UNIVERSITY of LIMERICK

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Stress Reduction and Wellbeing: Evaluating a Six-Week Stress Control Course

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Word Count: 8349

A thesis submitted as a requirement for the degree of BSc. Psychology, University of Limerick, 20th of April 2015.

Acknowledgements:

Firstly, I would like to recognise Dr. Jim White, the creator of 'Stress Control', upon which this thesis is based. I would like to extend my utmost gratitude to Dr. Gary Collins for facilitating data collection, along with Dr. Rosario Power, who inspired this research and was always on hand to offer valuable advice. I would like to acknowledge my supervisor, Dr. Ann-Marie Creaven, who was extremely knowledgeable, understanding and reassuring throughout the entire process of completing this project. Finally, thank you to my family and relatives who will most likely need to attend a Stress Control course after the last two semesters.

Abstract

Background: Symptoms of stress and anxiety are currently the most common referral to Primary Care services. 'Stress Control' is an evidence-based cognitive-behavioural group stress management intervention implemented worldwide. The latest design reflects recent research highlighting the importance of positive wellbeing in psychological outcomes, but has yet to be evaluated. **Aim:** The programme was evaluated in terms of effectiveness in reducing stress and increasing wellbeing. **Method:** Treatment group (n = 44) and control group (n = 57) were administered psychometric measures of stress, anxiety, depression and wellbeing before and after the intervention. **Results:** Treatment group had higher scores of stress, anxiety and depression and lower scores of wellbeing compared to control group at Time 1. Treatment group providing follow-up data (n = 16) experienced significant improvements on all measures after the six-week intervention. **Conclusion:** The results provide an empirical foundation for 'Stress Control' potentially improving positive wellbeing in addition to decreasing stress.

Keywords: stress, primary care, psychoeducation, cognitive-behavioural, wellbeing

The central thesis of this paper is simple: to investigate the role of 'Stress Control' as an effective, efficient Primary Care (PC) intervention in reducing stress and enhancing wellbeing. The issue of stress is important for psychologists, considering its contribution to the high levels of mental ill health in the global population (Marin, et al., 2011). It is not only dramatic stressful events that exact their toll, indeed, it is the cumulative nature of mundane daily events that contribute to the elevation and sustained activity of physiological systems, otherwise known as chronic stress.

Symptoms of stress include excessive worrying, panic attacks, tiredness, anger, irritability and poor concentration along with feelings of worthlessness and hopelessness (NHS UK, 2014). The American Psychological Association conducted a study finding 50% of participants experienced an increase in their stress levels over the past five years (2012). 75% of participants suffered from high levels of stress at least once during the previous month (APA, 2012), while job strain has been positively correlated with the utilisation of healthcare services (Azagba & Sharaf, 2011), suggesting that individuals face increased demands in modern daily living. Moreover, elevated stress levels account for the average worker being absent for three days each year, costing the EU economy approximately €30 billion annually (NHS UK, 2014).

Chronic stress is a risk factor for cardiovascular disease (Rosengren, et al., 2004) and metabolic syndrome (Chandola, Brunner, & Marmot, 2006), delayed wound healing (Gouina & Kiecolt-Glaser, 2011), increased susceptibility to autoimmune diseases (Stojanovich & Marisavljevich, 2008), cancer progression (Moreno-Smith, Lutgendorf, & Sood, 2010), immune system impairments (Segerstrom & Miller, 2004) and vaccine response (Gallagher, Phillips, Drayson, &

Carroll, 2009). Stress has a potentially causal relationship with depression (Van Praag, 2005), increases the likelihood of a major depressive episode (Wang, 2005) and is associated with alcohol misuse, eating disorders and cyber addiction in university students (Tavolacci et al., 2013). Women, younger adults and those of lower socioeconomic status are more susceptible to health-related risks linked with chronic stress (Cohen & Janicki-Deverts, 2012). However, certain levels of stress, namely 'eustress', can be positive by acting as a motivating tool, as well as increasing constructs of hope and self-efficacy. Therefore, reducing stress to healthy levels where it has a positive impact on an individual's life rather than eradicating stress completely should be the goal in mental health care (Nelson & Cooper, 2005).

Of course, there are psychological consequences associated with chronic stress but biological systems are also implicated, leading to a cascade of changes in the nervous, cardiovascular, endocrine and immune systems. Four situational determinants have been identified that activate the hypothalamic-pituitary-adrenal (HPA) axis: novelty (N), unpredictability (U), threat (T) and sense of low control (S) (Dickerson & Kemeny, 2004), hence the 'NUTS' paradigm was devised (Centre for Studies on Human Stress, 2015) and employed in stress education classes (Lupien, et al., 2013). The over activation of the HPA axis leads to the health damaging behaviours associated with chronic stress. Stress affects people of all ages, gender and ethnicity around the world. While each person will have different triggers of stress, the characteristics of these stressful situations – NUTS – are universal for everyone (Dickerson & Kemeny, 2004).

Hans Selye first coined the term 'stress' when he began medical training and noticed how all hospitalised patients, regardless of their ailment, 'looked' sick. He argued that different types of stimuli would have similar physiological responses – in

other words, all of the patients were under physical stress. This observation lead to the first theory of stress: 'General Adaptation Syndrome' (GAS) (Selye, 1936).

GAS refers to non-specific physiological and emotional responses of the body to demands placed upon it and has three stages. The first stage is the alarm phase, where the fight or flight response is activated, increasing the organism's ability to resist the stressor. In the resistance phase, second stage, the body starts to adapt to the existence of a chronic stressor. The exhaustion phase, third and final stage, is when the body's resources become depleted, and body systems start to deteriorate. After a period of time, the organism's ability to resist would begin to decrease as the stressor wears down the individual. Eventually, the individual would become unable to resist the effects of stress, and becomes ill (Selye, 1936).

A more psychological conceptualisation of Selye's 'stress' was developed 50 years later when Lazarus and Folkman (1984) explained how stress occurred when "an individual perceives that the demands of an external situation are beyond his or her perceived ability to cope with them" (p.9). They developed the 'Transactional Model of Stress and Coping', based on the assumption that stress is an interaction between the person and their environment. They criticised Selye for neglecting people's capacity to think, evaluate and then react to a stressor, thus rejecting the universality of response theory.

Their model proposed a two-stage process of appraisal. 'Primary appraisal' involves an individual's subjective cognitive judgement evaluating the significance of a stressor. If this judgement corresponds to any element of the 'NUTS' paradigm, it is identified as a stressor. 'Secondary appraisal' involves the individual assessing their coping resources, both internal and external, and determining how best to deal

with the situation. Chronic stress refers to continuous negative coping outcomes associated with detrimental health implications.

The health implications of chronic stress outline the necessity for developing efficacious interventions that can reduce both the behavioural and biological sequelae of psychological stress. Naturally, several stress management techniques have emerged. Hypnosis, biofeedback (Nagele, et al., 2014) and acupuncture (Weil et al., 2007) have been implemented as stress reducing measures without conclusive empirical support. Other practises including transcendental meditation, relaxation in all its forms (i.e. muscle relaxation, guided imagery, diaphragmatic breathing) (Varvogli & Darviri, 2011), mindfulness (Chiesa & Serretti, 2009) and exercise (Edenfield & Blumenthal, 2010) have been supported by extensive research establishing their positive effect in lowering stress.

Implementing low intensity, evidence-based treatment is important, given that symptoms of stress and anxiety are among the most common presentation to primary care services (Khan, Khan, Harezlak, Tu, & Kroenke, 2003). While these symptoms were traditionally dealt with on a ‘one-to-one’ basis within Primary Care (PC) services, economic constraints and availability of clinicians have resulted in extensive waiting times for psychological interventions in PC. Clinicians are pressurised to respond to these demands by developing innovative methods, with limited resources, that are safe and effective. Haaga (2000) found that group therapy is the most viable option for stress control intervention in PC psychology. The National Institute for Clinical Excellence (NICE) published guidelines indicating that guided self-help based on the cognitive behavioural therapy (CBT) model was the most effective approach to gain ‘control’ over anxiety and stress.

Group psychoeducation (PSE) programmes are considered to be within the framework of a cognitive-behavioural approach. These courses have been delivered in community groups and more recently online (Cuijpers, Marks, Van Straten, Cavanagh, Gega, & Andersson, 2009). PSE interventions aim to empower individuals with proficiencies in stress management to deal with the inevitability of stress through conventional teaching methods. Each participant is responsible for applying the information to their own lives and utilising the skills they learn to improve their wellbeing. A review of the literature on PSE interventions found consistent, positive effect sizes portraying the benefits of this approach in reducing stress (Van Daele, Hermans, Audenhove, & Van der Bergh, 2012).

'Stress Control'

One such intervention adopting the PSE approach to stress management, called 'Stress Control', was designed by psychologist Jim White (White & Keenan, 1990) and is now used as the principal first-step stress management intervention within the National Health Service (NHS) in the UK and the Health Service Executive (HSE) in Ireland.

A randomised controlled trial (White, Keenan, & Brooks, 1992) and comparative studies (White, Brooks, & Keenan, 1995) found 'Stress Control' to have benefits similar to individual treatment methods (Kellett, Clarke, & Matthews, 2007). In comparison to other PSE approaches, White's Stress Control programme was superior in maintaining improvements on a range of measures at a one-year (Van Daele, Van Audenhove, Vansteenwegen, Hermans, & Van der Bergh, 2013), two-year (White, 1998a) and three-year follow-up (White, 1998b). Further studies have demonstrated its effectiveness in reducing clinical symptoms of stress (Joice & Mercer, 2010; Kellett, Newman, Matthews, & Swift, 2004; Wood, Morgan, &

Bowen, 2006). ‘Stress Control’ has been recently implemented in a custodial setting (Breese, Maunder, Waddell, Gray, & White, 2012), demonstrating the versatility of this Stress Control class across specialised groups.

Wellbeing

Until recently, the majority of researchers and clinicians assumed that reducing mental ill health would simultaneously increase wellbeing. However, Keyes (2002) argues that the absence of mental ill health is not equivocal to the presence of mental health. He coined the terms ‘flourishing’ and ‘languishing’ in an attempt to define his argument. Those who are ‘flourishing’ are completely mentally healthy, functioning in a superior way to all others on a psychosocial level, with the lowest level of limitations in their health and daily living (Keyes, 2007). According to Keyes, only 20% of the adult population is flourishing. Languishing, then, in simple terms is the absence of mental health, but may include the presence of a major depressive episode (Keyes, 2007).

The concept of flourishing and positive wellbeing correlates with survival in healthy and diseased populations (Chida & Steptoe, 2008). People who ‘flourish’ live longer, have more positive physical health outcomes in terms of cardiovascular and immune function markers along with cancer and pregnancy outcomes (Rasmussen, Scheier, & Greenhouse, 2009). There are two primary perspectives of wellbeing: psychological wellbeing (PWB) focuses on the fulfilment of human potential and a meaningful life, while subjective wellbeing (SWB) focuses on the pursuit of happiness and a pleasant life (Chen, Jing, Hayes, & Lee, 2013). Keyes’ concept of flourishing aligns with the SWB perspective (Dodge, Daly, Huyton, & Sanders, 2012). He argues that both PWB and SWB are fundamentally concerned with the subjective nature of wellbeing (2002), with SWB being the focus

of the majority of studies relating to wellbeing. Therefore, it seems logical to evaluate the subjective facet of wellbeing in this study (Luhmann, Hofmann, Eid, & Lucas, 2012).

SWB can be defined as an individual's affective and cognitive assessment of his or her own life. The affective component refers to the experience of pleasant emotions or low levels of negative moods. The cognitive component is often referred to as 'life satisfaction' and is defined as an overall evaluation of the person's own life (Lucas & Diener, 2008). Similar to the affective element, life satisfaction correlates with predictor variables of SWB. While research shows that they are still distinct entities, the assessment of each separately can still provide complementary information (Pavot & Diener, 2009).

Research continues to support the effectiveness of stress management interventions in terms of reducing stress-related symptoms, but few have studied their impact on wellbeing. There exists a necessity to ensure interventions improve SWB, given the recent manifestation of wellbeing as an important factor in health-related outcomes.

Hypotheses

The latest version of 'Stress Control' increased its emphasis on wellbeing. This updated design is yet to be empirically evaluated. The next logical step is to evaluate 'Stress Control' with the intention of making an addition to research relating to wellbeing. The present evaluation will attempt to provide empirical data on the effectiveness of the programme in reducing stress – as previous studies have demonstrated – and will also assess the degree to which participants' wellbeing increases. Measures will be employed at the outset of the six-week course and at the end to evaluate changes in levels of perceived stress, anxiety, depression and

wellbeing. A control group will be recruited to provide a standard of comparison for the allotted six-week period.

H1. Treatment group will have significantly higher levels of stress, anxiety, and depression along with lower levels of satisfaction of life than the control group at Time 1.

H2. a. Treatment group participants' level of stress, anxiety and depression will decrease as a result of attending the Stress Control programme.

b. The control group will show no significant change across timepoints.

H3. a. Treatment group participants' reported levels of satisfaction with life will increase as a result of attending the Stress Control course.

b. The control group will show no significant change across timepoints.

Method

Design

A quantitative, between-subjects, repeated-measures design with an online control group was used. The treatment group attended the Stress Control classes once a week for six consecutive weeks. The control group was not manipulated between data collection timepoints.

The dependent variables stress, anxiety and depression along with wellbeing were assessed using psychometric measures (see 'Measures' section). Time was the independent variable, with two levels being identified as before (1) the six-week intervention and after (2). Both groups were assessed at identical timepoints.

A g-power test for a mixed repeated subjects' design was conducted and the result showed a minimum of 35 participants per group was required for appropriate statistical power at 80% (Faul, Erdfelder, Lang, & Buchner, 2007).

The Stress Control Course

The intervention consists of six weekly, ninety-minute sessions delivered by PC clinical psychologists. The setting replicates a traditional classroom layout, while self-disclosure is discouraged in keeping with the educational forum. The goal is for attendees to become 'their own therapist' at the end of the programme, by teaching them stress management strategies to cope with thoughts, feelings, body symptoms and behaviours they may feel when suffering from stress. The latest design accentuates the benefits of striving towards flourishing and mental wellbeing. White has incorporated progressive muscle relaxation (PMR) as a supplementary technique to avoid unnecessary stress and rumination into the design. Attendees received a CD providing instructions on utilising PMR and are given a brief demonstration. Research suggests a combination of PMR and psychoeducation increase intervention effectiveness (Rainforth et al., 2007).

Ethics and Confidentiality

The Education and Health Sciences Research Ethics Committee (EHSREC) within the University of Limerick (UL) granted academic approval (Reference: 2014_10_08_ EHS) (Appendix G) for this project. As this research project evaluated an intervention facilitated by the HSE Primary Care team, approval from the National Primary Care Research Committee (NPCRC) was required prior to the commencement of data collection. This was obtained on the 5/2/2015 (Appendix H). The investigator of this project assisted in running a Stress Control programme as part of his co-operative placement under the supervision of Dr. Rosario Power in 2013. Dr. Power agreed to act as gatekeeper for the present research project. Her role is outlined in a letter acquired as part of the NPCRC application process (Appendix E).

Informed consent was obtained at both data collection timepoints. Treatment group participants indicated their comprehension of the study by signature and control groups were only allowed progress to the questionnaire if they ticked the appropriate boxes indicating their informed consent. The investigator irrevocably anonymised the data upon entry. Each participant was entered into SPSS using a unique number, leaving individual data unidentifiable. Data were reported at the group level and no reference is made to specific location, preserving anonymity and maintaining confidentiality.

Participants

The treatment group attended Stress Control courses at location A (n = 34) and B (n = 10). Both locations were combined for analysis (n = 44). The treatment group were predominantly married, employed and middle-aged. The online control group (n = 57) were mainly young students who were either single or in a relationship. Descriptive statistics are displayed in Table 1.

Table 1

Descriptive Statistics for Time One Data

	Age				Gender		
	n	*Mean*	*SD*	*Range*	*n*	*Male*	*Female*
TA	33	45.85	10.83	47	34	5	29
TB	9	51.33	13.01	38	10	0	10
OC	57	23.93	9.18	48	57	14	43

	Employment Status				
	n	*Student*	*Employed*	*Unemployed*	*Retired*
TA	33	1	24	4	4
TB	8	0	4	2	2
OC	57	46	11	0	0

	Relationship Status						
	n	*Single*	*Relationship*	*LwP*	*Married*	*Sep/Div*	*Widowed*
TA	34	2	1	4	21	5	1
TB	10	0	0	0	6	2	2
OC	57	25	24	2	5	1	0

Note. n = number of participants in each group; *Relationship* = in a relationship; *LwP* = living with partner; *Sep/Div* = separated or divorced; TA = treatment group location A; TB = treatment group location B; OC = online control group

Procedure

Initial data collection occurred at the first class. A booklet containing an information sheet (Appendix A-1), consent form (Appendix B-1) and questionnaire (Appendix C) for this research study was placed on each available chair. Both classes began with an overview of the Stress Control programme, highlighting the role of continuous evaluation and research in its success. The investigator of the present study briefly outlined the purpose and procedure involved. Those who wished to participate were invited to fill in the questionnaire during the break that

immediately followed, allowing for minimal intrusion into the standard course schedule. Participants placed the questionnaires into a box as they exited the room at the end of the session. This procedure was repeated at the final class for the second stage of data collection and participants were matched to first round data using names specified.

The control group completed the same psychometric measures, with a slightly altered demographic questionnaire (Appendix C-1.2). Participants were enlisted through a recruitment email (Appendix F) sent to students and faculty in the University of Limerick. Those interested were asked to contact the investigator, and were subsequently provided with a link to the information sheet (Appendix A-2), consent form (Appendix B-2) and questionnaire (Appendix C) via the survey host, Questback. This procedure was repeated after six weeks had lapsed and participant data was matched using the Questback database ID number. No remuneration was provided to participants.

Measures

Previous studies had shown that the sample at Stress Control interventions could reflect the characteristics of a clinical sample and it was important that the measures were practically implementable without adversely affecting the benefits of the Stress Control programme or placing undue burden on the participants. Cronbach's $\alpha \geq .70$ is regarded as the minimum acceptable internal consistency reliability for a scale (Nunnally & Bernstein, 1994). This value was set as the minimum criterion for internal and test-retest for use in the present study. Dependent variables of perceived stress, anxiety, depression and wellbeing levels were operationally quantified using Cohen's Perceived Stress Scale (PSS) (Cohen,

Kamarck, & Mermelstein, 1983), the 21- item Depression, Anxiety and Stress Scale (DASS-21) (Lovibond & Lovibond, 1995) and the Satisfaction with Life Scale (SWLS) (Diener, Emmons, Larsen, & Griffin, 1985) respectively.

Cohen's PSS. The PSS is a 10-item scale measuring respondent's frequency of feelings and thoughts considering life uncontrollable, unpredictable and overloading within the last month, providing a measure of short-term stress. Answers were given on a 5-point likert scale ranging from 0 (never) to 4 (very often). Four items were positively worded and these were reverse-scored in the analyses. Higher scores indicated greater levels of psychological stress. Psychometric analyses show that the PSS satisfies the criteria for internal reliability ($\alpha = .85$) and test-retest reliability up to six weeks ($\alpha = .85$) (Lee, 2012). Large-scale studies assessing psychological stress using the PSS-10 also provides normative data as a standard for comparison (Cohen & Janicki-Deverts, 2012).

DASS-21. The DASS-21 is a shortened version of the DASS-42 but with equally excellent psychometric properties. It consists of three 7-item scales assessing the core symptoms of stress, anxiety and depression. Each item refers to the past week and is rated on a 4-point likert scale from 0 (never) to 3 (almost always). The stress subscale measures tension, agitation and negative affect of general stress, as it does not refer to a specific timescale. The anxiety subscale measures autonomic arousal, physiological arousal and the subjective feeling of fear. Finally, the depression subscale measures hopelessness, low self-esteem, and low positive affect. Higher scores on each scale indicate higher levels of stress,

anxiety or depression and details of clinically relevant cut-off scores for each subscale can be found in Appendix I.

The DASS – stress (α range = .88- .95), anxiety (α range = .81- .92) and depression (α range = .91- .97) subscales exceed the criterion for inclusion (Sinclair, Siefert, Slavin-Mulford, Stein, Renna, & Blais, 2012). Test-retest validity was also above the required value (α = .99) (Akin & Çetin, 2007). Normative data is available from a substantial series of samples, both clinical (Gloster, et al., 2008) and non-clinical (Henry & Crawford, 2005). Each subscale has clinically relevant cut-off points above or below the normative average (Appendix I). The DASS – depression, anxiety and stress subscales will be referred to as the DAS-D, DAS-A and DAS-S respectively for the remainder of this paper.

Diener's SWLS. The SWLS measures the cognitive factor of SWB: life satisfaction. The SWLS contains 5 items and these are rated on a 7-point likert scale, with 1 representing 'strongly disagree' and 7 signifying 'strongly agree'. The items reflect the importance of evaluating life satisfaction as a global judgement rather than referencing a specific domain, allowing participants to assess their lives in terms of their own values. Clinically relevant cut-off scores for the SWLS can be found in Appendix I. Reliability (α = .78) and test-retest reliability for a 2-month interval (α = .82) surpassed the necessary value to include the SWLS in the present study (Vassar, 2008). Normative data for the SWLS is available for both clinical and non-clinical samples (Corrigan, Kolakowsky-Hayner, Wright, Bellon, & Carufel, 2013).

Overview of data analysis. Independent sample t-tests were conducted to compare both groups using Time 1 data. Paired samples t-tests were used to compare mean change for each group between Time 1 and 2. Effect size for t-tests will be estimated using Cohen's *d* (Cohen, 1988). Levene's test was violated for a number of cases, as detailed in Table 2, and the 'equal variance not assumed' data was evaluated as a result (Howitt & Cramer, 2011). Chi-square test for independence evaluated Time 1 categorical data, and effect size was determined by Cramer's phi (Cramer, 1999).

As a result of the modest Time 2 treatment group sample size, two categories were created for each DAS subscale: 'normal' and 'above normal'. The normal category consisted of participants who were in the 'normal' categories for each scale, while above normal indicated they were in the 'mild', 'moderate', 'severe' or 'extremely severe' categories on the respective scales. The cell count was below five in each case (specific counts available in Appendix I) and so Fisher's Exact Probability Test was used in analysis (Field, 2009). This is a well-known test and has been utilised in several stress-related studies (Godfrin & Van Heeringen, 2010). Incomplete measures consisting of one or more missing responses were excluded from data analysis to maintain reliability scores and allow comparison to normative data obtained from large-scale studies. The number of fully completed measures for both groups at each timepoint is detailed in Tables 2 and 3.

Results

Time One Data Analysis

44 of a potential 110 attendees at two Stress Control courses completed first stage data, equating to a 40% response rate of overall attendance.

Hypothesis one. Scores on the PSS, DAS-S, DAS-A, DAS-D and SWLS were assessed and compared between the treatment and control group. Each scale exceeded the α-value criteria for reliability (Table 2). Figure 1 illustrates the results, where treatment group scores were significantly higher on the PSS and DAS subscales, and significantly lower on SWLS scores when compared to the control group, as hypothesised (H1). Each test yielded a large effect size ($d > .80$) (Cohen, 1988) (Table 2).

A chi-square test for independence displayed significant differences, with large effect sizes ($\phi > .50$)(Cramer, 1999) in categories on the DAS subscales and SWLS between the treatment and control group. 48.6% of the treatment group compared to only 3.6% of the control group scored below normative average on the SWLS. 94.4% and 44.4% of the treatment and control groups respectively scored 'above normal' on the DAS-S. 73.7% of the treatment group were categorically depressed compared to 13% of the control group. 75% of the treatment group and 29.6% of control participants had above 'normal' levels of anxiety.

Table 2

Scale Descriptive Statistics, Group Means and Standard Deviations; T-tests and Chi-Square Tests on Time One Data.

		Treatment		Control		t-test				Chi-square			
	α	*M*	*SD*	*M*	*SD*	*t*	*df*	*p*	*d*	χ^2	*df*	*p*	ϕ
PSS	.89	24.25	4.77	15.85	6.93	-6.85*	88.75	<.001	1.41	-	-	-	-
Str	.90	22.22	8.62	10.07	7.07	-7.31*	88	<.001	1.54	34.37	4	<.001	.62
Anx	.88	7.2	4.33	2.67	2.67	-5.85	60.4	<.001	1.26	29.16	4	<.001	.56
Dep	.93	9.34	4.38	2.83	2.91	-8.00*	59.46	<.001	1.75	45.04	4	<.001	.70
Swl	.92	18.23	8.45	27.84	4.97	6.46*	57.85	<.001	1.39	33.20	5	<.001	.60

Note. PSS = Perceived stress scale; Dep = DAS – depression subscale; Anx = DAS – anxiety subscale; Str = DAS – stress subscale; SWLS = satisfaction with life scale; *M* = mean; *SD* = standard deviation; *t* = t-test value; df = degrees of freedom; *p* = p-value; *d* = cohen's d; χ^2 = chi-square value; ϕ = Cramer's phi
*Indicates levene's test was violated and data was reassessed accordingly.

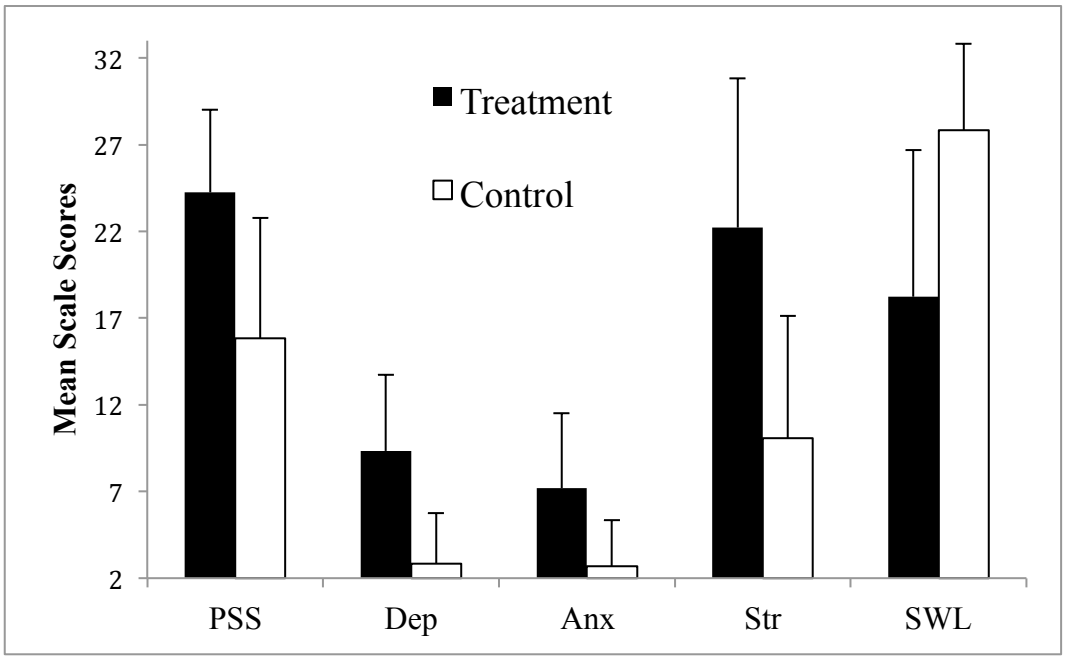

Figure 1: Mean Scale Scores Extracted From Time One Data Comparing Treatment and Control groups. PSS = Perceived stress scale; Dep = DAS – Depression subscale; Anx = DAS – Anxiety subscale; Str = DAS – Stress subscale; SWL = Satisfaction with Life scale.

Time Two Data Analysis

All 57 online control participants completed the second stage of questionnaires, while 19 participants completed the second stage data in the treatment group. Three were excluded due to identification issues, leaving a total of 16 treatment group participants. Numbers of each measure completed in its entirety are detailed in Table 3.

Hypothesis two. Paired sample t-tests were conducted to determine change over time for each group (Table 3), displaying significant reductions on DAS-A ($t(14) = 2.40$, $p = .03$, $d = .44$), DAS-D ($t(11) = 3.37$, $p < .01$, $d = 1.32$), and stress on both the PSS ($t(12) = 2.37$, $p < .04$, $d = .64$) and DAS-S ($p < .001$) for the treatment group. The control group yielded a significant decrease on the DAS-S ($t(52) = 6.59$, $p < .001$, $d = .83$), while all other measures were not significantly different across timepoints. Treatment group stress, anxiety and depression levels decreased, thus supporting hypothesis 2a. The control group decreased on stress levels, contradicting hypothesis 2b.

Table 3

Repeated Measures T-tests with Scale Descriptive Statistics Across Timepoints

		Time 1		Time 2						
	n	*M*	*SD*	*M*	*SD*	*t*	*df*	*p*	*d*	*F*
Treatment Group										
PSS	13	23.46	4.27	20.08	6.13	2.37	12	**< .04**	.64	-
Dep	12	10.67	3.31	6.17	3.51	3.37	11	**< .01**	1.32	-
Anx	15	6.47	4.66	4.67	3.37	2.40	14	**= .03**	0.44	.02
Str	11	22	7.16	8	3	7.85	10	**< .001**	2.55	-
Swl	15	19.80	5.14	22.93	4.95	3.08	14	**< .01**	.62	.07
Control Group										
PSS	57	15.74	6.94	15.31	7.03	.64	53	.53	.05	-
Dep	57	2.83	2.93	3.23	3.18	1.16	52	.25	.13	< .01
Anx	57	2.72	2.66	2.64	2.69	.25	52	.81	.03	< .001
Str	57	10.26	7.00	5.57	3.94	6.59	52	**< .001**	.83	.001
Swl	57	27.84	4.97	28.96	4.66	2.65	56	**< .01**	.23	.004

Note. Significant *p*-values (< .05) are in boldface. PSS = Perceived Stress Scale; Dep = DAS – Depression subscale; Anx = DAS – Anxiety subscale; Str = DAS – Stress subscale; Swl = Satisfaction with Life Scale; *n* = Number of participants who completed each scale; *M* = Mean; *SD* = Standard deviation; *t* = t-test value; *df* = degrees of freedom; *p* = p-value; *d* = Cohen's d.

Hypothesis three. T-tests revealed significant increases in life satisfaction for the treatment group ($t(14) = 3.08$, $p < .01$, $d = .62$) (Table 3), in line with hypothesis 3a. The control group ($t(56) = 2.65$, $p < .01$, $d = .23$) also displayed significant increases in satisfaction with life (Table 3), opposing hypothesis 3b. Figure 2 illustrates the changes across data points for all significant measures in both the treatment group (PSS, DAS-D, DAS-A, DAS-S, SWLS) and the control group (SWLS, DAS-S).

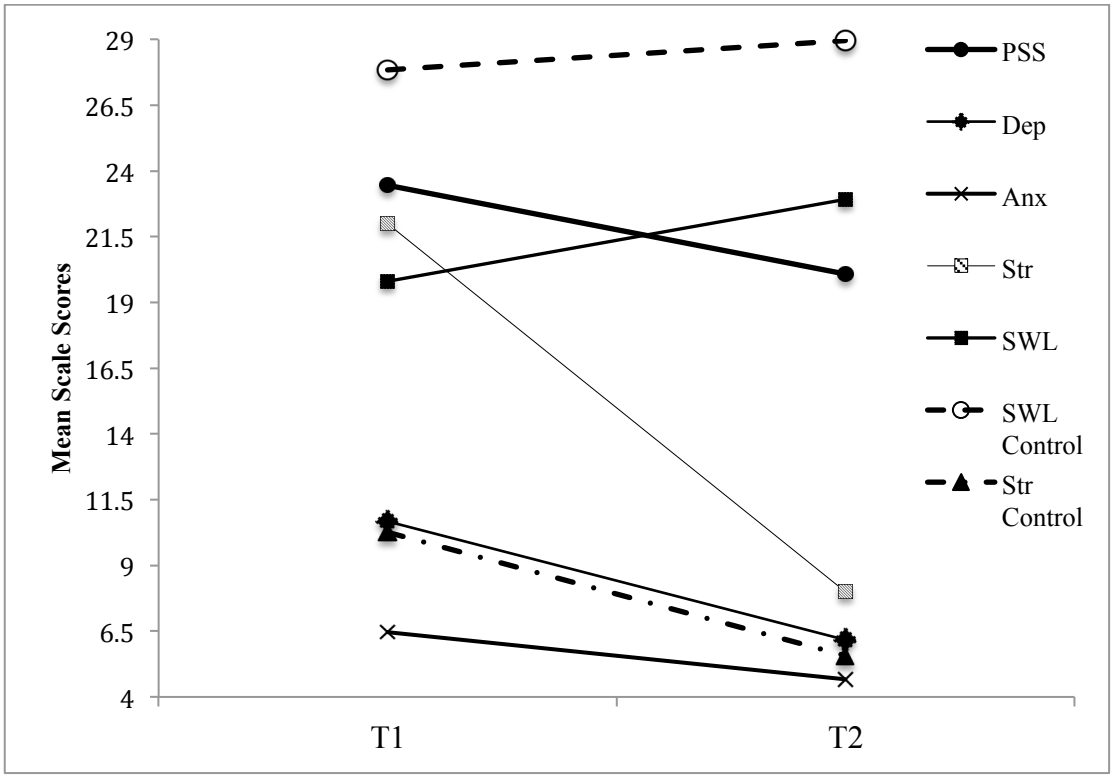

Figure 2: Significant changes across time points for treatment and control groups. Treatment group results denoted by solid lines; control group results denoted by broken lines. PSS = Perceived stress scale; Dep = DAS – depression subscale; Anx = DAS – anxiety subscale; Str = DAS – stress subscale (treatment group); SWL = satisfaction with life scale (treatment group); SWL Control = satisfaction with life scale (control group); Str Control = DAS – stress subscale (control group).

Clinical Significance

Despite the decrease in DAS-S and DAS-D scores in treatment participants, no participants moved to categorically 'normal' levels of depression or stress from abnormal levels. Fisher's exact probability test found significant change on the categorical DAS-A ($p < .02$). 20% more treatment participants were in the 'normal' category post-treatment.

Analysis on control group scores revealed a significant change in the DAS-S ($p = .001$), DAS-A ($p < .001$) and DAS-D ($p < .01$). An increase of 1.9% participants were categorised within 'normal' depression levels, 15.1% of control participants anxiety levels decreased to normal levels and 30.2% of individuals in the control group moved from 'above normal' to a 'normal' categorisation in stress between timepoints (Table 3).

A non-significant positive change was found on the SWLS for the treatment group ($p = .07$) with 26.7% moving from 'below normal' to 'normal' levels of satisfaction. The control group had a significant categorical change ($p = .004$) with a 3.5% increase in the number of people who are unsatisfied with life (Table 3).

Discussion

This research assesses the effectiveness of 'Stress Control' in reducing stress and mental ill health and increasing wellbeing. T-test and crosstabulation analysis revealed attendees were suffering significantly more than the general population in terms of their mental health, supporting hypothesis 1. Repeated-measures analyses provided evidence for the programme producing significant reduction in attendees' short-term and general stress, anxiety and depression levels along with improving satisfaction with life, as predicted in hypothesis 2a and 3a. Clinically significant categorical changes were observed in levels of anxiety, while the modest sample size might potentially be held accountable for the lack of statistically significant clinical improvement within the treatment group on stress, depression and life satisfaction. Contrary to hypothesis 2b and 3b, positive clinically significant changes were observed across all DAS subscales and on the SWLS, while a significant decrease in mean stress and increase in satisfaction with life scores was observed in the control group.

Considerations

The issue of wellbeing is a relatively novel concept and has only recently been incorporated into 'Stress Control'. It is important to note that pre-intervention, treatment group participants were closer to categorically 'normal' levels of life satisfaction than for stress, anxiety and depression. Compared with normative data, the majority of participants had scores only slightly below average levels of life satisfaction, while most were moderately to severely stressed, anxious and depressed. Furthermore, mean Time 2 scores on the SWLS were categorically 'normal' in comparison with normative data, not withstanding the variation within the sample.

The complex relationship between SWB and mental ill health, on both a continuous and categorical level, is beyond the scope of this study design. However, the present research used the 5-item SWLS measuring the cognitive aspect of SWB, thus overlooking the affective component. It may be necessary to examine the affective aspect of SWB to gain a comprehensive measure of overall wellbeing. The affective facet of SWB may be more sensitive to elevated levels of stress, anxiety and depression, implying the present study is not a true representation of participants' SWB; this is compounded by a decrease in the categorical mental ill health of the control group accompanying a reduction in life satisfaction. Nonetheless, the results provide tentative support that 'Stress Control' increases the cognitive aspect of SWB, suggesting the latest design is successful. More extensive research is required to determine the extent of its success.

Attrition rates should be considered when interpreting results. 40% of initial attendees completed the questionnaire at the Stress Control course. These participation rates are similar to past evaluations of 'Stress Control'. It could be

argued that this would not be a true reflection of the attendance in its entirety and this is an issue confounding all research evaluating 'Stress Control'. 41% of the initial participants completed the second stage data. Half of the initial attendees were present at the final session in both locations, meaning this attrition rate is course-related, rather than solely research-related. Perhaps those who did not complete the course did not find it helpful; this might imply that the programme is ineffective for half of its initial participants. While it cannot be assumed that those who failed to complete the course found it ineffective, further investigation into the reason why half of the initial sample failed to attend all six sessions is warranted.

However, it is important to note that attendance at the Stress Control classes is maintained on a comparable level to individual therapy. Researchers contacted nearly 500 referrals in Primary Care services and only 68% opted for individual therapy; 26% of these did not attend the first appointment and only 66% of those remaining completed the full course of therapy (Grant et al., 2012). The attrition rates of clinical therapy, both individual and group-based, could potentially be attributed to one specific age or gender group. This would become a public health issue, to which finding a solution would be essential in maintaining efficient patient care while managing clinician workloads. While beyond the capacity of the present study, this hypothesis is surely a credible future research direction.

Data were collected at two separate locations and must be considered nested. Despite both samples having similar demographical information and both classes being held in medium-sized localities, the response rate was three times higher in location B. In contrast to location A, no Primary Care amenities presently exist in location B and psychologists are attempting to expand their services to this location. Stress Control had been delivered in Location A on a number of occasions in the

past few years. It was the first delivery of the course at Location B; perhaps attendees at location B were more enthusiastic about the course and the research attached to it, which could have impacted on their post-intervention outcomes.

Previous contact with mental health services and medical history was not measured. While using categorical cut-offs for depression, anxiety and stress partially controlled for the absence of this data, these are potential covariates of outcomes.

Future Directions and Limitations

The present research is not without its limitations. The modest repeated-measures treatment group response rate limits the generalisability of results and also prevents further statistical analysis. Control group data yielded similar scores to normative data on each scale, providing an adequate standard of comparison for treatment group participants in Time 1 data. However, as a result of the substantial variation between groups in age, employment and relationship status along with compliance rates on second stage data collection, groups were incomparable for statistically relevant repeated-measures outcomes. The present study was unsuccessful in its attempts to recruit a matched control sample, but it must be prioritised in future research in order to provide more in-depth analysis of categorical cut-offs through methods of incentivising. Comparing the effects 'Stress Control' has on those with mild and severe symptoms of stress, anxiety and depression is necessary, while investigating the relevance of clinical cut-off points of these negative symptoms with wellbeing is also worthy of further investigation.

Additionally, a different clinical psychologist delivered the course at each location. Presenting styles, varying material used (i.e. presentation slides) and preferential emphasis on particular coping techniques may all play a role in the

outcome for participants. Joice and Mercer (2010) described how empathy of the psychologist delivering the course is an important factor in an individual's outcome. On reflection, these elements may have played a greater role in outcomes. Additional research might look at accessibility and timing of the course, how and where it is advertised, along with the degree of participant engagement and the course facilitator's style of delivery.

Given the psychoeducative, self-help nature of this course, longitudinal data is essential in determining its effectiveness. After the six-week programme, participants must implement the techniques learned in their daily lives – something much more challenging than attending a ninety-minute class each week. Longitudinal data has been published in relation to the stress reduction effects of the course, but it is essential that wellbeing measures are employed in future evaluations. Currently, there is no indication that improvements in wellbeing are maintained after the 'Stress Control' course has ended. This paper is the only one to date providing preliminary evidence for the positive short-term effects this course has on wellbeing.

Conclusion

Overall, this study presents results in line with previous research, suggesting that 'Stress Control' has substantial effects in reducing negative mental health symptoms, specifically stress-related symptoms in the short term. Albeit modest, initial data shows completing the programme can increase life satisfaction, though the long-term outcome is yet to be determined. Future research should investigate the parameters of comorbidity within the constructs of stress and wellbeing. Certainly, this study provides an empirical foundation for 'Stress Control' in potentially improving positive wellbeing as well as decreasing stress.

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Information Sheet
Study Title: Stress Reduction and Wellbeing: Evaluating a Six-Week Stress Control Course

Invitation to Participate: We are inviting you to take part in a research study. This Stress Control programme has been shown to be effective in tackling stress. The present research study is designed to learn more about the effectiveness of this Stress Control programme. It is being conducted by Dr. Ann-Marie Creaven (Lecturer in Psychology) and John Burke (Undergraduate Psychology Student) in the Department of Psychology in the University of Limerick, as part of John Burke's final year research project in Psychology.

What is my role? If you consent to take part in this study, you will be asked to complete a questionnaire at the beginning of the first class and at the end of the last class. The questionnaire includes items on your stress, anxiety and happiness levels. It also contains some questions relating directly to the Stress Control course.

Can anyone take part? Participation is open to individuals who attend the Stress Control classes and are over 18 years of age.

How long will participation take? Your participation will take no longer than 30 minutes: 10 minutes at the beginning of the course, and 15 minutes at the end of the course.

Voluntary participation: Participation in this research is voluntary. You may decide to withdraw from this research at any time with no consequences.

What are the benefits and risks? There are no risks involved in taking part in the study. The key benefit of the study is that you are helping contribute to researchers' knowledge of the effectiveness of this Stress Control course.

What happens to the information? Any information that we obtain from this study about you will be made anonymous and kept confidential. The information provided by each participant will be pooled for data analysis and no individual person will be identified in this process.

Do I have to sign anything? You will be requested to provide a signature in order to confirm that you understand the information about the study and it's procedure, understand that you are free to withdraw from the study at any time, and also that the information you provide will be treated completely confidentially. By signing the consent form, it will allow us to use the information you give us as part of our overall dataset.

If you have any questions or would like further information, please feel free to contact Dr. Ann-Marie Creaven (061-234909) or via e-mail Ann-Marie.Creaven@ul.ie. If you have any concerns about this study and wish to contact someone independent you may contact: Chairman Education and Health Sciences Research Ethics Committee, EHS Faculty Office, University of Limerick. Tel: (061) 234101. Email: ehsresearchethics@ul.ie

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Information Sheet
Study Title: Stress Reduction and Wellbeing: Evaluating a Six-Week Stress Control Course

Invitation to Participate: We are inviting you to take part in a research study investigating the effectiveness of a Stress Control programme as a successful method in tackling stress. To do so, we need to recruit a non-treatment control group that do not take part in the Stress Control intervention. This study is being conducted by Dr. Ann-Marie Creaven (Lecturer in Psychology) and John Burke (Undergraduate Psychology Student) in the Department of Psychology in the University of Limerick, as part of John Burke's final year research project in Psychology.

What is my role? If you consent to take part in this study, you will be asked to complete a questionnaire online, using a web-based questionnaire site called Questback. The questionnaire includes items on your stress, anxiety and happiness levels. It also contains some questions relating to your demographical information. You will be asked to complete this questionnaire today, and again in six weeks time.

Can anyone take part? Participation is open to individuals over the age of 18.

How long will participation take? Your participation will take no longer than 30 minutes. 10 minutes at the beginning of the six weeks, and 15 minutes at the end.

Voluntary participation: Participation in this research is voluntary. You may decide to withdraw from this research at any time with no consequences.

What are the benefits and risks? There are no risks involved in taking part in the study. The key benefit of the study is that you are helping contribute to researchers' knowledge of the effectiveness of this Stress Control course.

What happens to the information? Any information that we obtain from this study about you will be made anonymous and kept confidential. The information provided by each participant will be pooled for data analysis and no individual person will be identified in this process.

Is there anything else I need to know? The investigators will obtain an email address from you as the participant, and will use this to contact you after six weeks has elapsed to complete the second stage of questionnaires. This information will also be kept confidential and will only be used for research purposes.

Do I have to sign anything? As this questionnaire is distributed online, you do not have to provide your signature. By ticking the relevant boxes to indicate that you have read and understood the information provided, this indicates that you consent to participate.
If you have any questions or would like further information, please feel free to contact Dr. Ann-Marie Creaven (061-234909) or via e-mail Ann-Marie.Creaven@ul.ie. If you have any concerns about this study and wish to contact someone independent you may contact: Chairman Education and Health Sciences Research Ethics Committee, EHS Faculty Office, University of Limerick. Tel: (061) 234101. Email: ehsresearchethics@ul.ie

Appendix B-1: Consent Form for Stress Control Participants

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Informed Consent Form:

PLEASE READ CAREFULLY BEFORE SIGNING FOR INFORMED CONSENT

I am invited to take part in a study named, "Stress Reduction and Wellbeing: Evaluating a Six-Week Stress Control Course." This study is being conducted by Dr. Ann-Marie Creaven (Lecturer in Psychology) and John Burke (Undergraduate Psychology Student) at the University of Limerick, Limerick, Ireland.

Please read the statements below, and tick each box to show that you understand each statement.

I understand that my participation is voluntary and that I can withdraw from the study at any time. ☐

I understand the procedure involved in participating in this study. ☐

I understand that the information I supply will be treated confidentially and no information that could lead to the identification of an individual participant will be reported. ☐

Informed Consent

If you understand the information outlined above and you agree to participate in this study, please sign below. By signing, you indicate that you are providing informed consent to participate and you may continue to fill out the questionnaire.

Participant's Name: _____

Participant's Signature: _____ Date: _____

Signature of Researcher: _____ Date: _____

If you have chosen to participate and have signed this consent form, you may now proceed to fill in the questionnaire.

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Informed Consent Form:

PLEASE READ CAREFULLY BEFORE GIVING INFORMED CONSENT

I am invited to take part in a study named, "Stress Reduction and Wellbeing: Evaluating a Six-Week Stress Control Course." This study is being conducted by Dr. Ann-Marie Creaven (Lecturer in Psychology) and John Burke (Undergraduate Psychology Student) at the University of Limerick, Limerick, Ireland.

Please read the statements below, and click in each box to show that you understand each statement.

I understand that my participation is voluntary and that I can withdraw from the study at any time. ☐

I understand the procedure involved in participating in this study. ☐

I understand that the information I supply will be treated confidentially and no information that could lead to the identification of an individual participant will be reported. ☐

Informed Consent

If you understand the information outlined above and you agree to participate in this study, please click the continue button. By clicking continue you indicate that you are providing informed consent to participate and will progress to the questionnaire.

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Appendix C-1.1: Feedback Sheet/Demographic Information for Stress Control Class

Please fill in the questionnaire below to help us understand more about the people who attend this Stress Control class. Some questions will require you to circle the most appropriate answer, some will require you to write down the answer.

How would you rate the Stress Control Classes?	Poor	Fair	Average	Very Good	Excellent	
How Many Stress Control sessions did you attend?	1	2	3	4	5	6
What is your current employment status?	Employed	Unemployed	Retired	Student		
What is your age?	_____					
Are you:	Male: ☐		Female: ☐			
What is your relationship status?	Single	In a Relationship	Living with a Partner			
	Married	Separated/ Divorced	Widowed			
Where did you hear about the Stress Control class?	_____					

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Appendix C-1.2: Demographic Information for Online Participants

Please fill in the questionnaire below to help us understand more about the people who attend this Stress Control class. Some questions will require you to select the most appropriate answer; some will require you to write down the answer.

What is your current employment status? Employed Unemployed Retired Student

What is your age? _____

Are you: Male: ☐ Female: ☐

What is your relationship status?

Single In a relationship Living with a Partner

Married Separated/Divorced Widowed

Where is your GP practice? _____

Appendix C-2: Diener's Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985)

Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below, indicate your agreement with each item by circling the appropriate number in the scale beside each question. Please be open and honest in your responses.

	Strongly Agree	**Agree**	**Slightly Agree**	**Neither Agree nor Disagree**	**Slightly disagree**	**Disagree**	**Strongly Disagree**
In most ways, my life is ideal.	7	6	5	4	3	2	1
The conditions of my life are excellent.	7	6	5	4	3	2	1
I am satisfied with life.	7	6	5	4	3	2	1
So far I have gotten the important things I want in life.	7	6	5	4	3	2	1
If I could live my life over, I would change almost nothing.	7	6	5	4	3	2	1

Appendix C-3: Depression, Anxiety and Stress Scale - 21-item (Lovibond & Lovibond, 1995)

Please read each statement and circle a number 0, 1, 2 or 3, which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement. The rating scale is as follows:

0 -Did not apply to me at all-NEVER
1-Applied to me to some degree, or some of the time - SOMETIMES
2-Applied to me to a considerable degree, or a good part of time – OFTEN
3 -Applied to me very much, or most of the time - ALMOST ALWAYS

	Never	Some-times	Often	Almost Always
I found it hard to wind down	0	1	2	3
I was aware of dryness of my mouth	0	1	2	3
I couldn't seem to experience any positive feeling at all	0	1	2	3
I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
I found it difficult to work up the initiative to do things	0	1	2	3
I tended to over-react to situations	0	1	2	3
I experienced trembling (e.g., in the hands)	0	1	2	3
I felt that I was using a lot of nervous energy	0	1	2	3
I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
I felt that I had nothing to look forward to	0	1	2	3
I found myself getting agitated	0	1	2	3
I found it difficult to relax	0	1	2	3
I felt down-hearted and blue	0	1	2	3
I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
I felt I was close to panic	0	1	2	3
I was unable to become enthusiastic about anything	0	1	2	3
I felt I wasn't worth much as a person	0	1	2	3
I felt that I was rather touchy	0	1	2	3
I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)	0	1	2	3
I felt scared without any good reason	0	1	2	3
I felt that life was meaningless	0	1	2	3

Appendix C-4: Cohen's Perceived Stress Scale (Cohen & Williamson, 1988)

The following questions ask about your feelings and thoughts during THE PAST MONTH. In each question, you will be asked HOW OFTEN you felt or thought a certain way. Although some of the questions are similar, there are small differences between them and you should treat each one as a separate question. The best approach is to answer fairly quickly. That is, don't try to count up the exact number of times you felt a particular way, but tell me the answer that in general seems the best.

For each statement, please tell me if you have had these thoughts or feelings: never, almost never, sometimes, fairly often, or very often. (Read all answer choices each time).

	Never	Almost Never	Some-times	Fairly Often	Very Often
In the past month, how often have you been upset because of something that happened unexpectedly?	0	1	2	3	4
In the past month, how often have you felt unable to control the important things in your life?	0	1	2	3	4
In the past month, how often have you felt nervous or stressed?	0	1	2	3	4
In the past month, how often have you felt confident about your ability to handle personal problems?	0	1	2	3	4
In the past month, how often have you felt that things were going your way?	0	1	2	3	4
In the past month, how often have you found that you could not cope with all the things you had to do?	0	1	2	3	4
In the past month, how often have you been able to control irritations in your life?	0	1	2	3	4
In the past month, how often have you felt that you were on top of things?	0	1	2	3	4
In the past month, how often have you been angry because of things that happened that were outside of your control?	0	1	2	3	4
In the past month, how often have you felt that difficulties were piling up so high that you could not overcome them?	0	1	2	3	4

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Participant Debriefing Sheet:

Thank you for participating in this study: "Stress Reduction and Wellbeing: Evaluating a Six-Week Stress Control Course"

What is the study about?

There has been a lot of research about the best way of dealing with stress. This research has focused on group classes such as the one you have attended and whether or not they can be an effective way of combating stress for bigger groups. So far, it seems that they are a good way of reducing stressful symptoms. This study aimed to evaluate this particular Stress Control class. How effective was it at reducing stressful symptoms of people who attended? How effective was it in boosting feelings of wellbeing for those who attended? These are the questions that the study was interested in finding the answer to.

By finding out this information, it can help in improving the course for the people who attend it in the future, and also will help to spread the Stress Control course to other areas that are most in need of intervention against stress. If any of the topics brought up in the questionnaire has caused you to feel distressed, please contact the clinician delivering the class. Alternatively, if you wish to talk to someone in confidence, please contact Samaritans helpline on 116 123, or email jo@samaritans.org.

If you have any further questions about this study or your participation in the study, please feel free to contact the Principal Investigator, Dr. Ann-Marie Creaven (061 234909) or via e-mail Ann-Marie.Creaven@ul.ie.

Thank you for participating!

A summary of results of this study will be available upon study completion. If you would like to receive this, please contact the Principal Investigator Dr. Ann-Marie Creaven in writing via the Department of Psychology, Faculty of Education and Health Sciences, University of Limerick.

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What is the study about?

There has been a lot of research about the best way of dealing with stress. This research has focused on group classes and whether or not they can be an effective way of combating stress for bigger groups. To do so, a control group must be recruited to provide a standard of comparison with the treatment group - i.e. those who attended a Stress Control class. As you completed the questionnaires online, you were part of the control group this research project.

So far, it seems that they are a good way of reducing stressful symptoms. This study aimed to evaluate this particular Stress Control class. How effective was it at reducing stressful symptoms of people who attended? How effective was it in boosting feelings of wellbeing for those who attended? These are the questions that the study was interested in finding the answer to.

By finding out this information, it can help in improving the course for the people who attend it in the future, and also will help to spread the Stress Control class to other areas that are most in need of intervention against stress.

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Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Private and Confidential

Psychology Services,
Athy Primary Care Network,
Primary Care Services,
St Vincent's Hospital,
Athy,
Co. Kildare.
Tel: (059) 86 43093
11/11/2014

To whom it may concern,

My name is Dr. Rosario Power and I am a Senior Clinical Psychologist working with the HSE Primary Care Service in Kildare/West Wicklow. I recently supervised John Burke as part of his Co-Operative Education Programme in the 3rd year of his Undergraduate Psychology degree. During this experience, John assisted in running Stress Control classes and took a strong interest in this area of his placement.

John's proposed Final Year Project is supervised by Dr. Ann-Marie Creaven and will use brief measures of stress and wellbeing to evaluate the effectiveness of these Stress Control classes. It is my opinion that this research will be very interesting and worthwhile, considering the popularity of this particular Stress Control course throughout Ireland.

I am happy to facilitate John's research project and allow the recruitment of participants in the classes run by my colleagues and myself.

I have no concerns over the project and am confident that it will not be burdensome for the individuals who attend the Stress Control course. Of course, attendees at the course will be briefed on the study, provide informed consent if they wish to participate, and have their anonymity and confidentiality preserved. I will work with John during the data collection process to ensure these ethical considerations are met. I am confident that John will conduct the research to the highest standard and look forward to seeing the final product of his work.

I am available at rosario.power@hse.ie and would be happy to answer any queries you may have in relation to the proposed project.

Thank you.

Yours faithfully,

___Rosario Power_____

Dr Rosario Power,
Senior Clinical Psychologist

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Dear Sir/Madam,

A research team from the University of Limerick is inviting you to take part in a study that is examining effective methods of reducing stress and increasing wellbeing.

This study is being conducted by Dr. Ann-Marie Creaven (Lecturer in Psychology) and John Burke (Undergraduate Psychology student) in the Department of Psychology at the University of Limerick, as part of John Burke's Final Year Project in Psychology.

There has been a lot of research about the best way of dealing with stress. This research focuses on group classes and whether or not they can be an effective way of combating stress for bigger groups. So far, it seems that they are a good way of reducing stressful symptoms. This study is evaluating a Stress Control programme and is investigating its effectiveness in reducing stressful symptoms and boosting feelings of wellbeing for those who attend. To do this successfully, we are also inviting members of the general public to participate by completing some brief questionnaires. Your participation will help us see if the programme is truly effective.by providing information about normal changes in stress in the general population.

As part of this research project, we are inviting individuals who are aged 18 or over, to participate in this control group through a confidential online survey about their levels of stress, anxiety and wellbeing. Should you wish to participate in this research study, please follow the link provided: study_link_here

Many thanks for your time.
Best wishes,

Ann-Marie Creaven (Lecturer in Psychology, Department of Psychology, Faculty of Education and Health Sciences, University of Limerick)
Contact Information: Email: Ann-Marie.Creaven@ul.ie Telephone: 061-234909
John Burke (Undergraduate Psychology Student)
If you have any concerns about this study and wish to contact someone independent you may contact: Chairman Education and Health Sciences Research Ethics Committee, EHS Faculty Office, University of Limerick. Tel: (061) 234101. Email: ehsresearchethics@ul.ie

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From: Anne.OBrien
Sent: 03 December 2014 16:12
To: Ann-Marie.Creaven
Subject: 2014_10_08_ EHS

Dear Ann-Marie

Thank you for your clarifications with regard to your Research Ethics application, which was recently reviewed by the Education and Health Sciences Research Ethics Committee. The recommendation of the Committee is outlined below:

Project Title: 2014_10_08_ EHS Stress Reduction and Wellbeing: Evaluating a Six-Week Stress Control Course
Principal Investigator: Ann-Marie Creaven
Other Investigators: John Burke
Recommendation: Approved until October 2015.

Please note that as Principal Investigator of this project you are required to submit a Research Completion Report Form (attached) on completion of this research study.

Yours Sincerely

Anne O'Brien
Administrator, Education & Health Sciences Research Ethics Committee Ollscoil Luimnigh / University of Limerick Guthán / Phone +353 61 234101 Facs / Fax +353 61 202561 Ríomhphost / Email: anne.obrien@ul.ie Gréasán / Web: http://www.ehs.ul.ie

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Dear John,

I wish to confirm that the Primary Care Research Members (2) consider this a service evaluation and therefore you do not need approval from the Primary Care Research Committee. However as part of the protocol this committee does have to be informed of such evaluations.

Can you also ensure that the retention and destruction of data is in compliance with data protection requirements.

Kind regards,

Shirley Keane.

On behalf of Primary Care Research Committee.

Shirley Keane,

Business Planning and Development Manager,

Office of Head of Planning, Performance and Programme Management,

Primary Care Division.

Tel: 091 775922

Mobile: 087 7975674

Email: shirley.keane@hse.ie

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Appendix I1

SWLS: Satisfaction with Life Scale – Categorical Cut-offs

30 – 35	Very high score; highly satisfied
25- 29	High score
20 – 24	Average score
15 – 19	Slightly below average in life satisfaction
10 – 14	Dissatisfied
5 – 9	Extremely Dissatisfied

Appendix I2

DASS: Depression, Anxiety and Stress Scale – Subscale Categorical Cut-offs

	Depression	Anxiety	Stress
Normal	0-4	0-3	0-7
Mild	5-6	4-5	8-9
Moderate	7-10	6-7	10-12
Severe	11-13	8-9	13-16
Extremely Severe	14+	10+	17+

Appendix I3

Cell Counts from Time 2 Data for each scale analysed by Fisher's Exact Probability Test

	Treatment	Control
DAS-Stress	-	50%
DAS-Anxiety	75%	25%
DAS-Depression	-	25%
SWLS	75%	50%