To Test if Exercise Effects
Stress,
Self-Efficacy and Self-Concept
In University Students

Fiona Mary Crosby

Submitted in partial fulfilment of the requirements of the BA Hons in Psychology at Dublin Business School, School of Arts, Dublin.

Supervisor: Barbara Caska
Head of Department: Dr S. Eccles

March 2014
Department of Psychology
Dublin Business School
# Table of Contents

**Acknowledgements** ........................................................................................................... 1

**Abstract** .................................................................................................................................. 2

**Introduction** ............................................................................................................................... 3

  - Statistics in Ireland .................................................................................................................. 3
  - Body Mass Index (BMI) ............................................................................................................ 4
  - Exercise ..................................................................................................................................... 5
  - Stress ......................................................................................................................................... 6
  - Self-Efficacy ............................................................................................................................... 8
  - Self-Concept .............................................................................................................................. 11
  - Rationale .................................................................................................................................... 12
  - Hypotheses ............................................................................................................................... 14

**Methodology** .............................................................................................................................. 15

  - Participants ............................................................................................................................... 15
  - Design ....................................................................................................................................... 15
  - Materials .................................................................................................................................... 15
  - Procedure ................................................................................................................................. 17

**Results** ...................................................................................................................................... 18

  - Descriptive Statistics ............................................................................................................... 18
  - Inferential Statistics ................................................................................................................ 19

**Discussion** .................................................................................................................................. 23

  - Aim .......................................................................................................................................... 23
  - Conclusion of Data ................................................................................................................... 23
  - Hypotheses ............................................................................................................................... 23
Acknowledgements

I would like to thank my supervisor, Barbara Caska for her assistance, guidance and words of encouragement throughout this study. Numerous emails and rapid replies which answered every query I had regarding this study were greatly appreciated. I would also like to thank Margaret Walsh for her assistance in conducting and formatting thesis techniques and data requirements. I would also like to thank each participant that took part in this research, as it would have been impossible to conduct this research without all of you. A special thanks to my family, for their constant support and encouragement throughout this time, and for getting me this far in achieving my goals. Lastly, I would like to thank my friends and classmates for their continuous support, guidance and encouragement during this period.
Abstract

The aim of this study was to determine if there was a correlation between exercise, stress, self-efficacy, and self-concept. 102 university students were used in this study, and a questionnaire based on these variables was completed by each individual. Results obtained through a Spearman’s nonparametric correlational test showed that there was a significant negative correlation between exercise and stress ($r_s = -.391$, $N = 102$, $p = -.391 < .001$, two-tailed), and a significant positive correlation between exercise and self-efficacy ($r_s = .323$, $N = 102$, $p = .323 > .001$, two-tailed), and exercise and self-concept ($r_s = .385$, $N = 102$, $p = .385 > .001$, two-tailed). In conclusion, results obtained suggest when a high level of exercise is performed, stress levels will be lower, and self-efficacy and self-concept levels will be higher than those who do not exercise.
Introduction

Statistics in Ireland

Research was conducted on Irish people to find out how much exercise is being performed on a daily bases. It was found that only 41% of Irish adults executed twenty minutes of moderate or strenuous exercise, in comparison to 38% in 1998 (The National Guidelines on Physical Activity for Ireland, 2009). Moderate exercise refers to exercise which is not exhausting such as a brisk walk or tennis. Strenuous exercise refers to exercise which causes the heart to beat rapidly such as running or football (Godin & Shephard, 1985).

A survey conducted found that Irish children did not achieve the recommended level of physical activity in 2006. Girls scored less in this scale, for example, in fifteen year olds, boys were undertaking 27% of the recommended physical activity, whilst girls were only undertaking 13% (The National Guidelines on Physical Activity for Ireland, 2009). As the children grow older, they do not exercise as often as those who are younger, as eleven year old boys were doing 51%, and eleven year old girls were doing 38% of the recommended physical activity. Exercise and physical activity has been shown to assist those who are attempting to give up smoking, build muscle, as well as preventing cardiovascular disease and serious weight gain (Irish Heart Foundation 2013). It has been found by many studies and organisations such as the Irish Heart Foundation (2013), The American Heart Association (2013) Mata, Hogan, Joormann, Waugh & Gotlib (2013) and the Mayo clinic (2011), that many health risks are reduced by exercise, in both adults and children, such as coronary heart disease, cancer, depression, and strokes. Lack of exercise and an unhealthy diet often leads to obesity. SLÁN (2007) found that 38% of Irish people were overweight, and 23% were obese (as cited by The National Guidelines on Physical Activity for Ireland, 2009). There is an obvious increase in obesity in Ireland, in comparison to previous years as The Irish Universities Nutrition Alliance (2008) discovered that one in every five Irish children are
suffering from obesity or over the healthy weight for their age (The National Guidelines on Physical Activity for Ireland, 2009).

**Body Mass Index (BMI)**

Body Mass Index (BMI) is examined to determine those who may be at a higher risk of chronic illnesses such as diabetes. BMI is calculated by multiplying your height, and dividing your weight in kilograms. This formula is not suited to people ages twenty and younger, for this age group, BMI depends on the gender and age of the person in question. A healthy weight ranges between 18.5 and 24.9, overweight measures between 25.0 and 29.9 and obese measures between 30.0 and 34.9 in their BMI scores. Another way to assess risk of chronic illnesses is by measuring a person’s waist. These measurements vary between genders. A healthy waist measurement in males is less than 94 centimetres, and for women, less than 80 centimetres. Those who have an increased risk of chronic illnesses measure in between 94 centimetres to 101.9 centimetres in males, and 80 to 87.9 centimetres in women. Those who have a high risk of chronic illness measure higher than 102 centimetres in males, and 89 centimetres in women. According to the Irish Heart Foundation (2013) being physically active helps to lower cholesterol, and not being physically active increases the risk of heart disease and stroke. It is also recommended that individuals should be physically active for at least thirty minutes or more, five days a week. Exercise also helps mental health, as professionals believe that exercising releases hormones to the brain, which helps you to sleep better, increase good mood, increase self-esteem, and gain an improved social life (Mental Health Foundation, 2013). Exercise has also been shown to eliminate, or improve anxiety as during fight or flight situations, there is a build-up of perspiration, heavy breathing, and other feelings which are similar to those feelings that is experienced during exercise. If these symptoms are transferred onto exercise, instead of anxiety, this can diminish the feeling of panic (Weir, 2011).
Exercise

Exercise is a large contributing factor towards many variables within psychology. This study was focused on the influence of exercise on stress, self-efficacy, and self-concept. Stress is defined as “a pattern of cognitive appraisals, physiological responses and behavioural tendencies that occur in response to a perceived imbalance between situational demands and the resources needed to cope with them” (Passer, Smith, Holt, Bremner, Sutherland, & Vliek, 2009, p. 722). Stress occurs in every human being on a regular basis, and is triggered by daily stressors. Stressors are referred to as “demanding or threatening situations” (Passer et al., 2009, p. 721). These stressors can be small and somewhat inadequate such as having to find time to walk a dog, or big, such as being unsure whether you will be able to pay your rent for your home. According to Bandura (as cited in Keri, 2006, p. 98), “perceived self-efficacy is defined as people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives. Self-efficacy beliefs determine how people feel, think, motivate themselves and behave. Such beliefs produce these diverse effects through four major processes. They include cognitive, motivational, affective and selection processes”.

Coping self-efficacy is when a person believes that they can perform behaviours to be able to manage their stressors effectively (Passer et al., 2009). Self-concept is described as "a person’s understanding of who he or she is, in relation to self-esteem, appearance, personality, and various traits” (Berger, 2011, p.266). This includes everything a person thinks of themselves such as their looks, their weight, their abilities and their self-worth. These variables were chosen to look at how exercise influences them, or if it influences them at all. Exercise can be used to relieve stress, as when one exercises, they focus on what they are doing, such as running or brisk walking. Many people exercise to clear their head from
their daily stressors, however, others have found that exercise is a cause of stress for them as they see it as ‘one more thing to do’ in their already busy schedule.

Stress

Posttraumatic stress disorder symptoms, depressive symptoms, exercise and health were inspected in college students (Rutter, Weatherill, Krill, Orazem & Taft, 2013). Previous studies have shown that depressive symptoms are often related to poor health (Clum, Calhoun & Kimerling, 2000 as cited by Rutter et al., 2013), as well as posttraumatic stress disorder (PTSD) has been shown to be related to a decrease in exercise among sufferers of PTSD as 30% were involved in exercise before PTSD and only 6% remained active during PTSD. A negative association was found between exercise and depression. Rutter et al. hypothesised that there would be a relationship between PTSD and depression symptoms, PTSD with poorer health, and poorer health would be associated with less exercise. Their findings showed that PTSD and depression symptoms were related to poorer health. This shows that sufferers of PTSD and depression accomplish little exercise and had poorer health. Although health was is not tested in this current study, Rutter et al.’s case shows how stress can decrease the amount of exercise being implemented, as stress can often make people feel unmotivated and idle as they feel they cannot control their workload and day to day things to do, and become overwhelmed by everything they have to do.

The environment in which women exercise was also tested, to determine whether there were any benefits from exercising in a certain area (Plante, Gores, Brecht, Carrow, Imbs & Willemsen, 2007). Students were assigned to different conditions both indoors and outdoors. Plante et al. hypothesised that positive mood changes would occur if the participant exercised with a friend, rather than alone or with a stranger, along with exercising outdoors instead of indoors. It was found that exercise elevated mood, especially when the exercise was performed in a gym or outdoors rather than in a laboratory setting. Participants who
exercised with friends reported feelings of being less calm than being on their own, and they were the calmest when they were exercising alone. Outdoor exercise increased enjoyment than indoor exercise. Exercising with friends may increase stress, as it may be seen more as a competition rather than for enjoyment or health.

Mata, Hogan, Joormann, Waugh & Gotlib (2013) tested to see if exercise could act as a barrier towards reoccurring sadness in people who have recovered from depression. It was hypothesised that when shown sad mood stimulation, those who exercise will have a slighter increase in negative affect and a slighter decrease in positive affect than those who do not exercise. Those who do not exercise are hypothesised to have a larger increase in negative affect and larger decrease in positive affect. Results obtained suggest that exercise acts as a protective barrier against sad mood stimulation, especially in those who have recovered from depression. Aerobic exercise is said to have a calming quality as well as enhancing mood. Qigong is a form of exercise that moves every part of the body, which claims to restore health and increase energy, as well as decreasing chances of flu, arthritis and high blood pressure. Qigong exercisers were compared to a control group, and results obtained showed that those in the qigong group had lower anxiety scores. These results show that participating in exercises such as qigong and yoga have psychological benefits, as well as physical health benefits (Johansson, Hassmén & Jouper, 2011). Stetson, Rahn, Dubbert, Wilner and Mercury (1997) conducted a study on the effects of stress on exercise in women. They believed that every day stressors could have an impact on women’s exercise and health routines and cause them to participate in unhealthier habits.

Stetson et al. hypothesised that minor stressors could disrupt exercise regimes, causing an increase in stress, and that their self-efficacy levels towards exercise would be lowered for the duration of periods of higher stress. It was discovered that 70% of the females who took part in this study claimed that they exercised to relieve stress. During stressful
periods, the participants found it more difficult to push themselves to exercise, exercised for shorter periods than usual, and had lower self-efficacy. They also did not enjoy exercise as much as they usually would, and had lower self-efficacy to achieve their exercise goals. Some of the women claimed that often, exercise becomes a stressor in itself, as it is seen as “one more thing to do” in their already busy schedule. This has an interesting result, as people who are stressed are often encouraged to exercise to relieve this stress, not taking into account that it may in fact cause stress as people are unable to find the time to exercise on a regular basis. For this study, the stress levels in college students will be measured along with self-efficacy and self-concept to determine whether there is a relationship between exercise and these variables.

**Self-Efficacy**

In relation to the effect of exercise on self-efficacy, it will be tested to see if there is a relationship between exercise and self-efficacy. For example, if people who exercise make goals for fitness levels, weight loss and their speed when achieving their goals, it is possible that this will increase self-efficacy in other areas in their lives such as college work deadlines, as they can start to believe that if they have control over one aspect of their lives, they can have control over other aspects to achieve other goals. The effect of exercise on self-concept was also tested. As exercise has been shown to give many health benefits, as well as weight loss, exercise should increase a person’s self-concept, as it would cause them to feel healthier overall and more comfortable in their own bodies. If someone who was unhealthy and overweight and began to feel and see changes within their body, they would begin to have more self-worth and this would motivate them to continue their exercise regime to continue seeing and feeling these changes.

Numerous studies have been performed in the past to see if exercise affects different variables. A, Ginis, Jung, and Gauvin (2003) conducted a study to determine whether
exercising in front of a mirror affected women’s feeling states and self-efficacy. These variables were measured before the exercise commenced. Before their study commenced, it was found that exercise increases positive mood and decreases negative mood, as well as increasing self-efficacy. However, in front of a mirror, this result may not occur. Ginis et al. hypothesised that those with a poor body image would have an increase in negative affect than others who did not have any concerns regarding their bodies when exercising in front of a mirror. The results gathered by this study showed that there was a negative effect of the participants’ feeling states as it was hypothesised, however, the environment in which the women exercised in did was not related to self-efficacy, and body image did not affect the women’s self-efficacy or feeling states in relation to the environment. Stress levels were not taken into account in this study. When under pressure or stressed, this can make a person feel bad about themselves, in every aspect such as their appearance, their likability and their self-efficacy, which may give different results than if a person was not stressed. Also, only women were used in this study. According to previous research, many women have lower self-efficacy than males, which has not been tested in front of a mirror when both genders are involved. As this study was achieved in a lab setting, it may produce different results than in a natural setting.

Self-efficacy was manipulated in a study to observe self-efficacy with affect and exercise (McAuley, Talbot & Martinez, 1999). It was hypothesised that when the participants were in the higher efficacy group, they would have more positive and less negative affect than those who were in the lower efficacy group. Females were recruited by flyers posted around the university. A self-efficacy scale was used to determine what the women thought of their physical abilities. It was found that self-efficacy was related to well-being and distress in the high efficacy group during and after exercise, which enforced McAuley et al.’s hypothesis, concluding that self-efficacy is an important variable when contributing to
exercise. Self-efficacy was manipulated in this study, however no manipulations will take place in this present study, and exercise is the variable which is believed to affect stress, self-efficacy and self-concept.

Self-determination theory and self-efficacy theory were tested to determine if it predicted physical activity. Self-efficacy has been supported to be a predictor of physical exercise. It was hypothesised that self-efficacy will have a direct influence on exercise. To conduct this study, two hundred and twenty five university students chose to participate and they signed an online consent form and completed a questionnaire online. The questionnaire which addressed exercise was the Godin Leisure-Time Exercise Questionnaire, and Bandura’s questionnaire (1997) was used to address task self-efficacy, as well as barrier self-efficacy carried out by McAuley (1992), and Blanchard, Rodgers, Courneya, Daub & Knapik, (2002) (as cited by Sweet, Fortier, Strachan & Blanchard, 2012). Scheduling self-efficacy was also tested which included borrowed items from past research such as Strachan, Brawley, Spink & Yung, (2009), and McAuley & Mihalko (1998) (as cited by Sweet et al., 2012). It was found that self-efficacy was related to exercise, and if expected positive outcomes of exercise were increased, this would result in an increase in self-efficacy for exercise, which in turn would cause exercise to increase self-efficacy (Sweet et al., 2012).

Albert Bandura (1961) developed social learning theory, which is “an extension of behaviourism that emphasizes the influence that other people have over a person’s behaviour. Even without specific reinforcement, every individual learns many things through observation and imitation of other people” (Bandura, A, 1961, as cited by Berger, 2011, p.41). The observation and imitation of other people is referred to as modelling. Bandura presented this by showing a group of nursery children a video of an older model acting aggressively towards a Bobo doll. After the video was watched, the children were allowed to play in a room containing many other toys that were in the aggressive Bobo video, as well as
the Bobo doll. The children began to act in the same manner as the older model had. The control group involved were shown a non-aggressive video, and did not act aggressively to the Bobo doll (Baron & Branscombe, 2012). Self-efficacy is important in Bandura’s research, as self-efficacy involves believing that your personal actions will give you a favourable outcome. Self-efficacy can be built by watching others carry out tasks and completing them successfully, which shows children that they can also carry out these tasks, and help them to strive for positive endeavours (Berger, 2011).

**Self-Concept**

Results from the study Dishman, Hales, Pfeiffer, Felton, Saunders, Ward, Dowda & Pate (2006) achieved indicated that physical activity has positive influences on physical self-concept, which centres on appearance in adolescent girls. This positive influence in which Dishman et al. presented is important for adolescent girls as appearance plays a heavy role in their lives, which in turn causes depression if they are unsatisfied with their appearance. Stress often follows depression as they feel they are unable to get out of a rut. Stress would have been a valuable variable to test with this study to determine whether it was linked with depression and self-esteem issues, as well as self-efficacy. As exercise is recommended by medical professions when an individual is stressed, it would have been interesting to determine whether all these variables are linked. To gain this result, self-concept, self-esteem, physical activity and sports participation were all tested against each other. A study also concerning self-concept discusses self-concept in a way in which increases exercise. This study discusses how those who feel positively about exercise and physical activity, achieve goals and anticipated results in exercise and physical activity behaviours. Although this study was performed by looking at the influence of physical education teachers, it shows that self-concept and exercise are related, as self-concept increases positive attitudes to exercise and physical activity more than those who have lower self-concept (Marsh, Papaioannou, &
Theodorakis, 2006). Another study found that self-concept is compromised in youths with chronic illnesses. It was found that those with a chronic illness had lower self-efficacy levels, in comparison to healthy individuals (Ferro & Boyle, 2013). This is an important study to include because if there is a relationship between self-efficacy and exercise or if exercise increases self-efficacy as suggested by Dishman et al. (2006), exercise levels should be taken into account for further studies relating to self-efficacy levels among chronically ill youths.

**Rationale**

The reason for this study is that much of the previous research executed, only tested their hypotheses on women or adolescent girls, eliminating males from their study. The reason for this elimination is that it is said that women exercise more than males, and are more likely to have lower self-efficacy and self-concept levels than males. This current study will perform tests on university students, both males and females, to see if there is a relationship between exercise and stress, self-efficacy and self-concept. It will also be tested to see if exercise causes changes in stress levels, self-efficacy and self-concept. The gender results will then be compared. This study is important, as previous studies such as Stetson et al.’s (1997) study found that women also found that exercise often caused stress, as it was seen as “one more thing to do”, which is interesting as medical professions would often encourage exercising to relieve stress. As this study is focusing on university students, it will be interesting to see if these students feel the same way as the participants in Stetson et al.’s study, as with course workload, students may not find the time to exercise as often as they would like. However, Mata et al. (2013) found that exercise formed as a barrier against negative repeated emotional stressors in their participants, who had previously suffered from depression, and were no longer sufferers. Exercise, stress, self-efficacy and self-concept will be tested in this study, as it appears that no other previous research has been conducted using these variables together, such as the study of exercise on rehabilitation (Fleig, Pomp,
Schwarzer & Lippke, 2013). This study did not include stress or self-concept, it did however find that interventions with booster sessions in relation to exercise did encourage the preservation of self-efficacy. Self-efficacy was also tested in a physical activity setting (Sweet, Fortier, Strachan & Blanchard, 2012). It was found that self-efficacy and physical activity were significantly related, however, it was encouraged to further study this relationship in different circumstances. Another study was performed to determine whether exercise was a valuable variable to help stress levels in patients with spinal cord injury. Although this study did not include self-efficacy, it was found that three months later, lower pain, stress and depression levels were reported to be lower than what they were when the study first commenced. An increase in physical self-concept and perceived quality of life were also described (A., Ginis, Latimer, McKechnie, Ditor, McCartney, Hicks, Bugaresti & Craven, 2003).

It is important to determine the relationship, if any, between exercise and stress, self-efficacy and self-concept, and if exercise decreases stress levels, increases self-efficacy levels and increases self-concept levels. University students were chosen, as younger ages are going through puberty and experiencing changes in their body, as well as others who have gone through puberty but are not quite used to how their body appears. If they are uncomfortable with their current body shape, self-efficacy and self-concept levels will be lower than those students who are in college, and who are comfortable with their body shapes. The way in which data was collected for this study, was the use of a questionnaire. The questionnaires that were used were the Godin Leisure-Time Exercise Questionnaire (Godin & Shephard, 1985), the Perceived Stress Scale (Cohen, Kamarck & Meremstein, 1983), the Universal Questionnaire on Self-Efficacy (Schwarzer & Jerusalem, 1995), and the Self-Concept Clarity Scale (Campbell, Trapnell, Heine, Katz, Lavallee & Lehman, 1996). To gain access to university students, survey monkey was used and distributed over social networking sites.
The aim of this study is to determine if there is a correlation between exercise, stress, self-efficacy and self-concept.

**Hypotheses**

The hypotheses of this study are; there will be a negative correlation between exercise and stress. The second hypothesis is that there will be a positive correlation between exercise and self-efficacy. The third hypothesis is that there will be a positive correlation between exercise and self-concept. The fourth and final hypothesis is that males will be more involved in physical activity than females, therefore will have lower levels of stress, increased self-efficacy and increased self-concept than females.
Methodology

Participants

A convenience sample of one hundred and two university students from Ireland (52 females and 50 males) ranging in age from 18-28 years old (M = 21.17, S.D. = 1.819) voluntarily took part in this study. No control group was necessary so all of the participants were in the same experimental group. People who did not attend university were not included in this study. The reason for this sample size was to get a sample that had validity in the wider population.

Design

This design was a correlational design as no variables were manipulated and it was tested to see if there is a relationship between exercise, stress, self-efficacy and self-concept. Gender scores were also compared against exercise to test for a significant difference in the amount of exercise achieved by each gender. It was also a simple experiment as exercise was also tested to determine if exercising frequently caused a change in stress levels, self-efficacy scores and self-concept scores. The predictor variables (PV) were exercise and gender as they were tested to determine whether these variables caused changes in stress, self-efficacy and self-concept. The criterion variables (CV) were stress, self-efficacy and self-concept as these were measured in relation to the amount of exercise executed by the participant, and what gender they were. The independent variable (IV) for the gender comparison was exercise, and the dependent variable (DV) was gender.

Materials

The questionnaires that were used in this study were the Godin Leisure-Time Exercise questionnaire (Godin & Shephard, 1985) which included four questions, the Perceived Stress Scale (Cohan, Kamarck & Mermelstein, 1983) which included ten questions, the Universal Self-Efficacy questionnaire (Schwarzer & Jerusalem, 1995), which included ten questions
and the Self-Concept Clarity Scale (Campbell, Trapnell, Heine, Katz, Lavelle, & Lehman, 1996) which included twelve questions. At the beginning of the questionnaire, gender and age were also asked. These questionnaires were inserted into Survey Monkey and distributed online on social media websites. Individuals were instructed to complete the questionnaires only if they were attending university at the time, eliminating individuals who were not in university from the study. The questionnaires took four to seven minutes to complete. The Perceived Stress Scale comprised of ten questions, with five possible responses ranging from zero to four, zero meaning never, and four meaning very often. The Self-Efficacy questionnaire comprised of ten questions with four possible answers ranging from one to four, one meaning not true at all, and four meaning exactly true. The Self-Concept Clarity Scale comprised of twelve questions with five possible answers which were labelled with the numbers one to five, one meaning strongly disagree and five meaning strongly agree.

Each questionnaire was recoded and scored. In relation to the Godin Leisure-Time Exercise questionnaire, total weekly leisure activity was calculated by summing up the products of the separate components. Weekly leisure activity is \((9 \times \text{Strenuous exercise}) + (5 \times \text{Moderate exercise}) + (3 \times \text{Light exercise})\). In relation to the perceived stress scale, positively worded items, (questions four, five, seven and eight) were reversed scored. 0=4, 1=3, 2=2, 3=1 and 4=0. The reversed scores were then added to the original scores (questions one, two, three, six, nine and ten). The higher the overall score, the level of perceived stress experienced by the individual is higher. The General Self-Efficacy Scale was not reversed scored. Each score was added together from each question. The higher total of the questions, the higher the person’s generalized sense of self-efficacy. In relation to the Self-Concept Clarity Scale, the scores were reversed for questions one, two, three, four, five, seven, eight, nine, ten and twelve. 0=5, 1=4, 2=3, 3=2, 4=1, and 5=0. For questions six and eleven, the scores were 1=1, 2=2, 3=3, 4=4 and 5=5. The reversed scores were then added to the original
scores. The higher the overall score, the level of self-concept experienced by the individual is higher. The data was inputted into a computer programme, IBM SPSS Statistics 21.

Procedure

The four questionnaires, Godin Leisure-Time Exercise questionnaire, Perceived Stress Scale, General Self-Efficacy Scale and Self-Concept Clarity Scale were inserted into Survey Monkey, an online survey website, which were then shared on various social media websites. No deception was used in this study. The participants were aware that the questionnaires that they were answering were to determine the effects of exercise on stress, self-efficacy and self-concept. Each questionnaire gave clear instructions to each participant. These instructions asked the participant to tick the box that was most relevant to them in relation to the previous week. Each box was clearly labelled using numbers, and each number had a rating such as “never”, “almost never” and “always”, which were shown at the beginning of each questionnaire.
Results

Descriptive Statistics

The variables exercise (M= 63.59, SD= 37.43), stress (M= 18.34, SD= 9.42), self-efficacy (M= 28.75, SD= 5.96) and self-concept (M= 38.18, SD= 9.72) were examined to determine whether there was any correlation between them (as shown in Table 1).

Table 1: Statistics of Psychological Measures

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exercise</td>
<td>63.59</td>
<td>37.43</td>
</tr>
<tr>
<td>Stress</td>
<td>18.34</td>
<td>9.42</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>28.75</td>
<td>5.96</td>
</tr>
<tr>
<td>Self-Concept</td>
<td>38.18</td>
<td>9.72</td>
</tr>
</tbody>
</table>

Cronbach’s alpha was conducted to determine the reliability of each variable. When using Cronbach’s alpha, values under 0.7 are considered to be non-reliable. Exercise was considered non-reliable as Cronbach’s alpha was .363. Stress (Cronbach’s alpha = .870), self-efficacy (Cronbach’s Alpha = .925) and self-concept (Cronbach’s alpha = .904) were all considered reliable.

To test for normal distribution, age, exercise, stress, self-efficacy and self-concept were examined. Figures below 0.05 are not classified as displaying normal distribution. Stress and self-efficacy are both normally distributed; however, a non-parametric test was executed due to the majority of variables that were not normally distributed (as shown in Table 2).

Table 2: Test for Normal Distribution

<table>
<thead>
<tr>
<th>Shapiro-Wilk Statistics</th>
<th>df</th>
<th>Sig.</th>
</tr>
</thead>
</table>
Inferential Statistics

Scatterplots were conducted on exercise, stress, self-efficacy and self-concept to determine if there was any correlation. There were positive correlations shown between exercise and self-efficacy, and exercise and self-concept, as shown in figures 1 and 2. A Spearman’s rho nonparametric correlational test was carried out on exercise, stress, self-efficacy and self-concept, as shown in Table 3.
A Spearman’s rho nonparametric correlation test was conducted to determine if there was a significant correlation between exercise, stress, self-efficacy and self-concept. There was a significant negative correlation between exercise and stress ($r_s = -.391$, $N = 102$, $p = -.391 < .001$, two-tailed). There was a significant positive correlation between exercise and self-efficacy ($r_s = .323$, $N = 102$, $p = .323 > .001$, two-tailed). There was also a significant positive correlation between exercise and self-concept ($r_s = .385$, $N = 102$, $p = .385 > .001$, two-tailed). The null hypothesis can be rejected for three of the hypotheses as there were findings that when more exercise was performed, there was an increase in levels of self-efficacy and self-concept when exercise levels were high. When exercise levels were high,
levels of stress were lower, giving a negative correlation, rejecting the null hypothesis (as shown in Table 3).

**Table 3: Spearman’s Rho Nonparametric Correlation**

<table>
<thead>
<tr>
<th></th>
<th>Exercise Total</th>
<th>Stress Total</th>
<th>Self-Efficacy Total</th>
<th>Self-Concept Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spearman’s Rho</td>
<td>1.000</td>
<td>-.391</td>
<td>.323</td>
<td>.385</td>
</tr>
<tr>
<td>Rho</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exercise Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>N=102</td>
<td>102</td>
<td>102</td>
<td>102</td>
</tr>
<tr>
<td>Correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>coefficient</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.</td>
<td>.000</td>
<td>.001</td>
<td>.000</td>
</tr>
<tr>
<td>Exercise Total</td>
<td>-.391</td>
<td>1.000</td>
<td>-.455</td>
<td>-.738</td>
</tr>
<tr>
<td>Total</td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>.323</td>
<td>-.455</td>
<td>1.000</td>
<td>.571</td>
</tr>
<tr>
<td>Total</td>
<td>N=102</td>
<td>102</td>
<td>102</td>
<td>102</td>
</tr>
<tr>
<td>Correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>coefficient</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.001</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>Exercise Total</td>
<td>.385</td>
<td>-.738</td>
<td>.571</td>
<td>1.000</td>
</tr>
<tr>
<td>Total</td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>Self-Concept</td>
<td>.385</td>
<td>-.738</td>
<td>.571</td>
<td>1.000</td>
</tr>
<tr>
<td>Total</td>
<td>N=102</td>
<td>102</td>
<td>102</td>
<td>102</td>
</tr>
</tbody>
</table>

**Table 4: Independent t-test on Gender and Exercise**

<table>
<thead>
<tr>
<th>Gender of Respondent</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exercise Total</td>
<td>50</td>
<td>74.32</td>
<td>37.71</td>
</tr>
<tr>
<td>Male</td>
<td>50</td>
<td>74.32</td>
<td>37.71</td>
</tr>
<tr>
<td>Female</td>
<td>52</td>
<td>53.27</td>
<td>34.44</td>
</tr>
</tbody>
</table>
An independent samples t-test was conducted to determine whether exercise levels vary between genders. It was revealed that males (N= 50, M=74.32, SD = 37.71) exercise more frequently than females (N= 52, M= 53.27, SD = 34.44) (See Table 4). There was an equality of variance as the Levene’s significant value was .833, therefore equal variances assumed was studied (t = 2.945, df = 100, p = .004, two-tailed). The 95% confidence interval of the difference varied from 6.871 to 35.229 (See Table 5). The null hypothesis can be rejected as males participating in this study engaged in more exercise and physical activity than females.
Discussion

Aim

The aim of this study was to determine a correlation between exercise, stress, self-efficacy and self-concept in university students. Gender results were also compared to test if males participated in more physical activity and exercise than females.

Conclusion of Data

A reliability test was executed to ensure all variables in question were reliable. Stress, self-efficacy and self-concept were considered reliable. However, exercise was not considered to be reliable as Cronbach’s alpha showed it to be .363. A test for normal distribution was performed after the reliability test. This was executed using the Shapiro-Wilk test. The significance value is under 0.05 when testing for normal distribution. Exercise and self-concept were normally distributed; however stress and self-efficacy were not. Due to stress and self-efficacy not being normally distributed; a non-parametric test was performed. Spearman’s rho nonparametric correlation test was executed to determine any possible correlations between exercise, stress, self-efficacy and self-concept. It was shown that there was a significant negative correlation between exercise and stress in this sample. There was a significant positive correlation between exercise and self-efficacy, as well as exercise and self-concept. An independent samples t-test showed that males participate in more physical activity and exercise than females.

Hypotheses

At the beginning of this study, it was hypothesised that there would be a correlation between exercise and stress. When a person participates in high levels of physical activity and exercise, their stress levels would decrease due to the endorphins released during physical activity and exercise. The null hypothesis was rejected as a Spearman’s rho
nonparametric correlational test was performed and the results showed that there was a
significant negative correlation between exercise and stress \((rs = -.391, N = 102, p = -.391 < .001,\) two-tailed). When exercise is high, stress levels are lowered due to endorphins released
during exercise. This result did not support Stetson et al.’s (1997) theory that exercise does
not necessarily reduce stress levels, as participants saw it as ‘one more thing to do’ in their
already busy schedule.

It was hypothesised that there was going to be a correlation between exercise and self-
efficacy. When high levels of physical activity and exercise are accomplished, this should
increase self-efficacy levels as an individual would have set goals for their exercise regime
and fitness levels or weight loss. If these goals are achieved, this would entice an individual
to continue to set goals in the belief that they will be able to achieve each goal that is set, in
different areas of their lives. This gives the individual a feeling of control over their lives.
The null hypothesis was rejected as a Spearman’s rho nonparametric correlational test was
performed, which showed that there was a significant positive correlation between exercise
and self-efficacy. This finding supports Sweet et al.’s (2012) study, which found that positive
outcomes of exercise resulted in a positive increase in self-efficacy levels.

The third hypothesis was that there would be a positive correlation between exercise
and self-concept. When physical activity and exercise is accomplished regularly, self-concept
levels would be higher, in comparison to little physical activity and exercise performed by the
participant. Higher self-concept would result in a greater understanding of who he or she is,
in relation to self-esteem, appearance and individual traits. A Spearman’s rho nonparametric
corrrelational test was used to determine if there was a correlation between exercise and self-
concept. The null hypothesis was rejected as this test showed that there was a positive
correlation between exercise and self-concept. This finding supports the study executed by
Dishman et al. (2006), that physical activity and exercise positively influences self-concept.
Previous Theories and Research

Rutter et al. (2013) performed a study to determine if there was a relationship between posttraumatic stress disorder symptoms, depressive symptoms, exercise, and health. Their study was executed on two hundred undergraduate psychology students (75 males and 125 females), with a mean age of eighteen years old. The questionnaire used contained six questionnaires. The Traumatic Life Events Questionnaire (TLEQ) (Kubany, Haynes, Leisen, Owens, Kaplan, Watson & Burns, 2000, as cited by Rutter et al. (2013), the PTSD Checklist (PLC) (Weathers, Litz, Herman, Huska & Keane, 1993, as cited by Rutter et al. (2013), Beck Depression Inventory II (BDI-II) (Beck, Steer, & Brown, 1996, as cited by Rutter et al. 2013), Health Risk Appraisal (HRA) (Mendlowicz & Stein, 2000, as cited by Rutter et al., 2013), Cohen-Hoberman Inventory of Physical Symptoms (CHIPS) (Cohen & Hoberman, 1983, as cited by Rutter et al., 2013) and Short Form Health Survey (SF-36) (Ware & Sherbourne, 1992, as cited by Rutter et al., 2013) were the questionnaires used in this study. The results from the questionnaires showed that lower levels of exercise and physical health were associated with PTSD and depressive symptoms. In this current study, exercise was shown to have a significant negative correlation with stress.

Rutter et al. (2013) used a larger sample, of two hundred university students which would give a broader sample in comparison to one hundred university students tested in this study. According to Rutter et al., individuals suffering from PTSD and depressive symptoms lose interest in participating in activities, including exercise. As there is a possibility that no participants in this current study were sufferers of PTSD and depressive symptoms, these findings did not correlate with Rutter et al.’s theory that those who were sufferers of PTSD and depressive symptoms did not have interest in participating in physical activity and exercise.
Mata et al. (2013) conducted a study on eighty-one female participants, forty-one of these participants had recovered from Major Depressive Disorder (MDD) and forty of the participants were control. According to Almeida (2005) (as cited by Mata et al., 2013), many studies focus on major stressors in the lives of individuals, such as a loss in the family, or job loss, and do not focus on daily stressors which can also impede on an individual’s psychological health. Results obtained by Mata et al. suggest that exercise can act as a barrier against continual emotional stressors, as those who did not exercise showed a higher negative affect when confronted by a continual emotional stressor, and those who participated in higher levels of exercise showed less negative affect when they were confronted by continual emotional stressors. The results of this current study support Mata et al.’s study as it was shown that there is a negative correlation between exercise and stress, meaning when exercise levels are high, stress levels are lowered.

Stetson et al. (1997) also conducted a study which involved looking at how stress and exercise can affect each other in women. This study was conducted over eight weeks and the participants included eighty-two women. Daily minor stressors were examined over the eight week period. Participants involved in this study claimed that they had exercised to improve health, manage stress, and lose weight. Minor stressors showed to disrupt exercise plans, as during weeks when stress levels were high, the participants admitted to having lower self-efficacy levels for achieving aims and exercised for a shorter period of time. They also did not enjoy exercising as much as they normally would, and they were not as content with their performance in relation to exercise when they were able to participate in physical activity and exercise. Self-efficacy was found to be a major predictor of exercise within this study, as when planned exercising sessions were not achieved, anger and annoyance were felt by the participants, which in turn reduced the levels of self-efficacy. Exercising when self-efficacy was low and minor stressors were high, increased stress rates and exercising was seen as ‘one
more thing to do’. In this current study, there was a significant negative correlation between exercise and stress. This does not support Stetson et al.’s (1997) results. It is a possibility that this is due to only women being tested in Stetson et al.’s study. As the mean age of these women was 34.80, (SD = 11.13), it is a possibility that many of these women had young children. As a child needs a great deal of attention, this could dramatically reduce the possibility to exercise due to time restraints. As the mean age in this current study is lower, (M = 21.17, S.D. = 1.819), and every participate was currently studying in university, the participants may have had more time to accomplish various forms of physical activity and exercise, in comparison to the participants selected in Stetson et al.’s study.

This current study suggests that there is a positive correlation between exercise and self-efficacy. Self-determination theory (SDT) and Self-efficacy theory (SET) were used to predict physical activity in two hundred and twenty-two university students. According to Pan, Cameron, DesMeules, Morrison, Craig, & Jiang (2009) (as cited by Sweet et al., 2012), numerous studies conducted have suggested that self-efficacy is a substantial predictor of exercise and physical activity. It was hypothesised by Sweet et al. (2012), that exercise would be directly influenced by self-efficacy. Results obtained by this study rejected the null hypothesis as it was found that self-efficacy did influence physical activity and exercise directly. As mentioned in Sweet et al.’s study, there is a possibility that exercise would also influence self-efficacy, which has been suggested by this current study. There was a positive correlation between exercise and self-efficacy found in this study, which supports suggestions made by Sweet et al. (2012). As previously mentioned in relation to stress, Stetson et al. (1997) suggested that self-efficacy is a profound predictor variable in relation to exercise. The amount of exercise executed can influence self-efficacy levels, however, self-efficacy can also influence the amount of exercise performed. As this current study focused on exercise being the predictor variable, this supports the idea that exercise and self-efficacy can
both be a predictor variable of one another, as there was a positive correlation shown in this current study between exercise and self-efficacy.

A positive correlation was also found between exercise and self-concept. Dishman et al. (2006) found that physical activity had an indirect positive influence on physical self-concept. Depressive symptoms have been found among adolescents, which indirectly had a correlation with physical activity and exercise. This positive influence found is crucial in adolescent ages as this age group have a higher risk of having depressive symptoms (Goodman & Whitaker, 2002, as cited by Dishman et al., 2006). In this current study, there was a positive correlation found between exercise and self-concept when a Spearman’s rho nonparametric correlation test was conducted, which supports Dishman et al.’s study. Marsh et al. (2006) conducted a study to determine if physical self-concept predicts exercise behaviour. It was conducted as individuals who have high levels of self-concept in certain areas, are more willing to try and achieve goals set than those with lower levels of self-concept. Results found by Marsh et al (2006) support the results of this current study as there was a positive correlation found between exercise and self-concept in this study, and, similar to Dishman et al.’s study, it was found that self-concept and physical activity and exercise positively influence one another.

**Strengths and Weaknesses**

Strengths of this study include findings that physical activity and exercise are positively correlated with self-efficacy and self-concept. When an individual participates in physical activity and exercise, this increases self-efficacy and self-concept levels. When self-efficacy and self-concept levels are high, this encourages individuals to make goals, in the belief that they have a high chance of achieving their goals. When self-efficacy and self-concept levels are low, it is possible that an individual may not believe they can achieve goals. Physical activity and exercise have also been shown to reduce stress levels which
support numerous previous studies such as Rutter et al. (2013), and Mata et al. (2013). As it appears, exercise, stress, self-efficacy and self-concept have never been used in previous studies together, yet they all correlate together as shown by the Spearman’s rho nonparametric correlational test (Table 3).

Weaknesses of this study are that as the questionnaires were based on individual’s opinion of themselves, they may not be as accurate in comparison to a controlled laboratory setting. Also, according to Cronbach’s alpha, exercise was considered to be non-reliable, which is a possibility that this may have altered results obtained. A possibility of this non-reliability, is that, as previously mentioned, participants answered questions based on their opinion.

**Future Research**

For future researchers repeating this study, they should be encouraged to execute this study in a laboratory setting to ensure reliability. As a control, no exercise should be performed by each participant in the laboratory setting, and they should be asked to complete questionnaires on stress levels, self-efficacy and self-concept. This experiment should be repeated one month later using the same participants, as an experimental group. In this group exercise should be performed by each participant in a laboratory setting, and measured by the researcher. Once exercise is completed, the participants should be given the same questionnaire on stress, self-efficacy and self-concept. Once results are obtained from the control and experimental group, these scores should be compared. Executing this study in a laboratory setting would increase reliability, and the participant’s answers would show precisely the difference between the control and experimental answers. This would provide clarity between the changes that exercises causes within stress, self-efficacy and self-concept.
Application of Research

This research can be applied to the lives of everyone as exercise should be a part of day to day life in every individual. Not only is exercise performed to feel healthier and lose weight, it has many psychological benefits as previously discussed. If exercise is a part of an individual’s life, it is possible that they will have low levels of stress and high levels of self-efficacy and self-concept. This will help an individual to feel happier and confident in their abilities to perform tasks and achieve goals in other areas other than exercise.

Conclusion

It was hypothesised that there would be a correlation between exercise and stress, self-efficacy, and self-concept. The null hypotheses were rejected as a Spearman’s rho nonparametric correlational test was conducted on each variable. It was found that there was a significant negative correlation between exercise and stress (rs = -.391, N = 102, p = -.391 < .001, two-tailed). There was a significant positive correlation between exercise and self-efficacy (rs = .323, N = 102, p = .323 > .001, two-tailed), as well as a significant positive correlation between exercise and self-concept (rs = .385, N = 102, p = .385 > .001, two-tailed). This supports previous studies conducted by Rutter et al., (2013), Sweet et al., (2012), Dishman et al., (2006) and Marsh et al., (2006). When individuals participate in high levels of physical activity and exercise, there is a strong possibility that they will have low levels of stress, high levels of self-efficacy, as well as high levels of self-concept, according to previous research and this current study. The null hypothesis in relation to males participating in higher levels of exercise was rejected as it was discovered that males (N= 50, M=74.32, SD = 37.71) partake in higher levels of physical activity and exercise than females (N= 52, M= 53.27, SD= 34.44), through the use of an independent samples t-test. Although there were limitations to this study, results obtained support previous research. This study also
reinforces an old Latin saying “Mens Sana in Corpore Sano”, which is translated as “a healthy mind in a healthy body”.
References:


American Heart Association (2013). American Heart Association Recommendations for Physical Activity in Adults. As retrieved from:

http://www.heart.org/HEARTORG/GettingHealthy/PhysicalActivity/StartWalking/American-Heart-Association-Guidelines_UCM_307976_Article.jsp


http://www.uky.edu/~eushe2/Bandura/BanEncy.html


Appendices

Appendix 1:

Questionnaire

The effects of exercise on stress, self-efficacy, and self-concept.

My name is Fiona Crosby and I am conducting research in the Department of Psychology that explores the effects of exercise on stress levels, self-efficacy, and self-concept. This research is being conducted as part of my studies and will be submitted for examination.

You are invited to take part in this study and participation involves completing and returning the attached anonymous survey. While the survey asks some questions that might cause some minor negative feelings, it has been used widely in research. If any of the questions do raise difficult feelings for you, contact information for support services are included on the final page.

Participation is completely voluntary and so you are not obliged to take part.

Participation is anonymous and confidential. Thus responses cannot be attributed to any one participant. For this reason, it will not be possible to withdraw from participation after the questionnaire has been collected.

The questionnaires will be securely stored and data from the questionnaires will be transferred from the paper record to electronic format and stored on a password protected computer.

I t i s i m p o r t a n t t h a t y o u u n d e r s t a n d t h a t b y c o m p l e t i n g a n d s u b m i t t i n g t h e questionnaires that you are consenting to participate in the study.

Should you require any further information about the research, please contact me at

Thank you for taking the time to complete this survey.
Please Tick: Male [ ] Female [ ]

Age: ____________

During a typical 7-Day period (a week), how many times on the average do you do the following kinds of exercise for more than 15 minutes during your free time (write on each line the appropriate number).

Times Per Week

STRENUOUS EXERCISE
(HEART BEATS RAPIDLY)
(e.g., running, jogging, hockey, football, soccer, basketball, roller blading, skating, vigorous swimming, vigorous long distance bicycling) _______________

MODERATE EXERCISE
(NOT EXHAUSTING)
(e.g., fast walking, baseball, tennis, easy bicycling, easy swimming) ____________

MILD EXERCISE
(MINIMAL EFFORT)
(e.g., yoga, fishing, bowling, golf, easy walking) ____________

During a typical 7-Day period (a week), in your leisure time, how often do you engage in any regular activity long enough to work up a sweat (heart beats rapidly)?

OFTEN SOMETIMES NEVER/RARELY
The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way. For each question circle one of the following options:

0= NEVER
1= ALMOST NEVER
2= SOMETIMES
3= FAIRLY OFTEN
4= VERY OFTEN

1. In the last month, how often have you been upset because of something that happened unexpectedly? 0 1 2 3 4
2. In the last month, how often have you felt that you were unable to control the important things in your life? 0 1 2 3 4
3. In the last month, how often have you felt nervous or stressed? 0 1 2 3 4
4. In the last month, how often have you felt confident about your ability to handle your personal problems? 0 1 2 3 4
5. In the last month, how often have you felt that things were going your way? 0 1 2 3 4
6. In the last month, how often have you found that you could not cope with all the things you had to do? 0 1 2 3 4
7. In the last month, how often have you been able to control irritations in your life? 0 1 2 3 4
8. In the last month, how often have you felt that you were on top of things? 0 1 2 3 4
9. In the last month, how often have you been angered because of things that happened that were outside of your control? 0 1 2 3 4
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? 0 1 2 3 4
Listed below are a series of statements about people’s opinion of themselves. Please circle the number that reflects how often you could make the following statements:

1= NOT TRUE AT ALL
2=HARDLY TRUE
3= MODERATELY TRUE
4=EXACTLY TRUE

1. I can always manage to solve difficult problems if I try hard enough.

   1  2  3  4

2. If someone opposes me, I can find the means and ways to get what I want.

   1  2  3  4

3. It is easy for me to stick to my aims and accomplish my goals.

   1  2  3  4

4. I am confident that I could deal efficiently with unexpected events.

   1  2  3  4

5. Thanks to my resourcefulness, I know how to handle unforeseen situations.

   1  2  3  4

6. I can solve most problems if I invest the necessary effort.

   1  2  3  4

7. I can remain calm when facing difficulties because I can rely on my coping abilities.

   1  2  3  4

8. When I am confronted with a problem, I can usually find several solutions.

   1  2  3  4

9. If I am in trouble, I can usually think of a solution.

   1  2  3  4

10. I can usually handle whatever comes my way.

    1  2  3  4
Listed below are a series of statements about people’s opinion of themselves. Please circle the number that reflects how often you could make the following statements:

1=STRONGLY DISAGREE  
2=DISAGREE  
3= NEITHER DISAGREE NOR AGREE  
4= AGREE  
5=STRONGLY AGREE

1. My beliefs about myself often conflict with one another.
   1  2  3  4  5

2. On one day I might have one opinion of myself and on another day I might have a different opinion.
   1  2  3  4  5

3. I spend a lot of time wondering about what kind of person I really am
   1  2  3  4  5

4. Sometimes I feel that I am not really the person I appear to be
   1  2  3  4  5

5. When I think about the kind of person I have been in the past, I’m not really sure what I was really like.
   1  2  3  4  5

6. I seldom experience conflict between the different aspects of my personality
   1  2  3  4  5

7. Sometimes I think I know other people better than I know myself.
   1  2  3  4  5

8. My beliefs about myself seem to change very frequently.
   1  2  3  4  5

9. If I were asked to describe my personality, my description might end up being different from one day to another day.
   1  2  3  4  5

10. Even if I wanted to, I don’t think I could tell someone what I’m really like.
    1  2  3  4  5
11. In general, I have a clear sense of who I am and what I am.

1 2 3 4 5

12. It is often hard for me to make up my mind about things because I don’t really know what I want.

1 2 3 4 5

End of questionnaire. Thank you for your time.
Thank you for participating in my research project. If this questionnaire has caused any upset for you, don’t hesitate to contact any of the following support groups:

**Aware**

The services that Aware provide are face-to-face support groups, as well as phone, email and online support for people with depression and related mood disorder.

**Telephone:** 01 661 7211

72 Lower Leeson Street,
Dublin 2.

**Samaritans**

Samaritans is an organisation that is available to listen to any problem that a person may have.

**Telephone:** 01 872 7700

**Email:** jo@samaritans.org

112 Marlborough Street,
Dublin,
Republic of Ireland.
Appendix 2: