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The Relationships between Body Image, Activity Levels and Coping Styles in Women

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## Abstract

This study investigated whether any relationship exists between Activity, Body Image Dissatisfaction and Coping Skills. Three questionnaires were combined to investigate Activity, Body Image Dissatisfaction and Coping Skills. They were presented to participants as a world wide website. Usable answers were submitted by 214 women, aged 18-65. The study did not identify a psychological factor that correlates with exercise non-adherence. Body Image Dissatisfaction and Coping Skills were found to be related. Women's level of exercise was not affected by their body image or coping style. Poor body image is correlated with maladaptive and emotion-focused coping skills. Therefore training in adaptive coping skills might reduce poor body image in women.

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### The Relationships between Body Image, Activity Levels and Coping Styles

This research investigates adherence to physical activity, and how different variables may affect an individual's ability to adhere to an activity programme. Of special interest is any relationship between body image and activity levels that may exist in adult women. The aim of the study is to discover whether any relationship exists between a woman's self perception (body image) and her level of formal and informal exercise. We are also measuring different ways of coping to see if coping is related to either body image or activity levels.

In order to maintain continuity throughout this document, physical activity and exercise will be referred to as Activity. Body image is measured from the display of negative behaviours, therefore poor body image is the construct at hand and this will be referred to as Body Image Dissatisfaction. There are three levels of coping that are to be addressed. These will be referred to as Problem-focused coping, Emotion-focused coping and Maladaptive coping.

As part of a community health drive, groups such as the New Zealand Heart Foundation and The Hillary Commission have been encouraging New Zealanders to become more active to improve their health. The Hillary Commission estimates that "one in three New Zealand adults is not active enough to be healthy" (Hillary Commission, 2000). Research shows that regular physical activity has positive benefits such as increasing positive affect, improving energy and weight loss, and reducing harmful health issues such as heart disease, stroke, high blood pressure, non-insulin dependent diabetes and colon cancer (Hillary Commission, 2000). Green prescriptions are also being handed out by General Practitioners. These encourage individuals to include physical activity as part of their health management

plan (Hillary Commission, 2000). This research aims to support this push towards better public health by identifying psychological factors that correlate with exercise non-adherence.

### **1. Body Image Research - Historical Treatment and Current Trends**

Body image dissatisfaction is identifiable as a negative pattern of cognitions and behaviours regarding an individual's own body that leads to significant social and occupational malfunction or causes significant distress to the individual. This definition does not require physical symptomology or ill health. It also encompasses individuals who suffer psychological distress due to body image dissatisfaction yet do not meet the criteria for an eating disorder.

So what is Body Image Dissatisfaction? Poor body image or Body Image Dissatisfaction is defined by French & Jeffery (1994, p.430) as the "distressing preoccupation with appearance, self-consciousness and embarrassment in social situations, distress when appearance is noticed by other people, excessive importance given to appearance in self-evaluation, negative self-evaluation attributed to appearance, and avoidance of activities because of self-consciousness about appearance". Yanovski (1998) emphasized that body image dissatisfaction includes negative self evaluation of one's body, but this only manifests as a psychological problem if it is accompanied by a negative emotional response to that evaluation. Because of the importance ascribed to physical appearance by modern society, many individuals have a view of their body that is emotionally, rather than rationally, constructed. This means that an individual with Body Image Dissatisfaction is more concerned with possible judgments regarding their attractiveness, than with the functionality or health of their body. This research takes the intuitive leap from current data to suggest that this problem therefore manifests itself as being emotionally distressing, the individual

displays magnification and absolutist thinking and a generalized extinction of behaviour (particularly social behaviour) to avoid anxiety.

This obsession with body image is experienced by men and women, but seems exceptionally widespread among women (McCarthy, 1990; Habermas, 1992; Tyrrell, 1996). Focusing on women's experiences will target the most 'at risk' population.

Body image dissatisfaction has become so common among women of the Western World that the term 'normative discontent' has been coined to describe it (Garner & Wooley, 1991; French & Jeffery, 1994). The traditional approach to body image dissatisfaction could be regarded as 'blaming the victim'. It supposes that body image dissatisfaction is created by society's aversion to fatness, and that individuals suffer body image dissatisfaction because they are obese (and therefore unattractive). The following argument illustrates how the traditional treatment of 'poor body image' centred around the individual, focused on their physical 'faults' and suggested the cause of body image dissatisfaction was the individual's actual body! "The affective and cognitive attitudes towards one's body, ranging from great satisfaction to profound disapproval, represent a different aspect of the body image construct, ... and might be influenced simply by being overweight and by the social stigma against obesity" (Adami, Gandolfo, Campostano, Meneghelli, Giambattista & Scopinaro, 1997, p. 299). This definition of body image illustrates a short coming of traditional body image research. It suggests that body image dissatisfaction has a direct relationship to 'real' weight or shape, and excludes normal weight women from its definition. It also fails to acknowledge that many women in the Western culture are taught an abnormal standard for their bodies (Fallon, Katzman & Wooley, 1994) and therefore may misidentify their body as obese by cultural standards rather than medical requirements.

Disturbingly, Body Image dissatisfaction has also been identified in psychoanalytical literature as including “Unconscious denial of being fat... a refusal to recognize a realistic body image”, that “patients are ‘blind’ to the fact that they are now fat” (Weiss, 1986, p.522 & 529). This definition rests on the judgment that it is abnormal or maladaptive if an obese person does not wish to lose weight or is happy with an obese body. Because this is a value laden conclusion this definition of Body Image Disturbance will not be included in this work. Weiss also concludes that an individual must identify obesity as a problem in order to make a lifestyle change to include exercise and diet, however research by Cash & Hicks (1990) refutes this assertion.

The idea that obesity is a prerequisite for Body Image Dissatisfaction and that Body Image Dissatisfaction is a natural side effect of obesity is challenged by research that shows that among the non-eating disordered obese population, there does not seem to be a correlation between BMI, shape and an individual's self evaluation of their body. In fact research suggests that the presence of eating disordered behaviour is a more reliable predictor of Body Image Dissatisfaction than any of these variables (Eldredge & Agras, 1996). However, Tyrrell (1996) reported that overweight and normal weight teenage females were more likely to report that ‘Being Thinner’ would make their lives better than underweight females. Investigating how Body Mass Index, Body Image Dissatisfaction, Activity and Coping Styles interact could shed further light onto this area.

Cumulatively, the above research suggests that body image dissatisfaction is not related to medical obesity, and therefore should be treated by psychological means not medical. It also hypothesizes that individuals with body image dissatisfaction are less likely to exercise regularly or be active enough to assure good health. Rosen, Orosan & Reiter (1995) suggested a theory that negative body image could increase obesity related behaviours (e.g.,

overeating) and decrease health related behaviours (e.g., exercise). The complicated presentation of Body Image Dissatisfaction, and its possible serious repercussions (including dieting, depression and perhaps eating disorders) suggests that Body Image Dissatisfaction should be a focus for psychological research and treatment. To this end an investigation of how this problem relates to other factors in an individual's experience could facilitate an adaptive understanding of the etiology of body image dissatisfaction and how it contributes to an individual's level of functioning.

Those with Body Image Dissatisfaction may minimize feedback they receive that promotes the idea that they may be attractive and maximize any negative feedback they may receive about their bodies. "Body image is a psychological construct that refers to people's evaluations of their physical attractiveness and, although it is related to objective physical appearance, the correlation between the two is low" (French & Jeffery, 1994). Because body image is a psychological construct it is influenced by much more than external reactions by other people or sensory perception on the part of the individual herself.

From a cognitive-behavioural viewpoint, Body Image Dissatisfaction illustrates the existence of cognitive errors and application of maladaptive behavioural techniques that may reduce anxiety in the short term, but are likely to be maladaptive in the longer term. These errors and maladaptive behaviours (such as dieting, negative self talk & social anxiety) probably result from multiple experiences, including modeling others in one's family or society (Tyrrell, 1996), and from absorbing messages from society (via individuals, media, fashion etc) that define success and happiness in terms of physical beauty (Wolf, 1991).

"Negative body image has been learned and can therefore be unlearned and replaced with new learning" (Fallon, Katzman & Wooley, 1994, p.160). This argument illustrates the theory behind the move to treat Body Image Dissatisfaction with psychotherapy rather than

attempting to change the body itself. If Body Image Dissatisfaction is associated with maladaptive behaviours, and causes psychological distress that impairs ordinary functioning, it presents itself as a problem worth investigation.

So why is Body Image Dissatisfaction worthy of study? Rosen, Saltzberg & Srebnik (1989, p.393) suggest that “On the basis of its extremely high prevalence alone, negative body image in women is a problem in need of treatment”. That Body Image Dissatisfaction has also been associated with eating disorders, depression, anxiety, social avoidance & dangerous dieting practices (Rosen, Saltzberg & Srebnik, 1989; Garner & Wooley, 1991; Rosen, Srebnik, Saltzberg & Wendt, 1991; Eldredge & Agras, 1996) reinforces the need to understand this phenomenon. The next step is to establish the effects of Body Image Dissatisfaction, how it interacts with other factors and how it is affected by an individual's activities, strengths, weaknesses and experiences.

Research by Brownell & Kramer (1994) showed a correlation between self evaluation as obese and poor adherence to health promoting behaviours such as exercise. An interesting aspect of this study was that self-evaluation as obese was unrelated to actual body size. Therefore, it is feasible that an individual who self-evaluates as obese is exhibiting a form of body image dissatisfaction. If this is correct it suggests a relationship between body image dissatisfaction and non-adherence to exercise.

## **2. The Possible Relationship between Body Image and Activity**

The theory that links Body Image Dissatisfaction and exercise is based on the principles of avoidance and extinction of anxiety producing behaviour. Negative body image is maladaptive as it serves as a punisher (through cognitive patterns such as Negative Automatic Thoughts). Through the process of generalisation, body image dissatisfaction may

restrict all behaviour, not just that directly related to weight gain (ie eating). This would include a restriction of pleasurable experience and social activity. Regular exercise is usually rewarding (through the feeling of achievement, an endorphin high, or just the anti-depressive action of movement) but as it involves social exposure it would fit into the category of restricted activity. Exercise non-adherence is negatively reinforcing as the expectation of punishment (via negative cognitions about body image or fear of ridicule) restricts activity that might otherwise lead to positive reinforcement (in this case physical activity and social interaction). Because this positive reinforcement is not experienced, the avoidance behaviour is never extinguished. This pattern is more likely to appear when Emotion-focused or Maladaptive coping skills prevail, as these attempt to deal with negative emotions, use social reinforcement, or avoid the stressor, rather than problem solving. "Many obese people are deterred from active lives out of shame and fear of ridicule" (Garner & Wooley, 1991, p.763). A sedentary lifestyle is thereby negatively reinforcing, as the risk of exposure to failure or public humiliation (real or perceived) is minimized and anxiety is thereby reduced.

Body Image Dissatisfaction can create a vicious cycle for the overweight. Those who negatively self evaluate according to body image are less likely to continue their efforts (e.g., exercise) than those who recognize success or failure as temporary rather than global and stable (Brownell & Kramer, 1994). Research into current treatment of Body Image Dissatisfaction by use of weight loss programs has seen some perverse results appear. Body Image Dissatisfaction is associated with weight regain following initial weight loss (French & Jeffery, 1994) and predicts attrition from treatment independent of weight loss (Cash, 1993). Cash and Hicks (1990) suggested that self evaluation of being obese was a better behavioural predictor than actual BMI. Those whom self evaluated as being obese (whether medically true or not) were less likely to engage in activities to maintain and enhance their health and were

less fitness oriented than those who self evaluated as normal weight (whether obese or not). If Body Image Dissatisfaction does reinforce a sedentary lifestyle through negative reinforcement this could provide an explanation for these anomalies.

### 3. Obesity Research and Exercise

Obesity researchers have concluded that physical activity, specifically exercise and increased incidental activity, is the prime component needed to maintain any initial weight loss. However, their research has not been able to conclude why some clients are able to maintain a new exercise regime and others are not. Cash & Hicks found that subjects whom self evaluated as being obese were less likely to “attend to and behaviourally try to improve their physical appearance” (1990, p.332) irrespective of their actual body weight.

This study suggests that although Body Image Dissatisfaction can predict ‘adoption’ of an exercise regime, it also predicts poor maintenance of this exercise regime, perhaps in conjunction with a lack of Problem-focused coping skills. We also propose that those with good body image are more likely to have a long term exercise program, and to be more active during the rest of their day. A non adversarial approach to one’s body suggests more positive self talk regarding physical activity, lower levels of social embarrassment, and an ability to enjoy body movement for its own sake (Erdman, 1996), rather than with a goal of burning fat or using up calories.

Adopting an exercise regime is a major lifestyle change, particularly if this is after a long period of being sedentary. It usually requires at least some monetary input (a formerly sedentary person might not even own suitable walking shoes), a significant time input (at least 20 mins per day, plus warm up, getting changed and showering afterwards at the very minimum) and a change to a person’s normal routine. Adopting an exercise regime also

involves more subtle changes, such as getting used to new bodily sensations, such as muscle fatigue, increased or decreased appetite, comments from friends and family and exposure to new social situations (such as joining a gym or being seen walking on the road). For someone with poor coping skills or a poor body image these changes may cause anxiety and distress. Martinez-Gonzalez, Alfredo-Martinez, Hu, Gibney, & Kearney (1999) report that weight loss participants who failed to maintain an active exercise program were distinguished by their inability to cope with stressful events. This suggests that maintenance of an exercise program, or even increasing daily activity levels, is affected by many different variables.

#### **4. Activity**

Activity can be defined in a multitude of different ways. The Hillary Commission of New Zealand promotes any activity such as walking or washing the car, as contributing to a reduction in vulnerability to heart disease. The measure used for this research, the Stanford Physical Activity Recall (Rosen et al., 1991) measures all activity above very light activity such as dusting or light walking (e.g., around the house) but picks up on activities such as going for a walk or gardening that respondents might not otherwise have identified as exercise. Moderate activities rated 3 - 5 METS would include activities such as walking, mowing the lawn or golf. Hard activities rated 5.1 - 6.9 METS would include physical labour, scrubbing floors or tennis. Very Hard activities rated 7+ METS would include very heavy physical labour (concrete labourer, shearing etc) and social activities such as running, aerobics or weight training. These activities would raise the heart rate to at least 60% from resting rate. This is the level required to achieve some level of cardiovascular fitness.

It is an accepted medical fact that most people in modern societies do not achieve a level of daily activity necessary to prevent heart disease and obesity. The Surgeon General's

Report (Corbin & Pangrazi, 1999) concludes that “most Americans are not physically active enough to optimize their health, and a sizable percent of adults are extremely sedentary” (p.27). Healthy Weight New Zealand (Agencies for Nutrition Action, 1996) reports similar trends in New Zealand. Although physical health is traditionally the realm of medical practitioners, it is in the interests of the Psychological community to encourage physical wellbeing in our clients and communities as it undoubtedly would improve quality of life and may even reduce some forms of mental illness (e.g., depression). Interestingly, research into exercise shows that women who exercise regularly are less likely to suffer from depressive symptoms and low self esteem (McCann & Holmes, 1984; Rejeskie & Kenney, 1988; Pearl, 1993).

Corbin & Pangrazi (1999) report that all people can benefit from regular physical activity. This includes moderate activity on most or all days of the week, increasing this increases health benefits. This level of activity reduces the risk of "premature mortality, particularly coronary heart disease, hypertension, colon cancer and diabetes mellitus" (Corbin & Pangrazi, 1991, p.51).

Body image and exercise adherence have been linked in research. Cash, Novy & Grant (1994) found that negative attitudes towards fitness related activities and a low rate of change in Body Image Dissatisfaction during weight loss treatment predicted attrition from [obesity] programs. This research lends support to the theory that they may covary.

Cash & Hicks (1990) found that weight losers who participated in a weight loss program that included exercise had a change towards a more favorable body image by the end of the program. They suggested that the cognitive impact of regular exercise was the active ingredient of this program that caused change in body image. Pearl (1993) reports that aging

women who exercise experience an improvement in body image compared to their previous attitude, and that they show better body images than less active women.

Previous research has suggested that physical exercise has an effect on psychological wellbeing, including depression. This effect has been suggested as being a physiological effect, due to changes in the levels of different chemical processes in the brain, and as being positively reinforcing, due to the endorphin hit, the ability to succeed at something, and the social stimulation of exercising with others (McCann & Holmes, 1984). It has also been associated with a shift towards an internal locus of control in overweight subjects (Van Itallie, 1984). Foreyt & Goodrick (1994), reported clinical experience that showed that obese persons who included a walking program in their treatment generally reported feelings of wellbeing and an increase in energy. Garner & Wooley (1991) reported research that showed that running and strength training improved self concept and mood for depressed women. This research all supports a link between psychological wellbeing and exercise. It specifically targets emotionally constructed psychological constructs such as depression, self-concept and locus of control. Therefore, it is logical that the emotionally constructed concept of body image might also be positively affected by exercise.

## **5. Coping Styles**

Coping skills will be studied in relation to exercise adherence, as research shows that 'stress' and 'lack of time' are the most often cited reasons for non-adherence to exercise. More specifically, individuals who ceased an exercise program reported an inability to cope with stressful situations, and more emotional reactions to stressful situations than those who maintained an exercise program (Gormally, Rardin & Black, 1980). This research suggests the possibility that the ability to use Problem-focused coping skills may be a determinant of exercise adherence.

In the most basic sense, coping is the ability to behave in an adaptive manner under the influence of stress. There are many different methods of coping, often described as coping styles. These include 'Problem focused coping', when direct action is taken to work through a problem, such as gathering information or trying different methods to deal with the problem, and 'Emotion Focused coping' when the individual tries to deal with the emotional stress rather than the actual stressor by using tactics such as avoidance, distraction, relaxation or comfort from others (Davison & Neale, 1998). Each has its place. For example, problem focused coping is most effective when used on problems or stressors than can be solved, e.g., work problems, time management, money problems. Problem focused coping includes behavioural coping and cognitive coping (Grilo, Shiffman & Wing, 1989). Emotion focused coping is most effective when dealing with immovable stressors such as chronic illness, death (ie grief) or general levels of nonspecific anxiety. Research suggests that an inability to cope with life changes and stress predicts non-adherence to exercise (Gormally et al., 1980). Relapses among individuals trying to quit smoking were analysed and identified that the only difference between a relapse and a 'near-relapse' (successful avoidance) was the performance of an [problem-focused] coping response during the relapse crisis (Simmons, Jackson, Swinburn & Yee, 1996). Therefore, the observed non-adherence to exercise by individuals could be because emotion focused coping or maladaptive coping is used rather than problem focused coping.

It has been hypothesized that exercise can create a change in coping styles. When exercise was used as part of a weight reduction program a more internal locus of control was reported by participants (Martinez-Gonzalez et al., 1999). Therefore, it is fair to hypothesis that exercise might either change an individual's coping style, or that an individual's coping

style may enable continued exercise. Either way this research suggests a link between coping styles and exercise regime maintenance.

Individuals who fail to maintain a weight loss are also more likely to have rescinded on their exercise regime. These people reported that “they were unable to cope with stressful events that occurred during follow-up” (Martinez-Gonzalez et al., 1999). Foreyt & Goodrick (1994) reported clinical experience where clients found that increases in life stress, work and family demands and ‘lack of time’ contributed to cessation of an exercise program. This also suggests a link between exercise and coping styles (e.g., Stress & Time Management), although this research suggests that the coping style that is related to exercise adherence is also related to how the individual copes with life’s general stressors (Honig & Blackburn, 1994). In addition, the Relapse theory of Marlatt & Gordon (Honig & Blackburn, 1994), suggests “that once someone makes a behavioural change, relapse (return to previous behaviour) occurs when a high-risk situation, problem or emotional state occurs in the face of insufficient coping skills” (p.311). If experiencing Body Image Dissatisfaction increases the chances of an individual suffering a problem or negative emotional state or simply finding day to day problems more negative and personalized and if this Body Image Dissatisfaction coexists with Emotion-focused or Maladaptive coping styles, then it is probable that this individual would have more problems maintaining an exercise regime than an individual without these extra challenges.

## **6. Summary**

Recent research identifies physical activity and a healthy diet as being more strongly related to health outcomes (Gillis & Perry, 1991) than BMI or Waist-Hip ratio alone (Garner & Wooley, 1991; Fallon et al., 1994). There are also suggestions that dieting, particularly repeat

dieting, may have health costs for individuals that may be worse than if they maintained a steady weight (French & Jeffery, 1994). These findings suggest that the professional approach to weight and health should focus on improving health creating behaviours, specifically healthy eating and activity, in all weight groups rather than focusing on maintaining a 'thin' population.

The Healthy Weight New Zealand report (Agencies for Nutrition Action, 1996) emphasizes that although obesity is a health concern, it is balanced by concern regarding eating disorders. They therefore recommend that a health oriented approach to weight control is used (rather than appearance oriented) and that strategies which encourage people to maintain their weight within a sensible range are more desirable than those which encourage people to become slimmer. Healthy Weight New Zealand (Agencies for Nutrition Action, 1996) suggests improved self image, irrespective of actual body size, as a goal for New Zealand health providers. By studying how body image is related to other constructs, and to determining if it is related to body size it will be easier to identify ways to achieve these goals.

Earlier research has shown that Body image concerns are often motivators for initiation of dieting and exercise behaviours (Cash & Hicks, 1990; Cash et al., 1994) however it is possible that this motivation does not extend beyond the short-term. In fact, this study hypothesizes that Body Image Dissatisfaction could lead to more emotional reactions to lapses, less use of Problem-focused coping, and therefore a reduced probability of an activity regime being maintained.

This research is testing the theory that body image dissatisfaction is maladaptive, resulting in disordered behavioural patterns that include a non-active lifestyle and the use of poor coping skills.

## 7) Hypotheses

*Body Image Dissatisfaction is theorised to negatively reinforce a sedentary lifestyle. In particular an individual finds social behaviour or behaviour related to their body (e.g., exercise or trying on clothes) anxiety arousing, avoiding this behaviour reduces anxiety and therefore reinforces a sedentary lifestyle (see Chapter 3).*

- 1) Body image dissatisfaction is negatively correlated with Activity

*Body Image Dissatisfaction is associated with an emphasis on feelings and emotions about oneself. It is expected that individuals will demonstrate a lack of Problem Focused Coping Styles.*

- 2) Body image dissatisfaction is negatively correlated with Problem-focused Coping Styles.

*'Emotion Focused coping' is when the individual tries to deal with the emotional stress rather than the actual stressor by using tactics such as avoidance, distraction, relaxation or comfort from others. If experiencing Body Image Dissatisfaction increases the chances of an individual suffering a problem or negative emotional state, or simply finding day to day problems more negative and personalized, then Emotion-focused coping may perpetuate the cycle. Maladaptive coping is likely to be correlated with Body Image Dissatisfaction as it is related to general psychopathology and stress.*

- 3) Body image dissatisfaction is positively correlated with Emotion-focused and/or Maladaptive coping.

*Research suggests that non-adherence to an exercise regime is related to the type of coping styles employed by an individual. Specifically individuals who lapse from an activity regime often cite stress or lack of time as contributing factors. Both of these factors suggest a lack of Problem-focused coping.*

- 4) Activity and Problem-focused Coping Styles will be positively correlated.

*If Body Image Dissatisfaction or Coping style impact on Activity, then it is possible that by treating Body Image Dissatisfaction and providing training in new Coping Skills we may be able to increase Activity. Body Image Dissatisfaction, Problem-focused coping, Emotion-focused coping and Maladaptive Coping may have an impact on the level of Activity an individual undertakes. This may be due to individual factors or to an effect when all or some factors are combined.*

- 5) Body Image Dissatisfaction, Problem-focused coping, Emotion-focused coping and Maladaptive coping may impact on Activity.

### **Potential Confounds**

#### BMI & Waist measurement & Body Image Dissatisfaction

*BMI and Waist measurement are indicators of the physical size of a person and used to estimate whether they are medically overweight. Being obese may increase the chances of a person exhibiting Body Image Dissatisfaction due to social pressures to conform to a normal weight.*

#### Age and Body Image Dissatisfaction

*Age may be a confound for this research. Body Image Dissatisfaction may increase or decrease with age and if so needs to be controlled for.*

Age and Coping Style

*Coping Style could be considered a learned behaviour, therefore the approach used may change with age and experience.*

Age and Activity

*Research suggests that Activity declines with age.*

## Method

### *Participants*

The participants for this research were 250 women aged between 18 and 65. They volunteered to fill in the survey by responding to the research website and filling the survey in online.

The Information sheet requested that only females, 18 years and older, participate. The research is restricted to females as research about body image suggests that poor body image is more common in women, and has a greater effect on their psychological wellbeing when compared to men (Dworkin & Kerr, 1987).

Once collected the data was cleaned, with incomplete responses and outliers filtered. Data that did not include an indication of informed consent, or had been submitted by a male was also filtered. This resulted in 214 usable data sets.

### *Ethnicity*

Participants were asked to identify the major ethnic groups they identified with. Once multiple answers were compensated for (participants were able to select more than one ethnic group to allow them to reflect each of their major cultural groups) the following distribution was noted:

Table 1

*Ethnic diversity of sample population*

Ethnicity	Participants (N)	Participants (%)
African	1	0.5%
European	55	25.8%
American European	91	42.7%
Hispanic/ South American	2	0.9%
Pacific Islander	1	0.5%
Asian	6	2.8%
Middle Eastern	1	0.5%
Other (no other option selected)	43	20.2%
American European and Hispanic/ South American	3	1.4%
American European & Other	1	0.5%
European & American European	1	0.5%
African & European	1	0.5%
African & American European & Other	1	0.5%
Middle Eastern & Other	1	0.5%
European & Other	4	1.9%
African, Hispanic/ South American, Pacific Islander	1	0.5%

The ethnic group European reflects possible inclusion in a Western culture. 25.8% of respondents identified as European, 73.8% of respondents identified as belonging to European or American European culture at some level of their ethnicity, and only 26.2% of respondents did not identify themselves as ethnically European or American European.

*Age*

57.7% of Participants were aged between 18 & 25, 31.5% ( $n=123$ ) were aged between 25 & 40 ( $n=67$ ) and 10.8% ( $n=23$ ) were aged between 40 & 65.

*Language*

92.9% of Participants identified English as their first language. 7.1% of Participants had English as a second language.

### *Materials*

The constructs investigated were;

- **Coping Style**, using the subscales **Problem focused coping**, **Emotion focused coping** and **Maladaptive coping**. This construct was measured using the COPE Scale (Carver, Scheier, & Weintraub, 1989).
- **Activity** which was measured using the Stanford Physical Activity Recall (Sallis, Haskell, Wood, Fortmann, Rogers, Blair & Paffenbarger, 1985).
- **Body Image Dissatisfaction** which was measured using the Body Image Avoidance Questionnaire (Rosen et al, 1991).

Title: COPE SCALE

Authors: Carver, C.S., Scheier, M.F., & Weintraub, J.K.

Publication Details: Assessing Coping Strategies: A Theoretically Based Approach. *Journal of Personality and Social Psychology* (1989), Vol. 56, No. 2, 267-283

#### *Purpose and Nature:*

The COPE scale was developed theoretically using the Lazarus model of stress and a model of behavioural self-regulation as guidelines. The authors also incorporated research on existing measures of Coping, which allowed them to use empirical research in their test development (Carver et al., 1989).

#### *Practical Evaluation*

The COPE scale consists of 60 items, answered on a Likert-type scale. The questions were in the forms of statements about how a person 'usually' deals with a situation or stressor (Carver et al., 1989).

The questions were scored (0-3). Scores were traditionally worked out for each scale. For this research the scales were grouped according to problem-focused, emotion-focused and maladaptive coping. Because the maladaptive group of scales has fewer questions in it, the mean result for each variable was used to allow direct comparison.

### *Summary*

This measure was chosen as it combines a theoretical structure with empirical testing, offering the 'best of both worlds' in a psychometric sense. The questions have good face validity and the content is non-intrusive. The layout of the survey fits the Internet presentation very neatly and allows quick and effective answering. The measure has excellent validity and the breakdown of scales is meaningful.

Title: BODY IMAGE AVOIDANCE QUESTIONNAIRE

Author(s): Rosen, J.C., Srebnik, D., Saltzberg, E. & Wendt, S

Publication Data: Published by Psychological Assessment: a Journal of Consulting and Clinical Psychology, 1991, Vol. 3, No 1, 32-37.

### *Purpose and Nature of the Test:*

The Body Image Avoidance Questionnaire was a 19-item self report questionnaire that dealt with the behaviour of avoiding situations that provoke concern about physical appearance, such as body hugging clothes, social outings and physical intimacy. The questions addressed either directly observable behaviours or cognitions involved with directly observable behaviours.

The measure used a Likert scale. All items were scored positively and contributed the same value towards the final score. The final score was cumulative and represented severity of behaviour relating to poor body image.

This questionnaire measured the rate of an individual's body image dissatisfaction only, and did not target healthy body image behaviours. As a result there may be a tendency for scores to overestimate body image dissatisfaction in the lower levels. Therefore, the measure is accurate at detecting high levels of body image dissatisfaction, but a low score may overestimate the individual's level of body image dissatisfaction.

The reliability coefficient for the Body Image Avoidance Questionnaire suggested that responses on the measure were stable over several weeks ( $r = .87, p = .01$ ). The Cronbach's alpha was .89 ( $df=334$ ), indicating good internal consistency for the test.

The test had good concurrent validity when compared with other measures of Body Image. The Concurrent validity of the Body Image Avoidance Questionnaire is shown in the table below:

Table 2

*Correlations of Body Image Avoidance Questionnaire with other measures of the same construct*

Measure used for comparison	Correlation with BIAQ
Body Shape Questionnaire	$r(351) = .78, p < .0001$
Body Size Estimation Test	$r(111) = .22, p < .01$
Shape Concern Scale	$r(84) = .68, p < .0001$
Weight Concern Scale	$r(84) = .63, p < .0001$

The BIAQ was also demonstrated to be able to distinguish between subjects with bulimia nervosa and normals. The eating disordered group scored significantly higher than the control group ( $x = 40.17, SD = 10.9$ ;  $x = 30.67, SD = 12.7$ ;  $t(44) = 6.69, p < .0001$ ). The ability of this test to distinguish between clinical and non clinical samples contributed to its construct validity.

### *Summary Evaluation*

The main reason that the Body Image Avoidance Questionnaire was chosen was that it was the only identified measure of body image (or Body Image Dissatisfaction) that did not rely on measurement of the subjects actual body at some stage. The Body Image Avoidance Questionnaire did not reflect the value laden assumption that Body Image Dissatisfaction is related to obesity. It also demonstrated good internal and external validity and good reliability.

Title: STANFORD PHYSICAL ACTIVITY RECALL

Authors: Sallis, J.F., Haskell, W.L., Wood, P.D., Fortmann, S.P., Rogers, T., Blair, S.N. & Paffenbarger, R.S.

Publication Details: Physical activity methodology in the five-city project. **American Journal of Epidemiology**. 1985; 121: 91-106

#### *Purpose and Nature*

The Stanford Physical Activity Recall was a Self-administered measure of physical activity that measured duration and frequency of exercise/activity over a one week period (Williams, 1989).

#### *Practical Evaluation*

It consisted of one presentation of a questionnaire that asks participants to record their hourly participation in activities rated at three levels (moderate, hard, and very hard) and also recorded their activities according to week day or week ends

It has the advantages of being brief and easy to administer, is appropriate for a wide age range and for both genders and provides equivalent information to that acquired by a daily log without the heavy time requirement a daily log places on participants (Williams, 1989).

The test-retest reliability of the Stanford was 0.75-0.84 (mean = 0.79) over three weeks of testing. The Stanford correlated well with other measures of activity (Williams, 1989).

Therefore, although self reports of activity tend to overestimate physical activity, and underestimate sedentary activity (Klesges et al., cited in Williams, 1989) they were an acceptable form of measurement when the use of personal observation or electronic monitoring of activity is not possible. The Stanford Physical Activity Recall has been shown to be reliable and to be a valid alternative to Daily logs of activity (Williams et al., 1989).

The Stanford Physical Activity Recall was able to be scored in such a way that the results were scored in METs and could be converted to kcal/day measurements. This degree of accuracy was not required for this study. Therefore, only the apparent activities were measured (ie not counting sleep and light activities). The Moderate activities remained at their raw score value, Hard activities was multiplied by 1.5 and Very hard activities was multiplied by 2.5 (Williams, 1989). The resulting units were then used to compare rates of activity between participants rather than being used as a physiological measure.

Mets calculated:

Moderate activities rated 3 - 5 METS

Hard activities rated 5.1 - 6.9 METS

Very Hard activities rated 7+ METS

### *Summary*

The Stanford Physical Activity Recall was chosen because of its excellent psychometric properties, its simple presentation and scoring, and its ability to gain similar data to a daily log of activity.

### *Procedures*

The three measures were combined as one and presented on a world wide web site ([www.bodyimage.massey.ac.nz](http://www.bodyimage.massey.ac.nz)) (Appendix A,C & D). Contact with potential participants was via physical posters or virtual advertising on major search engines (including yahoo, google & altavista) or links posted on body image sites including:

- <http://psych.hanover.edu/APS/exponnet.html>
- <http://caringonline.com/eatdis/topics/bodyimage.htm>
- <http://www.bodypositive.com>
- <http://www.msu.edu/user/burkejoy/>

The first page was used as an introduction and consent form in one (Appendix A). Participants accessed the website via the World Wide Web on a Mac or PC. The questionnaires were at a website provided by Massey University. The questionnaire could be filled in using keyboard and mouse, or keyboard alone. At the end of the three measures (Appendix C) the participants were given the option to remove their data (clear the screen) or to submit their answers electronically. They were then presented with a Thank you screen (Appendix D) that included information on further sites or contacts that participants could use to get further support or information on the topics covered in the measures.

Participants were allowed as much time as they wanted to fill in the survey. Because the survey was on one page, they were also able to scroll back up the page and change any answers they had presented.

### *Ethical Approval*

Ethical approval for this research was given by the Massey University Human Ethics Committee (MUHEC) in August 2000.

### *Recruiting Participants and Obtaining Informed Consent*

Participants were recruited by both paper and virtual posters/advertisements (see Appendix B) directing participants to the research website.

Informed Consent was obtained by the participant clicking on a link at the bottom of the information page that confirmed that they had read all the information provided in the Information sheet and were continuing on an informed basis. This was a standard practice used by many of the Internet researchers and companies, including banks (see [www.bnz.co.nz](http://www.bnz.co.nz)). This was also in line with the standards suggested in American Association for the Advancement of Science's June 1999 report "Ethical and Legal Aspects of Human Subjects Research on the Internet; Washington DC".

To view this report please go to

<http://www.aaas.org/spp/dspp/sfml/projects/intres/main.htm>

It clearly stated to participants that they were not obliged to participate and that they were free to withdraw at any time. A contact email address is also provided to allow participants to ask questions of the researcher before completing the questionnaire. If participants wished to receive feedback about the results of the study, they were given the opportunity to submit their email addresses to the researcher.

### *Data Collection*

The questionnaires were downloaded from the website into the Excel Spreadsheet programme. This allowed data to be cleaned case by case before being uploaded into the SPSS 9.0 for Windows software for analysis.

## Results

**Descriptive Statistics for the Variables**

The variables analysed included *Activity Levels*, *Body Image Dissatisfaction*, *Problem-focused coping*, *Emotion-focused coping* and *Maladaptive coping*. Age, Body Mass Index (BMI) and Waist Measurement were included to identify potential confounds. The means, sd, median and mode for these variables are shown in Table 3.

Table 3

*Descriptive Statistics for the Variables*

	Min	Max	Mean	Standard Deviation	Median	Mode
Body Image Dissatisfaction	8.00	83.00	34.80	15.60	30.00	20.00
Activity Levels	0.00	141.00	26.40	24.30		15.00
Problem focused coping	1.45	3.85	2.60	0.40		
Emotion focused coping	1.38	3.46	2.40	0.40		
Maladaptive coping	1.38	3.13	2.40	0.40		
Age						18-25
Waist Measurement	50.00	220.00	75.15	17.07		80.00
BMI	15.57	58.27	24.74	7.01		20.00

The variable Activity had a strong negative skew, therefore the mean and SD were not representative of the distribution. The majority (94.4%) of respondents reported exercising more than 3.5 hrs per week.

The variable Body Image Dissatisfaction also had a strong negative skew therefore the mean and SD were not representative of the distribution.

## Analysis Procedure

To test the hypotheses (below) the variables were entered into a Simple Pearsons  $r$  correlation equation (see Table 4). The more complex relationships (ie Hypothesis 5 & 6) involved understanding how much each variable contributed to a relationship with the dependent variable. These were entered into a Hierarchical Multiple Regression.

Table 4

*Magnitude and direction of Simple Pearsons  $r$  correlation coefficients (N=214)*

	Age	Waist	BMI	Problem focused coping	Emotion focused coping	Maladaptive Coping	Activity Levels
Age	1.00						
Waist	0.32**	1.00					
BMI	0.21**	0.62*	1.00				
Problem focused coping	0.30**	-0.03	0.01	1.00			
Emotion focused coping	0.07	0.03	0.10	0.60**	1.00		
Maladaptive Coping	-0.11	0.02	0.14*	-0.03	0.09	1.00	
Activity Levels	-0.08	-0.16*	-0.16*	-0.11	-0.08	0.03	1.00
Body Image Dissatisfaction	-0.11	0.03	0.03	-0.28**	-0.31**	0.29*	0.05

\*\*  $p=0.01$  \*  $p=.01$ .

### 1. Body image dissatisfaction is negatively correlated with Activity

This hypothesis was not supported. Body image dissatisfaction was not significantly correlated with Activity (see Table 4).

## **2. Body image dissatisfaction is negatively correlated with Problem-focused Coping**

Body image dissatisfaction was significantly negatively correlated with Problem-focused Coping (see Table 4).

## **3. Body image dissatisfaction is correlated with Emotion-focused and/or Maladaptive Coping**

Body image dissatisfaction was negatively correlated with Emotion-focused coping and positively correlated with Maladaptive Coping. Table 4 shows that Body Image Dissatisfaction had a significant relationship with Problem-focused coping, Emotion-focused coping and Maladaptive coping.

To explore how the Coping variables impact on Body Image Dissatisfaction a data generated hypothesis was formulated (see Hypothesis 6).

## **4. Activity and Problem-focused Coping will be positively correlated**

This hypothesis was not supported. Activity and Problem-focused Coping are not significantly correlated (see Table 4).

Hypothesis 5 and 6 were tested using hierarchical regression, therefore the assumptions were tested for multivariate analysis. Outliers were found beyond 3 SDs in the Activity measure and removed. The variables Activity and Body Image were not normally distributed and were therefore transformed using Square Root before being entered into the regression equations.

Both Age and BMI were entered at the first level of the following hierarchical regressions to rule out any potential interference.

### **5. Body Image Dissatisfaction, Problem-focused coping, Emotion-focused coping, and Maladaptive coping will together impact on Activity.**

This hypothesis was tested by running a Multiple Regression with Activity (square root) as the Dependent variable and Body Image Dissatisfaction (square root), Problem-focused coping, Emotion-focused coping & Maladaptive coping as Independent variables. Age and BMI are entered as the first step in a hierarchical regression to rule out any effect they have as potential confounds.

To test whether Body Image Dissatisfaction (square root), Problem-focused coping, Emotion-focused coping and Maladaptive coping had a significant impact on Activity (square root) as individual variables, a multiple regression was run.

At the first step Age and BMI were entered to see if they had a significant effect on the Dependent Variable. The results showed that they did not act as confounds.

This hypothesis was not supported. Body Image Dissatisfaction, Problem-focused coping, Emotion-focused coping and Maladaptive coping did not have a significant relationship with Activity ( $F=1.24, ns$ ).

#### **Post hoc Hypothesis:**

### **6. Problem-focused, Emotion-focused and Maladaptive coping will together impact on Body Image Dissatisfaction.**

To explore this relationship while taking into account the correlations between the coping variables, a second regression using Body Image Dissatisfaction (square root) as the Dependent Variable and Problem-focused coping, Emotion-focused coping and Maladaptive coping as the Independent variables was run. Table 5 shows the Hierarchical Multiple Regression run using Body Image Dissatisfaction (square root) as the dependent variable, and Problem-focused, Emotion-focused and Maladaptive Coping as independent variables. Age

and BMI (Body Mass Index) were entered at the first step to ensure they did not act as confounds

Table 5

*Multiple Regression of Body Image Scores (square root) on Problem-focused coping, Emotion-focused coping and Maladaptive coping variables showing Standardized regression coefficients (beta), R, R<sup>2</sup>, and Adjusted R<sup>2</sup> (N=214)*

<i>Predictors</i>	<i>Step 1</i>	<i>Step 2</i>		
<i>Controls</i>				
AGE	0.06	0.03		
BMI	-0.13	-0.04		
<i>Main variables</i>				
Problem-focused coping		-0.10		
Emotion-focused coping		-0.25	**	
Maladaptive coping		0.31	**	
	R	0.13		0.44
	R <sup>2</sup>	0.02		0.19
	Adj R <sup>2</sup>	0.01		0.17
	F	1.79	<i>ns</i>	9.95 **

\*\*  $p < .01$

At the first step Age and BMI were entered to see if they had a significant effect on the Dependent Variable. The results show that they did not act as confounds. The regression shows that Problem-focused coping, Emotion-focused coping & Maladaptive coping together explain 17% of the variance in Body Image Dissatisfaction. When correlations between the IVs were controlled, the contribution of Problem-focused coping to the variation in Body Image Dissatisfaction was not significant (see Table 5). However, the impact of Emotion-focused coping and Maladaptive coping on Body Image Dissatisfaction was significant (see Table 5).

## Discussion

This study investigated whether any relationship existed between Activity, Body Image Dissatisfaction and Coping Skills. The study did not identify a psychological factor that correlates with exercise non-adherence. This research did identify some interesting relationships between Body Image Dissatisfaction and Coping Skills, and provided evidence to dispel myths about how poor body image is experienced by women.

### *Activity*

The results failed to confirm that Activity is related to Body Image Dissatisfaction or Coping Styles. An individual's level of Activity is not affected by their level of Body Image Dissatisfaction or their use of different Coping Styles. Therefore, women do not necessarily exercise in response to internal stimuli regarding their appearance. Women who have positive thoughts about their bodies exercise at similar levels to women who have negative thoughts about their bodies. This is important as many women believe that if they were comfortable with their bodies they would not exercise (Adami et al., 1997), and that negative feelings about one's body therefore prevent obesity. The use of different coping styles does not impact on the level of a woman's activity. Therefore, failure to maintain an exercise regime was not found to be caused by a lack of coping skills.

Activity was not related to Age. This study finds that older women are as likely to exercise as younger women. As Body Mass Index also increases with age we are able to dispute the myth that increased Body Mass Index in mature women is due to a decrease in activity.

This research also investigated whether poor body image reinforced an inactive lifestyle. The data did not show a relationship between Body Image Dissatisfaction and Activity. However, previous research linking Activity, Coping or Body Image Dissatisfaction

relates to individuals usually classed as low activity or sedentary (Garner & Wooley, 1991; Corbin & Pangrazi, 1999) and only 5.6% of the respondents were able to be classed as sedentary (less than 3.5 hours of activity per week). This number of sedentary respondents is too small to identify any relationship between sedentary behaviour and Body Image Dissatisfaction or Coping Skills.

### *Body Image Dissatisfaction*

Coping style was found to explain 17% of the variance in Body Image Dissatisfaction. This suggests that a significant part of Body Image Dissatisfaction is attributable to the cognitive style of an individual. Those subjects who used Emotion-focused coping have more positive body images than those who used Maladaptive coping. The use of behavioural or mental disengagement, focus on and venting of emotion, and alcohol or drug use are more likely to result in an individual having a poor body image.

Those who use coping styles such as Emotion-focused coping are less likely to display high levels of Body Image Dissatisfaction. Body Image Dissatisfaction is characterised by a heightened level of stress when the individual is exposed to stimuli connected with their body image. This suggests that the way in which an individual perceives stimuli, and their capacity to cope with stress, mediates their reaction to a stressor (Beiler & Terrell, 1990). When an individual experiences a stressor related to Body Image, perhaps a comment from a friend, the emotional reaction to this stressor is affected by the type of coping skill employed. This research suggests that those individuals who employ an Emotion-focused coping skill, such as seeking emotional support from another person, do not develop a severe emotional reaction to the stressor and therefore do not exhibit the behavioural aspects of Body Image Dissatisfaction. However, individuals who use Maladaptive Coping Skills such as venting emotions or denial, which do not reduce the

emotional distress experienced at such stressors, go on to display the behaviours associated with poor body image (for example, avoidance of social situations where weight would be discussed).

The relationship between Body Image Dissatisfaction and Coping Skills was explored by Beiler & Terrel (1988) who found that eating disordered subjects shared deficits in their coping skills when compared with a non-eating disordered sample. The groups differed significantly on Problem Solving Confidence and Approach-Avoidance Style. The sample population in the current research also exhibited poor coping skills when Body Image Dissatisfaction was high. Because the current research shows that Body Image Dissatisfaction and Emotion-focused coping are linked in a non-clinical population, this suggests that the poor body image experienced by individuals with eating disorders is part of a pattern of maladaptive thinking displayed throughout the female population.

A large proportion of the sample (31.8%) experienced Body Image Dissatisfaction at a level usually found in clinical eating disordered populations (Rosen et al., 1991). These participants had a rate of Body Image Dissatisfaction as high as those suffering from bulimia nervosa. Compared to a 1-3% incidence of eating disorder in our populations (Kaplan & Saddock, 1998), the figure of 31.8% is very high. The likely explanation for this result that our participants were all volunteers who were already interested in body image. If their interest was due to having a poor body image themselves then this could have resulted in an unrepresentative sample. However, even with a skewed sample, the result suggests that negative body image is experienced by a large number of women. As poor body image affects social and occupational functioning, as well as resulting in psychological distress for individuals, attention to this area of psychological health is well overdue, particularly as

Cognitive-Behavioural treatment of Body Image Dissatisfaction has been shown to be highly effective (Dworkin & Kerr, 1987).

Traditional treatment for poor body image has been aimed at persuading normal weight women that they are not overweight, and therefore do not need to have a poor body image (Rosen, Saltzberg & Srebnik, 1989), or suggesting that obese women's negative body image is simply a true reflection of their 'ugly' bodies (Foster & Wadden, 1994) and persuading them to lose weight, by whatever means possible, to correct this body image (Dworkin & Kerr, 1987; Garner & Wooley, 1991). This trend can be seen in published articles that point to improved body image among weight loss 'successes' after gastric restriction/bypass operations. These approaches suggest that negative body image is a symptom of obesity (French & Jeffery, 1994) rather than a socially created dysfunction. However, these same researchers state that postoperative subjects still display an abnormally high level of Body Image Dissatisfaction, that hinges on their fear of regaining weight (Blackburn and Kanders, 1994). The present study shows that poor body image is not related to Obesity, Age or Level of Activity. However, it is related to Coping Styles, which reinforces that poor body image is psychological rather than physical. Poor body image should therefore be treated as a psychological problem, using psychological tools, rather than exposing an individual to possibly dangerous physical or medical manipulations that serve only to exacerbate the original maladaptive beliefs.

It is interesting that Body Image Dissatisfaction is not related to Age, Waist Measurement or Body Mass Index. This confirms previous research that suggests that Body Image Dissatisfaction is experienced independent of actual physical condition (French & Jeffery, 1994; Eldredge & Agras, 1996). Slender women can be as unhappy with their physical appearance as obese women, and obese women can be as happy with their

appearance as slender women. It is also interesting that, despite common complaints about how aging affects one's body, women do not seem to have an increase in Body Image Dissatisfaction as they age. So this research disputes commonly held beliefs, first that women dislike their bodies more as they age, and secondly, that women dislike their bodies because they are fat or have real physical defects. Age is not significantly correlated with Activity, therefore the age of the respondent has not affected their reported level of activity. Age also shows a significant positive relationship with Problem-focused coping. Problem-focused coping is used more by older respondents than younger respondents. Therefore, the older women in our sample were not less active than the younger women.

### *Coping*

Body Image Dissatisfaction was found to be significantly negatively correlated with Problem-focused coping. However, when the correlations between Problem-focused, Emotion-focused and Maladaptive coping are controlled for, the contribution of Problem-focused coping to the variation in Body Image Dissatisfaction is not significant. A possible explanation of this is that Problem-focused coping may be related to Body Image Dissatisfaction because of its high correlation with Emotion-focused coping. Individuals who use a high rate of problem-focused problem solving also use a high rate of emotion-focused coping, therefore this correlation could be causing a false correlation to appear between problem-focused coping and poor body image. Alternately it may be that Problem-focused coping and Emotion-focused coping are components of another variable, such as social support. Further research could consider this possibility and investigate whether the level of social support an individual has access to affects their level of Body Image Dissatisfaction.

Emotion-focused coping has unexpectedly emerged as a useful coping technique as it relates to lower levels of Body Image Dissatisfaction. Emotion-focused coping is usually

most effective when dealing with 'immovable stressors', such as chronic illness or death, and works by relieving the level of stress experienced rather than dealing with the problem directly (Grilo et al., 1989). Poor body image may be a product of how an individual experiences a stressor rather than an inability to solve the problem creating the stress. When negative events related to one's appearance are dealt with in a maladaptive fashion poor body image is experienced and the related behaviour exhibited. The same stressor is less significant to an individual who is able to activate emotional support for themselves. Problem-focused coping would therefore be less effective as Body Image Dissatisfaction is not amenable to problem-solving techniques. It is a socially and emotionally based problem and therefore does not respond effectively to logic and reasoning.

The active ingredient in Emotion-focused coping that leads to a reduction in Body Image Dissatisfaction appears to be social support. Maladaptive coping is related to a higher level of poor body image. Maladaptive coping does not involve the seeking out of social support, and may even lead to behaviours that reduce social support, such as alcohol and drug use and venting of emotions. The way that social support interacts with Body Image Dissatisfaction would be an interesting area for further research.

Dworkin & Kerr (1987) suggest that women in Body Image Therapy reacted better to external praise (counselor reinforcement) than to internal praise (self reinforcement). Therefore, poor body image might be better influenced by external reinforcement, such as emotional-support from others, than by self reinforcement. Emotion-focused coping is a good example of seeking external, social based reinforcement. Problem-focused coping is usually behavioural and the consequences therefore tend to be self-reinforcing (e.g., pride or satisfaction). This suggests that treatment of Poor Body Image should incorporate an emphasis on the client-therapist relationship as the vector of change.

*Further research & Limitations*

The results show that Activity is not related to any of the variables other than BMI and Waist Measurement. While there may not be a relationship between Activity and Body Image Dissatisfaction or Coping Style, it may be because the variable that should have been investigated is the ability to adhere to a new exercise regime rather than current exercise. Current exercise may require the activation of a different set of skills and beliefs than the adoption of a new exercise regime. Another point is that the Stanford Physical Activity Recall identifies non-formal exercise such as housework or gardening more accurately than traditional measures. The attitude that exercise needed to be formal and vigorous led to measures being developed that were not sensitive enough to detect important daily activity such as workplace activity or gardening.

Earlier research linking activity and Body Image Dissatisfaction or Coping focused on the adoption and maintenance of a new exercise regime (Brownell & Kramer, 1994; Cash & Hicks, 1990; Cash, 1994; Foreyt & Goodrick, 1994; French & Jeffery, 1994; Garner & Wooley, 1991; Gormally et al., 1980; Martinez-Gonzalez et al., 1999). This study measured current Activity rather than a new exercise regime and therefore may have been measuring a very different variable to that identified by the above research. Further research could investigate whether an individual's coping styles or level of Body Image Dissatisfaction impacted on their ability to maintain a new exercise regime. For example, further investigation could focus on a change in activity levels, ideally changing from a low level of activity (less than the weekly recommended level) to a healthy level ie, 30 mins per day most days of the week. This would relate more closely to research that suggests that coping skills may be related to non-adherence to a new exercise regime (Gormally et al., 1980). The inclusion of poor body image as a variable would also be warranted because of research by

Brownell & Kramer (1994) showing a correlation between self evaluation as obese and poor adherence to health promoting behaviours such as exercise.

Most respondents reported exercising at above 3.5 hours per week (94.4%). This is unexpectedly high. Possibly, this sample of females aged 18-65 might be more active than the general population, or they may be systematically overestimating their level of activity. Overestimating activity levels in self report surveys is a known confound (Williams, Klesges, Hanson & Eck, 1989) however self report is often the only cost efficient way of gathering data from a large population. A limitation of this study is that the sample appears to be skewed towards high reporting of activity and Body image dissatisfaction, and may not be representative of the general population.

A further limitation of this study stemmed from the use of the world wide web to gather responses. This required that respondents have access to a web capable computer. It is likely that this skewed the population towards a socio-economic level whereby a computer was available to individuals at home or at work. Therefore, it is likely that respondents were mainly middle class or above and well-educated. This limitation is inherent in web-based research, and hopefully will be reduced as computer access increases across cultures and socio-economic groups. The limitation is also balanced by the large geographic range gained by using the world wide web.

### *Conclusions*

Poor body image often leads to women trying to adapt their bodies rather than their beliefs. An entire dieting industry has been founded on the belief that how one feels about their body is dictated by their actual physical condition. The main argument against dieting has been firstly that it is unhealthy and possibly dangerous and secondly that attempting to attain an ideal body shape may have dubious results. Diet and exercise are unable to work

beyond the limits of genetics, metabolic rate and fat cell number (Foster & Wadden, 1994). Foster and Wadden (1994) expand this argument to suggest that the perceived benefits of a change in body shape may be an illusion, and of no real benefit. This current research supports this, as no relationship has been found between Body Image Dissatisfaction and Age, Body Mass Index or Waist Measurement. Dieting cannot be considered an acceptable form of treatment for Body Image Dissatisfaction as any change in body shape or size is unlikely to affect the level of Body Image Dissatisfaction experienced by an individual.

An individual's level of Activity does not seem to be influenced by their body image or coping skills. However, this finding does not necessarily relate to the sub-population of sedentary individuals. Further research on this group could identify differences between the active population and sedentary individuals that this research did not identify.

The relationship between maladaptive coping and poor body image could be useful. Identification of one set of behaviours would alert professionals to the increased possibility of the other behaviours being present in their clients. This would be particularly useful for psychologists and counselors working with clients at risk of developing an eating disorder or may facilitate an understanding of the underlying issues behind the use of maladaptive coping skills in a client. Furthermore, training in adaptive coping skills might reduce poor body image in women.

As Body Image Dissatisfaction is associated with maladaptive behaviours, and psychological distress that impairs ordinary functioning, it presents as a problem worth time and effort on behalf of the scientific community.

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## **Appendix A**

### **Introduction & Consent Form**



## Research Information Sheet

School of Psychology  
Massey University, New Zealand

My name is Fiona Gordon and I am currently in my final year of my masters Degree. My main interests in psychology are Women's health issues. My supervisor is Dr Christine Stephens, a lecturer at Massey University.

We are conducting a study concerning the relationship between body image and exercise/activity levels in adult women. The aim of the study is to discover whether any relationship exists between a woman's self perception (body image) and her level of formal and informal exercise. We are also measuring different ways of coping to see if coping is related to either body image or exercise/activity levels. The purpose of this study is to understand the connections between these variables.

We would like to invite you to take part in this research. Please be aware that you can decide not to submit your answers at any time by exiting the website or by erasing your answers at the end of the questionnaire. Please feel free to not answer any questions that you may feel uncomfortable about. If you wish to withdraw your responses please do so BEFORE submitting the questionnaire. We may not be able to remove your data from the computer after this time. However, no identifying information will be included in this data.

Before agreeing to take part in the study, please be aware that:

1. In this study you will be asked to fill out a questionnaire that will take approximately 25 minutes to complete. Answering the questions in this questionnaire is the sole extent of your participation required, there is no followup to this research,
2. Taking part in this study is completely voluntary and you have the right to discontinue your participation at any time,
3. Participants must be female and 18 years or older. As we have no way of confirming this we are relying on your honesty, thank you,
4. Your responses are private and will remain confidential. At no time will your name be associated with your responses to this questionnaire. If you supply your email address, it will be held in separate records to the questionnaire results, it will not be possible for any outside agency to connect your results with your email address,
5. We suggest that you do not use company or institution computers to submit this questionnaire. Many countries allow employers to monitor their employees' email and internet use. Using a work computer to submit this questionnaire may allow an outside agency (eg your employer) to view your answers. There is also a small risk that submitted results may be intercepted by hackers. If this concerns you please contact the researcher before completing the questionnaire.
6. Completion and submission of the questionnaire constitutes informed consent to use the data,
7. If you have any questions or concerns, please email the researcher (Fiona Gordon) at [BodyImage@massey.ac.nz](mailto:BodyImage@massey.ac.nz) or contact the Massey University Supervisor (Dr Christine Stephens) by email: [C.V.Stephens@massey.ac.nz](mailto:C.V.Stephens@massey.ac.nz); or by phone: +64 6 350-5799 extn 2071. You also have the right to request results from this study. To do this please place your email address in the window below or visit this website at the end of 2000 to read the summarized results.

In conclusion your rights as a participant in this research include, the right;

- to decline to participate;
- to refuse to answer any particular questions;
- to withdraw from the study at any time;
- to ask any questions about the study at any time during participation;
- to provide information on the understanding that your name will not be used unless you give permission to the researcher;
- to be given access to a summary of the findings of the study when it is concluded.

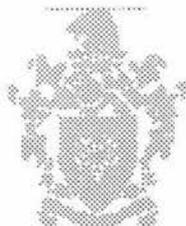
If you wish to receive feedback at the completion of this study, please enter your email address in the box provided.

Email Address:

---

**If you have read all of the above and would like to take part in this study, click on questionnaire to proceed.**  
**By doing so, be advised that you are giving informed consent to use your responses in this study.**

**If you do not wish to take part in this study, clicking here will take you to a search engine.**



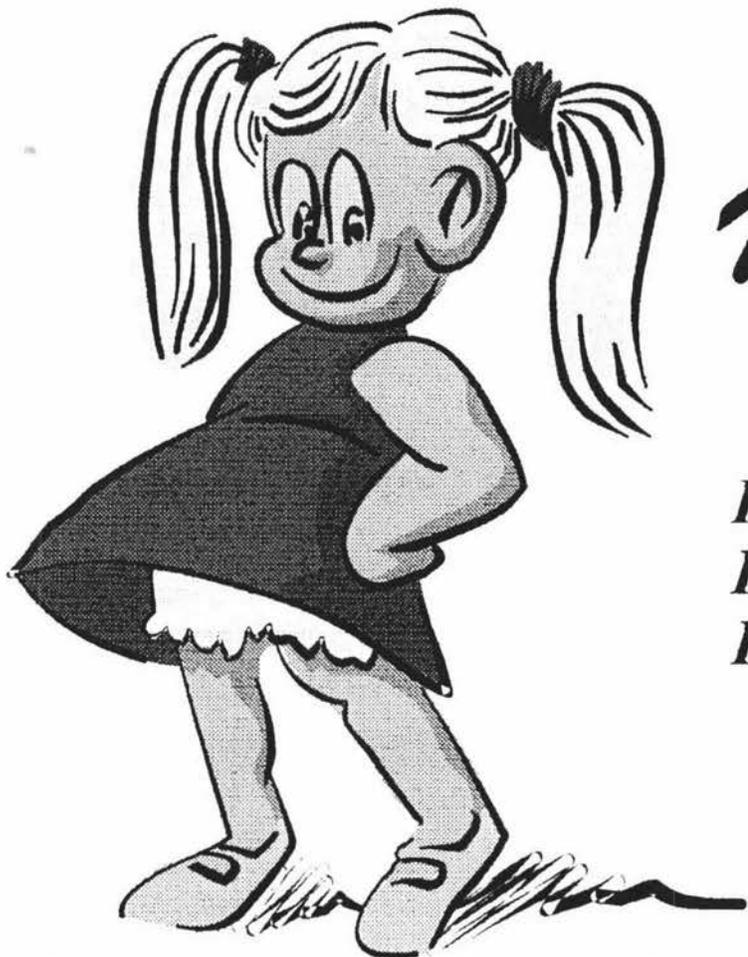
Comments to  
[Psych.Website@massey.ac.nz](mailto:Psych.Website@massey.ac.nz)  
Massey University, New Zealand  
URL: <http://psychology.massey.ac.nz/>

[Disclaimer](#)

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## **Appendix B**

Poster



## *You and your Body*

*How do you feel about your body?*

*How do those feelings affect your life?*

*How do you feel about using your body?*

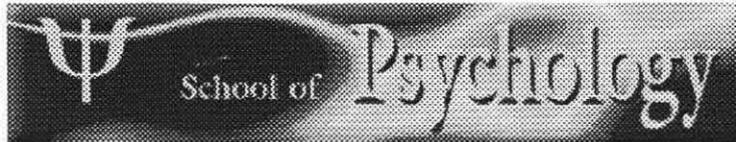
This research is investigating a possible relationship between body image and activity levels in adult women. The aim of the study is to discover whether any relationship exists between a woman's self perception (body image) and her level of formal and informal exercise. We are also measuring different ways of coping to see if this relates to either body image or activity levels. This research is part of a Massey University Masters Thesis being completed by Ms F Gordon (contactable at [BodyImage@massey.ac.nz](mailto:BodyImage@massey.ac.nz) (or contact Chris Stephens, Supervisor, at 06 350 5249 extn 2071 ) This research has Massey University Human Ethics Committee approval.

If you would like to take part please visit:

***<http://bodyimage.massey.ac.nz>***

## **Appendix C**

Measures - Complete Questionnaire



## Questionnaire - Self Image Study

School of Psychology  
Massey University, New Zealand

I have viewed the Information Sheet and hereby give my informed consent for my answers to be included in this research:

Yes  - No

### Demographic Information

First, we just need to request some basic demographic information from you. The main reason for gathering this information is to ensure we get a good representative sample of respondents. The secondary reason is so that we can identify if there are any differences between age groups and/or ethnic groups in the way that women feel about their bodies and participate in exercise or activity.

Please complete the options which best apply to you.

<b>Gender:</b>	<input type="radio"/>	Male
	<input type="radio"/>	Female
<b>Age:</b>	<input type="radio"/>	18 - 24
	<input type="radio"/>	25 - 39
	<input type="radio"/>	40 - 64
	<input type="radio"/>	65 +

### Ethnic Group:

*Please select one or more of the following groups (for eg, if you identify as African-American you might select African & American European)*

<input type="checkbox"/>	African	<input type="checkbox"/>	Pacific Islander
<input type="checkbox"/>	European	<input type="checkbox"/>	Asian
<input type="checkbox"/>	American European	<input type="checkbox"/>	Middle Eastern
<input type="checkbox"/>	Hispanic/ South American	<input type="checkbox"/>	Other/ None of the above

Is English your first/native language?    Yes     No

### Biological data:

Research suggests that body image and weight may not be related. We would like to test that result and therefore request that you provide us with the following biological data:

<b>Height:</b>	<input type="text"/>	<input type="radio"/> cms <input type="radio"/> inches
<b>Weight:</b>	<input type="text"/>	<input type="radio"/> kgs <input type="radio"/> lbs
<b>Measurement at waist:</b>	<input type="text"/>	<input type="radio"/> cms <input type="radio"/> inches

*Thank you for completing the Demographic questions, please continue onto the actual survey questions.*

---

Now we would like to know about your physical activity during the past 7 days, that is, the last 5 weekdays and last weekend, Saturday and Sunday. We are not going to talk about light activities such as slow walking or light housework (eg dusting), or un strenuous sports such as bowls or pentaque. Please look at this list, which shows some examples of what we consider moderate, hard and very hard activities. People engage in many other types of activities, and if you are not sure where one of your activities fits, please just make the best match you can.

### MODERATE ACTIVITY

#### *Occupational tasks:*

- delivering mail, patrolling on foot, house painting, delivering parcels.

#### *Household tasks:*

- raking the lawn, sweeping and mopping, mowing the lawn, cleaning windows, planting or weeding the garden.

#### *Sports activities (actual playing time):*

- volleyball, Ping Pong, brisk walking (for pleasure or to go somewhere), golf (without a cart), calisthenics exercises.

### **HARD ACTIVITY**

#### *Occupational tasks:*

- heavy carpentry, construction work, doing physical labour.

#### *Household tasks:*

- scrubbing floors, hand washing clothes, moving furniture, pruning and hoeing garden.

#### *Sports activities (actual playing time):*

- tennis doubles, dancing, horseriding.

### **VERY HARD ACTIVITY**

#### *Occupational tasks:*

- very hard physical labour (concrete labourer, fencing), digging or chopping, carrying bricks, handling animals, lumber.

#### *Sports Activities (actual playing time):*

- jogging, swimming, aerobics/ tai bo/ step, weight training, singles tennis, rugby, squash, soccer.

.....

First, please let us know about your sleep habits:

1. On average, how many hours did you sleep each night during the last 5 weekday nights (Sunday - Thursday)?  hrs?
2. On the average, how many hours did you sleep each night last Friday and Saturday nights?  hrs?

Now we are going to talk about your physical activity during the past 7 days, that is, the last 5 weekdays and last weekend, Saturday and Sunday.

3. First, let's consider moderate activities. How many hours did you spend during the last 5 weekdays doing these moderate activities or others like them? Please tell me to the nearest half hour. eg.2.5 hrs.  hrs?
4. Last Saturday and Sunday, how many hours did you spend on moderate activities?  hrs?
5. Now, let's look at hard activities. How many total hours did you spend during the last 5 weekdays doing these hard activities or others like them? Please tell me to the nearest half hour.  hrs?
6. Last Saturday and Sunday, how many hours did you spend on hard activities?  hrs?
7. Now, let's look at very hard activities. How many total hours did you spend during the last 5 weekdays doing these very hard activities and others like them? Please tell me to the nearest half hour.  hrs?
8. Last Saturday and Sunday, how many hours did you spend on very hard activities?  hrs?
9. Compared with your physical activity over the past 3 months, was last week's physical activity

more, less or about the same?

<input type="radio"/>	More
<input type="radio"/>	Less
<input type="radio"/>	About the same

Now we would like to know about the different ways in which you deal with stress. Remember, everyone has different ways of thinking and behaving under stress, so there are no right or wrong answers.

**Please read each statement carefully.** There are 60 statements altogether. Treat each item separately from every other item. **As you read each item, think what YOU do in a stressful situation,** and click on the box which corresponds nearest to the way that indicates what YOU do, rather than what most people do, or what you think 'most' people 'should' do.

Indicate what YOU usually do when YOU experience a stressful event:

Response choices are:

1. means I usually don't do this at all
2. means I usually do this a little bit
3. means I usually do this a medium amount
4. means I usually do this a lot

**The button you select will indicate how you cope with stressful situations, there are no right or wrong answers.**

### The questions about coping

	Question	Not at all	A little bit	A medium amount	A lot
1	I try to grow as a person as a result of the experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	I turn to work or other substitute activities to take my mind off things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	I get upset and let my emotions out.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	I try to get advice from someone about what to do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	I concentrate my efforts on doing something about it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	I say to myself 'this isn't real'.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	I put my trust in God.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	I laugh about the situation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9	I admit to myself that I can't deal with it, and quit trying.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10	I restrain myself from doing anything too quickly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11	I discuss my feelings with someone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12	I use alcohol or drugs to make myself feel better.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13	I get used to the idea that it happened.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14	I talk to someone to find out more about the situation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15	I keep myself from getting distracted by other thoughts or activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16	I daydream about things other than this.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17	I get upset, and am really aware of it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18	I seek God's help.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19	I make a plan of action.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20	I make jokes about it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<b>Question</b>	<b>Not at all</b>	<b>A little bit</b>	<b>A medium amount</b>	<b>A lot</b>
21	I accept that this has happened and that it can't be changed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22	I hold off doing anything about it until the situation permits.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23	I try to get emotional support from friends or relatives.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24	I just give up trying to reach my goal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25	I take additional action to try to get rid of the problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26	I try to lose myself for a while by drinking alcohol or taking drugs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27	I refuse to believe that it has happened.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28	I let my feelings out.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29	I try to see it in a different light, to make it seem more positive.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30	I talk to someone who could do something concrete about the problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31	I sleep more than usual.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32	I try to come up with a strategy about what to do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

33	I focus on dealing with this problem, and if necessary let other things slide a little.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34	I get sympathy and understanding from someone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
35	I drink alcohol or take drugs, in order to think about it less.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
36	I kid around about it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
37	I give up the attempt to get what I want.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
38	I look for something good in what is happening.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
39	I think about how I might best handle the problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
40	I pretend it hasn't really happened.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<b>Question</b>	<b>Not at all</b>	<b>A little bit</b>	<b>A medium amount</b>	<b>A lot</b>
41	I make sure not to make matters worse by taking action too soon.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
42	I try hard to prevent other things from interfering with my efforts at dealing with this.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
43	I go to the movies or watch TV, to think about it less.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
44	I accept the reality of the fact that it happened.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
45	I ask people who have had similar experiences what they did.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
46	I feel a lot of emotional distress and find I express those feelings a lot.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
47	I take direct action to get around the problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
48	I try to find comfort in my religion.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
49	I force myself to wait for the right time to do something.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
50	I make fun of the situation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
51	I reduce the amount of effort I'm putting into solving the problem.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
52	I talk to someone about how I feel.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
53	I use alcohol or drugs to help me get through it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
54	I learn to live with it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



17	I avoid going clothes shopping.	<input type="radio"/>					
18	I don't wear "revealing" clothes (e.g., bathing suits, tank tops, or shorts).	<input type="radio"/>					
19	I get dressed up or made up.	<input type="radio"/>					

To submit your results, please click on the ***Submit this information*** button. Please note that by doing so, you are giving informed consent to use your responses in this study.

If you wish to wipe your answers, click on the ***Clear your answers*** button.

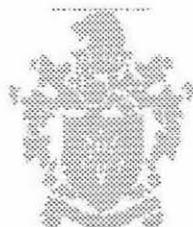
Submit this information.

Clear your answers.

If you would like to access further information about body image, exercise or coping skills, please contact the research at [BodyImage@massey.ac.nz](mailto:BodyImage@massey.ac.nz) or try some of the following links:

- <http://www.nami.org> - A good site for information about mental health issues.
- <http://homepages.ihug.co.nz/~psychsoc/> - The official site of the NZ Psychological Society.
- <http://www.naafa.org> - For information and support about living with obesity.
- <http://caringonline.com/eatdis/topics/bodyimage.htm> - A site of bulletin boards, discussions and articles about women and their bodies.
- <http://www.americanheart.org> - A good site about health and exercise for a healthy heart.
- <http://www.nhf.org.nz> - The NZ Heart Foundation, advice about exercise and diet for health.

Thank you for your time.



Comments to  
[Psych.Webmaster@massey.ac.nz](mailto:Psych.Webmaster@massey.ac.nz)  
 Massey University, New Zealand  
 URL: <http://psychology.massey.ac.nz/>

[Disclaimer](#)

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## **Appendix D**

Thank you Page

# Thank You!

**Thank you very much for completing this survey form.**

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If you would like to access further information about any of the topics raised in this questionnaire please contact the researcher at [BodyImage@massey.ac.nz](mailto:BodyImage@massey.ac.nz) or try some of the following links:

- <http://www.nami.org> - A good site for information about mental health issues.
- <http://homepages.ihug.co.nz/%7Epsychsoc/> - The official site of the NZ Psychological Society.
- <http://www.naafa.org> - For information and support about living with obesity.
- <http://caringonline.com/eatdis/topics/bodyimage.htm> - A site of bulletin boards, discussions and articles about women and their bodies.
- <http://www.americanheart.org> - A good site about health and exercise for a healthy heart.
- <http://www.nhf.org.nz> - The NZ Heart Foundation, advice about exercise and diet for health.