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STAGE OF CHANGE: RELATION TO RISK FACTORS FOR BINGE EATING AND  
OTHER HEALTH-RISK BEHAVIOURS AMONG UNIVERSITY WOMEN

by

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B.A. (Hons.), St. Thomas University, 2001

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## Abstract

The transtheoretical model delineates the different stages that individuals go through as they change maladaptive behaviours: precontemplation, contemplation, action, and maintenance (Prochaska, DiClemente, & Norcross, 1992). These stages of change have been researched for many types of health-risk behaviours including smoking, drinking, unprotected sex and, more recently, binge eating. Research to date has not begun to combine the findings from the research on the stages of change with the well-researched area concerning risk factors for binge eating. Thus, the purposes of the present study were to (a) investigate whether body dissatisfaction, dieting, negative and positive affect, self-esteem, social support and stress, and body mass are associated with stage of change for binge eating, (b) explore if these factors are associated with the stage of change for smoking, heavy drinking, and unprotected sex, (c) investigate if the stages differ in regards to the severity of the behaviour, and (d) explore the comorbidity with these health-risk behaviours and vomiting, pill use, and excessive exercise across the stages of change for binge eating. Participants were 266 female university students who completed a questionnaire package including all measures. It was found that body dissatisfaction, dieting, negative affect, self-esteem were related to the stages of change for binge eating. More specifically, those in the action stage appeared to suffer the most. Some of these risk factors discriminated participants as a function of their stage of change for smoking, but not for heavy drinking or unprotected sex. Comorbidity with the health-risk behaviours appeared to be similar across the stages of change for binge eating, although there were group differences in comorbidity for vomiting, pill use, and excessive exercise. Again, at least in regards to vomiting, those in the action stage appeared to suffer the most. This research has indicated that there are differences in proven risk factors for binge eating across the stages of change. Although in need

of further investigation, it appears that those in the action stage for binge eating suffer the most distress, and have the most disordered attitudes and behaviours. These preliminary findings, if replicated by longitudinal research, would add to our understanding of the process of change for binge eating. Furthermore, differences in risk and protective factors across the stages of change have implications for research methodologies and treatment of binge eating. To further extend these findings, future research could investigate these risk factors in relation to binge eating among certain populations or other risk and protective factors, other disordered eating behaviours and attitudes, and other health-risk behaviours.

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## Introduction

As society becomes more focussed on physical and mental health, a large number of people are attempting to change maladaptive or health-risk behaviours. Although access to therapy has been made easier by the increasing popularity of self-help books, lasting change is difficult. Even with the aid of a clinician, attempts at behavioural change often falter. Most psychological therapies are geared toward people who are ready to change their behaviour, yet only a portion of people are actually ready to change at any given moment (Prochaska, Norcross, DiClemente, 1994). Research has indicated that people go through a series of stages of motivation and intent to change the behaviour in a non-directional manner before arriving at lasting behavioural change (Prochaska, DiClemente, & Norcross, 1992).

Prochaska's (1979) transtheoretical model delineates different stages individuals go through as they change maladaptive behaviours. This model has been useful to help understand the process of change for those who undergo therapy or try to change their own behaviours. The main stages are precontemplation, contemplation, action, and maintenance (Prochaska, DiClemente, & Norcross, 1992). Those in the precontemplation stage of change either deny the behaviour is a problem or are unaware that the behaviour is in need of change. Contemplation involves the knowledge that the behaviour is problematic and one is considering change. Action is initiating the change, whereas maintenance is a continuance from action and there is an attempt to avoid relapse. An additional stage, recovery, has been added by Davis (1996) to characterize those who no longer need to fight relapse and do not predict the behaviour will re-appear, thus are fully recovered.

\*

### *The Transtheoretical Model and Health-Risk Behaviours*

The transtheoretical model has been used to understand the process of change for many types of health-risk behaviours, including alcohol abuse (DiClemente & Hughes, 1990), smoking, unsafe sex, sun exposure, and medicine non-compliance (for a review see Burkholder & Evers, 2002). Health-risk behaviours are especially prominent among university populations, and they can lead to medical problems, academic difficulties, and other negative outcomes. Heavy alcohol consumption is very common with 26% of surveyed women aged 20-24 having five or more drinks, more than 12 times a year (Statistics Canada, 2003). Heavy alcohol consumption has been associated with outcomes such as missing classes, driving while intoxicated and other problems with the law (Vik, Carrello, Tate, & Field, 2000). Smoking cigarettes continues to be problematic among university students (Emmons, Wechsler, Dowdall, & Abraham, 1998), with 24% of women aged 20-24 smoking daily and another 9% occasionally (Statistics Canada, 2003). Many university students also engage in the risky behaviour of unprotected sex, which puts them at risk for unwanted pregnancies and sexually transmitted diseases. In fact, Canadian youths aged 15-24 have the highest rate of sexually transmitted diseases of all other age groups (Health Canada, n.d.). Research has attempted to investigate factors associated with these health-risk behaviours and what factors may be related to each stage of change.

*Smoking.* One survey on smoking behaviour among university students found that heavy partying and involvement in other health-risk behaviours (i.e., heavy drinking) was associated with smoking (Emmons, Wechsler, Dowdall, & Abraham, 1998). This association was stronger for women who were also more likely to smoke than men. In another study of adolescent smoking behaviour, smokers were more likely to believe themselves invulnerable to addiction

and health problems than non-smokers (Milam, Sussman, Ritt-Olson, & Dent, 2000). The transtheoretical model has been used to understand smoking behaviour and cessation more than any other behaviour (Dijkstra, De Vries, Roijackers, & van Breukelen, 1998). Characteristics of smokers at different stages of change were followed over 6 months to investigate factors that were predictive of change. One factor that predicted change was health problems: Smokers in the precontemplation stage were likely to progress onto subsequent stages after experiencing even a mild health problem. As well, the longer the participant had smoked the less likely it was that they would progress to action. Another finding was that smokers who remained in precontemplation at the end of 6 months were more likely to smoke for pleasure than those who changed stages (Wilcox, Prochaska, Velicer, & DiClemente, 1985).

*Heavy Drinking.* A large number of university-aged women, possibly up to 55%, partake in bouts of heavy drinking (Schulenberg, O'Malley, Bachman, Wadsworth, & Johnston, 1996). Heavy drinking has been defined as consuming four or more drinks for females and five or more drinks for males on one occasion (Wechsler, Dowdall, Davenport, & Rimm, 1995). The number of drinks is not the same for both sexes because of the female's lower body mass, lower rates of gastric metabolism of alcohol, and associated problems (i.e., hangover) when women drink four or more drinks. Although few university students who drink actually develop alcohol dependence (Bennett, McCrady, Johnson, & Panina, 1999), there can be immediate negative consequences of heavy drinking that can be at the least a nuisance and at the worst fatal. The transtheoretical model has also been applied to heavy drinking. In one study on heavy drinking among university students, the stage of change did not differ with age, gender, whether the students lived at home or in residence; or the age at which they first drank, began regular drinking, or became intoxicated. However, contemplators drank more often and experienced

more problems with authorities than all other groups (Vik, Culbertson, & Sellers, 2000). Another study researched characteristics of adolescent drinkers who were treated in an emergency medical department for excessive alcohol consumption (Barnett et al. 2002). Characteristics of the drinkers that were associated with their being in the action stage of change 3 months later included younger age, smaller amount of alcohol consumption, having penalties for breaking family drinking rules, and severity of anticipated consequences for drinking.

*Unprotected Sex.* Unprotected sex is another major problem on university campuses where sexually transmitted diseases (STD) infect students who do not protect themselves. Sex has been defined as risky if a condom is not used with a partner whose STD status is unknown (Grimley et al., 1996). Unknown STD status is an important element because even a steady partner could put the other individual at risk. One study researched the factors associated with condom use amongst university students and found that women already on birth control were less likely to protect themselves by using condoms. Furthermore, students were more worried about becoming pregnant than contracting a sexually transmitted disease (Grimley et al., 1996). The transtheoretical model has also been used in research regarding condom use (Grimley, Prochaska, Velicer, & Prochaska, 1995) and in programs to promote safer sex and abstinence among adolescents (Grimley, Prochaska, & Prochaska, 1997). In one study examining condom use, participants were at a more advanced stage of change for casual partners than for steady partners (Grimley, Prochaska, & Prochaska, 1993).

#### *The Transtheoretical Model and Binge Eating*

Eating disorders are one of the most common psychiatric problems amongst young women. They have the potential for significant medical and psychological morbidity that can run a chronic course (Fairburn et al., 1995). One to four percent of young adult females will develop

an eating disorder in their lifetime (American Psychiatric Association, 2000). In a recent survey, over a quarter (28%) of a large sample of Canadian females reported some symptoms of disordered eating (Jones, Bennett, Olmstead, Lawson, & Rodin, 2001). While this large portion of youth may never develop a full-blown eating disorder, they are nevertheless at risk for significant medical and psychological morbidity.

Binge eating is a central characteristic of Bulimia Nervosa (BN) and that of the newly defined Binge Eating Disorder (BED). Binge eating occurs in about 50% of those who suffer from Anorexia Nervosa (AN) (Davis, & Olmstead, 1992) and has been shown to be fairly common among non-clinical populations. In a survey of Canadian females, 15% of the sample experienced binge eating associated with a loss of control and 8.2% engaged in self-induced vomiting (Jones, et al., 2001). Binge eating has been defined in the DSM-IV-TR (American Psychiatric Association, 2000, p. 594) as

- (a) eating, in a discrete period of time (e.g. within any 2-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances.
- (b) a sense of lack of control over eating during the episodes (e.g., a feeling that one cannot stop eating or control what or how much one is eating)

Often there is a great deal of shame accompanying the behaviour as it usually occurs in secrecy. Moreover, many individuals who binge also severely restrict their food intake, creating a vicious cycle of binge eating and restricting (American Psychiatric Association, 2000). This cycle has many negative effects on one's physical and emotional health. Some individuals who engage in binge eating also engage in dangerous compensatory behaviours such as vomiting, pill use, or excessive exercise. These behaviours can have serious psychological and physical sequelae and can be fatal.



More recently, principles from the transtheoretical model have been used to understand the change process for disordered eating symptoms and have been applied to therapeutic approaches for eating disorders (Touyz, Thornton, Rieger, George, Beumont, 2003; Villapiano & Goodman, 2001). Treatment approaches that are geared to the individual's current stage of change appear to be helpful, as research has indicated that those with an eating disorder prefer treatment compatible with their stage of change (Levy, 1997). Furthermore, those who are initially at a more advanced stage of change have more successful outcomes with treatment than those who are in less advanced stages (Franko, 1997; Gusella, Butler, Nichols, & Bird, 2003; Wolk & Devin, 2001). Survey results from former bulimics who changed their own behaviour indicated that social support, making a firm commitment to change, and substituting healthy alternative behaviours helped change their behaviour (Stanton, Rebert, & Zinn, 1986). The stage of change paradigm has also been used to help understand disordered eating symptoms, such as binge eating and purging, that may occur among young female athletes who do not meet the diagnostic criteria for an eating disorder (Bass & Hunt, 2001).

Clausen (1999) compared groups of adult bingers and smokers across the stages of change on a global measure of distress and various types of psychopathology as measured by the Brief Symptom Inventory (BSI; Derogatis, 1993), affective response to the behaviour, pros and cons of changing, and behavioural characteristics of the behaviour such as frequency and age of onset. Overall, bingers scored higher on the global measure of distress than controls. Bingers and smokers scored higher on the Hostility and Somatization scales from the BSI than the controls. However, there was no difference across the stages of change for binge eating or smoking on any of the subscales from the BSI or on its global measure of distress. This suggests that, although

there is greater distress among bingers and more psychopathology among bingers and smokers than controls, there are no differences across the stages of change.

Negative and positive affect were also inspected by assessing the affective response to binge eating or smoking (Clausen, 1999). Although there were no significant differences for the smokers across the groups, those in the action stage for binge eating reported more negative affect in response to the behaviour than those in precontemplation and recovery groups. There was no difference in the positive affect in response to the behaviour across the stages of change for binge eating or smoking. Behavioural characteristics of binge eating, such as past frequency, age of onset, volume of food, or rate of consumption did not differ across the stages of change. Pros and cons of changing the behaviour were also investigated. As expected, those in the precontemplation stage for smoking or binge eating showed the lowest endorsement of pros for behaviour change. Participants in the precontemplation stage for binge eating also reported less loss of control over their binge eating than those in more advanced stages. Clausen suggested that those in the precontemplation stage, although binge eating at the same frequency as those in the other stages, might be in denial of the effect of their binges. Although not significant for bingers, those contemplating quitting smoking showed greater endorsement of the cons for behaviour change than the precontemplators. Most notably, those in the action stage for binge eating or smoking were most aware of both the pros *and* cons of changing the behaviour. This was unexpected, as the theorized progression through the stages is characterized by an increase in the pros for behaviour change and a decrease in the cons. Clausen suggested that this result might be partially due to problems classifying participants or low number of people in the action group. However, it was also proposed that the action stage might be the critical stage to

determine behaviour change, as it is associated with the most negative affect and potentially the greatest understanding of both the positive and negative aspects of behaviour change.

It is possible that there may be other important differences across the stages of change for binge eating that would allow for a greater understanding of the process of change. Moreover, this type of research is important to begin to investigate why some people do or do not progress past certain stages, particularly that of the action stage. There has been considerable research pertaining to risk and protective factors for eating disordered symptoms, such as binge eating, using various psychological and social measures in both cross-sectional and prospective designs (see Shisslak & Crago, 2001). It is possible that these researched risk factors may shed light on differentiating people as a function of their stage of change.

#### *Risk and Protective Factors for Disordered Eating*

Disordered eating is a term used to describe a wide range of symptoms associated with eating disorders, including a drive for thinness, body dissatisfaction, dieting, purging, and thoughts about and engaging in binge eating (Jones et al., 2001). As a consequence of using this broad term, much of the research is not able to differentiate risk factors that are related specifically to any one attitude or behaviour (Stice, 2002). Thus the present review on risk and protective factors clearly demarcates whether the criteria examined is disordered eating or whether it is specific to binge eating.

A large number of women experience some level of body dissatisfaction based upon the pressure to obtain the “culture’s beauty ideal” (Striegel-Moore & Cachelin, 1999). Body dissatisfaction is probably one of the most robust risk factors for disordered eating, and has reliably predicted binge eating (Heatherton & Polivy, 1992) and dieting behaviour (Stice, Mazotti, Krebs, Martin, 1998). This finding is consistent across almost all studies, including

those with different ages ranging from 11 years and older (e.g., Cattarin & Thompson, 1994), and longitudinal time frames up to a 4-year follow-up (Garner, Garfinkel, Rockert, & Olmstead, 1987). Dieting, another very common risk factor, has predicted disordered eating (e.g., Killen et al., 1994) in longitudinal designs, but not in experimental manipulations of calorie deprivation (Telch & Agras, 1996). A possible explanation for this difference could be that there are fundamental differences between the participants used in longitudinal designs and those used in experimental designs. For instance, participants used in longitudinal designs were predominately of an average weight, whereas those used in experimental designs, were predominately overweight (Stice, 2001). Another explanation for this could be that a third variable, possibly a tendency towards caloric over-consumption could cause both dieting and future binge eating (Stice, Cameron, Killen, Hayward, & Taylor, 1999). Finally, another explanation is that going off a diet rather than being on a diet is a risk factor for disordered eating (Stice, 2001). Further research needs to examine dieting behaviour to further clarify this issue.

Another risk factor that has predicted disordered eating is perceived sociocultural pressures to be thin from family, peers, and the media (Field, Camargo, Taylor, Berkey, & Colditz, 1999). Furthermore, the internalization of this thin ideal has also served as a risk factor for binge eating (Stice & Agras, 1998). For example, experimentally reduced internalization of the thin ideal has resulted in decreases in levels of body dissatisfaction, dieting, negative affect, and binge eating (Stice, Mazotti, Weibel, & Agras, 2000). There has also been some support that perfectionism predicts onset of disordered eating (Killen et al., 1994). However, these results were not found in other studies (e.g., Leon, Fulkerson, Perry, Early-Zald, 1995).

Negative affectivity has also predicted the onset of binge eating (Killen et al., 1996; Stice & Agras, 1998). For example, the experimental induction of negative affect potentiates binge

eating in women with BED (Agras & Telch, 1998). Furthermore, negative affect has been shown to be elevated among women with BN in the moments preceding a binge eating episode (Davis, Freeman & Garner, 1988). It has been theorized that binge eating may serve to decrease this heightened negative affect (Heatherton & Baumeister, 1991), for which there is some evidence (Davis & Jamieson, 2000).

Low self-esteem is another factor that has been researched in regards to disordered eating. Although some researchers have failed to find low self-esteem to be predictive of disordered eating (Calam & Waller, 1998), it has predicted onset of disordered eating in a number of other studies (Button, 1990; Schleimer, 1983; Stice, Presnell, & Spangler, 2002).

Level of social support has been considered both a risk and protective factor in the development of eating disorders and body dissatisfaction (Ghaderi & Scott, 1999). Perceived social support is the individual's perception of the quality of support they receive from their relationships, and the perception of how emotionally close they are to these people (Wolchik, Sandler, & Braver, 1987). Deficits in social support have been observed among adult women with BN and AN (e.g. Tiller, Sloane, Schmidt, Troop, et al., 1997) and eating disordered females compared to dieters (Bennett & Cooper, 2001). Another cross-sectional study compared a group of bulimics to a control group and found that the bulimics perceived less social support than the control group (Grisset & Norvell, 1992). Recently, social support among young adolescents was positively correlated with body satisfaction (McFarlane, 2002), and paternal support moderated the effect of school related stress on disordered eating (McVey, Pepler, Davis, Flett, & Abdoell, 2002). Furthermore, deficits in social support were related to increased vulnerability to body dissatisfaction, dieting, and binge eating among women exposed to thin media images (Stice, Spangler, & Agras, 2001). Another study researching predictors for the onset of binge eating

studied females in 9<sup>th</sup> and 10<sup>th</sup> grade over a 2-year period (Stice, Presnell, & Spangler, 2002). Participants with poor peer support at baseline were almost twice as likely to binge at follow-up, although there was no effect of parental support. This finding contradicts past cross-sectional research that found parental support as protective (McVey et al., 2002).

Other social factors may be related to eating disorders and binge eating. One study found that adults with an eating disorder viewed their parents as less empathic and supportive than those without an eating disorder (Steiger, Liquornik, Chapman, & Hussain, 1991). Some have even theorized that eating pathology is not due to individual factors but to dysfunctional family systems (e.g., Minuchin, Rosman, & Baker, 1978). However, there has been no support for this theory with research (Stice, 2002). Furthermore it is possible that social factors, such as family factors, interact with other risk factors to promote eating disturbances. Peers and friends have also been investigated as risk factors and associated with an increased risk of eating pathology. For example, peer modeling of binge eating in a university sorority was associated with increased binge eating (Crandall, 1988). Modelling of eating problems was also shown to predict onset of binge eating in a 2-year prospective study of high school girls (Stice, Presnell, & Spangler, 2002). Furthermore, teasing about weight or shape by both female and male peers has been associated with increased body dissatisfaction, yet only teasing from males was associated with eating disorder behaviours and attitudes (McFarlane, 2002).

Research on the effect of Body Mass Index (BMI) as a predictor of disordered eating has been inconsistent across studies. Certain studies have found that a higher BMI is predictive of general symptoms of eating disorders (e.g., Killen et al., 1994; Jones, et al., 2001) and binge eating (e.g., Stice, Presnell, & Spangler, 2002). However, other studies have not found BMI to be a significant predictor of either eating disorders (e.g., Cattarin & Thompson, 1994) or binge

eating (Stice & Agras, 1998). A meta-analytic review of prospective studies indicated that body mass may be more important in predicting other risk factors for disordered eating, such as body dissatisfaction, dieting, and negative affect, rather than directly predicting disordered eating (Stice, 2002).

In summary, it appears that certain psychological factors, such as body dissatisfaction, negative affect, and dieting have shown in cross-sectional and prospective designs to be associated with binge eating. Other factors, such as self-esteem and social factors have not been researched in as much depth, but also appear to be associated with binge eating. Although these factors are often theorized as specific to eating pathology, many of these risk and protective factors are also related to other health-risk behaviours (Crago, Shisslak, & Ruble, 2001). For example, negative affectivity and low self-esteem have been predictive not only of binge eating, but also of other health-risk behaviours. Consequently, they may be considered to be general risk factors for medical and psychological morbidity (Shisslak & Crago, 2001).

#### *General Risk Factors*

Body dissatisfaction as described earlier is a robust risk factor for binge eating, but also may be related to other health-risk behaviours. For example body dissatisfaction has predicted the onset of smoking in adolescent females (Stice & Shaw, 2003), and has been associated with heavy drinking (Penas-Lledo, Sancho, & Waller, 2002). Negative affect has also been associated with smoking (Brandon, Wetter, & Baker, 1996). In one study, negative affect predicted the onset of smoking in adolescent females (Stice & Shaw, 2003). One study that examined affect and heavy drinking among university students found that, although a global rating of negative affect did not predict subsequent drinking, daily ratings of hostility and sadness did predict heavy drinking (Hussong, Hicks, Levy, Curran, 2001). In the same study, positive affect also predicted

drinking. It was theorized that positive affect may be related to social drinking that is common among this age group. Dieting has predicted smoking initiation in a study of 10-14 year old females (Austin & Gortmaker, 2001), whereas another study only found that a minority of female smokers reported smoking for weight loss (George & Johnson, 2001). Dieting attitudes have also been associated with heavy drinking (Penas-Lledo, Sancho, & Waller, 2002).

Social support, which has been predictive of binge eating has also been related to other health-risk behaviours. In a prospective analysis, less social support from families in the fall of the participant's university freshman year predicted risky behaviour (i.e., unprotected sex, heavy drinking) in the spring, whereas less social support from friends predicted higher amounts of alcohol use (Zaleski, Levey-Thors, & Schiaffino, 1998). Another study using a growth curve analysis linked lack of parental support to intensity and frequency of binge drinking in a community sample of adolescents who were followed into young adulthood (Aseltine & Gore, 2000).

Thus, it appears that certain risk factors that have been related to disordered eating also serve as general risk factors for other behaviours. Risk factors such as dieting, body dissatisfaction, and negative affect are very common amongst young university aged women. Furthermore, binge eating, smoking, drinking, and unprotected sex appear to occur at a high frequency as well, and all can have serious consequences. It appears important for research to better understand the relationship between these established risk factors for binge eating and common health-risk behaviours. Furthermore, it is possible that there may be important differences in these risk factors across the stages of change for binge eating and for the health-risk behaviours.



*Purposes of the Present Study*

The present study served to compare risk factors that have been supported by research across the stages of change for binge eating. These include body dissatisfaction, dieting, and negative affect. Also, factors that have not received as much attention were included; self-esteem, social support from parents and friends, and stress from parents and friends were examined. More recently, BMI as a risk factor has not been supported by research. However, it was included in this study to examine if there are differences among binge eating women as a function of the stages of change regarding actual BMI, desired BMI, and the difference between actual and desired BMI. Furthermore, the stages of change for smoking, heavy drinking, and unprotected sex were compared using the same group of supported risk factors. Stages of change for binge eating and the other health-risk behaviours were also compared on frequency of present and past engagement in the behaviour and the age of onset to investigate differences in severity. Finally, the stages of change for binge eating were compared on the comorbidity with the health-risk behaviours and several additional facets of disordered eating; vomiting, pill use, and excessive exercise.

Positive affect (PA) was investigated as a correlate of stage of change for both binge eating and other health-risk behaviours which is in keeping with past risk research (e.g., Hussong, Hicks, Levy, Curran, 2001). PA has been related to satisfaction with life, involvement in social activities, and frequency of pleasant events (Clark & Watson, 1988). Negative affect (NA) and PA have been shown to have a minimal correlation with each other. High PA is defined as energetic, full concentration, and pleasurable engagement, whereas low PA is characterized by lethargy. In contrast, NA is defined as distress and unpleasurable engagement that includes guilt, hostility, sadness, and anxiety/fear. Low NA is a state of calmness and

serenity. (Watson, Clark, & Tellegen, 1988). PA was included in this study as an exploratory correlate of stage of change for binge eating as well as smoking, heavy drinking, and unprotected sex.

The first group of hypotheses are in relation to the stages of change for binge eating and the psychological and social risk factors. On the basis of past research, it was anticipated that women who never engaged in binge eating would have lower body dissatisfaction, less dieting behaviour, less NA, higher self-esteem, and possibly more social support and less social stress. Secondly, as found by Clausen (1999), it was expected that those in action would have more NA than those in precontemplation or recovery. As previously mentioned, BMI has not been a reliable risk factor associated with binge eating. However, it is possible that more subtle differences would arise as a function of the stage of change for binge eating. Thus, actual BMI, desired BMI, and the difference between the two were included as exploratory correlates of stage of change for binge eating.

The second group of hypotheses were in relation to the stages of change for smoking, heavy drinking, and unprotected sex and the associated psychological and social risk factors. As described earlier, body dissatisfaction, dieting, NA, low self-esteem, and low social support appear to be general risk factors. Thus, similar to binge eating, it was hypothesized that women who have never engaged in the behaviour would experience less of these risk factors than those who are currently engaging in the behaviour. One study found PA to be related to heavy drinking (Hussong, Hicks, Levy, & Curran, 2001). Consequently, this factor was included to explore the differences across the stages of change for each health-risk behaviour.

Age of onset and current and past frequency of the behaviour were measured to provide an index of the severity of the behaviours under study. As Clausen (1999) did not find any

differences on these variables as a function of the stage of change, this was included to further explore possible differences. Finally, comorbidity with smoking, heavy drinking, unprotected sex, vomiting, pill use, and excessive exercise were included to examine possible differences across the stages of change for binge eating.

## Method

### *Participants*

Participants were 266 female Introductory Psychology students. The ages of the participants ranged from 17 to 49, with a mean age of 20.32 ( $SD = 4.57$ ). The majority of the sample was Caucasian (77.4%). Other ethnicities included Asian (3.2%), Aboriginal (5.6%), those who did not state their ethnicity (13.5%), and those who endorsed the “other” category (0.4%). A similar number of participants lived in residence (39.7%) as those living with their parents (39.3%). Fewer participants lived in rented accommodations with roommates (12.7%) or by themselves (7.5%).

### *Measures*

*Personal Information.* (see Appendix B). Participants filled out a demographic measure requesting age, sex, and ethnic background, living arrangements, height, weight, and desired weight. BMI was calculated by dividing self-reported weight in kilograms by height in meters squared. Self-reported weight has been a good indicator of actual weight and has been correlated in some studies ranging from .94 to .99 (Galambos, Almedia, & Petersen, 1990).

*Behavioural Questionnaire.* (see Appendix C). This is a 26-item questionnaire on binge eating, smoking, heavy drinking, and unprotected sex. Information asked included age of onset of the behaviour, the frequency of the behaviour in the last 5 months (current monthly

frequency), and the frequency of the behaviour when they were engaging in the behaviour the most (highest past monthly frequency).

*Stage of Change Inventory.* (SCI; Davis, 1996; see Appendix D). This 8-item staging instrument assesses stage of change for the following disordered eating behaviours to control weight or shape: skipping meals, avoiding certain types of food, following strict dieting rules, binge eating, vomiting, exercise vigorously and a lot, pill use, and the need to control weight or shape. Additional items were included to assess the stage of change for smoking, heavy drinking, and unprotected sex. Stage of change for each behaviour is rated separately using a 6-point nominal scale indicating the respondent's perceived stage of change: never, precontemplation, contemplation, action, maintenance, and recovery. The SCI and adapted versions have been shown to have concurrent validity with other measures of stages of change. Clausen (1999) found correlations for single items above .54 for binge eating and .84 for smoking with the *University of Rhode Island Change Assessment Scale-Revised* (Prochaska & DiClemente, 1982). Responses to the SCI were used to operationally define participants' stage of change for binge, smoking, heavy drinking, and unprotected sex.

*Body Dissatisfaction.* Two measures of body dissatisfaction, *The Eating Disorders Inventory – Body Dissatisfaction Scale* (EDI-BD; Garner, Olmstead, & Polivy, 1983; see Appendix E) and the *Concerns for Shape and Weight Scale – Affective subscale* (CSAW; Davis & Phillips, 1996; see Appendix F) were combined to create one global indice of body dissatisfaction. The EDI-BD is a 9-item scale that assesses satisfaction with the body (e.g., hips, weight, thighs) on a 6-point scale from “always” to “never.” Internal consistencies for the EDI-BD have been good. In one study coefficient alpha was .91 for 15-18 year olds (Shore & Porter, 1990). Furthermore, test-retest reliability has been shown to be above .70 for 282 nonpatients

(Crowther, Lilly, Crawford, Shepard, & Oliver, 1990), and it has been shown to predict onset of binge eating at 1-year and 2-year follow-up (Norrington, 1990). Higher summed scores indicated greater body dissatisfaction. Items 3, 4, 5, 7, 9 were reversed scored. Whereas the EDI-BD measures satisfaction with different body parts, the CSAW assesses affective dimensions of body dissatisfaction. The CSAW has 18 items that are rated on a 5-point scale ranging from “strongly disagree” to “strongly agree.” Similar to the EDI-BD, higher summed scores also indicate more body dissatisfaction. Items 2, 6, 8, 10, 12, 13, 16, 17, and 18 were reversed scored. The EDI-BD and the CSAW were highly correlated ( $r = .83$ ). The measure of body dissatisfaction was created by summing the standardized scores for each scale.

*The Dutch Eating Behaviours Questionnaire – Restrained Eating Scale.* (DRES; van Strein, Frijters, van Straveren, Defares, & Deurenberg, 1986; see Appendix G). The DRES includes 10 items pertaining to dieting cognitions and behaviour. Although, as shown in one study, it is possible that the DRES may be more related to failed attempts of dieting than successful dieting (Ogden, 1993). The DRES has been shown to have excellent internal consistency, and it has a test-retest reliability over  $r = .92$  for a period of 2 weeks (Allison, Kalinsky, & Gorman, 1992). Items are rated on a 5-point scale from “never” to “very often.” Higher summed scores indicate more extreme dieting behaviour and attitudes.

*Positive and Negative Affective Schedule.* (PANAS; Watson & Clark, 1991; Watson, Clark, & Tellegan, 1988; see Appendix H). This 32-item scale contains 5 subscales measuring sadness, guilt, hostility, and fear/anxiety, and positive affect. Respondents were asked to indicate the extent they have felt certain emotions in the past few weeks on a 5-point scale, from “very slightly or not at all” to “extremely.” Scores from the sadness, guilt, hostility, and fear/anxiety scales were summed to create a negative affect (NA) dimension, with higher scores indicating

more negative affect. Similarly, all positive items were summed to create a positive affect (PA) dimension, with higher scores indicating more positive affect. These scales have been shown to be internally consistent, reliable, and have good convergent and predictive validity (Watson & Clark, 1991).

*Rosenberg Self-Esteem Inventory.* (RSEI, Rosenberg, 1979; see Appendix I). This is a 10-item measure of global self-esteem. Respondents are asked to determine whether statements apply to them on a 4-point scale, from “strongly agree” to “strongly disagree.” Higher summed scores indicate higher self-esteem. Items 1, 3, 4, 7, 10 were reversed scored. Internal consistency in a large sample of high school students was .77 (Rosenberg, 1965) and test-reliability was .73 over a period of 7 months for a large Canadian sample (Wylie, 1989).

*Life Stressors and Social Resources Inventory – Youth Form.* (LISRES-Y; Moos & Moos, 1994; see Appendix J). The LISRES-Y assesses stressors and social resources and is intended for youths between the ages of 12 and 18 (Moos & Moos, 1994). An adapted version of the LISRES-Y included 82 items. However, only the social resource scales and the stressor scales from mother, father, and friend were analyzed in the present study. Scores were summed across items within scales, where higher scores reflect more social support and more social stress. Internal consistencies for females range from .66 for friends stressors to .93 for parent social resources. Stressors and resources, except for boy/girlfriend stressors or resources, have also been shown to be fairly stable (Moos & Moos, 1994).

### *Procedure*

Participants were recruited through announcements in Introductory Psychology classes. Interested students obtained a questionnaire package and returned it to the experimenter within 1

week. An explanation of the procedures for the study was given prior to obtaining consent (see Appendix A). One course bonus point was given for participation.

## Results

### *Characteristics of Participants*

Participants ( $N = 266$ ) completed the questionnaire package. Sixteen participants were eliminated from the analysis due to missing three or more entire questionnaires in the package. Participants were initially divided into 6 groups based on their stage of change for binge eating: never, precontemplation, contemplation, action, maintenance, and recovery. However, due to a low number of participants in maintenance ( $n = 9$ ) and recovery stage ( $n = 13$ ) of change for binge eating, the two groups were collapsed to create a history of binge eating group. This was also done in the classification of participants for the other health-risk behaviours: smoking, heavy drinking, and unprotected sex. There were no significant differences between the maintenance and recovery groups on any of the measures.

### *Normality and Internal Consistencies of the Measures*

All variables were initially screened for accuracy of data entry, missing data, outliers, and normality. Items were screened by inspecting the minimum and maximum scores to ensure accuracy of data entry. Incorrectly entered data were corrected. Participants that were missing less than 30% of the items from the EDI-BD, CSAW, DRES, or the RSEI scale had missing items replaced with the mean of the item across the entire sample. Scales that were missing more than 30% of the items were not included in the analysis. Participants that were missing less than 50% of the items from the LISRES scales had scale scores pro-rated on the basis of completed items. Outliers were defined as scores greater than a standardized score of +3 or less than -3. Outliers were replaced with the corresponding most extreme acceptable score. A logarithmic

transformation on PANAS-NA and reflected logarithmic transformations on the mother, father, and friend support subscales from the LISRES were used in the analysis to reduce the amount of skewness of each of the variables. Cronbach's Alpha, means, standard deviations, range of possible scores, number of participants that completed each scale, and the number of outliers replaced are presented in Table 1. Cronbach's Alpha for the measures were satisfactory, ranging from .73 to .98.

*Stage of Change for Other Eating Disorder and Health-Risk Behaviours*

As shown in Table 2, a large number of participants engage in behaviours to control their weight or shape such as skipping meals, avoiding certain foods, following strict dieting rules, and engaging in excessive exercise. However, many do not think these behaviours are a problem as reflected in the high frequency of those in the precontemplation stage. Especially noteworthy is that half (47.8%) of participants are in the precontemplation stage for feeling they must control their weight or shape. This is in contrast to the minority (8.8%) of the participants that have never felt like this. Approximately 15% of the sample presently engage in vomiting (5.6%) or have in the past (10.5%). Half of the active vomiters are in the precontemplation stage. Approximately 20% of the sample take pills presently or have in the past to control their weight, and virtually all current pill users are in the precontemplation stage. A larger percentage of participants have engaged in binge eating, with almost 40% doing so presently or having done so in the past. Roughly one-third of active bingers are in the precontemplation stage. Approximately half of the sample has never smoked. Again, many active smokers are in the precontemplation stage. Over half of the sample is in the precontemplation stage for heavy drinking and virtually all of the current heavy drinkers. Once again, the majority of women who currently engage in unprotected sex are in the precontemplation stage. Thus it is apparent that many individuals



Table 1

*Scale and BMI information*

Variables	Outliers	Cronbach's alpha	Number of items	Possible range	<i>M (SD)</i>	<i>N</i>
EDI -BD	0	.91	9	0-27	11.52 (7.76)	246
CSAW	0	.98	18	0-72	38.46 (18.29)	249
BD	0	.98	27	0-99	49.98 (25.12)	246
DRES	0	.94	10	0-50	26.57 (9.71)	247
NA	2	.94	22	0-110	46.69 (16.32)	248
PA	2	.91	10	0-50	35.15 (7.42)	248
RSEI	1	.90	10	0-40	30.84 (5.81)	250
LISRES -Y						
Mother Stress	2	.85	7	0-35	8.32 (5.38)	247
Father Stress	2	.86	7	0-35	8.82 (6.15)	239
Mother Support	1	.92	5	0-25	15.49 (4.86)	247
Father Support	0	.91	5	0-25	13.77 (5.25)	239
Friends Stress	3	.73	5	0-25	4.45 (2.77)	250
Friends Support	3	.81	9	0-45	26.46 (4.94)	249
Actual BMI	4				24.24 (4.15)	238
Desired BMI	4				21.83 (2.30)	238
Diff BMI	6				2.39 (2.58)	238

*Note.* Higher scores indicate a greater degree of the variable. Outliers having a standardized score of  $>3$  or  $<-3$  were replaced with the highest or lowest acceptable score. EDI -BD = Eating Disorders Inventory - Body Dissatisfaction. CSAW = The Concerns for Shape and Weight Scale - Affective Subscale. BD = Body Dissatisfaction variable was created by summing the standardized scores for the EDI-BD and the CSAW. DRES = The Dutch Eating Behaviour Questionnaire - Restrained Eating Scale. NA = Negative Affect Scale from the Positive and Negative Affective Schedule (PANAS). PA = Positive Affect Scale from the PANAS. RSEI = Rosenberg Self-Esteem Inventory. LISRES - Y = Life Stressors and Social Resources Inventory for Youth. Diff BMI = Difference between Actual BMI and Desired BMI.

Table 2

*Frequency of each Stage of Change Across Various Health-Risk Behaviours*

Variables	Never	Precontemplation	Contemplation	Action	Maintenance	Recovery
Skip meals	40.2	32.9	4.4	7.2	5.6	9.6
Avoid food	21.1	56.7	6.5	7.3	2.4	6.1
Dieting	51.8	28.9	4.8	3.6	7.2	3.6
Binge	59.9	9.7	8.1	12.6	3.6	6.1
Vomit	83.9	2.8	0.8	2.0	2.8	7.7
Exercise	50.8	32.3	1.6	2.4	6.9	6.0
Pills	79.9	10.0	0.8	0.4	3.6	5.2
Control	8.8	47.8	19.7	16.1	1.6	6.0
Smoke	52.6	12.4	12.9	5.6	2.4	14.1
Drink	30.4	52.6	4.5	0.8	1.6	10.1
Sex	59.7	12.5	4.4	4.0	1.6	17.7

*Note.* Values represent percentage of participants in each stage of change for each behaviour measured by the Stage of Change Inventory. All items, except for smoke, drink, and sex, include in the definition the purpose of controlling weight and/or shape. Skip meals = engage in skipping meals. Avoid food = avoid certain foods. Dieting = follow strict dieting rules about what, when and/or how much they will eat. Vomit = purposely make themselves throw up after they have eaten food. Exercise = exercise vigorously and a lot. Pills = take pills (e.g. water pills, laxatives, herbal substances, prescribed medications, street drugs). Control = feel they must control their weight or shape. Smoke = engage in smoking cigarettes. Drink = heavy drinking characterized by drinking four or more drinks of alcohol at one time. Sex = unprotected sex.

believe that they are invulnerable to the consequences posed by health-risk behaviours they engage in. Specifically in regards to the drive to control weight or shape, this appears to be the norm.

### *Method of Analysis*

Participants were grouped according to the stage of change for binge eating, smoking, drinking, and unprotected sex; which served as the independent variables. Dependent variables were separated into families of related variables for analysis. One group was the psychological variables, which included body dissatisfaction (BD), dieting (DRES), self-esteem (RSEI), negative affect (PANAS-NA), and positive affect (PANAS-PA) scales. The other group was the social variables, which included the stress and social support scale for mother, father, and friend. The stages of change for binge eating and each of the health-risk behaviours were analysed using separate Multivariate Analyses of Variance (MANOVA) of the two groups of psychological and the social variables. Additional analyses included comparing the stages of change for binge eating on actual BMI, desired BMI, and the difference between the two also using a MANOVA. Severity was measured across the stages of change for binge eating and each of the health-risk behaviours on age of onset, current monthly frequency, and past monthly frequency when engaging in the behaviour the most often. Finally, comorbidity of smoking, drinking, unprotected sex, and engagement in eating disordered behaviours (vomiting, pill use, and excessive exercise) were compared across the stages of change for binge eating using Chi Square analysis.

### *Psychological and Social Variables as a function of Stage of Change for Binge Eating*

The first MANOVA was completed with the stages of change for binge eating as the between- subjects variable and PA, body dissatisfaction, self-esteem, dieting, and the log transformation of the NA variable as the dependent variables. There was a main affect of the

stages of change for binge eating across the psychological variables, Wilks's multivariate Lambda criterion ( $\Lambda$ ) = .708,  $F(20, 774) = 4.24, p < .001$ . Univariate ANOVAs on each dependent variable were conducted as follow-up tests. Using the Bonferroni method, family-wise error rate was set at .05, thus each ANOVA was tested at the .01 level (.05 divided by 5 dependent variables). Means, standard deviations, and significance levels are shown in Table 3. All of the variables except for PA were significant.

Post hoc analysis to the Univariate ANOVAs for each dependent variable consisted of conducting pair-wise comparisons using Tukey's HSD. These comparisons indicated that the action group had significantly more body dissatisfaction than those in the never, precontemplation, and history stages. The action group had more restricting behaviour than those in the never, precontemplation, and contemplation stages of change. The action group also had significantly less self-esteem than those in the never and precontemplation stages of change. Finally the action group had significantly more negative affect than those in the never and the history stages of change. The only other group difference that was significant was those in the group with a history of binge eating had more restricting behaviour than those who never binged.

The second MANOVA was completed with the stages of change for binge eating as the between-subjects variable and the inverse log transformation of mother, father, and friend support subscales and the mother, father, and friend stress subscales from the LISRES as the dependent variables. This MANOVA indicated that the stages of change did not significantly differ across the social variables,  $\Lambda = .880, F(24, 783) = 1.22, p = .22$ .

Further description of the stages of change for binge eating was done by analysing group differences in actual BMI, desired BMI, and the difference between actual weight and desired BMI. Using the Bonferroni method, the univariate significance level was set at .02 (.05/3) for

Table 3

*Psychological Variables as a function of Stage of Change for Binge Eating*

Variables	Never (n = 147)	Precontemplation (n = 23)	Contemplation (n = 18)	Action (n = 31)	History (n = 23)	F	p <sup>a</sup>
DRES	23.73 <sub>a,c</sub> (9.09)	25.83 <sub>a</sub> (8.09)	26.17 <sub>a</sub> (9.19)	35.45 <sub>b</sub> (7.24)	32.17 <sub>d</sub> (7.71)	14.50***	.001
RSEI	32.01 <sub>a</sub> (5.36)	31.04 <sub>a</sub> (5.36)	29.94 (5.14)	26.39 <sub>b</sub> (5.60)	30.09 (5.75)	7.21***	.001
BD	-0.49 <sub>a</sub> (1.83)	0.17 <sub>a</sub> (1.82)	0.49 (1.74)	1.66 <sub>b</sub> (1.26)	0.11 <sub>a</sub> (2.08)	9.95***	.001 *
NA	1.62 <sub>a</sub> (0.13)	1.69 (0.16)	1.67 (0.15)	1.77 <sub>b</sub> (0.12)	1.65 <sub>a</sub> (0.15)	7.67***	.001
PA	35.19 (7.93)	35.96 (6.83)	35.28 (6.33)	33.42 (5.69)	35.57 (7.84)	0.5	.737

*Note.* Values represent means (standard deviations) for each group. *F* tests have *dfs* = (4, 237). Means with subscript a and b are significantly different as are means with the subscript c and d, at  $p < .05$  using Tukey's HSD comparison. DRES = The Dutch Eating Behaviours Questionnaire – Restrained Eating Scale; RSEI = Rosenberg Self-Esteem Inventory; BD = Body Dissatisfaction; NA, PA = Negative and Positive subscale, respectively, from the Positive and Negative Affective Schedule. NA data are log transformations of the raw data.

<sup>a</sup> $p$  tested at .01 using the Bonferroni correction.

\*\*\*  $p < .001$

Table 4

*Body Mass as a Function of the Stages of Change for Binge Eating*

	Never ( <i>n</i> = 144)	Precontemplation ( <i>n</i> = 23)	Contemplation ( <i>n</i> = 19)	Action ( <i>n</i> = 28)	History ( <i>n</i> = 24)	<i>F</i>	<i>p</i> <sup>a</sup>
Actual	23.7 <sub>a</sub>	24.24	26.88 <sub>b</sub>	25.33	24.13	3.14*	.015
BMI	(3.82)	(2.92)	(4.41)	(5.07)	(4.88)		
Desired	21.78	21.86	22.23	21.89	21.68	.18	.95
BMI	(2.16)	(1.70)	(2.45)	(3.00)	(2.71)		
Diff	1.9 <sub>a</sub>	2.38 <sub>c</sub>	4.5 <sub>b, d</sub>	3.35 <sub>b</sub>	2.53	5.92***	.001
BMI	(2.28)	(2.14)	(2.87)	(2.79)	(3.13)		*

*Note.* Values represent means (standard deviations) for each group. *F* tests have *dfs* = (4, 238). Means with subscript a and b are significantly different as are means with the subscript c and d, at  $p < .05$  using Tukey's HSD comparison. Diff BMI = Difference between Actual BMI and Desired BMI.

<sup>a</sup>*p* tested at .02 using the Bonferroni correction.

\*  $p < .02$ . \*\*\*  $p < .001$



these tests. There was a main effect of stage of change across the BMI variables,  $\Lambda = .89$ ,  $F(12, 661) = 2.3$ ,  $p < .01$ . Means, standard deviations, and significance levels are shown in Table 4.

Actual BMI and the difference between actual and desired BMI were significant, but desired BMI was not. Post hoc analysis to the univariate ANOVAs for each dependent variable consisted of conducting pair-wise comparisons using Tukey's HSD. These comparisons indicated that the contemplation group had a significantly higher BMI than those who never binged. Furthermore, those in the contemplation and the action groups desired a significantly greater weight loss than those who never binged. Finally those in the contemplation group desired a greater weight loss than those in the precontemplation group. Based on inspecting the means the contemplation had the highest BMI and also desired the largest weight loss.

As the BMI variables did not meet the multivariate assumption of homogeneity of variance, a nonparametric median test was used to ensure that multivariate tests were accurate. The significance level was set at .02 (.05/3) for the BMI comparisons using the median test. Actual BMI was no longer significantly different,  $\chi^2(4, N = 242) = 11.47$ ,  $p = .02$ , as it just was above the acceptable alpha level. Although the median test is quite conservative, the ANOVA results for actual BMI should be interpreted cautiously. As indicated by the ANOVA, the groups did not significantly differ on desired BMI,  $\chi^2(4, N = 239) = 3.96$ ,  $p = .41$ . However, the groups were significantly different on the difference between actual and desired BMI,  $\chi^2(4, N = 238) = 19.62$ ,  $p < .001$ . Similar to the means from the ANOVA, the contemplation group also desired the most weight loss.

*Psychological and Social Variables as a function of Stage of Change for Smoking, Drinking, and Unprotected Sex*

Each health-risk behaviour was investigated in the same fashion as that of binge eating. After conducting MANOVAs to analyse group differences across each of the stages of change for the health-risk behaviours, univariate ANOVAs on each dependent variable were conducted as follow-up tests using the Bonferroni method maintain family-wise error rate at .05. Thus the univariate ANOVAs for the psychological variables were tested at the .01 level and the .008 level for the social support and stress variables.

There was a main effect for stage of change for smoking across the psychological variables,  $\Lambda = .871$ ,  $F(20, 777) = 1.66$ ,  $p < .05$ . As shown in Table 5 the groups differed significantly on NA and restricting behaviour (DRES). Post hoc analysis to the univariate ANOVAs for each dependent variable consisted of conducting pair-wise comparisons using Tukey's HSD. These comparisons indicated that the group that never smoked had significantly less negative affect than those in the precontemplation and action groups. Similarly, those who never smoked had significantly less restricting behaviour than those who were in the precontemplation stage. Although the univariate ANOVA was not significant, there was a tendency for those who have never smoked to also have a less body dissatisfaction than those in the action stage. The social support and stress variables did not differ significantly across the stages of change for smoking,  $\Lambda = .890$ ,  $F(24, 790) = 1.11$ ,  $p = .32$ .

The MANOVA for the psychological variables and the stage of change for drinking was not significant,  $\Lambda = .893$ ,  $F(20, 767) = 0.63$ ,  $p = .89$ , nor was it significant for the support and stress variables,  $\Lambda = .932$ ,  $F(24, 779) = 0.67$ ,  $p = .89$ . Similarly the MANOVA for the psychological variables and the stage of change for unprotected sex was not significant,  $\Lambda = .927$ ,  $F(20, 777) = 0.90$ ,  $p = .59$ , nor was it significant for the support and stress variables,  $\Lambda = .942$ ,  $F(24, 786) = 0.57$ ,  $p = .95$ .

Table 5

*Psychological Variables as a function of the Stage of Change for Smoking*

Variables	Never (n = 127)	Precontemplation (n = 31)	Contemplation (n = 32)	Action (n = 14)	History (n = 39)	F	p <sup>a</sup>
DRES	24.38 <sub>a</sub> (.83)	29.68 <sub>b</sub> (1.68)	26.13 (1.65)	31.0 (2.50)	28.92 (1.50)	4.0**	.004
RSEI	31.64 (5.65)	28.55 (6.39)	31.06 (5.17)	29.93 (5.78)	30.51 (5.29)	2.05	.089
BD	-.36 (.17)	.42 (.34)	.08 (.33)	1.19 (.50)	.19 (.30)	10.73	.018 *
NA	1.62 <sub>a</sub> (.01)	1.70 <sub>b</sub> (.03)	1.67 (.03)	1.74 <sub>b</sub> (.04)	1.67 (.02)	3.81**	.005
PA	35.65 (7.74)	34.94 (6.88)	34.18 (7.45)	33.57 (33.57)	34.74 (7.07)	0.47	.759

*Note.* Values represent means (standard deviations) for each group. *F* tests have *dfs* = (4, 238). Means with subscripts a and b are significantly different at  $p < .05$  using Tukey's HSD comparison. DRES = The Dutch Eating Behaviours Questionnaire – Restrained Eating Scale; RSEI = Rosenberg Self-Esteem Inventory; BD = Body Dissatisfaction; NA, PA = Negative and Positive subscale, respectively, from the Positive and Negative Affective Schedule. NA data are log transformations of the raw data.

<sup>a</sup> $p$  tested at .01 using the Bonferroni correction.

\*\*  $p < .01$ .

*Related Characteristics of Stage of Change.*

Further description of the stages of change was done by analysing possible group differences in age of onset, present frequency of the behaviour, and highest past frequency in an attempt to investigate the severity of the behaviour. Present frequency was the number of times per month the participant typically engaged in the behaviour during the last five months. Highest past frequency was the number of times per month the participant engaged in the behaviour during the most frequent time in their life. Those who never engaged in the behaviour were not included in these analyses and those who have a history of the behaviour were not included in the analysis on present frequency. Univariate ANOVAs indicated that there was no difference across the stages of change on age of onset for binge eating,  $F(3, 75) = 0.305, p = .82$ , smoking,  $F(3, 107) = 1.71, p = .17$ , heavy drinking,  $F(3, 156) = 1.07, p = .36$ , or unprotected sex,  $F(3, 49) = 0.39, p = .76$ . As the frequency variables did not meet the assumptions of parametric testing, nonparametric median tests were used. The frequency variables were analyzed in groups based on the behaviour; therefore using the Bonferroni method, the univariate significance level was set at .025 (.05/2) for binge eating, smoking, heavy drinking, and unprotected sex. Statistics for the frequency variables are reported in Table 6.

The median number of binges over the past five months did not differ across the stages of change,  $\chi^2(2, N = 75) = 1.49, p = .48$ , nor did the median number of binges when binge eating most frequently,  $\chi^2(3, N = 99) = 7.99, p = .05$ . Thus, it appears that the severity of present or past binge eating does not differ across the stages of change. The median number of cigarettes smoked over the past 5 months was significantly different across the stages of change for smoking,  $\chi^2(2, N = 77) = 22.43, p < .001$ , as was the number of cigarettes smoked when smoking the most frequently,  $\chi^2(3, N = 118) = 33.85, p < .001$ . Inspecting the medians, it is

Table 6

*Median Binge Eating and Health-Risk Behaviour across the Stages of Change*

Variables	Precontemplation	Contemplation	Action	History	$\chi^2$	$p^a$
Present binge eating	1.5	4.5	3		1.49	.48
Highest past binge eating	2.5	8	12	8	7.99	.05
Present smoking	2	280	140		22.43***	.001
Highest past smoking	12	364	294	56	33.85***	.001
Present drinking	3	4	2.7		2.84	.241
Highest past drinking	5.5	8	3.25	9	6.42	.093

Present						
sex	0	1	1		11.62**	.003
Highest past						
sex	0	1	3.5	1	18.67***	.001

*Note.* Present = the median number of times per month the participant typically engaged in the behaviour during the last five months.

Highest past = the median number of times per month the participant engaged in the behaviour during the most frequent time in their life. The median tests have  $df = (2, N = 75)$  for present binge eating,  $df = (3, N = 99)$  for highest past binge eating,  $df = (2, N = 77)$  for present smoking,  $df = (3, N = 118)$  for highest past smoking,  $df = (2, N = 143)$  for present drinking,  $df = (3, N = 147)$  for highest past drinking,  $df = (2, N = 52)$  for present sex,  $df = (3, N = 100)$  for highest past sex. Sex = unprotected sex.

<sup>a</sup> $p$  tested at .025 for present and past frequency for binge eating, smoking, and unprotected sex using the Bonferroni correction.

\*\*  $p < .01$ , \*\*\*  $p < .001$

apparent that those in the contemplation group for smoking have the highest current and highest ever frequency of smoking than the other groups. In regards to the stages of change for heavy drinking, the median number of times the participant drank heavily over the past 5 months did not differ across the stages of change,  $\chi^2(2, N = 143) = 2.84, p = .24$ , nor did the frequency during the time in the participant's life when drinking the heaviest,  $\chi^2(3, N = 172) = 3.05, p = .38$ . The results for heavy drinking frequency should be interpreted cautiously as there were only 2 participants in the action group. The median number of times the participant engaged in unprotected sex over the past 5 months was significantly different across the stages of change for unprotected sex,  $\chi^2(2, N = 52) = 11.62, p < .003$ , as was the number of times the participant engaged in unprotected sex when doing so the most frequently in their life,  $\chi^2(3, N = 100) = 18.67, p < .001$ . Those in the precontemplation stage have the fewest present and past unprotected sexual encounters. However, these results also have to be interpreted cautiously as the median for precontemplation for both present and past frequency was zero. This does not correspond to their endorsement of engaging in the behaviour.

*Comorbidity of Other Health-Risk Behaviours and Compensatory Behaviours across the Stages of Change for Binge Eating*

To analyse comorbidity, the health-risk and compensatory behaviours variables were created by collapsing the precontemplation, contemplation, action, and history groups to create a dichotomy of those who presently engage in the behaviour or have in the past and those who never have engaged in the behaviour. The frequency of participants with current and/or past history for smoking, drinking, and unprotected sex were analysed across the stages of change for binge eating using a Chi Square (see Table 7). Using the Bonferroni method, the significance level was set at .02 (.05/3). Although not significant, there was a tendency for the percentage of



smokers to differ across the stages of change for binge eating,  $\chi^2(4, N = 247) = 11.75, p = .02$ . Upon inspecting the frequencies, it is evident that the contemplation group has highest frequency, with 75% of the contemplation group either presently smoking or having smoked in the past. Neither the frequency of unprotected sex,  $\chi^2(4, N = 247) = 5.51, p = .24$ , nor the frequency of drinking,  $\chi^2(4, N = 247) = 1.99, p = .74$ , were significantly different across the stages of change for binge eating.

Frequencies of vomiting, excessive exercise, and pill use were also analysed across the stages of change for binge eating using a Chi Square. Using the Bonferroni method, the significance level was set at .02 (.05/3). The frequency of vomiting, pill use, and excessive exercise differed significantly across the groups,  $\chi^2(4, N = 246) = 46.06, p < .001$ ,  $\chi^2(4, N = 247) = 13.85, p < .01$ ,  $\chi^2(4, N = 247) = 22.49, p < .001$ , respectively. The number of participants vomiting presently or in the past was highest in the action group (58%). The majority of those in the action stage for binge eating are in the action or history stage of change for vomiting (76%). Due to a low number of participants in each stage of change this observation could not be investigated to see if this difference was significant. Those in the precontemplation, contemplation, action, and history stages of change for binge eating have similar levels of pill use and excessive exercise. However, these groups appear to have significantly more people who presently engage or have a history of engaging in taking pills or excessive exercise than those who have never binged.

### *Summary*

*Stages of change for binge eating.* The main hypothesis of this study was supported in that there were significant differences across the stages of change on the risk factors. The results of this

Table 7

*Percentage of Participants with Current or Past Engagement in Health-Risk Behaviours as a function of the Stage of Change for Binge Eating*

Variables	Never ( <i>n</i> = 148)	Precontemplation ( <i>n</i> = 24)	Contemplation ( <i>n</i> = 20)	Action ( <i>n</i> = 31)	History ( <i>n</i> = 24)	$\chi^2$	<i>p</i> <sup>a</sup>
Smoking	39.9	54.2	75	58.1	54.2	11.75	.02
Drinking	66.2	70.8	75	77.4	66.7	1.99	.74
Sex	38.5	29.2	40	58.1	41.7	5.51	.24
Vomiting	6.8	12.5	15	54.8	25	46.06***	.001
Pill use	12.2	29.2	30	32.3	33.3	13.85**	.008
Exercise	37.2	70.8	70	67.7	62.5	22.49***	.001

*Note.* Values represent the percentage of participants in each group who reported current or past engagement. Drinking = heavy drinking. Sex = unprotected sex. Exercise = excessive exercise. The median tests have *dfs* = (4, *N* = 247) for smoking, unprotected sex, drinking, pill use, and exercise and *df* = (4, *N* = 246) for vomiting.

<sup>a</sup>*p* tested at .02 using the Bonferroni correction.

\*\*  $p < .01$ . \*\*\*  $p < .001$ .

\*\*

study indicated that those who are currently trying to stop binge eating (action stage) appear to be suffering the most and those who have never binged, the least. Those who are currently trying to stop binge eating had more body dissatisfaction and restricting behaviour than those who have never binged, precontemplators, or contemplators. They also had less self-esteem than those who have never binged or the precontemplators. Finally the action group had significantly more negative affect than those who never binged or those who have a history of binge eating. The only other group difference was those with a history of binge eating had more restricting behaviour than those who have never binged. In contrast, stage of change for binge eating was unrelated to social support or social stress.

*Stages of change for health-risk behaviours.* Similar to the bingers, those who have never smoked appeared to suffer the least. They had less negative affect than those in the precontemplation and action groups. Also, those who never smoked had less restricting behaviour than those who were in the precontemplation stage. There was a tendency for those who never smoked to also have less body dissatisfaction than those in the action stage. There were no group differences for the other health-risk behaviours or the social variables.

*Related characteristics of stage of change.* Age of onset was not significantly different across the stages of change for binge eating or the other health-risk behaviours. Present frequency or highest past frequency were not significantly different across the stages of change for binge eating or heavy drinking, but were for smoking and unprotected sex. It appears that those in the contemplation stage for smoking have both the highest frequency presently and highest past frequency. Those in the contemplation stage had the highest present frequency and those in the history group had the highest past frequency for unprotected sex. Although as previously mentioned, the results for unprotected sex need to be interpreted cautiously.

*Comorbidity with the stages of change for binge eating.* In regards to comorbidity, there were no significant differences across the stages of change for binge eating for comorbid heavy drinking or unprotected sex. There was a tendency for more people in the contemplation stage for binge eating to be smokers or have a history of smoking. In regards to compensatory behaviours, the percentage of participants vomiting presently or in the past was highest in the action group. This is in contrast to the comorbidity with pill use and excessive exercise, where it appears that the main difference is between those who have never binged from those who have.

### Discussion

The purposes of the present study were to (a) investigate risk and protective factors in association with the stage of change for binge eating, to (b) explore if these risk and protective factors are associated with the stage of change for common health-risk behaviours among university women, to (c) investigate if the stages differ in regards to the frequency of the behaviours or age of onset, and to (d) explore the comorbidity with health-risk behaviours and compensatory behaviours across the stages of change for binge eating.

It is apparent from this research that a large number of university women have concerns about their weight and shape and that some are acting on these concerns. It is disconcerting to find that 50% of the women sampled stated that they are in the precontemplation stage for feeling they must control their weight or shape, and only 10% of the sample stating they have never felt this way. There was a high percentage of women in the precontemplation stage for excessive exercise, dieting, skipping meals, and avoiding certain foods. This disregard of the severity of these disordered eating behaviours and attitudes may indicate that participants believe they are normal behaviours in our culture. Although a smaller number engage in more dangerous

behaviours such as taking pills or vomiting, the majority of these individuals are in the precontemplation stage, and thus will not be the ones to seek help.

#### *Stage of Change for Binge Eating and Risk Factors*

In regards to the first set of hypotheses, all psychological variables but positive affect were significantly different across the stages of change. This confirms the first hypothesis: those who have never binged appear to be the healthiest with respect to self-esteem, the least amount dieting behaviour, the least body dissatisfaction, and the least amount of negative affect. However, even more interesting was the observation that women in the action stage of change for binge eating appeared to fare the worst. These women have more negative affect than those who have never binged or have a history of binge eating, a finding similar to that found by Clausen (1999). Furthermore, those in the action stage had more dieting behaviour than those who never binged, those in the precontemplation stage, or those in the contemplation stage. They also had more body dissatisfaction than those who never binged, those in the precontemplation stage, and those in the history stage. Furthermore, women in the action stage had less self-esteem than those in the never and precontemplation stages. Upon inspecting the means for each measure, the action group had the most extreme score across all of the variables. It is possible that with more statistical power, by increasing sample size, those in the action stage may fare worse than the other stages as well.

There are several possible explanations for this heightened level of body dissatisfaction, negative affect, dieting, and low self-esteem among women in the action stage for binge eating. First, women who describe their stage of change as being in action are qualitatively different from those who describe themselves as in another stage. Possibly those who believe that their behaviour is in need of change suffer more negative consequences from their binges. These may

include a range of physical, emotional, and social consequences. Based on this hypothesis, those in the other stages will likely never suffer in a similar way as those in the action stage. It is likely that this difference is not due to severity of the binges, as age of onset or frequency of present or past binge eating did not differ across the stages. Furthermore, the research by Clausen (1999) indicated that there were no differences across the stages in the quality of the binge as measured by variables such as the amount of food consumed or rate of consumption. It is possible that if those in action may suffer more consequences from their binge eating. Coupled with the desire to stop binge eating, they may also be more likely to be in therapy. Unfortunately, treatment-seeking behaviour was not ascertained in the present study.

Another possible explanation to account for why the action group experiences the most distress may have something to do with the *process* of change itself. Based on this hypothesis, distress is low among those who are not aware of the behaviour or are not ready to change. Distress increases in the action stage, and decreases again once the binge eating has ceased. Clausen (1999) found that those in the action stage had the greatest amount of concern for the pros *and* the cons of behaviour change. This suggests that action is the critical stage of change. Thus, an increase in body dissatisfaction, dieting, negative affect, and lowered self-esteem could be associated with this belief or experience of negative consequences of behaviour change. The only way to test this hypothesis would be to conduct a longitudinal study by following a group of bingers from precontemplation through maintenance or recovery.

Social support and the exploratory social stress variables were not associated with the stages of change for any of the behaviours examined in this study. There are two possible explanations for this. Firstly, the scale used was not sensitive for this age group as it was created for those 18 and under. Secondly, the failure to demonstrate an association of the social factors

and stages of change may reflect an insufficient statistical power necessary to detect a true association.

BMI has not consistently predicted the onset of binge eating and other eating disordered symptoms (Stice, 2002). It is possible that although BMI may not distinguish bingers from non-bingers, there may be more subtle differences such as those found across the stages of change in the present study. Present indicated that those in the contemplation group had a significantly higher BMI than those who never binged. Furthermore, it is possible that desired weight loss may be a more important associated characteristic than actual BMI. Results indicated that those in the contemplation and action groups desired more weight loss than those who never binged. In addition, those in the contemplation group also desired more weight loss than those who were in the precontemplation group. Inspecting the means, the contemplation group had the highest BMI and desired the most weight loss. It is possible that the BMI of those in the contemplation stage may be elevated due to binge eating, creating a motivating factor to stop binge eating. This same desire for weight loss may also be a motivator for those in action. Jones et al. (2001) have hypothesized that BMI may be more related to binge eating and disordered eating attitudes as the population becomes more disparate from the ideal body weight, thus desiring a greater weight loss. The paradox is that weight loss efforts often falter or even contribute to rebound weight gain, thereby perpetuating more disordered attitudes and behaviours. Further research will need to clarify the relationship of BMI and desired weight loss.

#### *Stage of Change for Health-Risk Behaviours and Risk Factors*

In regards to the second set of hypotheses, some of the risk factors were significantly different across the stages of change for smoking. However, the only consistent difference across the variables was that those who never smoked fared the best. Those in the action stage or



precontemplation stage had more negative affect than those who never smoked. Those in the precontemplation stage had more dieting behaviour than those who never smoked. There was also a tendency for those in the action group to have more body dissatisfaction than those who have never smoked. Thus it appears that certain risk factors for disordered eating, namely negative affect, dieting, and possibly body dissatisfaction may be related to different stages of change for smoking.

The risk factors did not appear to be associated with the stages of change for heavy drinking or unprotected sex. It is possible that the risk factors are unrelated to these health-risk behaviours. Past research has indicated that body dissatisfaction, dieting, negative affect, and self-esteem were related to drinking behaviour. Possibly, a larger sample is required to increase the statistical power necessary to investigate what may be a small effect in reality. Although there has been little research on risk factors for unprotected sex, a similar suggestion could be made.

Social support and social stress variables were not significantly different across the stages of change for smoking, heavy drinking, or unprotected sex. This is in contrast to some research (Zaleski, Levey-Thors, & Schiaffino, 1998) that has indicated that health-risk behaviours may be predicted by level of social support. As mentioned previously, it could be that the scale used to operationally define social support and stress was not reliable or valid for this age group.

#### *Severity across the Stages of Change*

Age of onset was not significantly different across the stages of change for binge eating or any of the health-risk behaviours. Similarly, severity as measured by present frequency or highest past frequency was not significantly different across the stages of change for binge eating. Thus, it is unlikely that the differences associated with the psychological factors would be

mediated by severity. Another hypothesis may be suggested from this finding. Similar to that found by Clausen (1999), women in the precontemplation stage binged at the same frequency as the other stages of change, and it was concluded they were in denial of the effects of their behaviour. In the present study, those in the precontemplation group had less dieting behaviour and body dissatisfaction, and more self-esteem than those in the action group. It is possible that this denial may buffer the effects of binge eating. This hypothesis would have to be investigated further.

In contrast, frequency differed across the stages of change for smoking, indicating that those in the contemplation stage for smoking have the highest present and highest past frequency of cigarette smoking. Based on the medians of number of cigarettes smoked, it appears that those in the precontemplation stage have a very low frequency of smoking. It is possible that these individuals only smoke intermittently, whereas those in the action stage have a lower present frequency as they have already begun to quit. Clausen (1999) found that those in the contemplation stage had greater concern over the cons of quitting than those in the precontemplation stage. It is possible that this concern over the cons of quitting may be related to smoking at such a high frequency.

There were no significant differences in present or past frequency of heavy drinking across the stages of change for drinking. In contrast, those in the contemplation and action groups for unprotected sex had the highest current frequency of unprotected sex, whereas those in the history group had the highest past frequency. These findings need to be investigated further as group sizes were very small and some group frequencies did not correspond to stage of change. For example there was a median of zero for present and past frequency of unprotected sex in the precontemplation stage.

*Comorbidity across the Stages of Change for Binge Eating*

Investigation of the comorbidity between the stages of change for binge eating and the health-risk behaviours indicated that those in the contemplation stage for binge eating had the highest probability for a smoking history (75%). This is in contrast to heavy drinking and unprotected sex where there were no differences across the stages of change for binge eating.

Present or past vomiting, pill use, and excessive exercise were significantly different across the stages of change for binge eating. It appeared that more individuals in the action group endorsed present or past self-induced vomiting than the other stages of change. The stage of change for vomiting was inspected in correspondence with the action stage for binge eating and it appears that the majority of the group is in the action or history stages for vomiting. A larger frequency of individuals with a history of vomiting in the action stage for binge eating may suggest that these individuals suffer from Bulimia Nervosa. This may offer yet another explanation for why those in the action stage may have more body dissatisfaction, more dieting, more negative affect, and less self esteem. Unfortunately the participants did not fill out a diagnostic measure for eating disorders, so this hypothesis could not be tested.

In regards to pill use and excessive exercise, it appears that the largest difference is between those who have never binged and those who presently binge or have a history of binge eating. It is possible, as shown by the high frequency of these behaviours in the sample, that these behaviours are a more acceptable means of attempting to control weight. This may be especially true with individuals that already have a maladaptive relationship with food, as shown by their engagement of binge eating.

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### *Limitations and strengths*

There are several limitations of the present research. The first limitation that affects the interpretation of the present research is that it is cross-sectional. This limitation is especially problematic as the variable being investigated, *change*, is inherently in need of being investigated over time. Thus, a longitudinal study following individuals over the stages of change would be suggested to investigate these preliminary findings. Another limitation is that certain stages of change had few participants, thus decreasing power. Finally, the measure of binge eating and the health-risk behaviours relied on self-report which may have caused some people to under-report socially undesirable behaviours, especially unprotected sex.

One strength of the present research is the use of risk factors for binge eating that have been supported by past research. This would allow the results to be interpreted with more confidence, as these factors have at least prospectively predicted the onset of binge eating. Another strength lies in the definition of binge eating. Some studies have not used the definition of binge eating as indicated by the DSM-IV-TR (American Psychiatric Association, 2000). This inconsistency across studies makes results unreliable and difficult to generalize. Finally, the inclusion of other health-risk behaviours is important to begin to investigate general risk factors, which may eventually lead to models of risk (Stice, 2002) that may predict multiple behaviours. This may prove to be helpful in the creation of prevention and treatment models.

### *General Conclusions*

Several general conclusions can be made from this research. Primarily, it appears that there are differences in proven risk factors for binge eating across the stages of change. Although in need of further investigation, it appears that those in the action stage for binge eating suffer the most distress, and have the most disordered attitudes and behaviours. Factors that have lost

favour, such as BMI, should be researched in greater depth, as there appears to be differences across the stages of change on desired weight loss and possibly actual BMI. However, as mentioned previously, the only way to adequately measure the stages of change is to conduct longitudinal research. Another conclusion that can be made is that certain risk factors for binge eating appear to be associated with smoking. Finally, it is sobering to find that a large number of university women do not believe that their concern over their weight or shape or their engagement in certain behaviours used in attempt to change their weight and shape is problematic. This appears to be a phenomenon of our present culture (Striegel-Moore & Cachelin, 1999) and may contribute to the increase in the prevalence of women suffering with eating disorders or symptoms of eating disorders (Polivy & Herman, 2002).

#### *Implications and Future Research*

The differences found across the stages of change for binge eating have several implications for research and for practical settings. In regards to research, it may be prudent to investigate stage of change when investigating risk factors. This is suggested because simply obtaining information on whether the participant presently binges or not does not necessarily describe the sample precisely. Clearly, as this study suggests, women who binge are in different stages of change and their staging has implications for their mental health. Practically, it appears that those in the action stage appear to be the most severely distressed and have more dysfunctional eating-related attitudes and behaviours. Thus clinicians need to be aware of associated variables to each stage of change to better understand their clients and to build more effective treatment models.

Future research should include larger samples and possibly a better measure of the health-risk behaviours to better understand general risk factors. As previously discussed, stage of

change research needs to include longitudinal research on the investigated risk factors as well as additional factors, including factors that have lost favor, such as actual BMI and social support. Future research may also include investigation of additional risk factors, and the investigation of risk factors across the stages of change in specific samples such as those with Anorexia or Binge Eating Disorder. The preliminary findings found by the present study, if replicated by longitudinal research, may prove helpful for research methodologies and will help to better understand the stages of change for binge eating to allow for improved application to treatment.

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Appendix A  
Consent Form

## Consent Form

My signature below indicates that I agree to participate in this study concerning certain health-risk behaviours among university women. This study is being conducted by Andrea Beranger in the Department of Psychology for her Master's thesis under the supervision of Dr. Ron Davis (343-8646). This study entails completion of questionnaires assessing health-risk behaviours (e.g., binge eating, drinking, smoking, unprotected sex) and a number of psychological factors (e.g., self-esteem, emotion, and social support). Participation will take approximately 40 minutes to complete the questionnaires. Follow-up testing will occur again in late February 2003 when questionnaires would be completed a second time. If you volunteer to participate, the experimenter will contact you via email or telephone to arrange for the second testing.

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 seven years.
4. I may receive a summary of the project, upon request, following the completion of the study.

\_\_\_\_\_  
Name of Participant (please print)

\_\_\_\_\_  
Signature of Participant

\_\_\_\_\_  
Student Number for Psych 1100  
Bonus Mark

\_\_\_\_\_  
Name of Professor for Psych 1100  
1 Bonus Mark

\_\_\_\_\_  
Date

\_\_\_\_\_  
Email Address @mail.lakeheadu.ca

\_\_\_\_\_  
Phone Number

\_\_\_\_\_  
Other Email Address (if you have one)

✶

**Appendix B**  
**Personal Information**

\*

Please complete the following questions:

Age: \_\_\_\_\_

Gender (circle one): female male

What year of university are you presently in: \_\_\_\_\_

Ethnic Background: \_\_\_\_\_

Living situation (circle the number that best applies to you):

1. University residence
2. Home with parent(s)
3. Apartment/house/room alone
4. Apartment/house/room with roommates

How long have you been in the above living situation: \_\_\_\_\_

Height: \_\_\_\_\_ ft \_\_\_\_\_ inches (guess if you don't know)

Current weight: \_\_\_\_\_ lbs (guess if you don't know)

Desired weight: \_\_\_\_\_ lbs

Appendix C

Behavioural Questionnaire

\*

Please respond as honestly as possible to the following questions by circling your response or by filling in the blank.

1. Has there ever been a period of time in your life when you engaged in binge eating? A binge episode means two things: (1) Eating, in a discrete period of time (e.g. within any 2-hour period), an amount of food that is definitely larger than what most people would eat during a similar period of time and under similar circumstances, and (2) Experiencing a sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating).

(a) = yes If YES, please continue

(b) = no If NO, skip to question #2 on page 6

2. How old were you when you began to binge eat on a regular basis?

\_\_\_\_\_

3. During the last five months (since May), how often have you typically had an eating binge? (check one item only and fill in corresponding frequency)

\_\_\_\_\_ Daily – I usually binge \_\_\_\_\_ time(s) a day

\_\_\_\_\_ Weekly – I usually binge \_\_\_\_\_ time(s) a week

\_\_\_\_\_ Monthly – I usually binge \_\_\_\_\_ time(s) a month

\_\_\_\_\_ I have not binged in the last five months

4. When you binged the most frequently, how often did you typically have an eating binge:

\_\_\_\_\_ Daily – I usually binge \_\_\_\_\_ time(s) a day

\_\_\_\_\_ Weekly – I usually binge \_\_\_\_\_ time(s) a week

\_\_\_\_\_ Monthly – I usually binge \_\_\_\_\_ time(s) a month

5. For how many months were you binge eating this frequently? \_\_\_\_\_ months

6. I would presently label myself a “compulsive eater” (one who engages in episodes of uncontrollable eating).

(a) absolutely

(b) yes

(c) yes, probably

(d) yes, possibly

(e) no, probably not

7. When I feel that my eating behavior is out of control, I try to take rather extreme measures to get back on course (strict dieting, fasting, laxatives, diuretics, self-induced vomiting, or vigorous exercise).

- (a) always
- (b) almost always
- (c) frequently
- (d) sometimes
- (e) never or my eating behavior is never out of control

If you answered (a), (b), (c), or (d) circle the behavior(s) in the above parenthesis that you engage in.

8. After I binge eat I turn to one of several strict methods to try to keep from gaining weight (vigorous exercise, strict dieting, fasting, self-induced vomiting, laxatives, or diuretics).

- (a) never or I don't binge eat
- (b) rarely
- (c) occasionally
- (d) a lot of the time
- (e) most or all of the time

If you answered (b), (c), (d), or (e) circle the behavior(s) in the above parenthesis that you engage in.

If you engaged in binge eating during the last five months, continue with page 4 (BEAC). Otherwise, go to page 6



Please respond as honestly as possible to the following questions by circling your response or by filling in the blank.

1. Has there ever been a period of time when you engaged in smoking cigarettes?

- (a) = yes If YES, please continue  
 (b) = no If NO, skip question C., on page 7

2. How old were you when you began smoking on a regular basis?

\_\_\_\_\_

3. During the last five months, how often have you typically smoked? (check one item only and fill in corresponding frequency)

- \_\_\_\_\_ Daily – I usually smoke \_\_\_\_\_ time(s) a day  
 \_\_\_\_\_ Weekly – I usually smoke \_\_\_\_\_ time(s) a week  
 \_\_\_\_\_ Monthly – I usually smoke \_\_\_\_\_ time(s) a month  
 \_\_\_\_\_ I have not smoked in the last five months

4. During the time in your life that you smoked the heaviest, how often did you typically smoke?

- \_\_\_\_\_ Daily – I usually smoke \_\_\_\_\_ time(s) a day  
 \_\_\_\_\_ Weekly – I usually smoke \_\_\_\_\_ time(s) a week  
 \_\_\_\_\_ Monthly – I usually smoke \_\_\_\_\_ time(s) a month

5. For how many months were you smoking this frequently? \_\_\_\_\_ months

6. I would presently label myself a “smoker”.

- (a) absolutely  
 (b) yes  
 (c) yes, probably  
 (d) yes, possibly  
 (e) no, probably not

Please respond as honestly as possible to the following questions by circling your response or by filling in the blank.

1. Has there ever been a period of time when you engaged in heavy drinking? An episode of heavy drinking is characterized by drinking four or more drinks of alcohol at one time.

- (a) = yes If YES, please continue  
 (b) = no If NO, skip to question D, on page 8

2. How old were you when you began drinking heavy?  
 \_\_\_\_\_

3. During the last five months, how often have you typically drank heavy? (check one item only and fill in corresponding frequency)

- \_\_\_\_\_ Daily – I usually drink heavy \_\_\_\_\_ time(s) a day  
 \_\_\_\_\_ Weekly – I usually drink heavy \_\_\_\_\_ time(s) a week  
 \_\_\_\_\_ Monthly – I usually drink heavy \_\_\_\_\_ time(s) a month  
 \_\_\_\_\_ I have not engaged in heavy drinking in the last five months

4. During the time in your life that you drank the heaviest, how often did you typically drink heavy?

- \_\_\_\_\_ Daily – I usually drank heavy \_\_\_\_\_ time(s) a day  
 \_\_\_\_\_ Weekly – I usually drank heavy \_\_\_\_\_ time(s) a week  
 \_\_\_\_\_ Monthly – I usually drank heavy \_\_\_\_\_ time(s) a month

5. For how many months were you drinking this frequently? \_\_\_\_\_ months

6. I would presently label myself a “heavy drinker” (one who engages in episodes of drinking alcohol four or more drinks of alcohol at one time.

- (a) absolutely  
 (b) yes  
 (c) yes, probably  
 (d) yes, possibly  
 (e) no, probably not

D. Please respond as honestly as possible to the following questions by circling your response or by filling in the blank.

1. Have you ever engaged in sexual intercourse without a condom?

(a) = yes If YES, please continue

(b) = no If NO, skip to page 9.

2. If you answered YES to the above question, did you ever engage in sexual intercourse with a partner whose sexually transmitted disease status was unknown to you?

(a) = yes If YES, please continue

(b) = no If NO, skip to end

3. How old were you when you first had unprotected sex?

\_\_\_\_\_

4. During the last five months, how often have you typically engaged in sexual intercourse with a partner whose sexually transmitted disease status was unknown to you? (check one item only and fill in corresponding frequency)

\_\_\_\_\_ Daily – I usually have unprotected sex \_\_\_\_\_ time(s) a day

\_\_\_\_\_ Weekly – I usually have unprotected sex \_\_\_\_\_ time(s) a week

\_\_\_\_\_ Monthly – I usually have unprotected sex \_\_\_\_\_ time(s) a month

\_\_\_\_\_ I have not had unprotected sex in the last Five months

5. During the most frequent period of unprotected sexual encounters in your life, how often have you typically engaged in sexual intercourse with a partner whose sexually transmitted disease status was unknown to you?

\_\_\_\_\_ Daily – I usually had unprotected sex \_\_\_\_\_ time(s) a day

\_\_\_\_\_ Weekly – I usually had unprotected sex \_\_\_\_\_ time(s) a week

\_\_\_\_\_ Monthly – I usually had unprotected sex \_\_\_\_\_ time(s) a month

6. I would not protect myself when I have sexual intercourse with a partner whose sexually transmitted disease status was unknown to me.

(a) absolutely, I would not protect myself

(b) yes, I would not protect myself

(c) yes, I probably would not protect myself

(d) yes, I possibly would not protect myself

(e) no, I would probably protect myself

Appendix D  
Stage of Change Inventory

\*

Instructions: This questionnaire contains groups of statements about different kinds of eating problems and health-risk behaviours that people can have.

1. Read all of the statements within each
2. Circle the number beside the one statement that best describes you.

A. Some people skip meals to control their weight or shape.	
0	I have never skipped meals to control my weight or shape in my entire life.
1	I have skipped meals to control my weight or shape within the past 5 months but I am not concerned about it. I just don't see it as a personal problem.
2	I have skipped meals to control my weight or shape within the past 5 months and it concerns me. I would like to eat all of my meals but I really haven't done anything about it so far.
3	I have skipped meals to control my weight or shape within the last 5 months and it concerns me. I am really trying to hard not to skip meals but sometimes I still have this problem.
4	I used to skip meals to control my weight or shape but I have managed to eat all of my meals within the past 5 or more months. I am concerned that I could start skipping meals again if I am not careful.
5	I used to skip meals to control my weight or shape but I have managed to eat all of my meals within the past 5 or more months. I believe that I have completely overcome this problem and I am confident that I will not start to skip meals again in the future.

✱

Instructions: This questionnaire contains groups of statements about different kinds of eating problems and health-risk behaviours that people can have.

1. Read all of the statements within each
2. Circle the number beside the one statement that best describes you.

B Some people avoid certain kinds of food to control their weight or shape	
0	I have never avoided certain kinds of food to control my weight or shape in my entire life.
1	I have avoided certain kinds of food to control my weight or shape within the past 5 months but I am not concerned about it. I just don't see it as a personal problem.
2	I have avoided certain kinds of food to control my weight or shape within the past 5 months and it concerns me. I would like to stop avoiding certain foods but I really haven't done anything about it so far.
3	I have avoided certain kinds of food to control my weight or shape within the last 5 months and it concerns me. I am really trying hard not to avoid certain kinds of food but sometimes I still have this problem.
4	I used to avoid certain kinds of food to control my weight or shape but I have managed to stop doing this within the past 5 or more months. I am concerned that I could start avoiding foods again if I am not careful.
5	I used to avoid certain kinds of food to control my weight or shape but I have managed to stop doing this within the past 5 or more months. I believe that I have completely overcome this problem and I am confident that I will not start avoiding certain foods again in the future.

Instructions: This questionnaire contains groups of statements about different kinds of eating problems and health-risk behaviours that people can have.

1. Read all of the statements within each
2. Circle the number beside the one statement that best describes you.

C. Some people follow strict dieting rules about what, when and/or how much they will eat because they are trying to control their weight or shape	
0	I have never followed strict dieting rules about eating to control my weight or shape in my entire life.
1	I have followed strict dieting rules about eating within the last 5 months but I am not concerned about it. I just don't see it as a personal problem.
2	I have followed strict dieting rules about eating within the past 5 months and it concerns me. I would like to stop being so strict on myself about eating but I haven't done anything about it so far.
3	I have followed strict dieting rules about eating within the past 5 months and it concerns me. I am really trying to not be so strict on myself but sometimes I still have this problem.
4	I used to follow strict dieting rules about eating but I have stopped within the last 5 or more months. I am concerned that I could start being strict on myself again if I am not careful.
5	I used to follow strict dieting rules about eating but I have stopped within the past 5 or more months. I believe that I have completely overcome this problem and I am confident that I will not start being strict on myself again in the future.

Instructions: This questionnaire contains groups of statements about different kinds of eating problems and health-risk behaviours that people can have.

1. Read all of the statements within each
2. Circle the number beside the one statement that best describes you.

**D. Some people binge eat.** A binge episode means two things: (1) Eating in a discrete period of time (e.g. within any 2-hour period) an amount of food that is definitely larger than what most people would eat during a similar period of time and under similar circumstances, and (2) Experiencing a sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating).

- |   |   |
|---|---|
| 0 | I have never binged in my entire life.  |
| 1 | I have binged within the past 5 months but I am not concerned about it. I just don't see it as a personal problem.  |
| 2 | I have binged within the past 5 months and it concerns me. I would like to stop binge eating but I really haven't done anything about it so far.  |
| 3 | I have binged within the past 5 months and it concerns me. I am really trying hard to stop binge eating but sometimes I still have this problem.  |
| 4 | I used to binge but I have completely stopped within the past 5 or more months. I am concerned that I could start binge eating again if I am not careful.   |
| 5 | I used to binge but I have completely stopped within the past 5 or more months. I believe that I have completely overcome this problem and I am confident that I will not start it again in the future. |



Instructions: This questionnaire contains groups of statements about different kinds of eating problems and health-risk behaviours that people can have.

1. Read all of the statements within each
2. Circle the number beside the one statement that best describes you.

**E. Some people purposely make themselves throw up after they have eaten food in an attempt to control their weight or shape.**

- |   |   |
|---|---|
| 0 | I have never purposely thrown up to control my weight or shape in my entire life.   |
| 1 | I have purposely thrown up within the past 5 months but I am not concerned about it. I just don't see it as a personal problem.   |
| 2 | I have purposely thrown up within the past 5 months and it concerns me. I would like to stop throwing up but I haven't done anything about it so far.   |
| 3 | I have purposely thrown up within the past 5 months and it concerns me. I am really trying hard to stop throwing up but sometimes I still have this problem.  |
| 4 | I used to purposely throw up but I have managed to stop doing it altogether within the past 5 or more months. I am concerned that I could start throwing up again if I am not careful.  |
| 5 | I used to purposely throw up but I have managed to stop doing it altogether within the past 5 or more months. I believe that I have completely overcome this problem and I am confident that I will not start it again in the future. |

Instructions: This questionnaire contains groups of statements about different kinds of eating problems and health-risk behaviours that people can have.

1. Read all of the statements within each
2. Circle the number beside the one statement that best describes you.

F. Some people exercise vigorously and a lot because they are trying to control their weight or shape.	
0	I have never exercised vigorously and a lot to control my weight or shape in my entire life.
1	I have exercised vigorously and a lot to control my weight or shape within the last 5 months but I am not concerned about it. I just don't see it as a personal problem.
2	I have exercised vigorously and a lot to control my weight or shape within the past 5 months and it concerns me. I would like to stop exercising vigorously and a lot to control my weight or shape but I haven't done anything about it so far.
3	I have exercised vigorously and a lot to control my weight or shape within the past 5 months and it concerns me. I am really trying hard to stop exercising vigorously and a lot but sometimes I still have this problem.
4	I used to exercise vigorously and a lot to control my weight or shape but I have managed to stop doing this within the last 5 or more months. I am concerned that I could start doing it again if I am not careful.
5	I used to exercise vigorously and a lot to control my weight or shape but I have managed to stop doing this within the last 5 or more months. I believe that I have completely overcome this problem and I am confident that I will not start doing it again in the future.

Instructions: This questionnaire contains groups of statements about different kinds of eating problems and health-risk behaviours that people can have.

1. Read all of the statements within each
2. Circle the number beside the one statement that best describes you.

C. Some people take pills (e.g. water pills, laxatives, herbal substances, prescribed medications, street drugs) because they believe this will control their weight or shape.	
0	I have never taken pills to control my weight or shape in my entire life.
1	I have taken pills within the past 5 months but I am not concerned about it. I just don't see it as a personal problem.
2	I have taken pills within the past 5 months and it concerns me. I would like to stop taking pills to control my weight or shape but I really haven't done anything about it so far.
3	I have taken pills within the past 5 months and it concerns me. I am really trying hard to stop taking pills but sometimes I still have this problem.
4	I used to take pills but I have managed to completely stop doing it within the past 5 or more months. I am concerned that I could start doing it again if I am not careful.
5	I used to take pills but I have managed to completely stop doing it within the past 5 or more months. I believe that I have overcome this problem and I am confident that I will not start doing it again in the future.

Instructions: This questionnaire contains groups of statements about different kinds of eating problems and health-risk behaviours that people can have.

- 1 Read all of the statements within each
- 2 Circle the number beside the one statement that best describes you.

**H. Some people feel they must control their weight or shape.**

- |   |   |
|---|---|
| 0 | I have never felt that I must control my weight or shape in my entire life.   |
| 1 | I have felt that I must control my weight or shape within the past 5 months but I am not concerned about it. I just don't see it as a personal problem.   |
| 2 | I have felt that I must control my weight or shape within the past 5 months and it concerns me. I would like to stop feeling this way but I haven't done anything about it so far.  |
| 3 | I have felt that I must control my weight or shape within the past 5 months and it concerns me. I am really trying to stop feeling this way but sometimes I still have this problem.  |
| 4 | I used to feel that I must control my weight or shape but I have stopped feeling this way in the last 5 or more months. I am concerned that I could start feeling this way again if I am not careful.   |
| 5 | I used to feel that I must control my weight or shape but I have stopped feeling this way in the past 5 or more months. I believe that I have completely overcome this feeling and I am confident that I will not start to feel this way again in the future. |

Instructions: This questionnaire contains groups of statements about different kinds of eating problems and health-risk behaviours that people can have.

1. Read all of the statements within each
2. Circle the number beside the one statement that best describes you.

I. Some people smoke — a period of time in their lives when they engage in smoking cigarettes	
0	I have never smoked in my entire life.
1	I have smoked within the past 5 months but I am not concerned about it. I just don't see it as a problem.
2	I have smoked within the past 5 months and it concerns me. I would like to stop smoking but I really haven't done anything about it so far.
3	I have smoked within the past 5 months and it concerns me. I am really trying hard to stop smoking but sometimes I still have this problem.
4	I used to smoke but I have completely stopped within the past 5 or more months. I am concerned that I could start smoking again if I am not careful.
5	I used to smoke but I have completely stopped within the past 5 or more months. I believe that I have overcome this problem and I am confident that I will not start doing it again in the future.

Instructions: This questionnaire contains groups of statements about different kinds of eating problems and health-risk behaviours that people can have.

1. Read all of the statements within each
2. Circle the number beside the one statement that best describes you.

**J. Heavy drinking is characterized by drinking four or more drinks of alcohol at one time**

- |   |  |
|---|--|
| 0 | I have never drunk heavily in my entire life.  |
| 1 | I have drunk heavily within the past 5 months but I am not concerned about it. I just don't see it as a problem.   |
| 2 | I have drunk heavily within the past 5 months and it concerns me. I would like to stop heavily drinking but I really haven't done anything about it so far.  |
| 3 | I have drunk heavily within the past 5 months and it concerns me. I am really trying hard to stop heavily drinking but sometimes I still have this problem.  |
| 4 | I used to drink heavily but I have completely stopped within the past 5 or more months. I am concerned that I could start drinking heavily again if I am not careful.                                    |
| 5 | I used to drink heavily but I have completely stopped with the past 5 or more months. I believe that I have overcome this problem and I am confident that I will not start doing it again in the future. |

Instructions: This questionnaire contains groups of statements about different kinds of eating problems and health-risk behaviours that people can have.

1. Read all of the statements within each
2. Circle the number beside the one statement that best describes you.

K. Some people have unprotected sex – intercourse without using a condom with a partner whose sexually transmitted disease status was unknown to them	
0	I have never had unprotected sex in my entire life.
1	I have had unprotected sex (defined above) within the past 5 months but I am not concerned about it. I just don't see it as a problem.
2	I have had unprotected sex within the past 5 months and it concerns me. I would like to stop having unprotected sex but I really haven't done anything about it so far.
3	I have had unprotected sex within the past 5 months and it concerns me. I am really trying to hard to always protect myself but sometimes I still have this problem.
4	I used to have unprotected sex but I have completely stopped within the past 5 or more months. I am concerned that I may start having unprotected sex again if I am not careful.
5	I used to have unprotected sex but I have completely stopped within the past 5 or more months. I believe that I have overcome this problem and I am confident that I will continue to protect myself in the future.

Appendix E

Eating Disorders Inventory-Body Dissatisfaction Subscale

\*



Please indicate which rating best applies to you by circling the response:

A = Always; U = Usually; O = Often; S = Sometimes; R = Rarely; N = Never

- |   |  |   |   |   |   |   |   |
|---|--|---|---|---|---|---|---|
| 1 | I think that my stomach is too big             | A | U | O | S | R | N |
| 2 | I think that my thighs are too large           | A | U | O | S | R | N |
| 3 | I think that my stomach is just the right size | A | U | O | S | R | N |
| 4 | I feel satisfied with the shape of my body     | A | U | O | S | R | N |
| 5 | I like the shape of my buttocks                | A | U | O | S | R | N |
| 6 | I think my hips are too big                    | A | U | O | S | R | N |
| 7 | I think that my thighs are just the right size | A | U | O | S | R | N |
| 8 | I think that my buttocks are too large         | A | U | O | S | R | N |
| 9 | I think my hips are just the rights size       | A | U | O | S | R | N |

\*

Appendix F

Concerns for Shape and Weight Scale – Affective Subscale

4

This is a scale that measures a variety of personal opinions and feelings about your own body weight and shape. **THERE ARE NO RIGHT OR WRONG ANSWERS SO TRY VERY HARD TO BE COMPLETELY HONEST IN YOUR ANSWERS.** Read each statement carefully. For each statement circle the number that best represents your opinion or feeling.

SD = Strongly Disagree; D = Disagree; N = Neutral; A = Agree; SA = Strongly Agree

1	I feel insecure about my weight or shape	SD	D	N	A	SA
2	I feel great about my weight or shape	SD	D	N	A	SA
3	I feel negative about my weight or shape	SD	D	N	A	SA
4	I feel humiliated about my weight or shape	SD	D	N	A	SA
5	I feel unhappy about my weight or shape	SD	D	N	A	SA
6	I feel comfortable about my weight or shape	SD	D	N	A	SA
7	I feel dissatisfied about my weight or shape	SD	D	N	A	SA
8	I feel secure about my weight or shape	SD	D	N	A	SA
9	I feel terrible about my weight or shape	SD	D	N	A	SA
10	I feel proud about my weight or shape	SD	D	N	A	SA
11	I feel bad about my weight or shape	SD	D	N	A	SA
12	I feel happy about my weight or shape	SD	D	N	A	SA
13	I feel satisfied about my weight or shape	SD	D	N	A	SA
14	I feel nervous about my weight or shape	SD	D	N	A	SA
15	I feel uncomfortable about my weight or shape	SD	D	N	A	SA
16	I feel relaxed about my weight or shape	SD	D	N	A	SA
17	I feel good about my weight or shape	SD	D	N	A	SA
18	I feel positive about my weight or shape	SD	D	N	A	SA

Appendix G

The Dutch Eating Behaviours Questionnaire – Restrained Eating Scale

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

- 1 When you have put on weight do you eat less than you usually do?  
1 2 3 4 5
- 2 Do you try to eat less at mealtimes than you would like to eat?  
1 2 3 4 5
- 3 How often do you refuse food or drink offered you because you are concerned about your weight?  
1 2 3 4 5
- 4 Do you watch exactly what you eat?  
1 2 3 4 5
- 5 Do you deliberately eat foods that are slimming?  
1 2 3 4 5
- 6 When you have eaten too much, do you eat less than usual the following day?  
1 2 3 4 5
- 7 Do you deliberately eat less in order not to become heavier?  
1 2 3 4 5
- 8 How often do you try not to eat between meals because you are watching your weight?  
1 2 3 4 5
- 9 How often in the evenings do you try not to eat because you are watching your weight?  
1 2 3 4 5
- 10 Do you take your weight into account with what you eat?  
1 2 3 4 5

Appendix H  
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 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
Frightened	1	2	3	4	5
Nervous	1	2	3	4	5
Jittery	1	2	3	4	5
Shaky	1	2	3	4	5
Angry	1	2	3	4	5
Irritable	1	2	3	4	5
Hostile	1	2	3	4	5
Scornful	1	2	3	4	5
Disgusted	1	2	3	4	5
Loathing	1	2	3	4	5
Afraid	1	2	3	4	5
Guilty	1	2	3	4	5
Ashamed	1	2	3	4	5
Blameworthy	1	2	3	4	5
Angry	1	2	3	4	5
Disgusted with self	1	2	3	4	5
Dissatisfied with self	1	2	3	4	5
Sad	1	2	3	4	5

<b>Blue</b>	1	2	3	4	5
Down-hearted	1	2	3	4	5
Alone	1	2	3	4	5
Lonely	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 I  
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 J

Life Stressors and Social Resources Inventory – Youth Form

This inventory contains questions about your health, school, and your relationships with parents, friends, and other important people in your life.

Some items require a Yes or No answer and look like this:

For these items:

Y = Yes; N = No

Some items require a different kind of response and look like this:

For these items:

DY = Definitely Yes; MY = Mainly Yes; MN = Mainly No; DN = Definitely No

Some items ask about how often things happen and look like this:

For these items:

N = Never; S = Seldom; ST = Sometimes; FO = Fairly Often; O = Often

**A HOME AND MONEY**

Here are some questions about your home. If you stay in more than one home, please answer the questions about the home you spend the most time in.

DY = Definitely Yes / MY = Mainly Yes / MN = Mainly NO / DN = Definitely No

- |   |             |
|---|-------------|
| 1. Is it well kept up (e.g., painting, repairs)?                      | DY MY MN DN |
| 2. Do you have enough space and privacy or a place to be by yourself? | DY MY MN DN |
| 3. Is there enough heat in the winter?                                | DY MY MN DN |
| 4. Is it quiet enough?  | DY MY MN DN |
| 5. Is it safe to walk alone in the neighborhood at night?             | DY MY MN DN |

Do you have enough money to afford:

- |   |             |
|---|-------------|
| 6. Good medical and dental care when you need it?                   | DY MY MN DN |
| 7. Enough food and clothing?  | DY MY MN DN |
| 8. A good place to live (nice furniture, things for house, etc.)?   | DY MY MN DN |
| 9. Other things you need (books, school supplies, etc.)?            | DY MY MN DN |
| 10. Activities and entertainment (movies, concerts, etc.)?          | DY MY MN DN |
| 11. Extra things you want (clothes, games, records or tapes, etc.)? | DY MY MN DN |

**B PARENTS**

N = Never; S = Seldom; ST = Sometimes; FO = Fairly Often; O = Often.

When you spend time with you mother/stepmother, how often:

- |  |   |   |    |    |   |
|--|---|---|----|----|---|
| 1. Do you have arguments with your mother/stepmother?                              | N | S | ST | FO | O |
| 2. Is she critical or disapproving of you?   | N | S | ST | FO | O |
| 3. Does she get on your nerves?  | N | S | ST | FO | O |
| 4. Does she get angry or lose her temper with you?                                 | N | S | ST | FO | O |
| 5. Does she expect too much of you?  | N | S | ST | FO | O |
| 6. Is she strict with you, not letting you do what you want?                       | N | S | ST | FO | O |
| 7. Does she put too much pressure on you to do well in school, sports, or hobbies? | N | S | ST | FO | O |
| 8. Can you count on her to help you when you need it?                              | N | S | ST | FO | O |
| 9. Does she cheer you up when you are sad or worried?                              | N | S | ST | FO | O |
| 10. Do you have fun, laugh, or joke with her?                                      | N | S | ST | FO | O |
| 11. Does she really understand how you feel about things?                          | N | S | ST | FO | O |
| 12. Does she really respect your opinion?  | N | S | ST | FO | O |

N = Never; S = Seldom; ST = Sometimes; FO = Fairly Often; O = Often.

When you spend time with your father/stepfather, how often:

- |  |   |   |    |    |   |
|--|---|---|----|----|---|
| 13. Do you have arguments with your father/stepfather?                             | N | S | ST | FO | O |
| 14. Is he critical or disapproving of you?   | N | S | ST | FO | O |
| 15. Does he get on your nerves?  | N | S | ST | FO | O |
| 16. Does he get angry or lose her temper with you?                                 | N | S | ST | FO | O |
| 17. Does he expect too much of you?  | N | S | ST | FO | O |
| 18. Is he strict with you, not letting you do what you want?                       | N | S | ST | FO | O |
| 19. Does he put too much pressure on you to do well in school, sports, or hobbies? | N | S | ST | FO | O |
| 20. Can you count on him to help you when you need it?                             | N | S | ST | FO | O |
| 21. Does he cheer you up when you are sad or worried?                              | N | S | ST | FO | O |
| 22. Do you have fun, laugh, or joke with him?                                      | N | S | ST | FO | O |
| 23. Does he really understand how you feel about things?                           | N | S | ST | FO | O |
| 24. Does he really respect your opinion?   | N | S | ST | FO | O |

**B. BROTHERS AND SISTERS**

The following questions ask about you brothers and sisters. If you have more than one brother or sister, think about your relationship with the brother or sister you spend the most time with. If you do not have any brothers or sisters, skip this section.

N = Never; S = Seldom; ST = Sometimes; FO = Fairly Often; O = Often.

When you spend time with you brother/sisters, how often:

- |  |   |   |    |    |   |
|--|---|---|----|----|---|
| 1. Can you count on him or her to help you when you need it?   | N | S | ST | FO | O |
| 2. Does he or she cheer you up when you are sad or worried?    | N | S | ST | FO | O |
| 3. Do you have fun, laugh, or joke with him or her?            | N | S | ST | FO | O |
| 4. Does he or she really understand how you feel about things? | N | S | ST | FO | O |
| 5. Does he or she really respect your opinion?                 | N | S | ST | FO | O |

**C. EXTENDED FAMILY**

The following questions ask about your relatives other than your parents or brothers and sisters.

N = Never; S = Seldom; ST = Sometimes; FO = Fairly Often; O = Often.

When you spend time with your relatives, how often:

- |  |   |   |    |    |    |
|--|---|---|----|----|----|
| 1. Can you count on any of your relatives to help you when you need it?  | N | S | ST | FO | O  |
| 2. Do any of your relatives she cheer you up when you are sad or worried?  | N | S | ST | FO | O  |
| 3. Do you have fun, laugh, or joke with them?  | N | S | ST | FO | O  |
| 4. Do any of your relatives she really understand how you feel about things?   | N | S | ST | FO | O  |
| 5. Do any of your relatives respect your opinion?  | N | S | ST | FO | O  |
| 6. How many relatives do you feel close to (that is, relatives you feel at ease with and can talk to about personal problems)? | 0 | 1 | 2  | 3  | 4+ |
| 7. How often do you spend time with the relative or relatives to whom you feel the closest?                                    | N | S | ST | FO | O  |

**D. SCHOOL**

Here are some questions about your school and school activities. Do not include activities with friends, clubs, or organizations outside of school.

N = Never; S = Seldom; ST = Sometimes; FO = Fairly Often; O = Often.

- |   |   |   |    |    |   |
|---|---|---|----|----|---|
| 1. Do you have arguments or fights with any students at school?         | N | S | ST | FO | O |
| 2. Are any students at school critical or disapproving of you?          | N | S | ST | FO | O |
| 3. Do any students at school get on your nerves?                        | N | S | ST | FO | O |
| 4. Do any students at school get angry or lose their temper with you?   | N | S | ST | FO | O |
| 5. Do any students at school expect too much of you?                    | N | S | ST | FO | O |
| 6. Is there too much pressure to compete with other students at school? | N | S | ST | FO | O |

Here are some questions about your professors, coaches, and counsellors.

How often:

- |   |   |   |    |    |   |
|---|---|---|----|----|---|
| 7. Can you count on any of them to help you when you need it? | N | S | ST | FO | O |
| 8. Does she cheer you up when you are sad or worried?         | N | S | ST | FO | O |
| 9. Do you have fun, laugh, or joke with her?                  | N | S | ST | FO | O |
| 10. Does she really understand how you feel about things?     | N | S | ST | FO | O |
| 11. Does she really respect your opinion?                     | N | S | ST | FO | O |

**E. FRIENDS**

Here are some questions about your friends and social activities. Do not include a steady boyfriend or girlfriend, your family, or brothers and sisters as friends when answering these questions.

N = Never; S = Seldom; ST = Sometimes; FO = Fairly Often; O = Often.

- |   |   |   |    |    |   |
|---|---|---|----|----|---|
| 1. Do you have arguments or fights with any of your friends?          | N | S | ST | FO | O |
| 2. Are any of your friends critical or disapproving of you?           | N | S | ST | FO | O |
| 3. Do any of your friends get on your nerves?                         | N | S | ST | FO | O |
| 4. Do any of your friends get angry or lose their temper with you?    | N | S | ST | FO | O |
| 5. Do any of your friends pressure you to smoke, drink, or try drugs? | N | S | ST | FO | O |

6. How many school clubs and organizations (e.g. sports teams, choir, student government) do you belong to?	0	1	2	3	4	+
---	---	---	---	---	---	---

7. How many clubs and organizations outside of school (e.g. church groups, sports teams, clubs, organized hobbies) do you belong to?	0	1	2	3	4	+
--	---	---	---	---	---	---

8. How many close friends do you have (people you feel at ease with and can talk to about personal matters)?

0 1 2 3 4 +

9. How often are you in touch with the friend or friends to whom you feel closest?

0 1 2 3 4 +

N = Never; S = Seldom; ST = Sometimes; FO = Fairly Often; O = Often.

How often:

- |   |   |   |    |    |   |
|---|---|---|----|----|---|
| 10. Can you count on any of your friends to help you when you need it?  | N | S | ST | FO | O |
| 11. Do any of your friends cheer you up when you are sad or worried?    | N | S | ST | FO | O |
| 12. Do you have fun, laugh, or joke with any of your friends?           | N | S | ST | FO | O |
| 13. Do any of your friends really understand how you feel about things? | N | S | ST | FO | O |
| 14. Do any of your friends respect your opinion?                        | N | S | ST | FO | O |

**F. PARTNERS**

Here are some questions about your current dating situation and your relationship with a steady partner, if you have one. If you do not have a steady partner, do not answer these items.

N = Never; S = Seldom; ST = Sometimes; FO = Fairly Often; O = Often

- |   |   |   |    |    |   |
|---|---|---|----|----|---|
| 1. Do you have arguments or fights with your partner?             | N | S | ST | FO | O |
| 2. Is your partner critical or disapproving of you?               | N | S | ST | FO | O |
| 3. Does your partner get on your nerves?                          | N | S | ST | FO | O |
| 4. Does your partner get angry or lose their temper with you?     | N | S | ST | FO | O |
| 5. Does your partner expect too much of you?                      | N | S | ST | FO | O |
| 6. Can you count on your partner to help you when you need it?    | N | S | ST | FO | O |
| 7. Does your partner really understand how you feel about things? | N | S | ST | FO | O |
| 8. Does your partner cheer you up when you are sad or worried?    | N | S | ST | FO | O |
| 9. Does your partner really respect your opinion?                 | N | S | ST | FO | O |
| 10. Do you have fun, laugh, or joke with your partner?            | N | S | ST | FO | O |