

Psychological Well-Being:  
The Effects of Mindfulness, Sociability, Self Control and Yoga on Mental Health

Olivia Cassidy

14428188

Bachelor of Arts (Hons) in Psychology

**Submission of Thesis to Norma Smurfit Library, National College of Ireland**

**Student Name:** Olivia Cassidy

**Student Number:** 14428188

**School:** School of Business

**Course:** BA (Hons) Psychology

**Degree to be awarded:** Bachelor of Arts (Hons) in Psychology

**Title of Thesis:** Psychological Well-Being: The Effects of Mindfulness, Sociability, Self Control and Yoga on Mental Health.

---

One hard bound copy of your thesis will be lodged in the Norma Smurfit Library and will be available for consultation. The electronic copy will be accessible in TRAP

(<http://trap.ncirl.ie/>), the National College of Ireland's Institutional Repository. In accordance with normal academic library practice all theses lodged in the National College of Ireland Institutional Repository (TRAP) are made available on open access.

I agree to a hard bound copy of my thesis being available for consultation in the library. I also agree to an electronic copy of my thesis being made publicly available on the National College of Ireland's Institutional Repository TRAP.

**Signature of Candidate:** *Olivia Cassidy*

For completion by the School:

The aforementioned thesis was received by \_\_\_\_\_ Date: \_\_\_\_\_

This signed form must be appended to all hard bound and electronic copies of your thesis submitted to your school.

**Submission of Thesis and Dissertation**

**National College of Ireland**

**Research Students Declaration Form**

*(Thesis/Author Declaration Form)*

**Name:** Olivia Cassidy

**Student Number:** 14428188

**Degree for which thesis is submitted:** Bachelor of Arts (Hons) in Psychology

**Material submitted for award**

- I declare that the work has been composed by myself.
- (b) I declare that all verbatim extracts contained in the thesis have been distinguished by quotation marks and the sources of information specifically acknowledged.
- (c) My thesis will be included in electronic format in the College Institutional Repository TRAP (thesis reports and projects)
- (d) *Either* \*I declare that no material contained in the thesis has been used in any other submission for an academic award.
- Or* \*I declare that the following material contained in the thesis formed part of a submission for the award of

---

*(State the award and the awarding body and list the material below)*

**Signature of research student:** *Olivia Cassidy*

**Date:** 31.03.17

## **Acknowledgements**

---

First and foremost, I would like to express my gratitude to Dr. April Hargreaves for her most supportive role as my supervisor for the duration of my thesis production. I am sincerely grateful for her engagement, encouragement and advice that guided me toward confidently completing my final year project.

Furthermore, I would like to thank my final year project module co-ordinator Dr. Rebecca Maguire for her information and additional support in preparing me for each step of my research study and arranging me with my supervisor.

I would like to thank everyone who volunteered to participate in my study, who took the time to play a precious role in generating my research findings.

To all the psychology staff and my class mates at the National College of Ireland, a very special acknowledgment goes out for your continuous welcome and encouragement for the last three years.

Finally and by no means least, I would like to express my gratitude to my mum for introducing me to the research topic of my thesis, and my family and friends for their outstanding support throughout the last three years.

## Abstract

In recent years, there has been a surge of interest in the psychological construct of mindfulness as a predictor of positive mental health. Despite much awareness and implication of mindfulness practice, little research exists in related predictors of psychological well being including sociability and self control and their relationship with mindfulness. The present study aims to examine whether mindfulness, sociability and self control contribute to a positive mental health and observe the relationship between the four variables using a regression analysis. The study will observe whether people who engage in yoga activities comprise of higher levels of mindfulness than non yoga attendees to further strengthen current research that yoga practice is related to mindfulness and subsequently psychological well being. The current sample (n= 77) were recruited using opportunistic sampling in which interested participants followed an online link to virtually participate in the research study. The results of the Multiple Regression model demonstrated that mindfulness, sociability and self control significantly explained 40% of variance associated with psychological well being. Hypotheses 2 and 3 were did not find a significant relationship between yoga practice and time period of yoga practice with increased mindfulness levels. The results of this study have important implications in addressing mental health issues across the student population of Ireland. Overall, the study effectively investigates the role of psychological constructs in predicting psychological well being.

## Table of Contents

### Introduction

<i>Psychological Wellbeing</i> .....	1
<i>Mental Health in Ireland</i> .....	2
<i>Stigma and Awareness of Mental Health</i> .....	3
<i>Mindfulness</i> .....	4
<i>Mindfulness Based Cognitive Therapy</i> .....	5
<i>Mindfulness Intervention in Schools</i> .....	6
<i>Sociability</i> .....	7
<i>Self Control</i> .....	8
<i>Yoga Practice</i> .....	9
<i>Yoga and Mindfulness</i> .....	10
<u><i>Current Study</i></u> .....	12
<i>Rationale</i> .....	12
<i>Hypothesis 1</i> .....	12
<i>Hypothesis 2</i> .....	13
<i>Hypothesis 3</i> .....	13
<u><i>Method</i></u> .....	14
<i>Sample</i> .....	14
<i>Design</i> .....	15
<i>Measures</i> .....	15
<i>Data Analysis</i> .....	19

<i>Sample Demographic Information</i> .....	20
<i>Ethical Procedures</i> .....	20
<i>Procedure</i> .....	21
<b><u>Results</u></b> .....	22
<i>Descriptive Statistics</i> .....	22
<i>Inferential Statistics</i> .....	24
<b><u>Discussion</u></b> .....	27
<i>Hypothesis 1</i> .....	29
<i>Mindfulness</i> .....	30
<i>Sociability</i> .....	31
<i>Self Control</i> .....	32
<i>Hypothesis 2</i> .....	34
<i>Hypothesis 3</i> .....	35
<i>Yoga Practice in Clinical Intervention</i> .....	36
<i>Major Implications</i> .....	37
<i>Limitations</i> .....	38
<i>Future Recommendations</i> .....	39
<i>Conclusion</i> .....	39
<b><u>References</u></b> .....	41
<b><u>Appendices</u></b> .....	49
<i>Appendix A</i> .....	49
<i>Appendix B</i> .....	49
<i>Appendix C</i> .....	50

<i>Appendix D</i> .....	50
<i>Appendix E</i> .....	51
<i>Appendix F</i> .....	51



## Introduction

### *Psychological Wellbeing*

Mental health conditions including major depression disorder, multiple anxiety disorder and social anxiety disorder are ranked as leading causes of disability worldwide (Collins et al., 2011). One's mental health is characterized by their emotional, psychological and social well-being. This psychological phenomenon is defined as a "state of emotional and psychological well being in which an individual is able to use his/her cognitive and emotional capabilities, function in society and meet the ordinary demands of everyday life" as defined by Nunberg and Newman in the American Heritage Dictionary (2011). A positive mental health enables an individual to adjust to change and function appropriately in society, it is therefore critical for one to attain a positive sense of wellbeing and enhance their general life approach (Seligman & Csikszentmihalyi). In many respects, emotional well being and mental health are associated with physical health and general coping mechanisms including sleep, resilience and energy levels (Fredrickson et al, 2002). On account of the latter research evidence, establishing an emotional balance is critical in reducing the development of stress related illnesses and mortalities. Whilst 20% of Americans suffer from a mental disorder a further 5% suffer a disorder which inhibits them from attending simple tasks of their everyday lives. In Ireland, the results of numerous studies conducted by Fitzpatrick and colleagues were consistent with the international findings that reported that mental health issues permeate at least 20% of the population (2006), endorsed by the economics of mental health care in Ireland report (O'Shea et al., 2008). These studies found that 4.5% of adolescents experience clinical depression ranging from anxiety to suicidal cognitions.

The figures dramatically increase to 15.6% by the age of 12-15, with a further 5% of Irish teenagers suffering depression at any given time (Lynch et al, 2007). According to a review of literature with keen focus on the findings of the World Health Organisation conducted by Kendall and Kessler, 75% of all mental illness prognoses occur before the age of 25 (2007). This finding only demonstrates the prevailing mental health concerns, particularly amongst adolescents and students (2007). It appears that addressing early symptoms of mental health disorders during child and adolescent development will not only ensure reverse investment in mental health national expenditure, but will ultimately tackle serious related problems faced by the Irish youth.

### ***Mental Health in Ireland***

The “My World” National Survey of Youth Mental Health found that on average, one in three young people suffered a mental health difficulty (Dooley & Fitzgerald, 2013). A multidisciplinary group within the Royal National College of Surgeons further investigated mental health in Ireland, exclusive to young adolescence and students which found that 15.4% of 11-13 year olds were experiencing a mental disorder (2013). These findings signify the exceptionally large student ratio that represents Irish people suffering from a mental health illness (Fitzpatrick et al, 2003). Interestingly, 31.2% of participating adolescents were reported to have suffered a mental health disorder at some part of their lives (Cannon et al, 2013). The findings of the RCSI illustrate critical psychological evidence that adolescents and young adults are significantly more vulnerable to mental health issues which can ultimately lead to an adverse development toward adulthood and general quality of life (Michaud and Fombonne, 2005). It appears that elements of the discussed research have been acknowledged in the Irish Mental

Health Strategic Plan (IMHSP) (2015-2017). Core objectives including the delivery of initiatives and services on top of financial stability by sourcing new revenue will impose the development of improving the nation's mental health. The project will focus on individuals suffering from a mental health disorder and those within their immediate circle, while ensuring the needs of communities and schools with the use of advocacy initiatives. The proposed objectives of the IMHSP are sufficient measures to tackle the paucity of awareness that children and adolescents account for the vast majority of mental health disorders across the board.

### ***Stigma and Awareness of Mental Health***

Increasing national awareness and information concerning mental health will not only assist those suffering a mental health disorder but will reduce the stigma that surrounds mental health conditions (Barry et al., 2009). Such stigmas pervade society accentuated by Kelly and colleagues who found that 67% people believe that children who suffer from a mental health condition should attend a different school than other children. Moreover, Kelly and his researchers found that people would find it least comfortable to have a co-worker suffering from a mental illness in comparison to an intellectual or physical disability. As regards to gender based stigmas toward mental health, limited research suggests that women hold more favourable attitudes concerning mental health than men, coinciding with the findings of Holzinger (2012) that women are more likely to recommend professional help as a result of mental health difficulties than men (Henderson et al., 2013). However these results contradict alternative findings of Holzinger and colleagues (2012) suggesting that although women are more likely to support psychosocial conceptualizations than their counterparts, they do not

demonstrate more positive attitudes towards individuals with mental health conditions than men. Empirical research, with particular focus on population studies concerning gender based stigmas toward mental health is relatively scarce, concluding that further research must be conducted to determine whether significant sex differences exist in relation to attitudes toward mental health. Awareness campaigns have become increasingly popular throughout Irish schools in the last number of years to promote psychological well being values with advances including the introduction of mental health week, mental health and suicide prevention programmes and education modules, accentuating the importance of monitoring ones mental health. However, in order for mental health initiatives to be recognised and operate effectively, greater awareness must be imposed to educate the population of prevalent information regarding mental health in Ireland to vanquish negative stigma and in turn harbour an accepting attitude to ensure recovery for suffering individuals.

### ***Mindfulness***

Mindfulness is the psychological process of bringing one's attention to the internal and external experiences occurring in the present moment (Creswell, 2016). This state of mind is adopted in yoga practice and meditation interventions through breathing exercises as a result of its strong correlation with psychological well-being and perceived health (Carmody and Baer, 2008; Bränström et al., 2011). To investigate the psychological construct, mindfulness, and its contributing role toward psychological well being, Brown and Ryan conducted a quasi, experimental designed study (2003) which found a positive relationship between mindfulness and positive-emotional states. The sample comprised of cancer patients who reportedly suffered significantly less

mood disturbances and stress after mindfulness intervention. The results of this study support the psychological phenomena that mindfulness predicts self regulated behaviour and positive mental states (Brown & Ryan, 2003).

### ***Mindfulness Based Cognitive Therapy***

Many rehabilitations and cognitive therapies practice mindfulness to enhance environment awareness, allowing the individual to disregard any distracters from interfering with their focus to restrict the relapse of negative thoughts (Gu et al, 2013). Furthermore, the practice of mindfulness has been integrated with the traditional procedure of Cognitive Based Therapy (CBT) to alleviate depression symptoms in Mindfulness Based Cognitive Therapy (MBCT) (Segal et al., 2002). This therapy is characterized by a decentering process in which patients disengage from negative self beliefs and behaviours associated with depression thinking patterns (Hayes et al., 2011). In contrast to CBT, MBCT addresses negative thought processes and subsequently disassociates the mind from this thought pattern as opposed to the fundamental approach of Cognitive Therapy by challenging, in turn changing, one's irrational beliefs (Segal et al., 2002). It is likely that MBCT could surpass Cognitive Behaviour Therapy as a sufficient approach to mitigate the symptoms of mental health disorders, particularly depression, due to its effective procedure by combining the analytical approach of CBT with the experiential quality of mindfulness practice (Watkins & Teasdale, 2004). By decentring negative thoughts and constraints and developing an automatic thought process toward conscious emotion processing, one can coherently understand how mindfulness can significantly contribute to a positive mental health, irrespective of extensive research findings (Herbert & Forman, 2011). It is clear from

the existing research findings that this simple exercise can have a significant impact on improving one's mental health and eliminating one's tendency to allow the mind to drift upon negative thoughts.

### ***Mindfulness Intervention in Irish Schools***

In Ireland, mindfulness was first introduced to Primary Schools in 2011, which flourished an indisputable awareness professing the positive effects of mindfulness intervention in education settings. More than 5,000 teachers have engaged in mindfulness training to integrate mindfulness practice to cultivate emotional intelligence along with intellectual competence during curriculum based activities. Empirical studies have also found that mindfulness awareness intervention maximises grade results, thence enhancing one's academic performance (Backosh et al., 2016). In addition, longstanding evidence suggests that effective implementation of mental health promotion programmes in schools contributes to long term emotional, academic and social benefits for students (National Institute for Health and Clinical Excellence, 2009; Barry et al, 2009). Despite the aforementioned benefits of mindfulness in schools, the significance of this practice is unrecognised as a compulsory core module ensuing that certain students are not experiencing these benefits to subsequently enhance their general mental health (Brown & Ryan, 2003; Herbert & Forman, 2011). Although many schools are yielding to the positive outcomes of mindfulness in learning environments by integrating its practice throughout modules in order to counteract the prevailing child/adolescent mental health issue in Ireland, mindfulness practice and meditation must be introduced as a compulsory module that ensure that each child will receive the sufficient tools to cultivate mindfulness in their daily lives.

## *Sociability*

Another significant predictor of psychological well being is sociability (Hotard et al., 1989; Singh & Misra, 2009; Miller, 2013). Extensive research emphasizes the stark relationship between depression and loneliness, supporting the existing consensus that social relationships are associated with mental health (Shaw & Gant, 2002; Singh, 2015). Thus far, the large body of research investigating the effects of sociability on mental health endorses the theories of leading Greek philosopher Aristotle that humans are by nature, social animals as addressed by Dijksterhuis in ‘Why we are social animals: The high road to imitation as social glue’ (2005). The findings lend credibility to his evolutionary social theory that humans embody an intrinsic need for social contact and association with others for survival, moreover, illustrating how reduced social contact gives rise to mental health difficulties (Wilkinson & Marmot, 2003; Evans-Lacko et al., 2012). Limited social relations and social isolation are major contributing factors for functioning difficulties, particularly amongst older persons (Singh & Misra, 2009). This renowned correlation is supported by the results of Singh and Misra, (2009), who investigated levels of depression and loneliness in an elderly sample using Beck Depression Inventory, UCLA Loneliness Scale and Sociability Scale by Eysenck (1964). The results of this study demonstrate that individuals who are more withdrawn from social interaction and companionship experienced higher levels of depression. Although gender does not have a significant role to play in respect to loneliness and depression despite contradicting evidence in terms of health problems amongst the elderly according to Arber and Ginn (1991), elderly men were found to be more sociable than their female counterparts. Numerous longitudinal studies have

deduced that older persons with severe depression and mental health disorders are at greater risk of mortality than those who sustain a positive mental health (Bruce 1994), emphasizing the urgency to deal with issues like sociability levels facing mental health initiatives throughout communities. Increased sociability levels are considered a protective factor against violence concerns and exposure to aggression amongst middle grade American students (Miller, 2013). Therefore, enhancing sociability skills during early adolescent years can be necessary to protect the well being of young individuals to reduce violent activities and concerns of exposure to violence (Miller, 2013). In recent years, reports of aggression and violence in schools have declined, however violence remains a pressing issue for the safety, well being and academic success for students across the board (Mayer & Furlong, 2010). With regard to these results, educators could introduce modules which foster sociability skills and companionship to strengthen the relationship between classmates to ensure and monitor students emotional well being. Due to the cross sectional nature of this study, it is difficult to measure the validity of the findings based on temporal associations as potential causal inferences remain outside of the study, however the results accentuate the inconspicuous role sociability plays in positive psychological well being.

### ***Self Control***

A psychological phenomenon that significantly influences levels of sociability and quality of mental health is locus of control. In addition to mindfulness and sociability, self-control is a personal trait, which is perceived to play a critical role in general life satisfaction, psychological well being and mental health. One's locus of control can be conceptualised as either internal, in which people recognise their own control in their



lives, or external, believing that the course of their lives are shaped by environmental and external events (Rotter, 1966; Lefcourt, 2014). A contemporary Chinese computer study investigated the locus of control and subsequent sociability levels of internet users. The results of this study inferred that individuals with lower levels of sociability and extrinsic locus of control are most inclined to become addicted to internet use (Chak & Leung, 2004). These results support extensive research that externally orientated people are more likely to fall victim of addiction and therefore experience higher stress levels and poor emotional well being (Robinson & Kelley, 1998; McPherson & Martin, 2017). Self controls relative concept, self-regulation (Burman et al, 2015), is a vital component in achieving everyday goals to sustain a positive state of mind and self-regard. For this reason, Lynn P. Rehm adapted the Self Control Model of Depression (1977), in which depression is characterized because of deficits in self-control. Evidently, the inability to regulate and control implicit desires and temptations has a negative relationship on mental health, allowing greater scope to understand what contributes to mental health.

### ***Yoga Practice***

Empirical research and studies support that yoga, a relaxation and breathing discipline, is a significantly effective exercise that counteracts the symptoms of depression and improve one's overall quality of mental health (Da Silva et al., 2009; Pilkington et al., 2005). Yoga is considered a psycho-physical activity by enhancing mindfulness levels in breathing exercises to reduce stress and anxiety levels (Bhusan, 1994; Kirkwood et al. 1995; Penman, 2012; Salmon et al. 2009). The first practice of yoga is speculated to date back to pre-vedic traditions during the 6<sup>th</sup> & 5<sup>th</sup> centuries BC, as researched by

Werner in *Yoga and the Rg Veda* (1977). Yoga remains very much a part of the everyday lifestyle of certain religions including Hinduism and Buddhism, and Indian culture. In contrast, yoga has only gained eminence as a psychophysical activity in Western society throughout the 20<sup>th</sup> century, declared by Singleton (2007), in the critical appraisal of Darwinism, ‘Yoga, Eugenics, and Spiritual Darwinism in the Early Twentieth Century’. However, it is only in recent years that yoga has been examined as a therapy when Khalsa reported improvements in patients suffering symptoms of anxiety, depression and schizophrenia after yoga intervention (Khalsa, 2013).

According to meta-analytic reports, yoga practice is beneficial for improving pain associated disabilities as well as mental health (Bussing et al, 2012). The increasingly growing field of yoga therapy research focuses on the affects of yoga on depression and anxiety, with an improvement on the quality of these clinical trials (Pilkington, 2005; Kirwood, 1995). In addition, various studies have explored the practice of yoga in a clinical setting, employed as a complementary intervention for mental health related illnesses including depression and schizophrenia (Vancampfort et al., 2012). Despite the aforementioned research outlining the significantly positive effects of this yoga practice, yoga has not been acknowledged as a sufficient therapy for clinical intervention (Butterfield, 2016). Due to the fundamental relationship between yoga and mindfulness, this simple practice could be introduced as an effective mechanism to tackle depression and poor mental health rates in schools and communities.

### ***Yoga and Mindfulness***

Yoga practice, particularly Hatha and Rocka yoga are widely acclaimed for enhancing psychological construct mindfulness. Studies have illustrated that yoga practice is strongly related to increased levels of mindfulness (Gaiswinker & Unterrainer, 2016; Khanna & Greeson, 2013). In a narrative review of yoga and mindfulness (2013), Khanna and Greeson found that the incorporation of yoga and mindfulness practice was effective in treating and alleviating behaviours associated to serious addiction. The findings of Gaiswinker and Unterrainer (2016) support the general consensus of Khanna and Greesons narrative review that yoga and mindfulness intervention contributes to higher levels of psychological well-being. They developed a study in which the relationship between levels of yoga involvement and parameters of mental health and illness was investigated. The results of the study portray that participants who frequently practiced yoga displayed significantly higher levels of mindfulness and psychological well-being than occasional yoga practitioners or members of the control group who never practiced yoga.

In conclusion, one cannot ignore the prevailing statistics representing mental health in Ireland, particularly amongst the student population. By publically endorsing the health benefits of mindfulness practice and yoga exercise, the current statistics of mental health rates in Ireland may be reduced. In addition, tackling the mental health issues faced by young people will not only lower present rates but significantly decrease future risks of current students from developing mental health problems, In turn, ensuring reverse investment. World Health Organization (WHO) estimated that depression will be the world's leading health problem by 2020 (WHO, 2012). Pinpointing and implementing practices of components of mental health including mindfulness,

sociability and self-control will not only tackle the challenges faced, but also improve the overall perspective and importance of mental health.

## **The Present Study**

### ***Rationale***

A positive, stable mental health is something the majority of people strive to attain. Much research has been conducted in this field however the substantial influence of mindfulness, individual's sociability and mastery of self control is considerably underestimated and overlooked in psychological research. When one considers the simple fundamentals of these attributes and examines their affect in communities, clinics and everyday life, it is clear that emphasising the stark relationship between high levels of mindfulness, sociability and self control and a positive mental health is vital in raising awareness and potentially implementing more practices of these attributes. Studies have addressed that mindfulness has a positive impact on every aspect of one's psychological well being. As mindfulness is encouraged in yoga activities, highlighting the increased level of mindfulness amongst yoga attendees in comparison to non yoga attendees, and in turn observing their psychological well being could portray how such a simple practice could therefore be introduced and encouraged as an important means to improve one's mental health throughout schools, corporations and the work place.

### ***Hypothesis I***

The first aim of this study is to investigate whether high levels of active mindfulness, sociability and self-control contribute to a positive mental health. Exploring levels of

mindfulness, sociability and self-control with the use of questionnaires is expected to support current research that these implicit attributes are higher amongst those who sustain a positive mental health. For this reason, the non-causal directional hypothesis of this experiment is that people with high levels of mindfulness, sociability and self-control experience a positive mental health.

### ***Hypothesis II***

The second objective of study experiment is to examine whether people who have engage in yoga activities will comprise of greater levels of mindfulness than those who have not. Participants will disclose how often they practice yoga in accordance to three conditions: often (weekly), occasionally (monthly/infrequently) or never. Their mindfulness levels will be investigated to determine whether there is a significant difference between the three conditions. Therefore, the second hypothesis of this experiment is that yoga attendees have greater levels of mindfulness than non-yoga attendees.

### ***Hypothesis III***

The third aim of this research study is to investigate whether people who have spent a longer time period practicing yoga will report higher levels of mindfulness than participants who have been practicing yoga for a shorter period of time. Participants will reveal how long they have been practicing yoga for by selecting the appropriate response: for the last month, for the last 6 months or for 1 year or more. Their mindfulness levels will therefore be tested to examine whether a significant difference in mindfulness exists between the three time periods of practice.

## **Method**

### ***Sample***

The current study comprised of 77 participants recruited from the general Irish population by non probability sampling. 19 males (24.7%) and 58 females (75.3%) participated in this study, of which 24 participants (31.2%) practiced yoga.

Additionally, the mean age of the sample was 22.58 (SD= 5.71, *range*: 18-53), in which the vast majority of participants were reported students (N= 64, 81%). (*See Results Table 1*).

Non probability convenience sampling was employed to recruit the overall sample, ensuring that a sufficient proportion of participants were yoga attendees to compare with the general sample to investigate the study hypotheses. A moderate to large sample size was required to reduce the risk of type I and type II errors and provide greater scope in diversity amongst the sample in terms of investigated variables including yoga practice and time period of yoga practice along with age and sex to conclude that the findings are reflective to Irish society, in particular the Irish student population. An online link was publicized on the social networking website, Facebook, which directed co-operating individuals to the host websites of the survey, Google Forms. All information concerning the study was disclosed to ensure the sample was over the age of 18 and to avoid deception and ethical risk for vulnerable participants who may find the survey questions uncomfortable, particularly in respect to the investigation of psychological well being.

Particular individuals, who regularly practiced yoga and/or expressed their preference to partake in the current study (8), received a link to the online questionnaire via email

(100% response rate). The high response rate was ultimately a result of the respondent's initial desire to participate in the study due to their relationship with the researcher and interest in the research objectives of the study.

### ***Design***

A predominantly multi-variate design was adopted in this study as more than one dependent variable was investigated. The study was entirely cross sectional, as all participant information was collected at a specific point in time. The design changed from multi variate, observing the affect of mindfulness, sociability and self control on psychological well being, to a between groups design, in respect of specific hypotheses exploring differences between yoga and non yoga attendees. The study was typically quantitative in nature, employing survey research to generate data in order to investigate the research variables mindfulness, sociability, self control, psychological well-being and yoga practice.

### ***Measures***

Four questionnaires were used to produce the experiment variable data; The Mindfulness Attention Awareness Scale (MAAS), Shyness and Sociability Scale (SSS), Mastery Scale (MS) and Measure of Psychological Wellbeing (MPW). Self report tests have strong reliability in receiving direct responses for given subjects, thus such reports were necessary measures in gathering the quantitative data required for this study. The anonymous nature of the survey may have reduced the affect of social desirability where by participants seek to exaggerate or under report their opinions or symptoms, potentially undermining the validity of the study measurements. In addition all

questionnaires were similar in length and format to avoid confusion and sustain participant involvement.

**Mindfulness Attention Awareness Scale- Short (MAAS-Short)**

Mindfulness levels were assessed using the MAAS-Short, modified by Hofling and colleagues (2011), to test the mindfulness levels of 602 participants drawn from German student populations. This test comprises of five negatively worded items and five positively worded items using a likert response scale ranging from 1 (*Almost always*) to 6 (*Almost never*). Consequently, items 1-5 were reverse coded in order for high scores to indicate higher levels of mindfulness. The test itself displays strong psychometric properties which draw on consciousness, self regulation and well being constructs. The original MAAS was developed by Brown and Ryan to assess the role of mindfulness in psychological well being using a sample of cancer patients (2003). MAAS has the longest standing empirical record to examine the mindfulness trait to date (Black et al., 2012), and has therefore been translated and tested in psychological studies worldwide (Black et al., 2012; Jermann et al., 2009; Johnson et al., 2014).

The ten item MAAS-Short has a high internal consistency (Cronbach's  $\alpha = .88$ ), commended as a largely reliable measure in assessing mindfulness levels across the sample of student participants. The overall internal consistency of MAAS in the current study was generally strong (.658). As a result of its use in Hofling and colleagues study, assessing student mindfulness levels and generally high internal consistency, the MAAS-Short scale is an appropriate measure in exploring mindfulness levels in the current study, with a large ratio of student participants.



### **Shyness and Sociability Scale (SSS)**

Participant sociability was measured using SSS developed by Cheek and Buss (1981). This is a 14 item scale consisting of 5 sociability and 9 shyness items, comprising of a likert response scale ranging from 1 (*Almost always*) to 5 (*Almost never*). SSS was constructed by Cheek and Buss (1981) to measure shyness and sociability levels in their study with items 1 and 3-10 recoded to ensure higher responses demonstrated higher levels of sociability. This scale was appropriate for the current study due to its inclusion of shyness related propensities including inhibition and tension and sociability propensities including a preference for being with others. Furthermore the SSS was a more preferable test to use in comparison to contemporary psychological self tests examining sociability constructs as the test adopts the fundamentals of leading shyness theories, including a number of sociability items developed by Guildford (1959) (Zimbardo, 1977; Buss , 1980). Zuckerman reported a high internal consistency for the SSS ranging from .83-.86 (1994) with test developers Cheek and Buss reporting a high internal consistency after a 90 day retest of reliability (Cronbach's  $\alpha = .74$ ), also describing a moderate negative correlation between self reported shyness and self reported sociability ( $r = -.30$ ). In the present study, the internal reliability of the SSS was moderately high (.68), concluding the SSS as an appropriate, valid measure for the current study.

### **Modified Mastery Scale (MS)**

Levels of self control were examined using the modified MS, designed by Shawe and Krause (2002) measure personal control beliefs in an investigation of the relationship between exposure to physical violence administered by one's parent and adult health.

Based on the Mastery Scale developed by Pearlin and Schooler (1978), the modified MS also seeks to measure self control beliefs amongst participants. The modified MS comprises of 5 items based on Pearlin and Schoolers original Mastery Scale, along with an additional three items. Participants indicate their general agreement of the 8 item scale using 7 point likert response scale ranging from 1 (*Almost always*) to 7 (*Almost never*). All 8 items of the test were recoded to demonstrate that higher scores represented higher levels of self control amongst participants. The modified MS scores .85 for internal consistency reliability, surpassing the Pearlin's original scale (cronbach's a = .72). The chronbachs alpha for the current investigation was .86, signifying that this self-report is an efficient measure in testing self control beliefs in the present study.

### **Measure of Psychological Well-being (MPW)**

Participant's mental health quality was examined using the Measure of Psychological Wellbeing Test. The purpose of this test is to measure psychological well being, developed by Choi and colleagues (2014). This contemporary test was designed to investigate the difference between chronological age and subsequent felt age among multiple generations. The tested psychological variables of PWB are related to the psychological measure used to test midlife well being in the US (Ryff et al., 2006). Psychological constructs related to psychological well being personal mastery and self efficacy are incorporated with the questions of this test in order to generate an overall psychological well being score.

MPW comprises of seven items which requires the participants to respond using a likert scale ranging from 1 (*Almost always*) to 3 (*Almost never*). To certify that higher scores

represent higher levels of psychological well-being, items 3 and 5 were recoded. The cronbachs alpha for the sample of adults aged 65 and older was .74 (Choi et al., 2014). The current internal consistency reliability was relatively high (cronbachs a= .70) emphasizing the overall validity of MPW in measuring the criterion variable, psychological well being, in the current study.

### ***Data Analysis***

The data was analysed using SPSS software. The results calculated in the four experiment scales were inputted into SPSS. Initially, a preliminary analysis was performed to assess the normality of the distribution running a frequency and descriptives test. A Multiple Regression Analysis was used to whether there is a relationship between the independent variables; mindfulness, sociability and self control, and mental health as the test were appropriate for assessing continuous data. The test considered how precise the independent variables predict the mental health and the degree of variance explained by the predicting variables.

A One Way ANOVA analysis was run to determine whether mindfulness levels were significantly related to 3 groups of yoga practice: Often (weekly), occasionally (monthly/infrequently) and never, investigated in the second hypothesis. In addition, an Independent Samples T-Test was run to examine whether there was a significant difference in levels of mindfulness between yoga attendees and non yoga attendees, by compiling the data of often and occasional yoga practice. A second One Way ANOVA analysis was conducted to examine whether mindfulness levels were significantly related to the time period participants practiced yoga whether significant differences in mindfulness levels were relative to how long participants had been practicing yoga. This

analysis was used to investigate hypothesis 3, comparing the mindfulness levels of three time periods of yoga practice: The last month, the last six months, one year or more.

### ***Sample Demographic Information***

Participants disclosed general demographic information regarding their age, gender and student status in conjunction with their yoga experience and practice (*See Appendix B*).

The use of demographic data was essential gather sample information in order to infer the results of the study to the general Irish population. Such knowledge was critical to ensure ethical treatment of participants, to disregard participants under the age of 18.

Furthermore, the demographic information was essential for generating participant responses regarding yoga, for hypotheses 2 and 3.

### ***Ethical Procedures***

All information regarding the experiment was disclosed when advertising for participants to ensure that those who volunteered were fully aware of what the experiment would entail. The current samples participated as a result of non probability volunteer sampling and have volunteered with the knowledge of what the study will entail. Moreover, members of vulnerable groups that would have found mental health evaluation testing intrusive were required to participate to prevent violation of the code of conduct, enforced by the Psychological Research Ethical Committee at NCI. Before the participants proceeded with the experiment, they were reminded that the questionnaires will be measuring different aspects of their quality of mental health.

They were informed of their right to withdraw from the experiment at any time along with the removal of their data. At the end of the study, debriefing occurred whereby the

researcher acknowledged participant co operation and reminded participants the terms of the experiment. The experimenter disclosed a contact email should any questions or misconceptions about the experiment arise amongst participants. Participants were unable to commence the experiment without clicking the consent box, used to address the participant's knowledge of the terms and ethical concerns of the experiment which ultimately highlights their decision to participate.

### ***Procedure***

The research proposal of this study was ethically approved by the Psychology ethical review board at the National College of Ireland. All members of the sample that expressed interest in participating in the study contacted the experimenter. These participants were sent a link to the online experiment by email. A concise synopsis of the study was presented on the introductory page of the experiment (*See Appendix A*). The participants were assured that their identification would remain anonymous and were notified of the approximate duration of completing the experiment. Once the participants had given their consent, they were required to complete the brief demographic questions provided. The participants were prompted to submit their responses to the Mindfulness Attention Awareness Scale, the Shyness and Sociability Scale, the Mastery Scale and measure of Psychological Wellbeing Test in chronological order. A note of appreciation was printed after the Psychological Wellbeing Test demonstrating the completion of the test and reminding participants of experimenter contact information should they need further debriefing or additional experiment information. The experiment took participants approximately five minutes to complete in its entirety.

## Results

### Descriptive Statistics

The current study comprised of 77 participants, 24 of which practiced yoga (31%).

Table 1 displays the relevant categorical variable information investigated in this study.

The number of participants applicable to each subcategory and the subsequent valid percent are provided.

Table 2 displays relevant information surrounding the continuous, independent variables examined in this study. The collective mean scores of each variable are moderately high, portraying particularly strong levels of mindfulness and self control amongst the sample (Mindfulness:  $M= 34.95$ ,  $Range: 20-49$ ; Self Control:  $M= 37.53$   $Range: 14-56$ ). Inspection of the confidence intervals and range of scores indicate no violation of the data as a result of outliers. The Self Control scale comprises of the most diversity in participant response highlighted by the standard deviation and range ( $SD= 9.24$ ;  $Range: 14-56$ ).

Histograms demonstrated the overall total scores and normal distribution (including outliers) for each measurement scale used in the study (*See Appendix F*).

**Table 1: Categorical Variables**

Variable	Frequency	Valid Percentage
<b>Gender</b>		
Male	58	75.3
Female	19	24.7

<b>Education Status</b>		
Student	64	83.1
Non-Student	13	16.9
<b>Yoga Level</b>		
Practice Yoga*	24 (6,18)*	31.2 (7.8,23.4)*
Do not practice yoga	53	68.8

\*(Often and Occasionally)

*Table 2: Descriptive statistics of continuous variables*

	Mean (95% Confidence Intervals)	Std. Error Mean	Median	SD	Range
Mindfulness	34.95 (33.53-36.37)	.71	35.50	6.22	20-49
Sociability	40.53 (38.81-42.26)	.86	39.00	7.49	27-64
Self Control	37.53 (35.43-39.63)	1.05	38.00	9.24	14-56
PschWB*	11.18 (10.56-11.80)	.31	11.00	2.74	7-18

\*Psychological Well-Being

### **Inferential Statistics**

## **Multiple Regression Analysis: Effect of Mindfulness, Sociability and Self Control on Psychological Well Being**

A multiple regression analysis was performed to investigate the degree to which mindfulness, sociability and self control predicted psychological well being.

Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, and homoscedasticity. Additionally, the correlations between the predictor variables included in the study were examined. All correlations were weak to moderate, ranging between  $r = -.15, p > .05$  and  $r = .49, p < .001$ . This indicates that multicollinearity was unlikely to be a problem (see Tabachnick & Fidell, 2007).

Mindfulness and self control predictor variables were statistically correlated with psychological well being indicating that the data was suitably correlated with the dependent variable for examination through multiple linear regression to be reliably undertaken.

Since no *a priori* hypotheses had been made to determine the order of entry of the predictor variables, a direct method was used for the multiple linear regression analysis. The three independent variables explained 40% of variance in psychological well being ( $F(3, 70) = 15.542, p = .000$ ).

In the final model mindfulness ( $\beta = .27, p = .01$ ) and self control ( $\beta = .49, p = .00$ ) were the only significant predictors of psychological wellbeing. This result indicates that increased levels of mindfulness and self control predict higher levels of psychological well being. (See tables 3 & 4).

## **One Way between Groups ANOVA: Comparing mindfulness levels between often, occasional and no yoga practice**



A one-way between groups analysis of variance was conducted to explore the impact of mindfulness levels on yoga practice (Often, n= 6, Occasional n= 18 and No Practice n= 53).

There was no statistically significant difference in levels of mindfulness for the three practice groups  $F(2, 73) = .8, p > .05$ . Despite statistical insignificance, a small effect size existed between the three groups, calculated using Eta squared, .022.

Post-hoc comparisons using the Tukey HSD test indicated that there was no statistically significant difference in mean scores between the three groups of yoga practice. A notable mean difference (3.23) existed between weekly (often) yoga practice and occasional and no yoga practice.

### **One Way between Groups ANOVA: Mindfulness levels and time period of yoga practice**

A one-way between groups analysis of variance was conducted to explore mindfulness levels according to how long participants have been practicing yoga (the last month n= 5, the last 6 months, n= 5 and a year or more, n= 14).

There was no statistical significant difference in levels of mindfulness for the three practice durations  $F(3, 72) = .85, p .05$ . Although the result proved insignificant, a moderately small effect size existed between the three groups, calculated using Eta squared, .03.

Post-hoc comparisons using the Tukey HSD test indicated no statistically significant difference in mean scores between the three time periods of yoga practice. However there was a noteworthy difference in mean scores (5.04) between participants who have

been practicing yoga for over 1 year (M=36.64) and participants who have been practicing yoga for 6 months (M= 31.60)

**Independent Samples T-Test: Comparing mindfulness levels with yoga practice and no yoga practice**

An independent samples t-test was conducted to compare mindfulness levels between yoga practice and no yoga practice. There was no statistically significant difference in scores between yoga practice and no yoga practice,  $t(74) = .37, p = .72$ , two-tailed.

Yoga practice (M = 35.33, SD = 6.09) scored higher than no yoga practice (M = 34.77, SD = 6.34) in reported psychological well being. The magnitude of the differences in the means (mean difference = .56, 95% CI: -2.51 to 3.64) was moderate (Cohen’s  $d = .09$ ).

**Table 3: Multiple Regression model: independent variables predicting Psychological Well-being**

	<i>R</i> <sup>2</sup>	<i>β</i>	<i>B</i>	<i>SE</i>	CI 95% ( <i>B</i> )
<b>Model</b>	.40**				
Mindfulness		.27*	.12	.04	.35 / .21
Sociability		.15	-.06	.03	.12 / .01
Self Control		.49**	-.14	.03	-.02 / .09

N = 77; Statistical significance: \* $p < .05$  \*\* $p < .001$

**Table 4: Correlations between the criterion and all predictor, continuous variables**

<b>Variables</b>	1	2	3	4
1. Psychological Well-Being	1			
2. Mindfulness	.38**	1		
3. Sociability	-.13	.14	1	
4. Self Control	-.57**	-.25*	.36	1

Note. Statistical significance: \* $p < .05$ ; \*\* $p < .001$

### ***Correlations between the criterion and exogenous variables***

Table 4 represents the correlations between the predictor variables and dependent variables respectively. Psychological well-being is significantly associated with high levels of mindfulness and self control ( $p < .001$ ). The table demonstrates that the psychological construct, self control, is also significantly related to levels of mindfulness ( $p < .05$ ). The Post Hoc Test identifies sociability as an insignificant predictor of psychological wellbeing. Furthermore, sociability has no significant association with other predicting variables of psychological well being.

## **Discussion**

The current study investigated psychological well being and related psychological constructs, mindfulness, sociability and self control. A large body of psychological literature and research studies were explored in the area of psychological well being, particularly focusing on mindfulness, sociability, self control and yoga practice. In order

to further investigate the research aims of this study, mindfulness, sociability and self control were hypothesized to be significant predictor variables of psychological well being. 3 sub hypotheses were also examined to observe related variables and analyse relevant research questions associated with the primary hypothesis. Participants who frequently practiced yoga were hypothesized to possess higher levels of mindfulness than participants who occasionally or never practiced yoga. Consequently, the researcher hypothesized that participants would have higher levels of mindfulness, dependant on how long they have practiced yoga. The final hypothesis explored whether a difference existed in reported psychological well being between students and non- students.

The results of this study were conflicting with previous research conducted in the field of mental health. As predicted, mindfulness and self control were significantly associated with psychological well being. Although sociability was evaluated as an insignificant predictor of the criterion, mindfulness, sociability and self control accounted for a significant amount of psychological wellbeing, indicating the remarkable suitability of these constructs for analysis. The ANOVA test failed to reject the null hypothesis in hypothesis 2, in which no significant findings were surmised investigating mindfulness levels and yoga attendance. Although the results did not yield to extensive research acclaiming the psychological and mindful benefits of yoga activity, participants who practiced yoga weekly demonstrated increased levels of mindfulness than participants who practiced yoga infrequently and participants who never practiced yoga. A T-Test was also conducted to further investigate differences in mindfulness levels comparing yoga practice, by compiling the data of weekly and occasional yoga practitioners to compare to the data of the control group. The results

remained consistent with the findings of the ANOVA test in which no significant difference was observed. In respect of hypothesis 3, the alternative hypothesis that examined whether increased mindfulness levels were relative to the length of time participants practiced yoga was rejected. Although no significant differences in mindfulness levels were reported according to the time period participants practiced yoga, individuals who have practiced yoga for more than a year had higher levels of mindfulness than participants who practiced yoga for more than 6 months and than those who did not practice yoga. The results of this study pursued a similar outcome to the findings of hypothesis 2, of which no significant difference between the groups, however the superior group of yoga practice exhibited the strongest levels of mindfulness.

**Hypothesis 1: Mindfulness, sociability and self control in predicting psychological wellbeing**

The findings of the current study suggest that mindfulness, sociability and self control explain a significant amount about the psychological constructs that make up psychological well being. It can therefore be deduced that psychological well being can be considerably represented by the three exogenous variables, supporting the model as a comprehensive explanatory of psychological wellbeing. Due to the abstract nature of psychological wellbeing, it is difficult to assemble a comprehensive model to predict this continuous variable and control for potential confounding variables that may impact the results. Therefore, the statistical significance of the model lends validity to explaining the criterion. The model also explains the unique contribution of each variable, signifying the stronger predictors of psychological well being (mindfulness &

self control) and the variable that does not have a significant impact on psychological well being (sociability).

### **Mindfulness**

The results of this study described mindfulness as a critical variable in predicting psychological well being, consistent with extensive research and psychological literature that commend the strong relationship between mindfulness and mental health (Carmody & Baer, 2000; Branstorm et al, 2011; Brown & Ryan, 2003). The significant role of mindfulness in predicting psychological well being accentuates the importance of this psychological constructs in attaining psychological well being and the necessary incorporation of mindfulness in clinical intervention and education settings.

The current results lend greater credibility to the findings of Brown and Ryan (2003), who reported that participants experienced reduced mood disturbances and stress reducing mindfulness intervention. The MAAS used to measure mindfulness levels distinguished higher levels mindfulness represented a strong awareness of present stimuli as oppose to the ruminating of thoughts (Hofling et al, 2011). Therefore, the results infer that sustaining attention on internal and external experiences in the present moment is critical in striving for or sustaining psychological well being (Creswell, 2016). Consequently, this emphasizes the logical, nonetheless effective, procedure of MBCT in alleviating negative thought patterns amongst patients in disengaging from irrational thought processing (Segal et al., 2002; Hayes et al., 2011; Watkins & Teasdale, 2004; Herbert & Forman, 2011). These findings in conjunction with the results of the current study portray the efficacy of the characteristic thought process, decentering, associated with MBCT. In consequence, MBCT should no longer be

perceived as an alternative therapy to CBT in clinical intervention (Watkins & Teasdale, 2004).

As it stands, mindfulness based practice and intervention has recently been introduced to a number of primary schools throughout Ireland. Despite the significant psychological benefits of mindfulness, studies have shown that mindfulness based programmes and intervention enhances academic performance in schools (Backosh et al., 2016). Although the current study does not investigate the contribution of mindfulness in education settings, the findings support further implication of mindfulness practice and awareness in schools, resultant of the coherent mental health related benefits. In addition, by continuously introducing mindfulness practice in education curriculums, the prevalent rates of depression and mental health related disorders may decrease amongst the student population (Fitzpatrick et al., 2006; Lynch et al., 2007; O'Shea et al., 2008). Overall the results of the current study strengthen current research that consider mindfulness a significant predictor of mental health, additionally commending mindfulness intervention in clinical and education settings in order to alleviate mental health related problems and reduce the risk of their development in the future.

### **Sociability**

In comparison to mindfulness and self control, the exogenous variable, sociability was found to be an insignificant predictor of psychological well being. In consequence, one can surmise that higher or lower levels of sociability have no effect on one's psychological mental health. The findings disprove certain research findings that sociability is a significant construct in predicting mental health (Shaw & Grant, 2002;

Singh, 2015; Wilkinson & Marmot, 2003; Evans-Lacko et al., 2012). However, it must be addressed that limited direct links between psychological well being and sociability exist throughout psychological findings, implying that the insignificant result of this study may be a reflection of the ambiguous nature of sociability in prevalent research. Miller (2013) reported high levels of sociability reduce the exposure to aggression and risk of violence amongst adolescence, therefore demonstrating the indirect affect of sociability on one's psychological well being. Furthermore, a large body of research expresses the strong relationship between isolation and depression, particularly amongst older persons (Arber & Ginn, 1991; Bruce, 1994; Singh & Misra, 2009). Although these findings do not directly emphasize the association of sociability and psychological well being, it is evident that deficits in social contact infer poor mental health. The aforementioned literature illustrates the importance of sociability and social inclusion to reduce the risk of poor mental, which leads to the speculation that high levels of sociability, is a sufficient protective factor against poor mental health in lieu of a predictor of psychological well being.

### **Self Control**

The results of the Multiple Regression analysis found that higher levels of self control induce higher levels of psychological wellbeing. The finding is congruent with the large body of research which considers self control as a direct characteristic of positive mental health, ranging from contemporary studies and experiments (Chak & Leunng, 2004) to the adaption of The Self Control Model of Depression (Rehm, 1977). The psychometric properties of the MS, coinciding with the expansive response range strengthens the credible relationship between high levels of intrinsic self control and



subsequent psychological well being (Chak & Leung, 2004; Robinson & Kelley, 1998; McPherson & Martin, 2017).

The results of the current study demonstrate that self control is a significant predictor of psychological well being, irrespective of the inclusion of pertaining concept, self regulation. The current results contrast the findings of Burman and colleagues (2015), who reported self regulation critical in sustaining internal self control, in turn contributing to perceived life satisfaction. No items concerning psychological construct self regulation were included in the modified MS, portraying the significant role of locus of control in predicting psychological well being, without the incorporation of self regulation.

Mindfulness is also significantly associated with self control. Although this finding marginally undermines the parsimonious nature of the model, it lends greater credibility to the psychological benefits of self control due to its relationship with mindfulness, a psychological construct acclaimed for its positive relationship with psychological well being (Carmody & Baer, 2000; Branstorm et al, 2011; Brown & Ryan, 2003).

However, a paucity of research exists investigating the relationship between mindfulness and self control and the subsequent affiliation of mindfulness and self control in predicting mental health. Perhaps an increased level of internal locus of control facilitates one's psychological discipline required to practice the decentering process. Nevertheless, the intervention of mindfulness and self control are both practiced in clinical settings, generally to alleviate depression symptoms (Rehm, 1977; Segal et al., 2002; Watkins & Teasdale, 2004). Thence it is not surprising that a significant relationship exists between the aforementioned variables (Rehm, 1977; Segal et al., 2002). Both self control and self regulation are necessary constructs used to

discipline the mind to focus on present, occurring events, portraying the requirement of self control in mindfulness practice.

**Hypothesis 2: Yoga practice is associated with higher levels of mindfulness**

Turning now to the results of the ANOVA test investigating differences in mindfulness levels between participants who practice yoga weekly (often), occasionally and who do not practice yoga, no significant difference were reported in mindfulness levels between the three conditions. Additionally, an Independent Samples T-Test was performed, accumulating the data of weekly (often) and occasional yoga practice to compare with the control group, no yoga practice. Both tests failed to reject the null hypothesis, challenging multiple studies which found that yoga practice is strongly related to increased mindfulness levels (Khanna & Greeson, 2013; Gaiswinker & Unterrainer, 2016). The current findings disputed the results of similar study conducted by Gaiswinker and Unterre (2016) in which frequency of yoga practice was reported to have a significant association with mindfulness levels. The current findings also challenge the belief that mindfulness is an active ingredient in yoga, therefore supporting the aforementioned research that yoga practice enriches levels of mindfulness amongst practitioners (Bhusan, 1994; Kirkwood et al. 1995; Penman, 2012; Salmon et al. 2009; Gaiswinker & Unterrainer, 2016). However the results of the present study partially support the findings of Gaiswinker and Unterrainer that mindfulness levels are highest amongst the most frequent group of yoga practice. The ANOVA test indicated that participants who practice yoga weekly (often) have notably higher levels of mindfulness than those who practice yoga occasionally and do not practice yoga. Therefore one must not rely too heavily on the results of the quantitative

analysis as the statistical insignificance does not entirely explain the underlying difference between the three groups.

**Hypothesis 3: Mindfulness levels differ in conjunction to length of time participants have practiced yoga**

A paucity of research exists demonstrating that participants who practiced yoga for long periods of time would display higher levels of mindfulness than participants who have practiced for shorter periods. Considering the stark relationship between yoga practice and mindfulness levels and Gaiswinker and Unterrainer's results (2016) that demonstrate that superior mindfulness levels are associated with frequent yoga practice, one can only assume that mindfulness levels enhance in relation to the time period individuals practice yoga (Bhusan, 1994; Kirkwood et al. 1995; Penman, 2012; Salmon et al. 2009; Gaiswinker & Unterrainer, 2016). The ANOVA Test reported no significant difference in mindfulness levels between students who have practiced yoga for 1 year, 6 months, and 1 month, failing to reject the null hypothesis of hypothesis 3. The insignificant relationship between increased mindfulness levels and the time period one has practiced yoga emphasizes an absence of research exploring the development of mindfulness levels in relation to yoga practice, drawing on whether there is a capacity to which yoga induced mindfulness levels. Regardless of this consideration, the current study indicated that participants who practiced yoga for the longest period of time described the highest levels of mindfulness in comparison to the two alternative time periods, somewhat in keeping with previous research that signifies a relationship between yoga practice and mindfulness levels (Bhusan, 1994; Kirkwood et al. 1995; Penman, 2012; Salmon et al. 2009; Gaiswinker & Unterrainer, 2016).

### **Yoga Practice in Clinical Intervention**

Much research findings and psychological literature supports the application of yoga in clinical intervention (Kirwood, 1995; Pilkington et al., 2005; Da Silva et al., 2009; Vancomport et al., 2012; Khalsa, 2013; Butterfield, 2016). The current results of this study, along with reviewed literature demonstrate the significance of mindfulness in explaining psychological well being (Carmody & Baer, 2000; Branstorm et al, 2011; Brown & Ryan, 2003). Thence, despite the insignificant findings of hypotheses 2 and 3, the increased levels of mindfulness related to frequency and time period of yoga practice indicates the psychological benefits related to yoga practice. Consequently, one can understand how yoga practice can effectively alleviate pain associated disabilities by recognising the combination of yoga exercise with the characteristic decentering process of mindfulness.

Nevertheless, the insignificant results of the current research indicates that further research could be conducted to explain the relationship of yoga practice and mindfulness levels, with particular focus on the development of mindfulness levels in respect to time period of yoga practice. For the moment, yoga practice is remains an effective practice measure in alleviating symptoms of mental health disorders and chronic pain in conjunction with clinical treatment.

### **Major Implications**

The findings of the present study provide influential information for the field of mindfulness, yoga practice and psychological well being. Foremost, the study provides further empirical evidence which acclaim mindfulness and self control as positive

contributors of mental health. Hypothesis one draws attention to sociability as a nonessential variable in explaining psychological wellbeing, therefore providing insight for future researchers to determine other psychological constructs that may explain the phenomena, psychological well being. The dismissal of sociability as a significant factor in predicting psychological well being contradicts the large body of research that suggests isolation is associated with depression, indicating that secluded individuals are generally more susceptible to poorer mental health (Arber & Ginn, 1991; Bruce, 1994; Singh & Misra, 2009). In turn, the positive influence of mindfulness and self control in predicting psychological well being commends the practice of these constructs in clinical intervention, illustrating the benefits of their application in mental health related settings.

With regards to the positive effects of yoga, the extent to which yoga practice induces higher levels of mindfulness remains obscure. Although the findings of the current study challenge a large body of research praising the greater experience of mindfulness with yoga practice, differences styles of yoga practice could limit the mindfulness experience. While mindfulness levels were highest amongst participants who practiced yoga most frequently, the non significant finding implies that yoga practice is not associated with superior mindfulness levels. The results of the current study provide guidelines for future research to identify the conflicting findings in this field, by comparing the mindfulness levels associated with different styles of yoga or by incorporating recent relevant contemporary studies in a Meta-analytic review.

### **Limitations**

In order to effectively interpret and infer the current results, one must recognise the limitations of this study. Four self report scales were employed to generate and measure the data of the research study. Therefore, the exclusive use of self reports may be criticized by other researchers as such measures are claimed to lack ecological validity. Often studies exploring psychological constructs such as mindfulness and psychological variables experimentally manipulate the investigated variable, to subsequently acquire interpersonal data. However, experimentally manipulating the tested variables would not be suitable in this study, as employing manipulation would alter the research design. Notwithstanding such contradictions, self report tests are a valid measure to generate data, regularly used in studies investigating non-observable phenomena and psychological constructs (Ellison et al., 2015). The easily accessible and anonymous nature of the online questionnaire eliminates extraneous variables such as the Hawthorne effect from impacting participant responses.

The primary limitation of the current study is the unequal sample size between the investigated groups of yoga participants, non yoga participants, students and non students. This inequality may have violated the normality assumption, consequently skewing the data distribution in the Independent Samples T Test. Furthermore, unequal sample sizes may have affected the homogeneity of variance assumption in ANOVA. Nonetheless, the results are reflective of the current sample that comprised of a far greater proportion of non yoga participants than yoga participants, thence a representative ratio of individuals who do and do not practice yoga across the given population.

Research critics could also argue that a gender bias was present throughout research data however gender based differences were not tested in the 3 hypotheses. The

significantly large proportion of females than males supports the findings of Holzinger (2012) in which women are allegedly less affected by mental health related stigma than males, thus explaining existing gender bias.

### **Future Recommendations**

With regards to the aforesaid implications and limitations of the current investigation, a number of important alterations could be made in future replications of the study.

Primarily, researchers should explore and compare the validity of the study by changing the research study to an experimental design, subsequently manipulating variables to explain causation of particular variables. Thence, an alternative sampling strategy could be adopted to recruit a relatively balanced number of participants for the groups in investigation. Secondly, future researchers should explore the potential confounding variables that may impact the relationship between yoga activity and psychological wellbeing. This recommendation is ensued as a result of the inconsistent findings of the current study with prevailing literature, which may be described by extraneous variables, for example different variations of yoga practice.

### **Conclusion**

An investigation of three hypotheses, examining the relationship between mindfulness, sociability and self control with psychological well being and yoga practice was conducted in this study. Although mindfulness and self control conceded as significant constructs in describing psychological wellbeing, the remaining two hypotheses were incongruent with comprehensive research endorsing the positive psychological benefits of yoga. Yoga practice and the subsequent period of time participants have practiced

yoga were not significantly associated with high levels of mindfulness. Therefore, the current study suggests an inadequacy of research in the area of yoga, particularly explaining the highly endorsed psychological and mindfulness related gains, which surpass the criticisms of this activity. Accordingly, a more comprehensive investigation of this study would adopt an experimental design to illustrate causality between reviewed variables. In effect, the current investigation could be used as a pilot study for a contemporary review of the alleged mindful and psychological benefits of yoga. Thus far, the thesis has addressed psychological constructs and activities that have recently been associated with positive mental health; however the results display contrary findings and highlight inefficacy of discussed variables in explaining psychological well being.



## References

- Abraham, C., Kelly, M. P., West, R., & Michie, S. (2009). The UK National Institute For Health and Clinical Excellence public health guidance on behaviour change: a brief introduction. *Psychology, health & medicine, 14*(1), 1-8
- Arber, S., & Ginn, J. (1991). *Gender and later life: A sociological analysis of resources and constraints*. London: Sage.
- Bakosh, L., Snow, R., Tobias, J., Houlihan, J., & Barbosa-Leiker, C. (2016). Maximizing Mindful Learning: Mindful Awareness Intervention Improves Elementary School Students' Quarterly Grades. *Mindfulness, 7*(1), 59. doi:10.1007/s12671-015-0387-6
- Barry, M., Van Lente, E., M., Molcho, M., Morgan, K., Watson, D., Harrington, J., & McGee, H. (2012). Measuring population mental health and social well-being. *International Journal Of Public Health, 57*(2), 421-430. doi:10.1007/s00038-011-0317-x
- Bhusan, L. (1994). Yoga and mental health. *Yoga Magazine January*
- Bränström, R., Duncan, L. G., & Moskowitz, J. T. (2011). The association between dispositional mindfulness, psychological well-being, and perceived health in a Swedish population-based sample. *British journal of health psychology, 16*(2), 300-316.
- Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal Of Personality And Social Psychology, 84*(4), 822-848. doi:10.1037/0022-3514.84.4.822

- Bruce, M. L., Seeman, T. E., Merrill, S. S., & Blazer, D. G. (1994). The Impact of Depressive Symptomatology on Physical Disability: MacArthur Studies of Successful Aging. *American Journal Of Public Health, 84*(11), 1796
- Büssing, A., Michalsen, A., Khalsa, S. B. S., Telles, S., & Sherman, K. J.(2012). Effects of yoga on mental and physical health: A Short Summary of Reviews. *Evidence-Based Complementary and Alternative Medicine : eCAM, 2012*, 165410. <http://doi.org/10.1155/2012/165410>
- Butterfield, N. (2016). Yoga and mental health. *Australian Nursing and Midwifery Journal, 23*(10), 43.
- Cannon, M., Coughlan, H., Clarke, M., Harley, M., & Kelleher, I. (2013). The Mental Health of Young People in Ireland: A report of the Psychiatric Epidemiology Research across the Lifespan (PERL) Group.
- Carmody, J., & Baer, R. A. (2008). Relationships between mindfulness practice and levels of mindfulness, medical and psychological symptoms and well-being in a mindfulness-based stress reduction program. *Journal of behavioral medicine, 31*(1), 23-33.
- Chak, K., & Leung, L. (2004). Shyness and Locus of Control as Predictors of Internet Addiction and Internet Use. *Cyberpsychology & Behavior, 7*(5), 559-570. doi:10.1089/1094931042403073
- Collins, P. Y., Patel, V., Joestl, S. S., March, D., Insel, T. R., & Daar, A. S. (2011). Grand challenges in global mental health. *Nature, 475*(7354), 27-30.
- Creswell, J. D., Taren, A. A., Lindsay, E. K., Greco, C. M., Gianaros, P. J., Fairgrieve, A., &

- Ferris, J. L. (2016). Alterations in resting-state functional connectivity link mindfulness meditation with reduced interleukin-6: a randomized controlled trial. *Biological psychiatry*, *80*(1), 53-61.
- Da Silva, T. L., Ravindran, L. N., & Ravindran, A. V. (2009). Yoga in the treatment of mood and anxiety disorders: A review. *Asian Journal of Psychiatry*, *2*(1), 6-16.
- Dijksterhuis, A. (2005). Why we are social animals: The high road to imitation as social glue. *Perspectives on imitation: From neuroscience to social science*, *2*, 207-220.
- Dooley, B., & Fitzgerald, A. (2013). Methodology on the My World Survey (MWS): a unique window into the world of adolescents in Ireland. *Early intervention in psychiatry*, *7*(1), 12-22.
- Ellison, N., Mason, O., & Scior, K. (2015). Public beliefs about and attitudes towards bipolar disorder: testing theory based models of stigma. *Journal Of Affective Disorders*, 175116-123. doi:10.1016/j.jad.2014.12.047
- Evans-Lacko, S., London, J., Japhet, S., Rüsçh, N., Flach, C., Corker, E., & Thornicroft, G. (2012). Mass social contact interventions and their effect on mental health related stigma and intended discrimination. *BMC Public Health*, *Vol 12, Iss 1, P 489* (2012), (1), 489. doi:10.1186/1471-2458-12-489
- Eysenck, S. B., & Eysenck, H. J. (1964). An improved short questionnaire for the measurement of extraversion and neuroticism. *Life Sciences*, 31103-1109. doi:10.1016/0024-3205(64)90125-0
- Gaiswinkler, L., & Unterrainer, H. F. (2016). The relationship between yoga involvement, mindfulness and psychological well-being. *Complementary*

*therapies in medicine*, 26, 123-127.

Gu, J., Strauss, C., Bond, R., & Cavanagh, K. (2016). Corrigendum to "How do Mindfulness- Based Cognitive Therapy and Mindfulness-Based Stress Reduction Improve Mental Health and Wellbeing? A Systematic Review and Meta-Analysis of Mediation Studies" [Clinical Psychology Review 37 (2015) 1-12]. *Clinical Psychology Review*, 49119. doi:10.1016/j.cpr.2016.09.011

Hayes, S. C., Villatte, M., Levin, M., & Hildebrandt, M. (2011). Open, aware, and active: Contextual approaches as an emerging trend in the behavioral and cognitive therapies. *Annual review of clinical psychology*, 7, 141-168.

Henderson, C., Evans-Lacko, S., & Thornicroft, G. (2013). Mental Illness Stigma, Help Seeking, and Public Health Programs. *American Journal of Public Health*, 103(5).

Herbert, J. D., & Forman, E. M. (2011). *Acceptance and mindfulness in cognitive behavior therapy: Understanding and applying the new therapies*. Hoboken, NJ, US: John Wiley & Sons Inc

Höfling, V., Moosbrugger, H., Schermelleh-Engel, K., & Heidenreich, T. (2011). Mindful Attention Awareness Scale—Short. *PsycTests*, doi:10.1037/t03771-000

Hotard, S. R., McFatter, R. M., McWhirter, R. M., & Stegall, M. E. (1989). Interactive effects of extraversion, neuroticism, and social relationships on subjective well-being. *Journal Of Personality And Social Psychology*, 57(2), 321-331.

Kelly, G., Crowley, H., & Hamilton, C. (2009). Rights, sexuality and relationships in Ireland: 'It'd be nice to be kind of trusted'. *British Journal of Learning Disabilities*, 37(4), 308-315.

- Kessler, R., Amminger, G., Aguilar-Gaxiola, S., Alonso, J., Lee, S., & Ustun, T. (n.d).  
Age of onset of mental disorders: a review of recent literature. *Current Opinion  
In Psychiatry*, 20(4), 359-364.
- Khalsa, S. S. (2013). Yoga for psychiatry and mental health: an ancient practice with  
modern relevance. *Indian Journal Of Psychiatry*, 55(Suppl 3), S334-S336.
- Khanna, S., & Greeson, J. (2013). A narrative review of yoga and mindfulness as  
complementary therapies for addiction. *Complementary Therapies In  
Medicine*, 21(3), 244.
- Kirkwood, G., Rampes, H., Tuffrey, V., Richardson, J., & Pilkington, K. (2005). Yoga  
for anxiety: a systematic review of the research evidence. *British Journal Of  
Sports Medicine*, 39(12), 884-891.
- Lefcourt, H. M. (1976). *Locus of Control: Current Trends in Theory and Research*.  
Hillsdale, NJ: Erlbaum.
- Lynch, F., Mills, C., Daly, I., & Fitzpatrick, C. (2006). Challenging times: prevalence of  
psychiatric disorders and suicidal behaviours in Irish adolescents. *Journal Of  
Adolescence*, 29(4), 555-573.
- Marcus, M., Yasamy, M. T., van Ommeren, M., Chisholm, D., & Saxena, S. (2012).  
Depression: A global public health concern. *WHO Department of Mental Health  
and Substance Abuse*, 1, 6-8.
- Mayer, M. J., & Furlong, M. J. (2010). How Safe Are Our Schools?. *Educational  
Researcher*, (1). 16.

- McPherson, A., & Martin, C. R. (2017). Are there gender differences in locus of control specific to alcohol dependence?. *Journal of clinical nursing*, 26(1-2), 258-265.
- Michaud, P., & Fombonne, E. (2005). Abc Of Adolescence: Common Mental Health Problems. *BMJ: British Medical Journal*, (7495). 835.
- Miller, J. W. (2013). The Role of Sociability Self-Concept in the Relationship between Exposure to and Concern about Aggression in Middle School. *RMLE Online: Research In Middle Level Education*, 36(7)
- O'Shea, E., Gannon, B., & Kennelly, B. (2008). Eliciting preferences for resource allocation in mental health care in Ireland. *Health Policy*, 88(2), 359-370.
- Nunberg, G., & Newman, E. (2011). The American heritage dictionary of the English language.
- Penman, S., Cohen, M., Stevens, P. and Jackson, S. 2012 Yoga in Australia: results of a national survey. *International Journal of Yoga*. 5: 92-101.
- Pilkington, K., Kirkwood, G., Rampes, H., & Richardson, J. (2005). Yoga for depression: the research evidence. *Journal of affective disorders*, 89(1), 13-24.
- Rehm, L. P. (1977). A self-control model of depression. *Behavior therapy*, 8(5), 787-804.
- Robinson, B. E., & Kelley, L. (1998). Adult children of workaholics: Self-concept, anxiety, depression, and locus of control. *American Journal of Family Therapy*, 26(3), 223-238.

- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs*, 80(1), 1-28
- . Russell, D. W. (1996). UCLA Loneliness Scale (Version 3): reliability, validity, and Factor structure. *Journal Of Personality Assessment*, 66(1), 20-40.
- Salmon, P., Lush, E., Jablonski, M., & Sephton, S. E. (2009). Yoga and mindfulness: Clinical aspects of an ancient mind/body practice. *Cognitive and Behavioral Practice*, 16(1), 59-72.
- Segal, Z. V., Teasdale, J. D., Williams, J. M., & Gemar, M. C. (2002). The mindfulness-based cognitive therapy adherence scale: Inter-rater reliability, adherence to protocol and treatment distinctiveness. *Clinical Psychology & Psychotherapy*, 9(2), 131-138.
- Seligman, M. E., & Csikszentmihalyi, M. (2000). Positive psychology. An introduction. *The American Psychologist*, 55(1), 5-14.
- Shaw, L. H., & Gant, L. M. (2002). In defense of the Internet: The relationship between Internet communication and depression, loneliness, self-esteem, and perceived social support. *Cyberpsychology & behavior*, 5(2), 157-171.
- Singh, A., & Misra, N. (2009). Loneliness, depression and sociability in old age. *Industrial Psychiatry Journal*, 18(1), 51–55. <http://doi.org/10.4103/0972-6748.57861>
- Singh, S. D. (2015). Loneliness, depression and sociability in old age. *The International Journal of Indian Psychology*, Volume 2, Issue 2, No. 2, 73.
- Singleton, M. (2007). Yoga, eugenics, and spiritual darwinism in the early twentieth

Century. *International journal of Hindu studies*, 11(2), 125-146.

Vancampfort, D., Vansteelandt, K., Scheewe, T., Probst, M., Knapen, J., De Herdt, A., & De Hert, M. (2012). Yoga in schizophrenia: a systematic review of randomised controlled trials. *Acta Psychiatrica Scandinavica*, 126(1), 12-20.

Watkins, E., & Teasdale, J. D. (2004). Adaptive and maladaptive self-focus in depression. *Journal of Affective Disorders*, 82(1), 1-8.

Werner, K. (1977). Yoga and the Rg Veda: an Interpretation of the Keśin Hymn (RV 10, 136). *Religious Studies*, 13(03), 289-302.

Wilkinson, R. G., & Marmot, M. (2003). *Social determinants of health: the solid facts*. World Health Organization.

Zuckerman, M. (2001). Sensation Seeking: Behavioral Expressions and Biosocial Bases. *International Encyclopedia Of Social & Behavioral Sciences*, 13905-13908. doi:10.1016/B0-08-043076-7/01772-1



## Appendices

### Appendix A

1. You are invited to take part in a research study investigating the effects of mindfulness, sociability and self control on mental health. This study will also examine whether engaging in yoga activities leads to higher levels of mindfulness. This investigation is part of my final year project which has been ethically approved by the Psychology Research Ethics Committee at NCI, conducted under the supervision of Dr. April Hargreaves. This brief questionnaire typically takes five minutes to complete and is made up of four, short sub tests investigating mindfulness, sociability, self control and mental health. While there are no great risks involved in partaking in this study, a debriefing is available for those who feel affected by the questions asked. Please note that you have the right to withdraw from the study at any time and all data provided will be kept confidential and anonymous, accessible only by the researcher. Should there be further concerns please email x14428188@student.ncirl.ie. Thank you for your time and please follow the instructions provided.

### Appendix B

#### 2. Participation Consent

By checking this box, I am giving my consent to participate in this study

Gender

Male

Female

Age

*(Short answer test)*

Nationality

*(Short answer test)*

How often do you practice yoga? (At home or in a class)

Often (weekly)

Occasionally (monthly/infrequently)

Never

How long have you been practicing yoga?

The last month

The last 6 months

For 1 year or more

### **Appendix C**

#### **Mindfulness Attention Awareness Scale – Short (MAAS Short)**

Ten-item rating scale; responses are made on a 6-point scale, ranging from 1 (almost always) to 6 (almost never).

Instructions: Please respond with the number that most accurately reflects your general awareness

Items:

I find it difficult to stay focused in the present

I am without much awareness of what is done

I do jobs or tasks automatically

I listen to someone while doing something else at the same time

I do things without paying attention

I find it easy to stay focused in the present

I am aware of what is done

I do jobs or tasks with awareness

I listen to someone without doing something else at the same time

I do things with while paying attention

### **Appendix D**

#### **Shyness and Sociability Scale (SSS)**

Fourteen item rating scale, responses are made on a 5-point scale ranging from 1 (almost always) to 5 (almost never).

Instruction: Please respond with the number that most accurately reflects your general sociability

I am somewhat socially awkward

I don't find it difficult to talk to strangers

I feel tense when I'm with people I don't know very well  
When in conversation, I worry about saying something dumb  
I feel nervous when I speak to someone in authority  
I am often uncomfortable at parties and other social functions  
I feel self conscious in social situations  
I have trouble looking someone right in the eye  
I am more shy with members of the opposite sex  
I like to be with people  
I welcome the opportunity to mix socially with people  
I prefer working with others rather than alone  
I find people more stimulating than anything else  
I would be unhappy if I was prevented from much social contact

## **Appendix E**

### **Mastery Scale-Modified**

Eight item rating scale, responses are made on a seven point scale ranging from 1 (almost always) to 7 (almost never).

Instruction: Please respond with the number that most accurately reflects your general self control

I have little control over things that happen to me.  
There is really no way I can solve the problems I have.  
I sometimes feel I am being pushed around in my life.  
There is little I can do to change the important things in my life.  
I often feel helpless in dealing with the problems of life.  
Other people determine most of what I can and cannot do.  
What happens in my life is beyond my control.  
There are many things that interfere with what I want to do.

## **Appendix F**

### **Psychology Wellbeing Scale**

Seven item rating scale, responses are made on a three point scale ranging from 1 (agree) to 3 (do not agree).

Instruction: Please respond with the number that most accurately reflects your general well being.

My life has meaning and purpose.

I feel confident and good about myself.

I gave up trying to improve my life a long time ago.

I like my living situation very much.

Other people determine most of what I can and cannot do.

When I really want to do something, I usually find a way to do it.

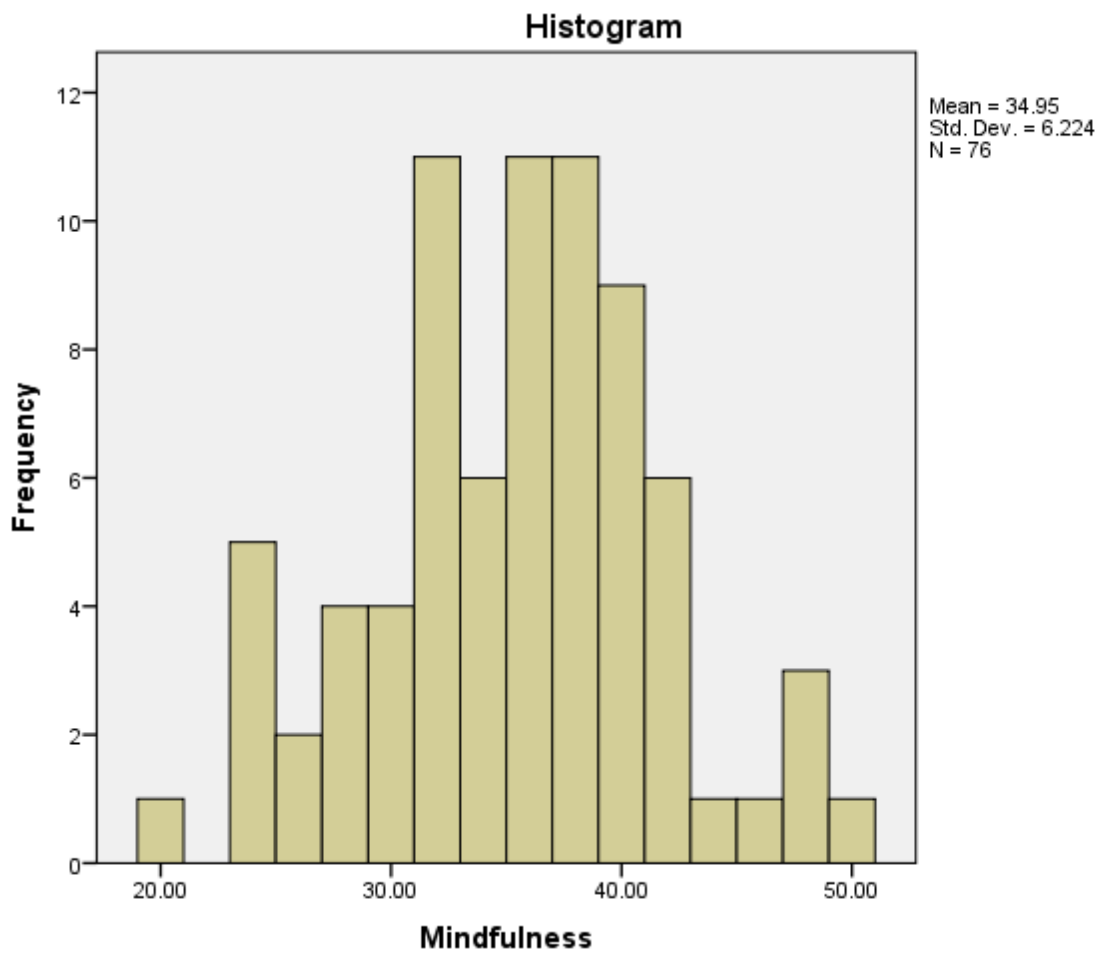
I have an easy time adjusting to change.

## **Appendix F**

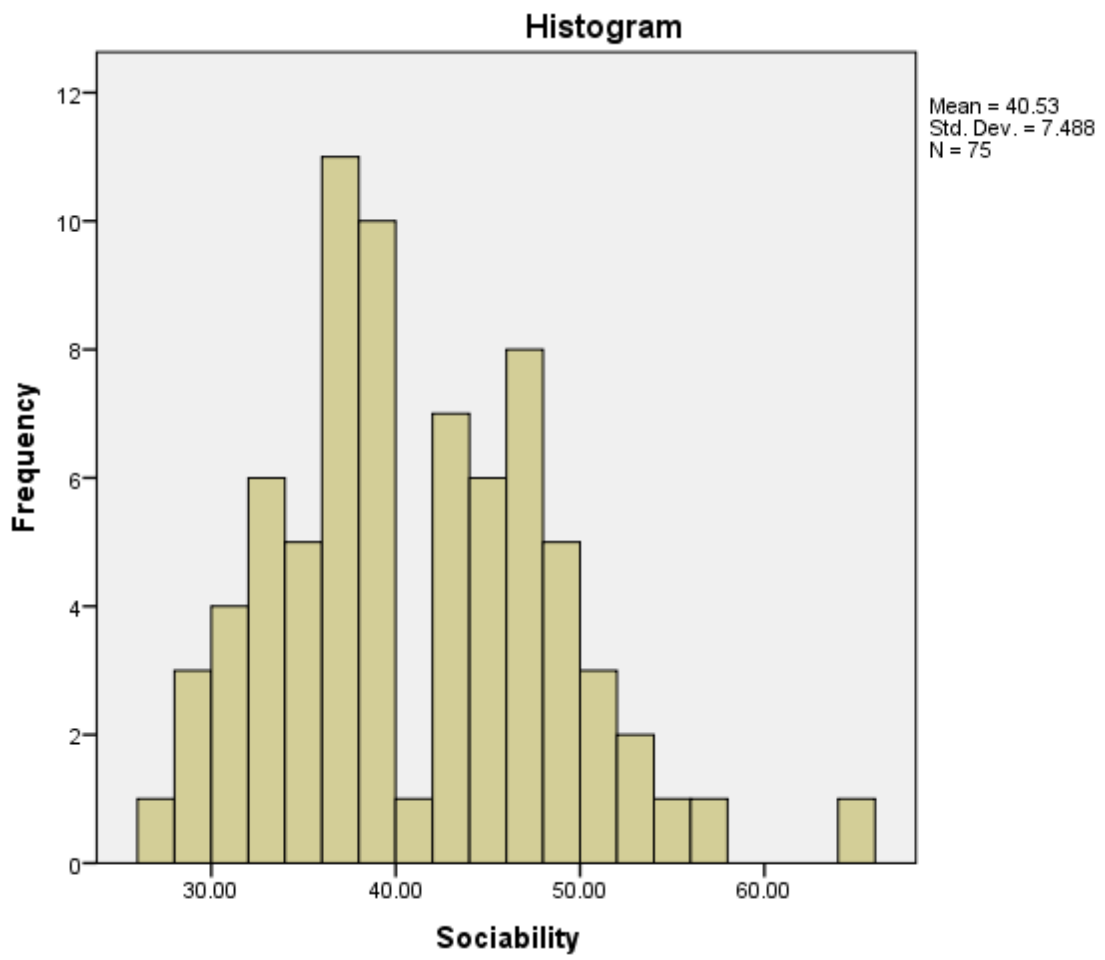
### **Histograms**

Histograms below to demonstrate the generally normal distributions of the scales

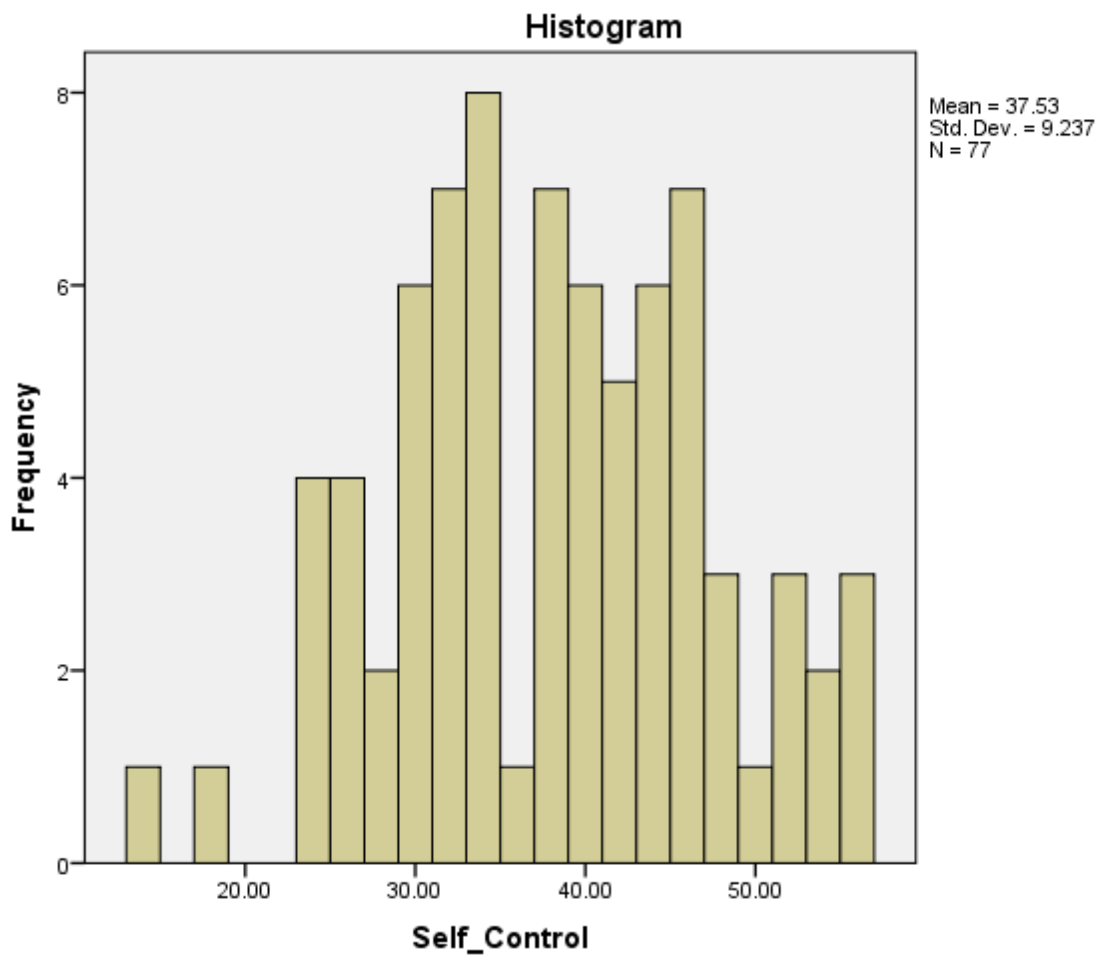
### ***MAAS***



SSS



*MS*



*PWB*

