Mental health literacy as a predictor of mental health outcomes in Irish college students

Bachelor of Arts (Hons) in Psychology

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Abstract

Mental health literacy is the recognition of, attitudes towards and knowledge of mental health difficulties. Often associated with help-seeking behaviours and wellbeing in adolescents and adults, this study instead examines mental health literacy levels as a predictor for positive mental health outcomes in a group of college students in Ireland. Data was collected from 75 Irish college students, who received their secondary education in Ireland. Demographics regarding age, gender, year and field of study were gathered in addition to perceived general wellbeing, levels of mental health literacy and overall levels of depression, anxiety and stress. Results of a three-step hierarchal multiple regression conducted on the variables of year of study, wellbeing and mental health literacy levels on the criterion variable of depression, anxiety and stress indicated that year of study had no statistical significance on depression, anxiety and stress outcomes. However, while year of study provided no statistical significance to the model, mental health literacy levels did tend towards statistical significance for depression, anxiety and stress, wellbeing on the other hand, accounted for 70% of the variance of depression, anxiety and stress outcomes. The results of this study suggest that while mental health literacy may be important, it is general wellbeing that is highly correlated predicts depression, anxiety and stress outcomes in college aged students in Ireland.

Keywords: mental health literacy, depression, anxiety, stress, mental health outcomes, adolescents, wellbeing, stigma, warwick-edinburgh, mental health literacy scale, intervention, DASS

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INTRODUCTION

The global impact of Mental health

A recent publication by the World Health Organisation (WHO) suggests that 450 million people worldwide are suffering from mental health issues, with depression effecting 1 in 12 people such that we see the impact of mental health illness, not only at an individual level but on business, social and economic levels also (WHO, 2019). In society today we are seeing an ever-growing demand on an individual's physical health, as well as their mental health. Mental health should be viewed on a spectrum whereby individuals experience varying levels of emotional, psychological, and social well-being. For most people stressful life events faced on a day-to-day basis can be mitigated through their ability to regulate emotions, engaging in healthy relationships and behaviours, as well through physical exercise and a healthy diet. However, for other individuals they may become an overwhelmed leading to significant mental health difficulties. Mental health is defined as in a disturbance in person's mental health that is not only influenced by individual attributes, but external factors such as social or cultural factors (WHO, 2019). The WHO suggests that there is "no health without mental health" (WHO, 2015, p.2) and with the two so intrinsically linked it stands to reason that as with physical illness, the longer mental health difficulties go unidentified, the more severe the symptoms can become, stressing the importance of early detection of mental health issues in order to ensure that the symptoms do not go untreated and become chronic (Marshall et al., 2005, Leahy et al., 2018).

Mental health literacy

The term health literacy has become the focus of a large body of empirical research in recent years (Jorm, 2019). It has highlighted the importance of understanding the demands on the individual and the complexities of maintaining good health (Sørensen et al., 2015). Mental

health literacy (MHL) is still a relatively new concept in the field of mental health and is an extension of that original health literacy concept (Speros, 2005), mental health literacy is defined as "knowledge and beliefs about mental disorders that aid their recognition, management, or prevention" (Jorm et al., 1997, p. 182). The key components to good mental health literacy include; (i) recognition of the early symptoms of mental difficulties in oneself and others (ii) knowledge and understanding of where to seek the right kind of help, as well the risk factors that can lead to mental health difficulties (iii) improving attitudes towards mental problems and about those who are suffering from mental conditions, all of which can be used to help improve long term outcomes and reduce the continued stigmatisation and discrimination associated with mental health sufferers (Jorm et al., 2000; Svensson and Hansson, 2016).

Research and mental health literacy

It has been proposed removing barriers such as stigmatisation and negative attitudes towards those suffering from mental health difficulties could be augmented through education to help improve empathy among the general public (WHO, 2017). A pioneer in the field of MHL is Anthony Jorm who, along with Betty Kitchener, developed the Mental Health First Aid (MHFA 2020) program in Australia. An approach that is internationally recognised and is now being taught in 23 countries worldwide, including Ireland (SJOG, 2020), MHFA training involves teaching the skills required to identify the early signs and symptoms of a mental health crisis, along with information on where and how help can be sought from a professional, thus offering vital 'first aid' knowledge to those who may otherwise avoid seeking help. With over 1 million people now trained in MHFA, a meta-analysis was carried out on the outcomes of the program showed marked improvements in the participants ability to recognise mental health symptoms and to provide early assistance in them seeking professional care (Hadlaczky et al., 2014; Bonabi et al., 2016). In summary, with over 800

publications in the field of mental health, Jorm's research into mental health literacy provides an extensive body of literature on the subject, with his findings suggesting that the earlier we can provide mental health knowledge, the higher the degree of exposures to the topic and so, the more effectively we can improve public opinions and reduce the stigmas so often attached to mental health illness (Jorm et al., 1997; Jorm, 2000; Kelly, Jorm and Wright, 2007; Reavley and Jorm, 2011; Jorm, 2012; Bonabi et al., 2016; Jorm, 2019).

The impact of gender has also been studied in MHL research and while there is no overarching consensus as to whether gender is a is a conclusive predictor for higher levels of recognition and ability to label of mental disorders, some studies have found that gender appears play a role in recognising certain aspects of mental health illness, such depressive symptomology (Burns and Rapee, 2006; Cotton et al., 2006; Skre et al., 2013). Further studies have suggested that gender and age may play a role in perceived general wellbeing and mental health outcomes rather than mental health literacy (Abad, Forns and Gómez, 2002; Moksnes and Espnes, 2012; Moksnes and Espnes, 2013).

Currently, there is no overlapping consensus amongst researchers as to whether gender is a predictor for higher levels of recognition and ability to label mental disorders. Some studies, which often employ a series of vignettes describing a situation where an individual is facing a mental health crisis ask participants to consider the stories and attempt to recognise and discuss possible diagnoses and treatments for the character. Georgakakou-Koutsonikou et al., 2019, have reported gender may play a role in recognising certain aspects of mental health illness while others again, suggest that gender and age may play a role in perceived general wellbeing and mental health outcomes (Abad, Forns and Gómez, 2002; Moksnes and Espnes, 2012; Moksnes and Espnes, 2013).

Mental health literacy from the Irish perspective

In the last decade there has been an increase in efforts to challenge current levels of mental health literacy and introduce interventions for its improvement. In the UK, the Service User Movement has set up conferences, talks and lectures to help and promote the rights of those who suffer from mental problems in an effort to de-stigmatise these issues (Wallcraft and Bryant, 2003).

In the Irish context, Ireland had the third highest of mental health illness in Europe, with an annual cost to the Irish economy of over € 8.2 billion (WHO, 2019). Psychologists report an overlap of symptoms that suggest a spectrum of mental health symptomology rather than a single inert diagnosis, implying that we are facing a paradigm shift in mental health requirements (Manderscheid et al., 2010; Coughlan, 2013; McGorry, Bates, and Birchwood, 2013; Mezzich, 2016; Kutcher, Wei and Coniglio, 2016). While efforts to improve mental health literacy levels are still in their infancy, there are some community based programs and campaigns aimed at improving MHL. Today, with more than 18% of Irish adolescence reporting having a mental illness/difficulty, there is an increasingly urgent need to improve mental health literacy in Ireland (Kelly, Jorm and Wright, 2007; Kitchener and Jorm, 2008; Illback and Bates, 2011; McGorry, Bates and Birchwood, 2013; Headstrong and UCD School of Psychology, 2012; (Healthy Ireland Survey - 2016, 2016) Mental Health - OECD, 2020). However, findings regarding MHL levels in Irish samples remain relatively low. Despite this, the literature available highlights that early exposure to mental health literacy may improve the mental health outcomes in individuals and so help them avoid what could be potentially years of frustration, loneliness and even sometimes isolation (Headey, Kelley, and Wearing, 1993; Bond and Bunce, 2003; Lally et al., 2013). Furthermore, low mental health literacy in adolescents have been shown to lead young people going undiagnosed with mental health conditions that impact their lives in a number of ways such as an inability to achieve their goals, job struggles, as well of social and private frustration (Bond et al., 2003; Doyle,

Cafferkey and Fullam, 2012; Becker and Kleinman, 2013; Leavey, 2014; Sørensen et al., 2015; Kutcher, Wei and Coniglio, 2016). Other research has highlighted issues such as high public stigma combined with low emotional disclosure, self-stigma and reduced help-seeking in young people concerning mental health problems (Burns et al., 2004; Burns and Rapee, 2006; Eisenberg et al., 2009; Martin, 2010; Storrie, Ahern and Tuckett, 2010; Lally et al., 2013; McNicholas et al., 2015). Finally, the department of Psychology in Trinity College Dublin investigated help giving behaviours among adolescents using five vignettes that described a young person in the midst mental health crisis. Results from the study were in line with previous findings and suggested that a significant number of the participants, while having feelings of empathy for the character, presented with low mental health literacy levels and were unable to successfully identify a number of the symptoms of depression and anxiety (Burns, Swords and Nixon, 2015; Dooley, Fitzgerald and Mac Giollabhui, 2015).

Research aims and hypothesis

Past research has produced tangible evidence on the influence of good mental health literacy on mental health outcomes in young adults and has provided further additional evidence that the early augmenting mental health literacy is a key factor in improving both, short and long term mental health outcomes of young adults (O'Reilly, 2015; Molloy, 2019). Additionally, research into levels of mental health in adolescents focused on the relationships (or potential predictive abilities) between perceived mental health wellbeing and help-seeking behaviours on mental health status and year of study, rather than the relationship between levels of mental health literacy and a mental health outcomes (Reavley and Jorm, 2011). Yet despite the growing attention on the importance of good mental health literacy, research on its impact on an individual's mental health outcomes, particularly from an Irish perspective, remains lacking. Good mental health is well documented and researched field, mental health literacy

on the other hand is not understood sufficiently and so the question should be asked, does mental health literacy have an influence on mental health outcomes.

In order to address this gap in the area of MHL research, this study aim's to the questions; (1) does a person's level of mental health literacy predict mental health outcomes? (2) can general wellbeing predict mental health literacy and mental health outcomes and finally, (3) do age, gender and field of study impact wellbeing and mental health literacy levels. These research questions will be investigated using correlational, inferential and hierarchical multiple regression analysis.

H_1: Higher mental health literacy will be correlated with higher mental health status

H_2: That wellbeing will be a predictor of mental health literacy and mental health outcomes.

H_3: There will be no statistically significant difference between the age, gender and field of study on wellbeing and mental health literacy levels.

Methodological approach to Mental Health Literacy

With regard to methodological approaches to MHL, in recent years researchers have moved away from these more qualitative approaches to a more quantitative approach in MHL. The mental Health Literacy Scale (O'Connor and Casey, 2015), was developed in an attempt to produce a psychometrically robust measure that could access all the attributes of MHL e.g.: recognition, prevention and coping, and thus provide insight into the relevant attributes identified in previous research (Harlow, Mulaik and Steiger, 1997; O'Connor, Case and Clough, 2014; O'Connor and Casey, 2015; Wei et al., 2017).

METHODS

Participants

Data was collected from a total of 87 self-selecting participants, who received their secondary school education in Ireland and currently engaged in further education in universities around Ireland. In order to understand any relationship between levels of mental health literacy and an individuals current mental health status, all participants included in the study needed to have received their secondary education in Ireland, thus we could more likely infer similar levels of exposure similar and mental health resources during their school years.

Following a cleansing of the data a total of 12 participants were identified as ineligible for the study for the following reasons; 'none consent' to participate in the study (n = 6), participants who received their secondary education outside Ireland (n = 4) and finally those who did not follow the instructions for the survey correctly and thus their data could not be considered valid for the purposes of the study. (n = 2). There was no missing data identified and so the final sample size for this study was comprised of 75 (Female: n = 43; Males: n = 30; Non-binary: n = 2) participants. Using G*Power analysis to calculate sample size, the suggested minimum of 39 participants, the sample size was deemed more than sufficient for the study (Faul et al., 2007; Faul et al., 2009).

Measures/Materials

Mental Health Literacy Scale (MHLS) (O'Connor and Casey, 2015). The MHLS is a psychometric and methodologically robust, univariate scale containing 35 items designed to gage a participants mental health literacy levels under the subscales of; mental health recognition, understanding of help seeking behaviours (help available), risks & causes of mental health disorders and illness. Data is gathered from questions such as *how willing would you be to employ someone if you knew they had a mental illness?* using 4 and 5-point Likert scales before the total mental health literacy score resulting from the summing all

items. Answers on the scale are recorded with a score of 0 - 4 or 0 - 5 excepting the answers to questions 10, 12, 15 and 20 through to 28, to which reverse scoring was applied. The MHLS scores range from 30 – 160. Additionally, following consultation with the scales creators, the questions that made specific reference to Australia were amended to read Ireland, while wording changings were made to questions 5 and 8 in line with the latest version of the DSM-V (personal communication, November 01, 2019). Reviews into the MHLS have shown it to have good validity and reliability, as well as good test-retest reliability results with previous studies indicating a Cronbach's α of .79 to .89 and over (O'Connor and Casey, 2015; Gorczynski, et al, 2017). In line with previous research, the current study identified a Cronbach's α of .84 (Appendix L).

The Warwick-Edinburgh Wellbeing Scale (WEMWSB) (Taggart, Stewart-Brown, and Parkinson, 2007). The WEMWSB is a psychometrically robust scale, positively worded scale containing 14-items designed to identify participants subjective wellbeing (e.g.: optimism and confidence) as well as psychological functioning such as clarity of thought and positive relationships (Lloyd and Devine, 2016). Items on the scale scored from 1 to 5, with final scoring providing a total score between 14 and 70. The WEMWSB scores range from 14 - 70. Research into the WEMWSB have shown good face and internal validity and test-retest validity, with previous studies having identified a Cronbach's α score from 0.89 to 0.91 in general population samples (Tennant et al., 2007; Stewart-Brown and Janmohamed, 2008; Clarke et al., 2011; Stewart-Brown, 2013). The current study identified a Cronbach's α of .94. (Appendix L)

The Depression, Anxiety and Stress Scale (DASS21) (Lovibond and Lovibond, 1995). A reduced version of the original DASS42 scale, this 21-item self-reporting questionnaire that measures the severity of a range of symptoms common to the subscales of stress, depression and anxiety. As per scoring instruction from the matrix designers, these subscales are moderately inter-correlated suggesting they share common causes such as vulnerability

and emotional states (Henry & Crawford, 2005). Taken as an overall score (total scores taken rather than the 3 factors of depression, anxiety and stress individually – before being summed up for a total and averaged by 3), the combined scores provide a composite measure indicative of negative emotional symptoms in an individual. The total DASS21 scores range from 0 - 120. This scale has shown to have good internal validity, along with a Cronbach α of 0.81, 0.89 and 0.78 for stress, depression and anxiety in that order (Osman et al., 2012; Tran, Tran and Fisher, 2013) while results for this study showed stress, depression and anxiety results as .94, .80 and .86 respectively, total Cronbach's α for the scale, .94 (Appendix L)

A note on participants undergoing non-medical mental health treatment and the study scales. There is a low likelihood that a person will experience distress due to participation in this study or the survey content, however in the interest of avoiding any possible harm to potential participants, all interested parties will be asked if they are currently to the care of a mental health professional and if so, be advised to speak to their mental health consultant ahead of participation in the study (Appendix C).

Design

The study was conducted as a quantitative, within-subject, correlational design, comprised of a population of self-selecting participants. The research data collected via an online survey, included general demographics such as gender, age, field and area of study and confirmation that they had received their secondary education in the Irish school and year of study as well as the additional variables of mental health literacy levels, perceived well-being (predictor variables) and depression, stress and anxiety (criterion variable) in college aged university students in Ireland.

Procedures

Pilot study. Following ethical approval from the National College of Ireland ethics board and ahead of the launch of the main study, a draft questionnaire was piloted on five eligible people to ensure the study was appropriate in content and in length. At the end of the questionnaire, the pilot participants were asked five questions regarding, their understanding of the information sheet and consent pages, the survey instructions, the ease of understanding the questions and any improvements they felt might make the survey more efficient (Appendix K). No additional changes were required following the pilot study.

Main study procedures. Administered via an online survey created using google forms©, the 70-item survey was launched. Prior to completing the main section of the survey which contained the three scales covering mental health literacy scale (MHLS) (Appendix E), mental well-being (WEMWBS) (Appendix F), and depression, anxiety, and stress (DASS21), (Appendix G), general demographic information regarding participants age, gender, year and area of study as well as confirmation of having been through the Irish secondary education system were requested from each participant for the purposes of analysis (Appendix D). All participants required to read and understand the information / instruction sheet prior to beginning the survey which detailed the following: (1) the rationale behind the study, (2) what was required of them, (3) their rights to withdraw and how to withdraw, (4) a confirmation that all data collected will be reported in a *combined form* of all participants data and no one individual would be identifiable from the data set (GDPR, 2019), (5) contact numbers for the researchers and of mental health services in Ireland, before requesting they provide there full informed consent to participate in the study (Appendix A; Appendix B; Appendix C). Consent could not be given until the individual indicated that they had read each section of the electronic consent form. If the participant did not consent, they were thanked for their interest and their involvement in the study ended.

Finally following completion of the survey a final, post-survey debriefing page reminding participants of the study aims, their rights as a participant, relevance of the study, their rights to withdraw and who to contact with additional queries regarding any aspect of the study was provided before thanking them for their participation (Appendix H). All results were saved automatically to the researchers Google Forms account at which point they were saved to a CSV file on an external hard drive in order to ensure the data was completely secure.

Recruitment procedures

To ensure compliance with PSI, APA, NCI and BEP ethical guidelines with human research participants, due consideration was given to minimisation of risk of harm, informed consent, protection of the individuals anonymity and confidentiality, as well as avoidance of deception and providing details of rights to withdraw from the study (BPS 2017; NCI , 2017; APA, 2019; PSI, 2019). Immediately following ethical approval, recruitment posters providing details on the purpose of the study and calling for Irish college students over the age of 18 years to participate as well as linked and QR codes that linked directly to the survey, were placed on the social media outlets Facebook, Twitter, Reddit and Instagram (Appendix J). The link was made available from October 31st 2019 until January 16th 2020 after which the survery was closed and no further results were accepted. Participation was completely voluntary and all participant identities kept anonymous.To ensure full and even exposure, and only where offical approval was given, further posters were distributed on university campus' as well as youth centres and public notice boards to maximise potential response rates (Appendix I). All participation in this study was on a voluntary basis.

Data analysis

All data collected from for this research was interpreted using IBM® SPSS 26 software, a computer software used to facilitate comprehensive statistical analysis such as

required by the study. The data gathered from the study surveys was recoded accordance with the guidelines provided the scale creators. In the case of the DASS21 scores, as the data on depression, stress, and anxiety collected was used provide an overall mental health status score for each participant. To facilitate this figure, the data from each of the three sub-scales (e.g.: depression, anxiety and stress) was summed for an overall total before being divided by three, as per the scales instructions (DASS FAQ, 2018). Internal consistency for all three psychometric scales will be confirmed using Cronbach's alpha calculations (Appendix L)

Two separate Pearson's product-moment correlations were conducted as a part of the data analysis. The first was conducted to examine the strength of the relationships between age and well-being (WEMWBS) and a further correlation was run between age and Mental health literacy (MHL).

In order to ensure unintentional participant bias, an Independent Samples T-Test was conducted to ensure no statistically significance difference between those students who are studying psychology and those who were studying in other fields. Two further Independent Samples T-Tests was conducted to compare means scores for wellbeing (WEMWBS) between gender and mental health literacy (MHL) and gender.

Finally, all data will be analysed using a three step hierarchical regression analysis where the predictor variables will be; participants current year of study (taken as an indication of increased exposure by year to mental health literature e.g.: workshops, showcases, mental health services etc that could be considered a typical part of the college experience), as well as the mean scores for a perceived wellbeing scale, a mental health literacy (MHL) and the criterion variable of mental health status. (Block 1: Year of Study; Block 2: Total wellbeing; Block 3: Total MHL score)

RESULTS

Descriptive statistics

The sample population consisted of 75 non-clinical participants, N = 43 females (57%) and N = 30 males (40%), with additional two participants identifying as non-binary (3%) (figure 1). Demographical data for the sample were generated using descriptive statistics from non-clinical participants (e.g.: mean, SD, max and min), with participants' levels of mental health literacy and wellbeing being explored through descriptive statistics (e.g.: frequency count and percentage etc.). All participants were aged between the ages of 18 – 60 years, with the average age of M = 23.53 (N = 75, SD = 7.29) and the majority of participants were under the age of 31 years, N = 63 (84%) and the remaining participants, N = 12 (16%) being 31 years or older. 27% participants in their first year of college (N = 20), 24% in their second (N = 24), 34% in their third year of college (N = 26) and 15% in their fourth year of college (N = 11) (Appendix L). Furthermore the field of study was included in the primary data-gathering stage of the survey A review of the data identified four overarching fields of study; the Sciences which accounted for N = 45 of the study field type or 60% of the sample, followed by Business, Education and Communications which accounted for N = 16, N = 9, N = 5 respectively (21%, 12%, 7%). For additional descriptive analysis of the sample can be seen in Table 1 and Table 2 below (also see Appendix L).

Table 1

Summary of Descriptive statistics of all continuous variables, i.e. Mean, Median, Standard Deviation (SD), Min and Max.

	N	Mean	SD	Min	Max
Gender					
Female	43				
Male	30				
Non-Binary	2				
Total	**75**	**.45**	**.55**	**.00**	**2.00**

Age	23.52	7.29	18.00	60.00
Year of study	2.37	1.04	1.00	4.00

Note: Participants N = 75

Table 2

Means and Standard Deviations for Gender, Age and Field of study.

	Mean	SD
1. Gender	.45	.55
2. Age	23.53	7.29
3. Psychology or non-psychology students	3.61	.49

Note. Correlation significant on: ** $p < .001$; * $p < .05$ level.

Assumption testing for Pearson's product-moment correlation for age and wellbeing confirmed the two variables were scaled and that there is a linear relationship between them. Preliminary analyses was conducted to ensure no violation of assumptions of normality and linearity were present. Although age was not found to be correlated to wellbeing, a single outlier was identified for age but as it is still statistically valid, it has been accepted. Additionally a violation on the assumption homoscedasticity is acknowledged (see figure x) and should be considered when reviewing the final results. The correlations amongst the predictor variables (demographics of age, and mental health literacy) were examined and any correlations shown as weak, while the predictor variable of wellbeing was strongly negatively correlated at $r = -.84$, and thus multicollinearity must be acknowledged and considered in the reviewing the final study output (See table x) (Tabachnick & Fidell, 2013; Yong and Pearse, 2013). Similarly, the assumptions for the Pearson's product-moment correlation for age and mental health literacy and a visual inspection of the out confirmed produced the same results with no correlation between age and the predictor variable of mental health literacy.

All test assumptions for the Independent samples T-Test for confirm that gender could not be interpreted as a confounding factor on the variable of wellbeing, as well as for gender and the variable of mental health literacy were met. With all observations being independent of one another with a similar standard deviation for each group, variables is showed as normally distributed with no outliers identified. Homogeneity of variance was tested for and met. Additionally, the criterion variable of depression, anxiety and stress displayed normative skewness or kurtosis results.

Inferential statistics

Independent-samples t-test results

An independent-samples t-test was conducted to compare means scores for psychology / non-Psychology students and mental health literacy levels (MHLS). There was no significant difference in scores, with Psychology student (M = 130.76, SD = 12.85) scoring similarly to males (M = 126.87, SD = 11.18 t(73) 1.38, p = .17, two-tailed. The magnitude of the differences in the means (mean difference = 3.89, 95% CI: -1.71to 9.49) was small (Cohen's d = .3). These results suggest that the participants area of study (psychology versus non psychology) is unlikely to be a mediating variable and therefore is not required within the hierarchical regression model.

Another independent-samples t-test was conducted, this time to compare means scores for wellbeing (WEMWBS) between gender. There was no significant difference in scores, with females (M = 41.67, SD = 11.40) scoring similarly to males (M = 44.00, SD = 10.16 t(71) -.90, p =.37, two-tailed. The magnitude of the differences in the means (mean difference = -2.33, 95% CI: -7.50 to 2.85) was small (Cohen's d = .2).

After re-coding the nominal variable of gender for two levels (0 = female and 1 = male) an independent-samples t-test was conducted to compare means scores for mental health literacy (MHLS) between gender. There was no significant difference in scores, with females (M =

129.79, *SD* = 11.71) scoring similarly to males (*M* = 127.37, *SD* = 11.98 *t*(71) = .86, *p* =.39, two-tailed. The magnitude of the differences in the means (mean difference = 8.03, 95% CI: -3.18 to 8.03) was small (Cohen's *d* = .2). These results confirm gender is unlikely to be a mediating variable and therefore does not need to be included in the hierarchical regression model.

Correlation results

In order to ensure that age would not be a confounding variable in the hierarchical multiple regression model, a two-tailed Pearson product-moment correlation was run to examine the relationship between age and well-being (WEMWBS) and age and Mental health literacy (MHL). Results showed a small positive, non-significant correlation between the two variables of age and Wellbeing, $r = 0.11$, $p = .07$, N = 75 and r = 0.21, p = .34, N = 75, thus showing a small positive, non-significant correlation between age and the two variables respectively.

Hierarchical Multiple Regression

Assumption testing for Pearson's product-moment correlation for age and wellbeing confirmed the two variables were scaled and that there is a linear relationship between them. Preliminary analyses as conducted to ensure no violation of assumptions of normality and linearity were present. A single outlier was product-moment correlation identified for age but as it is still statistically valid it has been accepted. A violation on the assumption homoscedasticity is acknowledged (Appendix M). The correlations amongst the predictor variables (demographics of age, Wellbeing and mental health literacy) were examined with any correlations shown as weak indicating that multicollinearity was unlikely to have been violated (Appendix M) (see Tabachnick & Fidell, 2013; Yong and Pearse, 2013). Similarly the assumptions for the Pearson's product-moment correlation for age and mental health literacy produced the same results.

All test assumptions for the Independent samples T-Test were met for both gender and wellbeing, as well as for gender and mental health literacy. With all observations being independent of one another, variables is showed as normally distributed with no outliers identified. Homogeneity of variance was tested for and met.

A hierarchical multiple regression was performed to examine the variance to which an individual's mental health literacy levels predict mental health status and furthermore to identify what the effect of between general wellbeing on mental health literacy and mental health outcomes. Preliminary analysis was conducted to ensure that there was no violation of the assumptions of normality, linearity, and homoscedasticity, no extreme univariate outliers identified during the data screening. A review of the residual and scatter plots suggests that the assumptions of normality, linearity and homoscedasticity were all satisfied (Pallant, 2013) (Figure 1 and 2; Appendix M). Multicollinearity results were all within acceptable limits, with a tolerance of less than 0.20 or 0.10 and VIF of 5 or 10, thus the assumption of multicollinearity was deemed to have been met (Coakes and Steed, 2009; Tabachnick & Fidell, 2003).

Although it could be considered on the small size, the sample size of 75 was deemed adequate based on the inclusion of the three predictor variables (Tabachnick & Fidell, 2003; Faul et al., 2009).

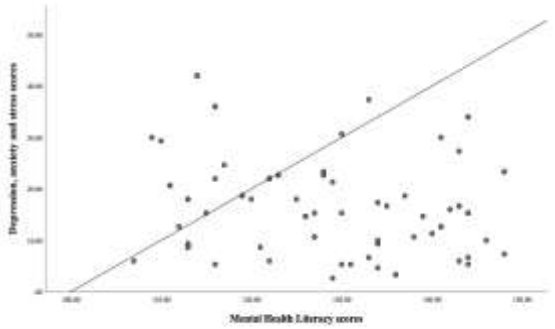

Figure 1. P-P Plot indicating a standardised normal distribution for mental health literacy scores

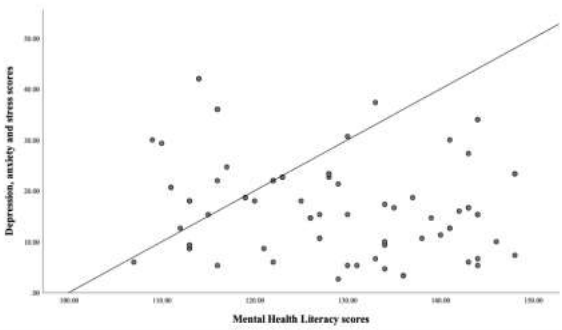

Figure 2. P-P Plot indicating a standardised normal distribution for total wellbeing scores

The three stage hierarchical multiple regression was conducted with the criterion variable of depression, anxiety and stress. In the first step of the regression, a single predictor variable of year of study was entered. This model showed no statistically significant results $F(1, 73) = .247$; $p > .001$ and explained 0% of variance in depression, anxiety and stress scores.

In step two, the introduction of wellbeing predictor variable explained a 70% variance in depression, anxiety and stress scores, after controlling for year of study; meaning that 70% of the variance in the criterion variable is explained by the predictor variables of year of study and wellbeing (R^2 Change = .70; $F (2, 72) = 85.37$; $p < .001$), a change that was statistically significant. Wellbeing is the strongest predictor ($\beta = -.84$, $p = .001$) followed by Year of study ($\beta = -.06$, $p = .41$).

Finally, with the inclusion of mental health literacy levels in step three, a strong positive correlation between the variables in the third model(r - .84) while explaining 71% of total variance of depression, anxiety and stress scores (R^2 Change = .71; $F (3, 71) = 8.32$; $p < .001$), with mental health literacy explaining an additional .003 of variance in depression, anxiety and stress, after controlling for year of study and wellbeing (see table x for full model results). Block 2 showed as .00 indicating a significant value for model two which is confirmed in the Anova table with shows a statistically significant P value of <.05. In this step, Wellbeing continues to be the strongest predictor ($\beta = -.86$, $p = .001$) followed by MHL which is tending towards significance ($\beta = -.06$, $p = .43$) and Year of Study ($\beta = -.05$, $p = .46$) (see tables 3 and 4 below).

Table 3

Correlations Between All Continuous Variables

Variables	1	2	3	4
1. Dass	1			
2. Year of study	-.06	1		
3. Wellbeing	-.84*	.13	1	
4. MHL	-.17	.13	.26	1

Note. Statistical significance: *p < .00. wellbeing = warwick-edinburgh mental wellbeing scales; MHL = mental health literacy scale; DASS =depression, anxiety and stress scale

Table 4

Summary of Hierarchical Regression Analysis for Total Scores for Depression, Anxiety and Stress (DASS21)

								CI 95% (B)	
	R	R^2	ΔR^2	*B*	*SE*	*β*	*t*	*Lower*	*Upper*
Step 1	.06	.00	.00		2.81		6.56	12.81	24.01
Year of Study				-.54	1.09	-.06	-.50	-2.70	1.62
Step 2	.84	.70*	.70		2.76		17.47	42.70	54.71
Year of Study				.49	.60	.05	.82	-.70	1.69
Wellbeing					.06	-.84	-13.03	-.87	-.64
Step 3	.84	.71	.00		6.67		6.41	29.86	56.83
Year of Study				.45	.61	.05	.74	-.76	1.66
Wellbeing				-.77	.06	-.86	-12.77	-.89	-.65
MHL				.04	.05	.05	.79	-.07	.15

Note. R^2 = R-squared; ΔR^2 = R^2 change; B = unstandardized beta value; SE = Standard errors of B; β = standardized beta value; CI 95% (B) = 95% confidence interval for B; N = 75; Statistical significance: *p < .05; **p < .01. Wellbeing = Warwick-Edinburgh Mental Wellbeing Scales; MHL =mental health literacy scale; DASS =Depression, Anxiety and Stress scale

DISCUSSION

This study looked at the potential predictive strength of mental health literacy levels (MHL) on participants mental health outcomes. While considered a key concept in the development of good mental health outcomes by psychologists (Lynch et al., 2006), previous studies into MHL have focused in reducing stigma and general wellbeing rather than specifically targeting MHL levels. As stated in the introduction this paper looked to bridge this gap by providing answers to the following questions using a sample of college students in Ireland; 1. Do higher mental health literacy levels act as a predictor on an individual's mental health outcomes and 2. Does general wellbeing have an effect on the predictive potential of mental health literacy on mental health outcomes and finally, 3. Do age, gender, field and year of study have an impact on wellbeing and mental health literacy.

Based on previous studies in MHL, a quantitative approach was employed for this study using psychometric assessments to measure participants psychological attitudes and perceptions of wellbeing, mental health literacy, and depression, anxiety and stress (mental health outcomes) were measured using the Warwick-Edinburgh Mental Wellbeing scale, Mental Health Literacy Scale and DASS21 respectively. Participants consisted of self-selecting, Irish college students, with a mean age of 23.53 (N = 75, Female = 57%, Male = 40%, Non-Binary = 3%), All participants were in their first (N = 20), second (N = 24), third (N = 26) or fourth year (N = 11) of college.

Findings from the study

The variables that were expected to predict mental health outcomes with particular focus on mental health literacy, included year of study and general wellbeing. Following a hierarchical regression analysis was employed to investigate hypothesis 1 and 2, the results were as follows. Along with the confounding variable of year of study, both hypothesis 1, which posited that that higher mental health literacy will be a predictor of better mental

health outcomes and hypothesis 2, that hypothesised that wellbeing will be a predictor of mental health literacy and mental health outcomes, were analysed using hierarchical regression analysis. It was expected that the confounding variable of year of study, wellbeing and mental health literacy would produce a significant predictor model for mental health outcomes. Following step 1 of the hierarchical regression containing the variable year of study the results produced did fall in line with previous studies and provided no statistically significant results (Ridner, 2016). Step 2 of the regression included the additional variable of wellbeing which was measured using the DASS21 scale. The impact of wellbeing, somewhat unsurprisingly, predicted 70% of variance of mental health outcomes, not only explaining a significant effect but showing a high F value with $P < .001$.

In step 3, it was expected that once the model had controlled for wellbeing, mental health literacy would also be a large predictor of mental health outcomes. The model shows a 71% variance for depression, anxiety and stress however the results suggested in individual variance of only .1% counter to what was expected. There for this study has failed to find significant results for hypothesis 1. Based on the negative finding produced from the data collected, mental health literacy cannot be said to predict mental health outcomes and therefore the null hypothesis for hypothesis 1 must be accepted, while it is rejected for hypothesis 2.

Three Independent samples t-tests and two Pearson's product-moment correlations analysis were conducted to provide empirical support for hypothesis 3, which posited that the demographics of age, gender and field of study would not have a significant impact on mental health literacy levels. As expected for hypothesis 3 the demographics of age, gender and field of study were not statistically correlated with wellbeing and mental health literacy levels and so the null hypothesis for hypothesis 3 is rejected.

Implications for the study

Although not all the findings from this study were in line with expected outcomes, the results from this study were clear; that while mental health literacy can be said to have a marginal correlation on total depression, anxiety and stress scores, it is general wellbeing that plays the significant role on mental health outcomes. Analysis indicated a negative relationship between MHL and mental health outcomes, indicated that the higher the levels of MHL, the lower the depression, anxiety and stress levels. Given however, the limited relationship between MHL and mental health outcomes, and the effect noted was no longer significant once wellbeing is included in the regression model, the author must accept the null hypothesis of this study for hypothesis 1.

Strengths and Limitations

It should be noted that the target sample size of this study (N = 75), could be considered a small, moderate sample size. This may influence the studies strength in observing the hypothesised associations or correlations for the study, however it could be said that the diversity of the sample itself may reduce the impact of the smaller sample size. Future studies may benefit from a larger sample from the non-clinical population to enhance findings on the subject of MHL.

As noted in previous studies, given the prevalence in previous studies reporting results indicating that wellbeing was an important predictive factor in mental health outcomes in previous studies, it would have been remiss of this author to not include it as a part of the hierarchical regression. The question should be asked as to whether the Warwick-Edinburgh mental wellbeing scale and the mental health literacy scale measure overlapping constructs. Should it be the case that wellbeing and mental health literacy scales are measuring similar constructs, future studies may need to consider controlling for wellbeing before looking at mental health literacy levels. Thus the author recommends that future studies should target

general wellbeing in conjunction with mental health literacy alone, when researching depression, anxiety and stress outcomes.

Future studies

Based on the results of this study, further investigations into the relevance of mental health literacy might gain more insight by focusing less on mental health literacy as a single factor but rather one to be included in a combination of factors to provide data on mental health outcomes. The results of this study have indicated that while mental health literacy instruction is important, mental health literacy may be related to wellbeing but might need to be investigated from a more generalised viewpoint. Although the findings in this study would be considered non-significant one must still note the implications of mental health literacy on depression, stress and anxiety.

Finally, in an effort to provide supportive data for the introduction of mental health literacy programs in Ireland, future studies may wish to consider randomised control trials as well as other research methods, where the mental health literacy variable can be examined and re-examined following the introduction of a suitable intervention. For example, an experimental design where mental health literacy could be examined at the initial stage, then re-examined post intervention to identify any changes to literacy levels. Another approach might involve participants who have been identified as having low perceived wellbeing following initial testing, and then measuring their mental health literacy levels to see if there is a significant difference.

CONCLUSION

Studies highlight the importance of mental health outcomes for college aged students. Targeting mental health literacy in schools may prove to bridge the gap between mental health illness and public understanding of those illnesses (Dooley and Fitzgerald, 2012). Improvements to mental health literacy may serve not only to mediate for the more chronic / severe mental health disorders and conditions such as bi-polar disorder, clinical depression and suicidal ideation, but on early identification of the more normalised issues such as puberty, peer pressure, sexual confusion, acute anxiety etc. Early intervention may impact both short- and long- term mental health outcomes so that when exposed to the additional issues that college aged students face, individuals could be more prepared to deal with these pressures (Malla et al., 2016; Power et al., 2016).

Sexual and reproductive health classes are an accepted part of the standard Irish educational curriculum, yet mental health literacy classes that would provide young people with a grounding of mental health literacy is currently not available (Dooley and Fitzgerald, 2012; Molloy, 2019). It is critical that we identify the best practice for delivering mental health literacy in schools which would provide young people with much needed personal resources, including ability to identify peers in mental distress, resilience and increased capacity for adaptation, when faced with unfamiliar situations or change, and coping strategies in the face of adversity.

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APPENDIX

Appendix A

Information sheet

Thank you for your interest in my research study. Please read the information provided below to understand the reason for conducting this study and what would be required of you if you wish to participate. Reading this sheet does not commit you to taking part in this study and you can close this page at any point.

What is the purpose of this study: The purpose of this study is to investigate Mental Health Literacy levels in university students and identify a link between those levels and the mental health status in students in Ireland? A study like this can be important because the results could potentially be used to influence future educational policies in Ireland, particularly around the inclusion of Mental Health classes in secondary schools around the county.

If you decide to take this survey, what will you have to do?

You will be asked a series of questions that explore the following areas:

- Your understanding of what Mental Health is
- Your own emotional, mental wellbeing and anxiety levels

Who can take part in the study? If you attended secondary school in Ireland, are over 18 years old and are currently attending college you are invited to participate. Participation is voluntary and you can choose to close out of the survey at any stage during the process if you change your mind.

Information gathering All the information that you provide during the survey will remain strictly confidential in accordance with the Data Protection Act (1998) and General Data Protection Regulation (2018). The answers you give will be collected anonymously and your responses will be unidentifiable as your own. All the results presented at publication will be at group level rather than an individual level which will preserve your anonymity. Your participation in this survey is voluntary but if you do decide to participate you will be contributing towards a clearer understanding of what teenagers need in terms of mental health education.

Can I change my mind about being involved during the survey? You can withdraw from the study at any point during the survey by closing the page. This will stop any of your answers from being included in the study data.

Who do I contact for additional information about the study? I am available to answer any queries or questions you may have on the study; my contact details, along with those of my university advisor are listed below.

If you would like general information on mental health services currently available, please click the links below:

The Samaritans www.samaritans.ie
Aware (Depression & Bi-Polar Disorder) supportmail@aware.ie
National Suicide Helpline (Pieta House) 1800 247 247
Turn2Me.org (for Online one to one or group counselling)
Grow (Mental Health support and Recovery) www.grow.ie
Irish Advocacy Network (Peer advocacy in mental health) www.irishadvocacynetwork.com

Thank You,
Karla

Research leader: Karla O'Brien
Contact number(s): 087 6754434
Email address: askingtherightquestions2020@gmail.com
Research supervisor: Matthew.Hudson@ncirl.ie

YOU ARE INVITED TO PRINT THIS INFORMATION SHEET FOR YOUR OWN RECORDS

Appendix B

Informed Consent

Participant Consent Form

You are invited to a web-based online survey on mental health run by Karla O'Brien, a student in the National College of Ireland. In order to consent to participation in this study, please read the below before giving your full consent:

i. I agree to participate in this research study of my own free will and on a voluntary basis.
ii. I understand that although I agree to participate now, I have the right to withdraw at any time or refuse to answer any question without fear of reprisals.
iii. I understand that I can withdraw my permission to use any data taken within two weeks of its complete and if I do, all material related to me will be deleted.
iv. I have had the purpose and reason for study has been given to me in writing and I have been given the opportunity to ask questions about the study.
v. I understand that participation involves the complete of a short 10-minute survey to investigate my personal mental health literacy (knowledge), my wellbeing and current mental health status.
vi. I understand that I will not benefit directly from participating in this research.
vii. I understand that any information I provide for this study will be treated anonymously and with the highest confidentially.
viii. I understand that if I inform the researcher that myself or someone else is at risk of harm they may be required to report this to the suitable authorities but that the researcher will discuss this with me beforehand. I further understand that they may have to report it with or without my permission.
ix. I understand that signed consent forms and online data collection will be retained in until the university exam board confirms study results after which they will be destroyed in line with the universities data destruction procedures.
x. I understand that under the Irish the freedom of information act 2014, I am entitled to access my information any time while it is in storage.
xi. I understand that I am free to contact the researcher and/or university to seek further understanding and information on the study. I confirm that I have been provided with a list of contact numbers and emails to do so.

Appendix C

Current mental health care and electronic consent

Are you currently under the care of a mental health professional?

If your answer is yes then given the nature of this study which includes questions around your own mental health, we would recommend that you seek their advice before participating in this survey.

- Yes
- No

If you are happy to continue with this survey, please complete the electronic consent form below.

Electronic consent:

Do you confirm that you have read and understood the information sheet provided to you? Do you also confirm that you are both over 18 years of age and that you are voluntarily completing this questionnaire? If so, please confirm below:

☐ Yes

☐ No

You may print a copy of this consent form for your records.

Appendix D

Survey demographics

Gender

- ☐ Male
- ☐ Female
- ☐ Non-Binary
- ☐ Prefer not to specify

Age

_____

I confirm that I completed my secondary level school in Ireland

- ☐ Yes
- ☐ No

Current area of study

_____

I am currently in the following year of my college studies

- ☐ 1st
- ☐ 2nd
- ☐ 3rd
- ☐ 4th

Appendix E

Mental Health Literacy scale

The purpose of these questions is to gain an understanding of your knowledge of various aspects to do with mental health. When responding, we are interested in your degree of knowledge, therefore **when choosing your response, consider that:**

- Very unlikely = I am certain that it is NOT likely
- Unlikely = I think it is unlikely but am not certain
- Likely = I think it is likely but am not certain
- Very Likely = I am certain that it IS very likely

1. If someone became extremely nervous or anxious in one or more situations with other people (e.g., a party) or performance situations (e.g., presenting at a meeting) in which they were afraid of being evaluated by others and that they would act in a way that was humiliating or feel embarrassed, then to what extent do you think it is likely they have Social Phobia

Very unlikely ☐ Unlikely ☐ Likely ☐ Very Likely ☐

2. If someone experienced excessive worry about a number of events or activities where this level of concern was not warranted, had difficulty controlling this worry and had physical symptoms such as having tense muscles and feeling fatigued then to what extent do you think it is likely they have Generalised Anxiety Disorder

Very unlikely ☐ Unlikely ☐ Likely ☐ Very Likely ☐

3. If someone experienced a low mood for two or more weeks, had a loss of pleasure or interest in their normal activities and experienced changes in their appetite and sleep then to what extent do you think it is likely they have Major Depressive Disorder

Very unlikely ☐ Unlikely ☐ Likely ☐ Very Likely ☐

4. To what extent do you think it is likely that Personality Disorders are a category of mental illness

Very unlikely ☐ Unlikely ☐ Likely ☐ Very Likely ☐

5. To what extent do you think it is likely that Dysthymia is a disorder

Very unlikely ☐ Unlikely ☐ Likely ☐ Very Likely ☐

6. To what extent do you think it is likely that Dysthymia is a disorder

Very unlikely ☐ Unlikely ☐ Likely ☐ Very Likely ☐

7. To what extent do you think it is likely that the diagnosis of Bipolar Disorder includes experiencing periods of elevated (i.e., high) and periods of depressed (i.e., low) mood

Very unlikely ☐ Unlikely ☐ Likely ☐ Very Likely ☐

8. To what extent do you think it is likely that the diagnosis of Drug Dependence includes physical and psychological tolerance of the drug (i.e., require more of the drug to get the same effect)

Very unlikely ☐ Unlikely ☐ Likely ☐ Very Likely ☐

9. To what extent do you think it is likely that in general in Ireland, women are MORE likely to experience a mental illness of any kind compared to men

Very unlikely ☐ Unlikely ☐ Likely ☐ Very Likely ☐

10. To what extent do you think it is likely that in general, in Ireland, men are MORE likely to experience an anxiety disorder compared to women

Very unlikely ☐ Unlikely ☐ Likely ☐ Very Likely ☐

When choosing your response, consider that:

- Very Unhelpful = I am certain that it is NOT helpful

- Unhelpful = I think it is unhelpful but am not certain
- Helpful = I think it is helpful but am not certain
- Very Helpful = I am certain that it IS very helpful

11. To what extent do you think it would be helpful for someone to improve their quality of sleep if they were having difficulties managing their emotions (e.g., becoming very anxious or depressed)

Very unhelpful ☐ Unhelpful ☐ Helpful ☐ Very Helpful ☐

12. To what extent do you think it would be helpful for someone to avoid all activities or situations that made them feel anxious if they were having difficulties managing their emotions

Very unhelpful ☐ Unhelpful ☐ Helpful ☐ Very Helpful ☐

When choosing your response, consider that:

- Very unlikely = I am certain that it is NOT likely
- Unlikely = I think it is unlikely but am not certain
- Likely = I think it is likely but am not certain
- Very Likely = I am certain that it IS very likely

13. To what extent do you think it is likely that Cognitive Behaviour Therapy (CBT) is a therapy based on challenging negative thoughts and increasing helpful behaviours

Very unlikely ☐ Unlikely ☐ Likely ☐ Very Likely ☐

14. Mental health professionals are bound by confidentiality; however, there are certain conditions under which this does not apply.

To what extent do you think it is likely that the following is a condition that would allow a mental health professional to **break confidentiality**:

If you are at immediate risk of harm to yourself or others

Very unlikely ☐ Unlikely ☐ Likely ☐ Very Likely ☐

15. Mental health professionals are bound by confidentiality; however, there are certain conditions under which this does not apply.

To what extent do you think it is likely that the following is a condition that would allow a mental health professional to break confidentiality:

if your problem is not life-threatening and they want to assist others to better support you

Very unlikely ☐ Unlikely ☐ Likely ☐ Very Likely ☐

Please indicate to what extent you agree with the following statements:

	Strongly Disagree	**Disagree**	**Neither agree or disagree**	**Agree**	**Strongly agree**
16. I am confident that I know where to seek information about mental illness					
17. I am confident using the computer or telephone to seek information about mental illness					
18. I am confident attending face to face appointments to seek information about mental illness (e.g., seeing the GP)					
19. I am confident I have access to resources (e.g., GP, internet, friends) that I can use to seek information about mental illness					

Please indicate to what extent you agree with the following statements:

	Strongly Disagree	**Disagree**	**Neither agree or disagree**	**Agree**	**Strongly agree**

20. People with a mental illness could snap out if it if they wanted					
21. A mental illness is a sign of personal weakness					
22. A mental illness is not a real medical illness					
23. People with a mental illness are dangerous					
24. It is best to avoid people with a mental illness so that you don't develop this problem					
25. If I had a mental illness I would not tell anyone					
26. Seeing a mental health professional means you are not strong enough to manage your own difficulties					
27. If I had a mental illness, I would not seek help from a mental health professional					
28. I believe treatment for a mental illness, provided by a mental health professional, would not be effective					

Please indicate to what extent you agree with the following statements:

	Strongly Disagree	**Disagree**	**Neither agree or disagree**	**Agree**	**Strongly agree**
29. How willing would you be to move next door to someone with a mental illness?					
30. How willing would you be to spend an evening socialising with someone with a mental illness?					
31. How willing would you be to make friends with someone with a mental illness?					

32. How willing would you be to have someone with a mental illness start working closely with you on a job?					
33. How willing would you be to have someone with a mental illness marry into your family?					
34. How willing would you be to vote for a politician if you knew they had suffered a mental illness?					
35. How willing would you be to employ someone if you knew they had a mental illness?					

Scoring

Total score is produced by summing all items (see reverse scored items below). Questions with a 4-point scale are rated 1- very unlikely/unhelpful, 4 – very likely/helpful and for 5-point scale 1 – strongly disagree/definitely unwilling, 5 – strongly agree/definitely willing

Reverse scored items: 10, 12, 15, 20-28 Maximum score – 160
Minimum score – 35

Appendix F

The Warwick–Edinburgh Mental Well-being Scale (WEMWBS)

	None of the time	**Rarely**	**Some of the time**	**Often**	**All of the time**
I am optimistic about the future					
I've been feeling useful					
I've been feeling relaxed					
I've been feeling interested in other people					
I've had energy to spare					
I've been dealing with problems well					
I've been thinking clearly					
I've been feeling good about myself					
I've been feeling close to other people					
I've been feeling confident					
I've been able to make up my own mind about things					
I've been feeling loved					
I've been interested in new things					
I've been feeling cheerful					

MHLS Scoring instructions

Scoring
Total score is produced by summing all items (see reverse scored items below). Questions with a 4-point scale are rated 1- very unlikely/unhelpful, 4 – very likely/helpful and for 5-point scale 1 – strongly disagree/definitely unwilling, 5 – strongly agree/definitely willing Reverse scored items: 10, 12, 15, 20-28 Maximum score – 160 Minimum score – 35

Appendix G

DASS21 Depression, Anxiety and Stress scale

DASS21 Name: Date:

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
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree or a good part of time
3 Applied to me very much or most of the time

DASS-21 Scoring Instructions

The DASS-21 should not be used to replace a face to face clinical interview. If you are experiencing significant emotional difficulties you should contact your GP for a referral to a qualified professional.

	Depression	**Anxiety**	**Stress**
Normal	0- 9	0 – 7	0 – 14
Mild	10 – 13	8 – 9	15 – 18
Moderate	14 – 20	10 – 14	19 – 25
Severe	21 – 27	15 – 19	26 – 33
Extremely Severe	28 +	20 +	34 +

1 (s)	I found it hard to wind down	**0**	**1**	**2**	**3**
2 (a)	I was aware of dryness of my mouth	**0**	**1**	**2**	**3**
3 (d)	I couldn't seem to experience any positive feeling at all	**0**	**1**	**2**	**3**
4 (a)	I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	**0**	**1**	**2**	**3**
5 (d)	I found it difficult to work up the initiative to do things	**0**	**1**	**2**	**3**
6 (s)	I tended to over-react to situations	**0**	**1**	**2**	**3**
7 (a)	I experiences trembling (e.g. in the hands)	**0**	**1**	**2**	**3**
8 (s)	I felt that I was using a lot of nervous energy	**0**	**1**	**2**	**3**
9 (a)	I was worried about situations in which I might panic and make a fool of myself	**0**	**1**	**2**	**3**
10 (d)	I felt that I had nothing to look forward to	**0**	**1**	**2**	**3**
11 (s)	I found myself getting agitated	**0**	**1**	**2**	**3**
12 (s)	I found it difficult to relax	**0**	**1**	**2**	**3**
13 (d)	I felt down-hearted and blue	**0**	**1**	**2**	**3**
14 (s)	I was intolerant of anything that kept me from getting on with what I was doing	**0**	**1**	**2**	**3**
15 (a)	I felt I was close to panic	**0**	**1**	**2**	**3**
16 (d)	I was unable to become enthusiastic about anything	**0**	**1**	**2**	**3**
17 (d)	I felt I wasn't worth much as a person	**0**	**1**	**2**	**3**
18 (s)	I felt that I was rather touchy	**0**	**1**	**2**	**3**
19 (a)	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**
20 (a)	I felt scared without any good reason	**0**	**1**	**2**	**3**
21 (d)	I felt that life was meaningless	**0**	**1**	**2**	**3**

Recommended cut-off scores for conventional severity labels (normal, moderate, severe) are as follows: NB Scores on the DASS-21 will need to be multiplied by 2 to calculate the final score.

Appendix H

Debrief paragraph

A note from the researcher:

Thank you for your participant in this study. With your help, this study will provide much needed information mental health literacy in Ireland and may potentially be used to influence future educational policies in Ireland, particularly around the inclusion of Mental Health classes in secondary schools around the county.

Please consider telling your friends and family about this survey. If you have not already done so, please remember to print off the information and consent sheets at the start of this survey which contains full details of the purpose of this study, how your data will be managed and your rights as a participant. Alternatively you can email me for a copy of the sheets and/or to ask any additional questions you may have regarding the study.

Please remember, there are several excellent mental health services freely available in Ireland. If you would like more information on those services currently available, please click the links below:

- The Samaritans www.samaritans.ie
- Aware (Depression & Bi-Polar Disorder) supportmail@aware.ie
- National Suicide Helpline (Pieta House) 1800 247 247
- Turn2Me.org (for Online one to one or group counselling)
- Grow (Mental Health support and Recovery) www.grow.ie
- Irish Advocacy Network (Peer advocacy in mental health) www.irishadvocacynetwork.com

Thank you again,
Karla O'Brien

Appendix I

University recruitment permission letter

RE: Permission to recruit participants for a research study

Dear Mr/Mrs/Ms……,

My name is Karla Maria O'Brien and I am writing to request permission to recruit participants for my final year research study from your institution. I am currently enrolled as a student myself in the National College of Ireland and I am shortly to begin my final year thesis for my Psychology degree.

The study is entitled *Understanding the impact of mental health literacy on mental health outcomes in college aged Irish students*. I was hoping you might allow me to place posters around your campus to recruit students for my study that will look at Mental Health Literacy levels (or knowledge) in 1st and 3rd university students, and the potential impact of both on the mental health of in students in Ireland.

Participants would complete an online survey that will cover mental health literacy levels as well as wellbeing, depression and anxiety status. They would need to have to have been educated previously through the Irish school system in order to be included in the study and be between the ages of 18-24 years old. Interested students, who volunteer to participate would only have to give 10 minutes of their time to complete the survey.

Your approval to conduct this study will be greatly appreciated. If you have an questions regarding the study, I would be happy to answer any questions you may have and have included my email addresses below.

Thank you for considering my request.

Appendix J

Study Promotional Poster

Appendix K

Pilot study questions

1. Were you able to understand the information sheet, the instructions, the consent and debrief forms that you were asked to sign?
2. Did you feel that the questionnaire was clear from the start, and easy to complete?
3. Did you understand the instructions?
4. Do you have any improvements that you feel might make the process more efficient?

Appendix L

Additional tables for study descriptive statistics

Table 1

Descriptive for Internal Consistency and Reliability for Scale Variables

	# of items	Mean	SD
1. MHLS	35	3.67	.84
2. WELLBEING	14	3.05	.94
3. Total DASS21	21	1.22	.94

Note. wellbeing = MHLS = mental health literacy scale (PV); Wellbeing = Warwick Edinburgh mental wellbeing scale (PV); DASS21 = depression, anxiety and stress scale (CV)

Table 2

Descriptives for Year of Study and Field of Study of Sample

	N	%
*Current year of study		
Year 1	20	27
Year 2	18	24
Year 3	26	34
Year 4	11	15
Totals	**75**	**100**
**Field of study		
Sciences	45	60
Business	16	21
Education	9	12
Communications	5	7
Totals	**75**	**100**

Note. *Current year of study identified by participant
**Field of study identified by participants at data collection.

Appendix M

Additional figures for Hierarchical Regression Analysis assumptions of normality, linearity and homoscedasticity