor variables were calculated (see Table 2). Cronbach's alpha was calculated for each of the predictor variables (excluding the one-item LTEQ and BMI) to provide a measure of internal consistency. For the predictor variables the alpha coefficients ranged from a low of .78 for the Eating Concern (EC) to a high of .93 for the Shape Concern (SC) scale,

indicating an acceptable level of internal consistency among the psychometric predictor variables.

Correlation Analysis for Proximity and Valence Variables with the Predictor Variables

Bivariate correlations were calculated to determine the strength of the relationship between the criterion variable of proximity and the valence moderator variable with the psychometric predictor variables. For proximity to healthy eating, body image, physical activity and body weight, the majority of the predictors were significantly correlated with these criterion variables (see Table 3). For proximity to healthy eating the significant Pearson *r* correlations were found with PA ($r = .34, p<.01$), BMI ($r = .33, p<.01$) and the LTEQ exercise ($r = .33, p<.01$), while NA ($r = -.13$) was the only nonsignificant correlation. Proximity to healthy body image was negatively correlated with WC ($r = -.56, p<.01$) and SC ($r =-.54, p<.01$), but not significantly correlated with NA ($r =-.13$) or LTEQ exercise ($r =.14$). Participants' proximity to healthy physical activity was significantly correlated with the LTEQ exercise ($r = .56, p<.01$) and PA ($r = .40$, $p<.01$), but not EC ($r = -.17$). Proximity to healthy body weight was negatively correlated with BMI ($r = -.56, p<.01$), WC ($r = -.43, p<.01$), and SC ($r = -.39, p<.01$), but not correlated with PA ($r = .06$). The RSES was significantly correlated with all of the proximity criterion variables. The eating, body image and physical activity proximity variables were all positively correlated with the RSES, indicating that the closer a person feels they are to meeting their healthy ideals, the more likely they are to report higher self-esteem. Interestingly, perceived body weight proximity was significantly negatively correlated with the RSES. This finding would suggest that the further away a person is from their ideal healthy body weight definition the more likely they are to have higher self-esteem.

In summary, the pattern of the correlations demonstrates that for the proximity criterion variables, there was a statistically significant degree of association with virtually all of the psychometric predictor variables. In particular, the correlations suggest that as people appraise themselves to be closer to meeting their healthy ideals they experience less negative and more positive effects as predicted from self-discrepancy theory. Moreover, except in the case of body weight proximity, such individuals tend to have better self-esteem and lower BMIs.

Pearson *r* correlations were also calculated between participants' valence of reaching their definitions of healthy eating, body image, physical activity and body weight with the psychometric predictor variables (see Table 4). Valence of healthy eating only significantly correlated with LTEQ ($r = .31, p<.01$). Body image valence was significantly correlated with all four of the EDE-Q subscales; EC ($r = .35, p<.01$), RT ($r = .34, p<.01$), SC ($r = .31, p<.01$) and WC ($r = .31, p<.01$). Valence of physical activity was significantly correlated with the LTEQ ($r = .44, p<.01$). Body weight valence was also correlated with the EDE-Q subscales; RT ($r = .40, p<.01$), WC ($r = .39, p<.01$), SC ($r = .37, p<.01$) and EC ($r = .34, p<.01$), but also with the LTEQ ($r = .26, p<.01$). In summary, affect and self-esteem were largely unrelated to the valence or importance that people ascribed to their healthy ideals. The valence moderator variables, were generally not significantly correlated with the predictor variables except for body image and body weight, which were positively associated with the predictors of disordered eating and body concerns.

Hierarchical Multiple Regression and Moderator Analysis

Four hierarchical multiple regressions were conducted using each of the criterion variables of proximity to healthy eating, body image, physical activity and body weight and the nine predictor variables (i.e. NA, PA, RT, EC, SC, WC, BMI, LTEQ, and RSE). These nine predictor variables were entered in the first block of the prediction model in a stepwise entry procedure. In the second block of the prediction model, the valence term related to each of the dependent variables (e.g. valence of eating in the proximity to eating model) was entered to determine if it significantly added to the prediction of proximity. In the final block, interaction terms calculated by multiplying valence with each of the predictor variables were entered in a stepwise method to determine the moderating effects of valence in the relationship between the predictor variables and the criterion variables. In the cases where interaction terms proved significant, they were examined by performing a median split on the valence variable and then graphing scatter plots between the predictor variable and proximity criterion.

Hierarchical multiple regression of valence and proximity to healthy eating definition. This regression was conducted to determine which independent variables might predict a participant's proximity to their own definition of healthy eating, as well as whether valence of healthy eating might moderate any relationships between the predictors and proximity. In the first block, four variables significantly added to the prediction of proximity to healthy eating (see Table 5). The first variable in the prediction was LTEQ exercise $F(1, 119) = 14.99, p < .001$, which accounted for 11.2 % of the variance in proximity to healthy eating. The second variable which added to the stepwise prediction was BMI, $F(1, 118) = 12.06, p = .001$, accounting for 8.2 % of the variance. The RSES also added to the prediction, $F(1, 117) = 7.92, p = .006$ and

accounted for 5.1% of the variance. PA was the final stepwise predictor in the first block which added to the prediction, $F(1, 116) = 3.40, p = .048$, accounting for 2.5 % of the variance. Healthy eating valence, which was entered in the second block, also significantly added to the prediction $F(1, 115) = 20.98, p < .001$ and accounted for 11.3 % of the remaining variance. These findings suggest that the closer a person is to their own definition of healthy eating behaviour, the more likely they are to engage in physical activity, have a lower BMI, experience more positive affect and greater self-esteem.

One interaction term, eating valence multiplied by the LTEQ exercise, also added to the prediction, $F(1, 114) = 5.21, p = .024$, and accounted for an additional 2.7 % of the variance in proximity to healthy eating. As displayed in Figure 1, the significant positive association between eating proximity and frequency of exercise is specific to individuals who place a lower valence upon achieving their ideals for healthy eating.

Hierarchical multiple regression of valence and proximity to healthy body image definition. A second multiple regression was conducted to determine the relationship between the predictors and proximity to healthy body image (see Table 6). The WC scale on the EDE-Q was a significant predictor of proximity, $F(1, 119) = 53.21, p < .001$, accounting for 30.9 % of the variance. The second stepwise predictor entered into the model was PA, $F(1, 118) = 10.90, p = .001$, which accounted for 5.8 % of the remaining variance. Body image valence was the final predictor entered into the model, $F(1, 117) = 10.57, p = .002$, accounting for an additional 5.2 % of the variance. None of the interaction terms entered into the model were significant. This regression model suggests, therefore, that women who rate themselves as closer to their definition of

healthy body image are less likely to have weight concerns, are more likely to experience positive affect and place a greater importance on meeting this ideal.

Hierarchical multiple regression of valence and proximity to healthy physical activity definition. A multiple regression was also conducted to investigate possible relationships between the psychometric predictor variables and proximity to physical activity (see Table 7). The first variable entered into the stepwise prediction model was the LTEQ exercise, $F(1, 119) = 54.15, p < .001$, which accounted for 31.3 % of the variance. The SC scale on the EDE-Q was entered next, $F(1, 118) = 10.23, p = .002$, and accounted for 5.5 % of the remaining variance. Thirdly, PA was entered into the model, $F(1, 117) = 5.78, p = .018$ and accounted for 3 % of the variance. The final variable entered into the stepwise model was physical activity valence, which was significant, $F(1, 116) = 14.51, p < .001$, accounting for 6.7 % of the variance. The interaction terms were not significant for this model. The results indicate that women who perceive themselves as closer to their ideal of healthy physical activity are more likely to engage in exercise, have fewer concerns about their body shape, experience more positive affect, and place a greater importance on meeting this ideal.

Hierarchical multiple regression of valence and proximity to healthy body weight definition. The final criterion variable analyzed through multiple regression was proximity to healthy body weight (see Table 8). The first stepwise predictor variable entered into the model was BMI, $F(1, 119) = 49.08, p < .001$, accounting for 29.2 % in the variance of body weight proximity. The SC scale was the second variable entered into the model, $F(1, 118) = 8.68, p = .004$, accounting for 4.9 % of the variance. The LTEQ exercise was the third predictor, $F(1, 117) = 4.71, p = .032$, accounting for 2.6 %

of the variance. Body weight valence was entered in the second block, however it was not significant. It would appear that the closer a person is to their definition of healthy body weight the more likely they are to have a lower BMI, fewer concerns about their body shape, and are more likely to exercise.

One interaction term, body weight valence multiplied by BMI, was significant, $F(1, 115) = 6.65, p = .011$ and accounted for an additional 3.4 % of the remaining variance. The moderating effects of valence on the relationship between body weight proximity and BMI can be seen in Figure 2. For those who place a high valence on healthy body weight, the lower the BMI they possess, the greater their proximity to healthy body weight. This same fact also holds true for those with low valence, however the effect is not as pronounced.

Discussion

This study was based on the key principle of self-discrepancy theory that people exhibit discrepancies between their actual and ideal and/or ought selves. The purpose of this study was to determine what factors might predict a person's proximity to their own definition of healthy behaviours and attitudes related to eating, body image, physical activity, and body weight. This study also sought to determine whether the valence of meeting these healthy definitions would moderate the relationship between the predictors and proximity. The results indicate that different psychometric predictor variables predict the four types of proximity examined in this study. Some support was also found for the hypothesis that valence would moderate the relationship between the predictor variables and proximity.

In regards to the first purpose of this study, several of the predictor variables appear to be related to perceptions of proximity to healthy ideals. The correlation analysis and multiple regressions both indicate that positive affect is related to perceptions of proximity to our ideals. Greater positive affect is associated with greater perceptions of proximity. Correlations also revealed that self-esteem was positively correlated with proximity, although in the multiple regression analyses it was a significant predictor only for proximity to healthy eating. These findings indicate that people who are closer to reaching their own definition of healthy ideals were also more likely to be experiencing less negative and more positive affect and greater self-esteem. These findings support the previous research in self-discrepancy theory that the further away a person is from their ideal or ought selves, the more likely they are to experience psychological discomfort. The question is whether positive affect and self-esteem are the result of being close to these ideals, or is perceived proximity a result of having better self-esteem and more positive affect?

Self-discrepancy theory implies that people experience psychological discomfort as a result of their decreased proximity to their ideal or ought selves. One might expect, that the further away someone is from their ideals, the greater importance it would have for them to reach these goals because they are experiencing psychological discomfort. If this assertion were true, in the case of healthy body image for example, if a person were not close to their ideal, she/he would experience less positive affect and self-esteem, which should in turn make it more important for her to achieve her definition. Affect and self-esteem however, did not appear to be related to valence. Proximity and valence were positively correlated for the eating and physical activity variables, suggesting that the

closer the participants were to reaching these ideals the greater importance these ideals possessed, which does not agree with what is predicted by self-discrepancy theory. The body image and body weight proximity and valence variables were not correlated, although there was a trend towards positive correlation, suggesting that proximity had a varying impact on the importance placed on reaching these ideals. In fact valence was only correlated with positive affect in relation to the physical activity variable, suggesting higher importance is associated with greater amounts of positive affect. In summary, these findings do not support the idea that experiencing less positive affect as a result of greater discrepancy leads to greater valence of ideals. In fact, the opposite was true; people who were closer to their ideals placed a greater importance on becoming closer to their healthy ideals. Consequently it may be more likely that positive affect and self-esteem contribute to reports of greater proximity to one's ideals.

Positive affect and self-esteem as contributors to proximity may better explain the results of this study. People who have greater self-esteem and experience more positive affect may be more likely to rate themselves as being closer to their ideal. This may be because (a) the better a person feels about themselves the more likely she/he is to rate their behaviours as positive, and/or (b) the better a person feels about themselves the more likely she/he is to engage in behaviours that foster proximity to ideals. Perceived proximity therefore may be a function of experiencing a greater sense of well-being. If we feel positive about ourselves, we may be less critical of our actual behaviours in meeting these ideals. Self-esteem and positive affect may also have an effect on our actual healthy behaviours, which may in turn further increase feelings of self-esteem and positive affect. A recent study found that people with lower self-esteem and more

negative affect were more likely to engage in impulse eating behaviour (Verplanken, Herabadi, Perry & Silvera, 2005). People who have higher self-esteem and positive affect may be less likely to engage in behaviours that are incongruent with most definitions of healthy eating. Engaging in the healthy behaviours may also increase feelings of self-esteem and positive affect as has been well documented in numerous studies of the effects of physical activity (Stein & Motta, 1992; Sonstroem, 1984). The results of this study therefore suggest that self-esteem and positive affect may serve as protective factors against feeling discrepant to our ideals.

Another finding of interest from the correlational analyses was that scores on the four EDE-Q subscales were negatively correlated with proximity to each of the four variables. The EDE-Q subscales indicate that the more proximal a person is to their definition, the less they experience symptoms related to disordered eating, or conversely the further away a person is from their definition the more likely they are to endorse symptoms related to disordered eating. This measure was particularly correlated with proximity to healthy body image, suggesting that women who view themselves as distant from healthy body image are more likely to experience symptoms related to eating disorders. This appears logical, as a key feature of eating disorders is experiencing a greater degree of body concerns and dissatisfaction.

The correlations for BMI suggest that the smaller a woman's BMI, the more likely she is to endorse high proximity to all four criterion variables. This result may provide support for the influence the media and society has on how women perceive their bodies. The media in North America has a tendency to present thinness as an ideal body shape for women. This study found that the thinner a woman is, the closer she feels to

her ideals, particularly regarding healthy body weight. This may indicate that most women have internalized the ideals presented in the media as their own ideals. Although it is not surprising that BMI influences perceptions of proximity to healthy body weight, it is interesting that it also predicts proximity to healthy eating, physical activity, and body image. For eating and physical activity it may be that a smaller body weight is equated with eating healthy and exercising. If a woman is thin, to her it may represent that she is eating and exercising an "ideal" amount.

The relationship between BMI and healthy body image proximity may be related to the definitions women ascribe to "healthy" body image. An initial analysis was conducted on the qualitative data that participants wrote regarding what "healthy" body image meant to them. The responses to this question indicated that the women in general either felt that a healthy body image was "feeling good" about their bodies, or that healthy body image meant possessing a certain physical appearance. The fact that approximately half of the participants thought that body image was about outward appearance might help to understand why lower BMIs were associated with greater proximity to healthy body image ideals.

The final psychometric predictor variable, the LTEQ exercise, was overall positively correlated with the criterion proximity variables. As might be expected, the LTEQ exercise was highly correlated with proximity to healthy physical activity, indicating that the more often the participants exercised the closer they report being to their own definition of healthy physical activity. Greater amounts of exercise also correlated with greater proximity to healthy body weight. This finding may be due to the

effects of exercise on body weight, meaning that the more a woman exercises the more likely she is to be at what she considers her ideal body weight.

The correlations between valence ratings and the predictor variables produced fewer significant results. Of note, however, were the positive correlations between valence of body image and body weight and the four EDE-Q subscales. These results would suggest that the higher the valence women place on meeting these definitions, the more likely they are to admit to eating disorder symptomatology.

This study also conducted hierarchical multiple regressions and moderator analyses for each of the four proximity variables. All four multiple regressions indicated that proximity to the healthy definitions could be predicted by at least some of the psychometric predictor variables. For eating proximity, the predictor entered in the first step that accounted for the most variance was the LTEQ exercise, followed by BMI, RSES, and positive affect. Participants with greater proximity to healthy eating therefore are more likely to exercise, have a smaller BMI, greater self-esteem and more positive affect. Valence of healthy eating also predicted proximity, meaning that those who place a greater importance on reaching this goal are more likely to be closer to their definition of healthy eating. In the final step of the analysis it was also found, however that valence is a moderator between proximity to healthy eating and score on the LTEQ exercise. The prediction of proximity to healthy eating by amount of exercise, therefore, is dependent on how much importance the person places on healthy eating. It appears that people who place a high valence on reaching their ideal of healthy eating exercise more and perceive themselves to be closer to their ideal as compared to people who place a low valence on healthy eating. For people who place a high valence on healthy eating, it may be that

greater amounts of proximity and exercise are both due perhaps to an overall healthier lifestyle as compared to those who place a low valence on healthy eating ideals.

In the multiple regression analysis of proximity to healthy body image, three variables were found to predict proximity. The first significant predictor was the weight concern scale on the EDE-Q. As the EDE-Q is often used as a measure of body dissatisfaction (Sysko, Walsh & Fairburn, 2005; Hopkinson & Lock, 2004; Gee & Troop, 2003), it is not surprising that one of its scales was the most important predictor of proximity to body image ideals. The second stepwise predictor of proximity was positive affect which, again, was to be expected based on the principles of self-discrepancy theory. In this analysis valence was not a moderator, but did independently contribute to the prediction of proximity to healthy body image. Based on these findings it appears that higher proximity to healthy body image is more likely if the person has less weight concern, more positive affect and places a higher valence on achieving their definitions of healthy body image.

For the analysis of predictors of proximity to healthy physical activity, not surprisingly the LTEQ exercise accounted for the greatest amount of the variance, meaning the greater amount of physical activity a woman does, the closer she feels she is to her definition of healthy activity. The other significant stepwise predictors were shape concern and positive affect indicating that the less concerned about their shape the woman is and the greater positive affect she is experiencing, the greater the proximity. It is interesting that shape concern had a negative relationship with proximity to physical activity ideals. Although it is logical that women who do not think they are exercising enough are concerned about their body shape, it would also make sense if women who

are closer to their ideal amount of physical activity also report more shape concern. Female athletes, for example are often considered a high-risk group for experiencing eating disorders (Hulley & Hill, 2001; DeBate, Wethington & Sargent, 2002), therefore it might be expected that females who are physically active may be prone to experiencing more shape concern. This effect, however, might be moderated by variables such as perfectionism, indicating that although objectively a woman may be very physically active, the woman herself may believe that she should actually be more active. Finally, valence again also played a significant role as an independent predictor, but not as a moderator.

In the final multiple regression, the first predictor of body weight proximity was BMI, followed by shape concern and LTEQ exercise in the first step of the prediction model. Valence did not significantly add to prediction by itself, but it did moderate the relationship between BMI and valence. For those who place a high valence on healthy body weight, the smaller the BMI means the greater proximity to their definition of healthy body weight. Proximity decreases, however, as BMI increases. Those who place a low valence on healthy body weight show a similar relationship but BMI does not have as significant an impact on perceived proximity ratings. It may be possible that for those people who place a lower valence on healthy body weight, their actual BMI does not impact their ratings of perceived proximity as much as it does for people who place a high valence in meeting this ideal.

The results of this study also provide some support for the hypothesis that relationships between the predictors and proximity would be moderated by valence. Although analyses indicated that valence was only correlated with proximity in the eating

and physical activity variables, three of the regressions suggested that having a high valence helps to predict having high proximity to healthy definitions. People who are closer to their goals, therefore, believe it is more important to achieve their healthy definitions. Valence did have moderation effects in two of the analyses as described above. The valence ratings, however, may not have been able to distinguish between groups in all of the analyses because the participants typically endorsed high valence ratings ranging from a low mean of 70.40 (SD = 19.83) for eating to a high mean of 75.13 (SD = 21.05) for body weight. This would suggest that healthy eating, body image, physical activity, and body weight were important goals for most of the participants in the study. If most of the participants believe it is important to achieve these ideals, then it is difficult to determine if valence of goals does moderate the relationship between predictors and proximity.

An important issue related to this study is the generalizability of the results. First, this study was conducted using only female participants therefore the results may not be applicable to males. The majority of participants in this study were also young adult women with a mean age of 21.15 (SD = 5.52), therefore the results may not be applicable to females in general. An interesting area for further research would be to conduct this same study with participants of both genders and a wider age range to determine if the results are similar for different populations.

An area where this study could be improved is in the use of an additional questionnaire examining actual eating behaviour. While the other dependent variables had measures that examined perceived body image (EDE-Q), physical activity (LTEQ) and body weight (BMI), there was no questionnaire related to eating behaviour besides

the restraint scale on the EDE-Q. Although the restraint scale gives an indication of restrained eating, it does not provide an overall picture of actual eating behaviour. Another area for improvement is that reported amounts of physical activity were examined using only one question from the LTEQ. If further analyses are conducted in this area, it may be useful to have a more in-depth measure of physical activity, taking into account type of activity (e.g. cardiovascular, weight training, etc.) and the actual amounts.

A final problem of this study was the use of a different method for collecting the proximity and valence ratings for body weight. It is possible that changing the format of response from making a mark on a line to providing an actual percentage response may have changed the ratings. Considering that body weight was given both the highest valence and proximity ratings there may be some reason to believe that participants may have rated this variable as higher due to the different format. An additional issue with this method is that of the 121 participants, 105 of the participants responded to the e-mail request. It may be that there was an essential difference between those who responded to the request and those who did not.

Based on the results of this study, further areas of research can be recommended. One area that may prove promising is further inquiry into the moderation effects of valence in the prediction of discrepancy. This study found that valence did have some moderation effects between the predictor variables and discrepancy, however this did not apply to all of the healthy ideals that were studied. Part of the difficulty may have been that most participants did place a fairly high valence on meeting these ideals, therefore this may have been an issue when determining the moderation effects. Additional studies

with wider ranges of valence may be useful in determining the validity of the moderation effects.

A further area that may prove valuable is examining whether the definitions people ascribe to as "healthy" are related to reported proximity to his/her own definition as well as the importance of meeting these ideals. This study did conduct an initial analysis of healthy body image and found that there were two different concepts of what body image meant to the participants; "feeling good" versus "looking good". It would be interesting to determine whether these definitions may be related to proximity, valence and the predictor variables. A recent study examining unrealistic expectations for dieting found that after viewing weight loss advertisements with inflated claims, women ate fewer cookies than did control subjects who did not see advertisements with unrealistic claims (Trottier, Polivy & Herman, 2005). Did the women in this study view themselves as further from their ideal as a result of setting new, if possibly transient, ideals based on these advertisements? Furthermore, did the strength of this new ideal temporarily influence the valence of reaching this ideal as reflected by the immediate restraint behaviours? Our ideals, therefore have an effect on our behaviour, but do they have a role in determining self-discrepancy? It might be expected that the more extreme the definition, the more likely one would be able to determine perceived proximity to the ideal. For example, if a woman describes her ideal of healthy eating as "Eating three meals a day consisting of all four food groups and never eating junk food", does this have a relationship to her proximity to this ideal? Might definition of healthy ideals also be a moderator between predictor variables and proximity to the ideal? If a woman has an extreme definition of ideal healthy eating, this might make her more susceptible to being

further away from this ideal, which may decrease her feelings of positive affect as predicted by self-discrepancy theory. This line of inquiry awaits further exploration.

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Appendix A

Participant Information Letter and Consent Form

Dear Participant:

I am a Masters Student in the Clinical Psychology program at Lakehead University conducting a research project. This study involves examining the thoughts of females regarding various behaviours, thoughts and relationships. All elements of this study will be conducted under the supervision and guidance of Dr. Ron Davis.

In this study you will be asked to write your thoughts on what you would consider to be healthy examples of particular behaviours, thoughts and relationships as well as what you would consider to unhealthy behaviours, thoughts and relationships. You will also be asked to fill out several questionnaires relating to these same areas. Upon completion and return of the questionnaire package you will receive one bonus mark in Psychology 1100.

This research has received approval from the Lakehead University Senate Research Ethics Board. Only Dr. Davis, a research assistant and I will have access to the information you provide. Your responses in the questionnaires will not be identified by name. The information you have given will be securely stored at Lakehead University for 7 years. A report of the findings of this study will be available to those interested upon request.

Participation in this study is completely voluntary. If for any reason you do not want to complete the questionnaires, or any part of this study, you will not be forced to participate. In addition, you can withdraw at any time from the study, without penalty. If you wish to take part in this study, please sign the attached consent form.

If you are under the age of 18, you must have a parent or guardian sign the attached consent form in order for you to participate in this study.

If you wish to receive more information regarding the study, or would like to be informed of the results of the study, please contact me through e-mail (klknauff@lakeheadu.ca), or by phone at 577-5502. Your interest in participating in this study is sincerely appreciated.

Thank you,

Kristine Knauff
Masters Candidate (Clinical Psychology)
Department of Psychology, Lakehead University

Consent Form

My signature below indicates that I agree to participate in this study about what university women think and act concerning a number of lifestyle issues. This study is being conducted by Kristine Knauff in the Department of psychology for her Master's thesis under the supervision of Dr. Ron Davis (343-8646).

Signing this form indicates that I understand the following:

1. I am a volunteer and can withdraw at any time from the study without penalty.
2. There are no expected risks associated with participation.
3. The information I provide will be anonymous and confidential, and will be securely stored in the Department of Psychology at Lakehead University for 7 years.
4. I may receive a summary of the project, upon request, following the completion of the study.

Name of Participant (please print)	Birth date
Signature of Participant	Date
E-mail Address	Telephone number
Student number for bonus mark	Name of Professor/ Course Number for Psychology 1100 bonus mark

Appendix B

Parent/Guardian Information Letter and Consent Form

Dear Parent/Guardian:

I am a Masters Student in the Clinical Psychology program at Lakehead University conducting a research project. This study involves examining the thoughts of females regarding various behaviours, thoughts and relationships. All elements of this study will be conducted under the supervision and guidance of Dr. Ron Davis. I would like to include your daughter in this study.

In this study your daughter will be asked to write her thoughts on what she would consider to be healthy examples of particular behaviours, thoughts and relationships as well as what she would consider to unhealthy behaviours, thoughts and relationships. She will also be asked to fill out several questionnaires relating to these same areas. Upon completion and return of the questionnaire package, your daughter will receive one bonus mark in Psychology 1100.

This research has received approval from the Lakehead University Senate Research Ethics Board. Only Dr. Davis, a research assistant and I will have access to the information provided by your daughter. Her responses in the questionnaires will not be identified by name. The information she has given will be securely stored at Lakehead University for 7 years. A report of the findings of this study will be available to those interested upon request.

Participation in this study is completely voluntary. If for any reason she does not want to complete the questionnaires, or any part of this study, she will not be forced to participate. In addition, she can withdraw at any time from the study, without penalty. If you wish to give your permission for your daughter to take part in this study, please sign the attached consent form and return it to your daughter to attach to her questionnaire package.

If you wish to receive more information regarding the study, or would like to be informed of the results of the study, please contact me through e-mail (klknauff@lakeheadu.ca), or by phone at 577-5502. Your cooperation is greatly appreciated.

Thank you,

Kristine Knauff
Masters Candidate (Clinical Psychology)
Department of Psychology, Lakehead University

Consent Form

I give permission for my daughter to participate in this study about what university women think and act concerning a number of lifestyle issues. This study is being conducted by Kristine Knauff in the Department of psychology for her Master's thesis under the supervision of Dr. Ron Davis (343-8646).

Signing this form indicates that I understand the following:

1. My daughter is a volunteer and can withdraw at any time from the study without penalty.

2. There are no expected risks associated with participation.

3. The information my daughter provides will be anonymous and confidential, and will be securely stored in the Department of Psychology at Lakehead University for 7 years.

4. My daughter and I may receive a summary of the project, upon request, following the completion of the study.

_____ _____

Daughter's name (please print) Birth date

_____ _____

Signature of Parent/Guardian Date

Appendix C

Healthy/Unhealthy Forms and Proximity and Valence Ratings

Please describe, in some detail, your **own** definition of what **healthy** eating behaviours are to you.

Please describe, in some detail, your **own** definition of what **unhealthy** eating behaviours are to you.

Please describe, in some detail, your **own** definition of **healthy** body image (the way you think about your weight or shape).

Please describe, in some detail, your **own** definition of **unhealthy** body image (the way you think about your weight or shape).

Please describe, in some detail, your **own** definition of **healthy** physical activity.

Please describe, in some detail, your **own** definition of **unhealthy** physical activity.

Please describe, in some detail, your **own** definition of **healthy** body weight.

Please describe, in some detail, your **own** definition of **unhealthy** body weight.

1) How **important** is it to you to achieve your own definition of **healthy eating behaviour**:

not at all important _____ My most important goal right now

2) How **close are you** right now to achieving your own definition of **healthy eating behaviour**:

I have not achieved my definition at all _____ I have achieved my definition in full

3) How **important** is it to you to achieve your own definition of **healthy body image**:

not at all important _____ My most important goal right now

4) How **close are you** right now to achieving your own definition of **healthy body image**:

I have not achieved my definition at all _____ I have achieved my definition in full

5) How **important** is it to you to achieve your own definition of **healthy physical activity**:

not at all important _____ My most important goal right now

6) How **close are you** right now to achieving your own definition of **healthy physical activity**:

I have not achieved my definition at all	_____	I have achieved my definition in full

Appendix D

Body Weight Ratings E-mail Form

Hello (Name here),
Recently you participated in a study about what women think regarding a number of issues (i.e. healthy/unhealthy eating, body image, etc.). I would like to thank you for your participation. You will be receiving a bonus mark for your time and effort.
It was just discovered however, that two important questions were left off of the questionnaire you received. Could you please take the time to answer these two questions right now and send it back to this e-mail address? It would be greatly appreciated.

For both of the questions listed below, please indicate a percentage (e.g. 63%) representing your answer.

1) How important is it to you to achieve your own definition of healthy body weight?
Not at all important=0%, My most important goal right now=100%

2) How close are you right now to achieving your own definition of healthy body weight?
I have not achieved it at all=0%, I have achieved it in full=100%

Appendix E

Positive and Negative Affective Schedule

This scale consists of a number of words that describe different feelings and emotions. Indicate to what extent you have felt this way in the past few weeks. Please indicate which rating best applies to you by circling the response:

1 = Very slightly or not at all; 2 = A little; 3 = Moderately; 4 = Quite a bit; 5 = Extremely

Scared	1	2	3	4	5
Nervous	1	2	3	4	5
Jittery	1	2	3	4	5
Irritable	1	2	3	4	5
Hostile	1	2	3	4	5
Afraid	1	2	3	4	5
Guilty	1	2	3	4	5
Ashamed	1	2	3	4	5
Attentive	1	2	3	4	5
Interested	1	2	3	4	5
Alert	1	2	3	4	5
Excited	1	2	3	4	5
Enthusiastic	1	2	3	4	5
Inspired	1	2	3	4	5
Proud	1	2	3	4	5
Determined	1	2	3	4	5
Strong	1	2	3	4	5
Active	1	2	3	4	5

Appendix F

Rosenberg Self-Esteem Scale

Please circle the appropriate answer per item. Use the following scale:
1 = Strongly Agree; 2 = Agree; 3 = Disagree; 4 = Strongly Disagree

1	On the whole, I am satisfied with myself.	1	2	3	4
2	At times I think I am no good at all.	1	2	3	4
3	I feel that I have a number of good qualities.	1	2	3	4
4	I am able to do things as well as most other people.	1	2	3	4
5	I feel I do not have much to be proud of.	1	2	3	4
6	I certainly feel useless at times.	1	2	3	4
7	I feel that I'm a person of worth, at least on an equal plane as others.	1	2	3	4
8	I wish I could have more respect for myself.	1	2	3	4
9	All in all, I am inclined to feel that I am a failure.	1	2	3	4
10	I take a positive attitude toward myself.	1	2	3	4

Appendix G

Leisure Time Exercise Questionnaire

1. Considering a **7-day period** (a week) how many times on the average do you do the following kinds of exercise for **more than 15 minutes** during your **free time** (write in each circle the appropriate number).

TIMES PER WEEK

a) **STRENUOUS EXERCISE (HEART BEATS RAPIDLY)**
(i.e. running, jogging, hockey, football, soccer, squash, basketball, cross country skiing, judo, roller skating, vigorous swimming, vigorous long-distance bicycling)

b) **MODERATE EXERCISING (NOT EXHAUSTING)**
(i.e. fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing)

c) **MILD EXERCISE (MINIMAL EFORT)**
(i.e. yoga, archery, fishing from river bank, bowling, horseshoes, golf, snow-mobiling, easy walking)

2. Considering a **7-day period** (a week) during your **leisure-time**, how often do you engage in any regular activity long enough to **work up a sweat** (heart beats rapidly)?

OFTEN	**SOMETIMES**	**NEVER/RARELY**
1. ☐	2. ☐	3. ☐

Appendix H

Eating Disorder Examination Questionnaire

Instructions

The following questions are concerned with the **PAST FOUR WEEKS ONLY** (**28 DAYS**). Please read each question carefully and circle the number on the right. Please answer ALL the questions.

EXAMPLES: **ON HOW MANY DAYS OUT OF THE PAST 28 DAYS.....**	No days	1-5 days	6-12 days	13-15 days	16-22 days	23-27 days	Every day
...Have you tried to eat vegetables?	0	1	2	(3)	4	5	6
...How many times have you walked to school?	0	1	(2)	3	4	5	6

ON HOW MANY DAYS OUT OF THE PAST 28 DAYS.....	No days	1-5 days	6-12 days	13-15 days	16-22 days	23-27 days	Every day
1. ...Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight?	0	1	2	3	4	5	6
2. ...Have you gone for long periods of time (8 hours or more) without eating anything in order to influence your shape or weight?	0	1	2	3	4	5	6
3. ...Have you tried to avoid eating any foods which you like tin order to influence your shape or weight?	0	1	2	3	4	5	6
4. ...Have you ever tried to follow definite rules regarding your eating in order to influence your shape or weight; for example, a calorie limit, a set amount of food, or rules about what or when you should eat?	0	1	2	3	4	5	6
5. ...Have you wanted your stomach to be empty?	0	1	2	3	4	5	6
6. ...Has thinking about food or its calorie content made it much more difficult to concentrate on things you are interested in; for example, read, watch TV, or follow a conversation?	0	1	2	3	4	5	6
7. ...Have you been afraid of losing control over your eating?	0	1	2	3	4	5	6
8. ...Have you had episodes of binge eating?	0	1	2	3	4	5	6

ON HOW MANY DAYS OUT OF THE PAST 28 DAYS.....	No days	1-5 days	6-12 days	13-15 days	16-22 days	23-27 days	Every day
9. ...Have you eaten in secret? (Do not count binges.)	0	1	2	3	4	5	6
10. ...Have you definitely wanted your stomach to be flat?	0	1	2	3	4	5	6
11. ...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?	0	1	2	3	4	5	6
12. ...Have you had a definite fear that you might gain weight or become fat?	0	1	2	3	4	5	6
13. ...Have you felt fat?	0	1	2	3	4	5	6
14. ...Have you had a strong desire to lose weight?	0	1	2	3	4	5	6

OVER THE PAST FOUR WEEKS (28 DAYS).....

15. ...On what proportion of times that you have eaten have you felt guilty because the effect on your shape or weight? (Do not count binges.) (Circle the number which applies.)

0. None of the times
1. A few of the times
2. Less than half the times
3. Half the times
4. More than half the times
5. Most of the times
6. Every time

16. ... Over the past four weeks (28 days), have there been any times when you have eaten what other people would regard as an unusually large amount of food given the circumstances? (Please circle appropriate number). **0- NO 1- YES**

17. ...How many such episodes have you had over the past four weeks? (Please write the appropriate number.) _____

18. ....During how many of these episodes of overeating did you have a sense of having lost control? _____

19. ....Have you had other episodes of eating in which you have had a sense of having lost control and eaten too much, but have not eaten an unusually large amount of food given the circumstances? **0- NO 1- YES**

20. ... How many such episodes have you had over the past four weeks? _____

21. ....Over the past four weeks have you made yourself sick (vomit) to control as a means of controlling your shape or weight?	**0- NO** **1- YES**
22. ....How many times have you done this over the past four weeks?	_____
23. ....Have you taken laxatives as a means of controlling your shape or weight?	**0 ----NO** **1 ----YES**
24. ....How many times have you done this over the past four weeks?	_____
25. ....Have you taken diuretics (water tablets) as a means of controlling your shape or weight?	**0 ----NO** **1 ----YES**
26. ....How many times have you done this over the past four weeks?	_____
27. ....Have you exercised hard as a means of controlling your shape or weight?	**0 ----NO** **1 ----YES**
28. ....How many times have you done this over the past four weeks?	_____

OVER THE PAST FOUR WEEKS (28 DAYS).....
(Please circle the number which best describes your behaviour)

	NOT AT ALL		SLIGHTLY		MODERATELY		MARKEDLY
29. ....Has your weight influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6
30. ....Has your shape influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6
31. ....How much would it upset you if you had to weigh yourself once a week for the next four weeks?	0	1	2	3	4	5	6
32. ....How dissatisfied have you felt about your weight?	0	1	2	3	4	5	6
33. ....How dissatisfied have you felt about your shape?	0	1	2	3	4	5	6
34. ....How concerned have you been about other people seeing you eat?	0	1	2	3	4	5	6

OVER THE PAST FOUR WEEKS (28 DAYS).....
(Please circle the number which best describes your behavior)

	NOT AT ALL		SLIGHTLY		MODERATELY		MARKEDLY
35 ....How uncomfortable have you felt seeing your body; for example, in the mirror, in shop window reflections, while undressing or taking a bath or shower?	0	1	2	3	4	5	6
36....How uncomfortable have you felt about others seeing your body; for example, in shared changing rooms, when swimming or wearing tight clothes?	0	1	2	3	4	5	6

37. How much do you weigh? If uncertain please give your best estimate. _____ lb.

38. How much would you like to weigh? _____lb.

39. How tall are you? If uncertain please give your best estimate. ____ ft ____ in.

40. Over the past 3 months, how many menstrual periods have you missed?

0 1 2 3 *N/A*

41. Have you been taking birth control pills during the past 3 months? YES NO

42. What is your current age? _____

Thank you for completing this study. You may return this questionnaire by bringing it to your next Psychology 1100 class or by dropping it off in the box marked "Healthy Lifestyles" in room SN 1042 Psychology main office in the Nursing Building.

If you are interested in receiving information regarding possible participation in focus groups on topics related to this study, please check this box. ☐ For participating in the focus group, you will be eligible to earn an additional bonus point.

Table 1.

The Means, Standard Deviations, and Correlations for the Proximity Criterion and Valence Moderator Variables.

	Proximity		Valence		Proximity*Valence	
Healthy Ideals	*M*	*(SD)*	*M*	*(SD)*	*r*	*p*
Eating	58.35	*(23.46)*	70.41	*(19.83)*	.41	<.001
Body Image	58.35	*(25.81)*	74.88	*(19.83)*	.06	.526
Physical Activity	58.16	*(27.20)*	74.11	*(20.19)*	.48	<.001
Body Weight	65.98	*(21.57)*	75.70	*(17.57)*	-.05	.623

Table 2.

The Means, Standard Deviations, and Cronbachs' Alpha Coefficients for the Psychometric Predictor Variables.

Variable	Cronbachs' Alpha	Number of Items	Theoretical Range	*M*	*(SD)*	*N*
PANAS						
NA	.83	8	8-40	17.55	*(6.11)*	121
PA	.88	10	10-50	33.80	*(7.27)*	121
EDE-Q						
RT	.79	5	0-6	1.56	*(1.27)*	121
EC	.78	5	0-6	.99	*(1.12)*	121
SC	.93	8	0-6	2.41	*(1.65)*	121
WC	.88	5	0-6	2.02	*(1.60)*	121
RSES	.90	10	10-40	30.83	*(5.67)*	121
LTEQ	-	1	1-3	1.98	*(.71)*	121
BMI	-	-	-	23.62	*(4.01)*	118

Note. PANAS scales are NA=Negative Affect, PA=Positive Affect; Eating Disorder Examination Questionnaire (EDE-Q) scales are Restraint (RT), Eating Concern (EC), Shape Concern (SC), and Weight Concern (WC); RSES= Rosenberg Self-Esteem Scale; LTEQ= Question 2 on the Leisure Time Exercise Questionnaire; BMI=Body Mass Index. Higher scores on all scales indicate a greater amount of the variable measured.

Table 3.

Pearson Correlations Between the Proximity Variables and the Psychometric Predictor Variables

	PANAS		EDE-Q						
Healthy Ideals	NA	PA	RT	EC	SC	WC	BMI	LTEQ	RSES
Eating	-.13	.34**	-.20*	-.19*	-.31**	-.29**	-.33**	.33**	.26**
Body Image	-.13	.35**	-.39**	-.41**	-.54**	-.56**	-.30**	.14	.24**
Physical Activity	-.28**	.40**	-.26**	-.17	-.30**	-.24**	-.21*	.56**	.20*
Body Weight	-.20*	.06	-.22*	-.26**	-.39**	-.43**	-.56**	.25*	-.20*

Note. PANAS: NA= Negative Affect; PA= Positive Affect; EDE-Q: RT= Restraint, EC=Eating Concern, SC=Shape Concern, WC=Weight Concern; BMI=Body Mass Index; LTEQ= Question 2 on Leisure Time Exercise Questionnaire; RSES=Rosenberg Self-Esteem Scale.

* $p<.05$ ** $p<.01$

Table 4.

Pearson Correlations Between the Valence Variables and the Psychometric Predictor Variables

	PANAS		EDE-Q						
Healthy Ideals	NA	PA	RT	EC	SC	WC	BMI	LTEQ	RSES
Eating	-.02	.03	.15	.17	.08	.12	-.02	.31**	.09
Body Image	.08	.00	.34**	.35**	.31**	.31**	-.04	.15	-.03
Physical Activity	-.10	.20*	.02	- .01	-.11	-.11	-.15	.44**	.17
Body Weight	.04	.00	.40**	.34**	.37**	.39**	.16	.26**	.16

Note. PANAS: NA= Negative Affect; PA= Positive Affect; EDE-Q: RT= Restraint, EC=Eating Concern, SC=Shape Concern, WC=Weight Concern; BMI=Body Mass Index; LTEQ= Question 2 on Leisure Time Exercise Questionnaire; RSES=Rosenberg Self-Esteem Scale.

* $p<.05$ ** $p<.01$

Table 5.

Stepwise Multiple Regression Analysis for Testing the Predictors of Proximity to Healthy Eating.

Predictor Variables	β	R^2	ΔR^2	F	*p*
First Block (Stepwise)					
LTEQ	.702	.112	.112	14.99	<.001
BMI	-.286	.194	.082	12.06	.001
RSES	.141	.245	.051	7.92	.006
PA	.195	.270	.025	3.40	.048
Second Block (Forced Entry)					
EV	.756	.383	.113	20.98	<.001
Third Block (Stepwise)					
EV*LTEQ	-.834	.410	.027	5.21	.024

Note. LTEQ=Question 2 on the Leisure Time Exercise Questionnaire; BMI=Body Mass Index, RSES=Rosenberg Self-Esteem Scale; PA=Positive Affect Scale on the Positive and Negative Affective Schedule; EV= Valence of Healthy Eating; EV*LTEQ=Interaction term of healthy eating valence multiplied by score on question 2 of the Leisure Time Exercise Questionnaire.

Table 6.

Stepwise Multiple Regression Analysis for Testing the Predictors of Proximity to Healthy Body Image.

Predictor Variables	β	R^2	ΔR^2	F	*p*
First Block (Stepwise)					
WC	-.583	.309	.309	53.21	<.001
PA	.231	.367	.058	10.90	.001
Second Block (Forced Entry)					
BIV	.242	.420	.052	10.57	.002

Note: WC=Weight Concern scale on the Eating Disorder Examination Questionnaire; PA= Positive Affect Scale on the Positive and Negative Affective Schedule; BIV= Valence of Healthy Body Image.

Table 7.

Stepwise Multiple Regression Analysis for Testing the Predictors of Proximity to Healthy Physical Activity.

Predictor Variables	β	R^2	ΔR^2	F	*p*
First Block (Stepwise)					
LTEQ	.368	.313	.313	54.15	<.001
SC	-.185	.368	.055	10.23	.002
PA	.173	.397	.030	5.78	.018
Second Block (Forced Entry)					
PAV	.282	.464	.067	14.51	<.001

Note: LTEQ=Question 2 on the Leisure Time Exercise Questionnaire; SC=Shape Concern scale on the Eating Disorder Examination Questionnaire; PA= Positive Affect Scale on the Positive and Negative Affective Schedule; PAV= Valence of Healthy Physical Activity.

Table 8.

Stepwise Multiple Regression Analysis for Testing the Predictors of Proximity to Healthy Body Weight.

Predictor Variables	β	R^2	ΔR^2	F	*p*
First Block (Stepwise)					
BMI	.087	.292	.292	49.08	<.001
SC	-.259	.341	.049	8.68	.004
LTEQ	.103	.366	.026	4.71	.032
Second Block (Forced Entry)					
BWV	.890	.369	.003	.56	.456
Third Block (Stepwise)					
BWV*BMI	-1.053	.404	.034	6.65	.011

Note: BMI=Body Mass Index; SC=Shape Concern scale on the Eating Disorder Examination Questionnaire; LTEQ=Question 2 on the Leisure Time Exercise Questionnaire; BWV=Valence of Healthy Body Weight; BWV*BMI= Interaction term of healthy body weight valence multiplied by BMI.