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State of Mind Ireland: The Design and Evaluation of a Positive Mental Health Intervention among Higher Education Students

Thesis presented by

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for the degree of

Doctor of Philosophy

University College Cork

School of Education

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2020

Author declaration:

This is to certify that the work I am submitting is my own and has not been submitted for another degree, either at University College Cork or elsewhere. All external references and sources are clearly acknowledged and identified within the contents. I have read and understood the regulations of University College Cork concerning plagiarism.

Signed: 

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Date: 3rd April 2020

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Abstract

Young adults are recognised as a vulnerable age group who carry the burden of mental health problems worldwide. Higher Education Institutions (HEIs) observe that many students are experiencing mental health issues. HEIs, however, are also in a critical position to reach the young adult population group and promote positive mental health. Low levels of physical activity (PA) participation is observed among Irish higher education students. PA is positively associated with wellbeing. Multi-level interventions for both positive mental health and PA are recommended for wellbeing by the World Health Organisation (WHO).

The purpose of this study was to design, develop, implement and evaluate a positive mental health and PA intervention, specifically tailored for the student cohort (aged 18 to 29 years old) in a large HEI in Ireland. The intervention, known as SOMI-HE, was designed using the principles of Intervention Mapping (IM).

Data for the design, development, implementation, and evaluation of the intervention were gathered from participants (n=413), using a mixed-method research design. Statistical levels of wellbeing, resilience and PA (n=262) were measured using well-known validated and reliable questionnaires. Observational data was collected (n=151) using open-ended questionnaires, a Delphi technique, and focus group discussions. Intervention evaluation data was collected at three time points (pre, post, and retention).

Results suggest that a structured mental health and PA education awareness intervention for Irish pre-service teachers may be warranted and that the IM planning protocol provides an empirical process that has the potential to create such interventions for promoting positive mental health and PA. Intervention evaluation results indicate a significant effect on participants' wellbeing ($t(120) = -4.27$, $p < .001$), PA levels ($t(126) = 3.91$, $p < .001$) and motivational readiness for exercise change ($\chi 2 (1, n = 131) = 6.9$, $p < p = .009$ (2–sided). Qualitative findings from the intervention suggest a sustained long-term increase in PA and resilience skills for positive mental health and reduced stigma and barriers to positive mental health.

Findings support the efficacy of positive mental health interventions to promote wellbeing and PA with higher education students, using the IM approach. This research highlights the benefits and potential of engaging higher education students

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Publications and conference proceedings related to the research

Published journal articles:

O'Brien, N., Lawlor, M., Chambers, F., Breslin, G. & O'Brien, W. (2019). Levels of Wellbeing, Resilience, and Physical Activity amongst Irish Pre-Service Teachers : A Baseline Study. *Irish Educational Studies*, pp. 1–18. https://doi.org/10.1080/03323315.2019.1697948

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Chapter 1
Introduction to the Thesis

1.1 INTRODUCTION

1.1.1 The background to the research

Typical of my age group and gender, I stopped participating in all sport and physical activity (PA) from the age of thirteen (World Health Organisation [WHO], 2016). Having had mixed experiences with team sports and competition, I really thought exercise was just for other people. I smoked for ten years and opted out of anything that would raise a heartbeat. I was yet to learn the value of PA (physical activity).

My 'health' learning curve came in the form of a reaction to a time when I had low mental health awareness. Again, typical of my age group, I began to experience increased mental health challenges (Gustavson, Knudsen, Nesvåg, Knudsen, Vollset, & Reichborn-Kjennerud, 2018). I sought a way to cope through the medium of PA participation, and I successfully completed my first 5-kilometre run at 25 years of age. This new type of PA behaviour was not a linear process for me, by any means, and, from this new experience, I appreciated the power of the mind and its synergistic connection with my body and movement. Gradually, over four years, I began to sustain PA participation every day and, along with it, I secured the positive psychological benefits from being part of a social community through sport. I learned to train, to rest, to pay attention to myself, and discipline the mind. I developed a whole new sense of self-efficacy from challenging myself and I managed to increase my wellbeing through the outdoors and connecting with others. I consistently practised skills of resilience through the medium of PA, and I soon noticed that these resilience skills were transferrable, as they transcended into other areas of my life.

Nonetheless, the alarming mental health concerns I had for my peers at that time remained and I developed a natural interest in understanding mental health and its link with PA participation for the want to help those around me. Coming from an educationalist background, I had a keen interest in intervention design and creative pedagogy, and I sought a way to harness my interests and skills, and, eventually, an opportunity arose in the form of this research project.

State of Mind Ireland (SOMI) is a charity that aims to improve the mental health, wellbeing, and working life of sports players and sporting communities across Ireland. SOMI is an adopted educational programme from the State of Mind (UK),

which was initially established in England in 2011 by the United Kingdom Super League (Rugby). The programme has since gained popularity and is used by the National Rugby League Australia and, most recently, by many GAA sporting communities across Ireland.

The director of SOMI (State of Mind Ireland), Dr Martin Lawlor, saw the value in introducing a similar programme to higher education institutions (HEIs), specifically to empower students by promoting resilience and wellbeing. Dr Wesley O'Brien and Dr Fiona Chambers were consulted and their expertise in PA and intervention research design were drawn upon. A proposal to undertake a pilot study exploring the response of third-level students in University College Cork to the SOMI intervention was implemented. Preliminary findings indicated a justification for a larger scale research project, and an intervention re-development was needed in the form of a PhD study. This essentially describes the study inception and explains the researcher's path to this destination, when awarded with a PhD studentship in December 2016.

The intervention programme developed and discussed in this study is referred to as State of Mind Ireland – Higher Education (SOMI-HE). The original programme designed for sporting communities is referred to as SOMI.

1.1.2 Setting the scene

Research has highlighted numerous times over the past decade that mental health problems are highly prevalent and are on the rise among young adults in Ireland (Cannon, Coughlan, Clarke, Harley & Kelleher, 2013; Dooley & Fitzgerald, 2012; Dooley, O'Connor, Fitzgerald & O'Reilly, 2019). Arnett (2000) identifies the 'young adult' population (18 to 29-year-olds), as emerging adults. Emerging adulthood has been flagged as a particularly vulnerable time in growing up and a time of in-between (Arnett, Zukauskiene & Sugimura, 2014). Worldwide, emerging adults are recognised to carry the burden of mental health problems (Kessler et al., 2007; Gore et al., 2011). This is most likely due to this age cohort being identified as a prevalent stage for the onset of commonly occuring disorders. It is estimated that half of all lifetime mental health disorders start by the mid-teens, and three quarters by the mid-20s, while later onsets of mental health disorders are mostly secondary

conditions (Kessler et al., 2007). For example, schizophrenia is known to usually emerge between the ages of 15 to 35 years old.

In relation to the environmental setting of the current research, increased levels of student psychological distress are recognised as a concern for higher education students in Ireland and abroad worldwide (Barkham, Miles, Slaa, Koutsopoulou & Bewick, 2010; Bayram & Bilgel, 2008; Bewick, Koutsopouloub, Miles, Slaad & Barkham, 2010a; Houghton, Keane, Murphy, Houghton & Dunne, 2011). Evidence-based mental health interventions tailored for young people in higher education are recommended to help master developmental tasks that come with the transitions from adolescence into adulthood (Gustavson et al., 2018). Higher education settings have been identified as an excellent platform to implement mental health interventions (Conley, Durlak & Dickson, 2013), specifically as the years of attending higher education are seen as a critical time to create a culture of positive mental health through intervening and preventing further consequences related to mental health problems and the associated stigma (Vidourek & Burbage, 2019). With almost 230,000 emerging adults enrolling in full-time higher education programmes in Ireland each year, HEIs (Higher Education Institutions) have enormous reach and scope to send positive lifelong messages to young adults going into society (HEA, 2018).

Research would also consistently suggest that there is a rising demand for increased mental health services in HEIs, with many currently overwhelmed by students presenting themselves with mental health distress (Murphy, 2017; Bewick, Koutsopouloub, Miles, Slaad & Barkham, 2010b). My World Survey (Dooley et al., 2019) shows 21% of 18 to 25 years olds attending higher education in Ireland report falling into severe and very severe categories of depression, a 6% increase from the previous My World Survey study in 2012 (Dooley & Fitzgerald, 2012). The transition that comes with attending higher education as a young adult often brings the stress that acts as a precursor to mental distress (Thorley, 2017). This current research would suggest that it is an opportunistic time to close the mental health gap between responding to and preventing adverse mental health experiences in emerging adulthood. HEIs are in a prime position to take preventative and promotive positive mental health measures to support students' mental health and wellbeing effectively for now and their future. HEIs have a responsibility to not only

deliver education but to have interest in protecting and promoting students' mental health and wellbeing (Thorley, 2017). An evidence-based intervention presents an opportunity to teach student resilience-building skills, which are considered essential for development (Holdsworth et al. 2017). Skills-based mental health interventions demonstrate strong benefits, particularly those that focus on mindfulness and cognitive-behaviour techniques (Conley et al., 2013). It is critical to note, however, that this does not mean a single approach will suffice as an initiative to promote positive mental health through intervention. It is essential that a whole university approach is taken to ensure positive mental health and wellbeing is understood and embraced by all members of the HEI community (Murphy, 2017; Thorley, 2017).

1.1.3 Promoting positive mental health

Fundamentally, the current research is about positive mental health promotion. Positive mental health promotion is a powerful tool that can be used to enhance the health and lives of people and communities through harnessing environmental, social and individual strengths that promote wellbeing (WHO, 2005). In general, the promotion of mental health is associated with positive mental health, whereas the prevention of mental disorders is concerned with reducing the incidence of specific disorders (M. Barry, 2001).

Promoting positive mental health leans towards the enhancement of those protective factors and behaviours that can contribute to a range of lifelong health and social benefits (Keyes, 2007). It recognises that health is more than just the absence of illness (WHO, 1951) and embraces that wellbeing is what the New Economics Foundation (NEF) describe as the bolstering of mental health capital (Aked, Marks, Cordon & Thompson, 2008). Throughout this research, positive mental health is frequently described as mental fitness. Mental fitness reflects the teaching that individuals can take actions that will enhance their mental health and have the ability to reach their potential to live a full and meaningful life (Robinson, Oades & Caputi, 2015; Vaillant, 2012). Using the language of 'mental fitness' is a means of promoting positive mental health in a way that is analogous with physical fitness, as the term suggests that an individual can develop mental strength, flexibility, and endurance, without having any connotations to mental illness (Robinson, Oades & Caputi, 2016). Additionally, the term 'mental fitness' is regarded as less stigmatising

in interventions related to mental health (Breslin et al., 2018). It is essentially about what makes people well, rather than what makes people unwell.

Barry (2009, p.8) maintains effective positive mental health-promoting interventions involve several characteristics for success. They include:

- Programme development based on underpinning theory, research principles of efficacy, and needs assessment of the target population and setting.
- A focused and targeted approach to programme planning, implementation, and evaluation.
- Adoption of a competence enhancement approach and an implementation process that is empowering, collaborative, and participatory.
- Carried out in partnerships with key stakeholders addressing a range of protective and risk factors.
- Employ a combination of intervention methods operating at different levels with comprehensive approaches that intervene at a number of different time periods rather than once-off.
- Include the provision of training and support mechanisms that will ensure high-quality implementation and sustainability.

This research has adopted the advice of Barry (2009) and designed an intervention using a positive mental health approach, specifically using a planning tool known as Intervention Mapping (IM) from Bartholomew Eldridge, Markham, Ruiter, Gerjo & Parcel (2016). IM ensured the guidelines described by Barry (2009) were followed and the components associated with positive mental health were delivered effectively through the intervention, most notably the component of PA participation.

1.1.4 Promoting physical activity

There is robust evidence that sheds positive light on the mental health benefits associated with regular PA participation (Chudasama et al., 2019; Murphy et al., 2018; Eime et al., 2013; Malcolm et al., 2013; Martin & McCann, 2005). In this research, therefore, a significant emphasis is based on positive mental health outcomes associated with PA participation. PA includes a full range of human movement, ranging from hobbies to competitive sport or activities that are a part of

daily living (Bouchard, Blair & Haskell, 2012). These activities include leisure-time PA, sport, deliberate exercise, transportation, professional work, and chores (Miles (2007). The WHO (2010) recommends that maintaining and/or improving physical and mental health requires adults to take part in at least 150 minutes of PA per week, and up to 300 minutes per week for additional health benefits.

In Ireland, 68% of the general population do not reach the recommended PA guidelines for health (Department of Health, 2016b), while in HEI populations, 36% (29% male: 42% female) of students do not meet the recommended PA guidelines for health (Murphy et al., 2016). PA among those attending higher education is associated with increased perceived happiness (Murphy et al., 2018; Cekin, 2015). The connection between student wellbeing and regular bouts of activity highlights how PA and physical fitness are strong determinants of student health and are seen as a viable medium to enhance students' wellbeing.

PA interventions in higher education come in many forms and their efficacy is frequently recognised as significant when designed with an evidence-based theoretical framework addressing the personal, social, and environmental determinants of PA (Donnelly et al., 2011; Plotnikoff et al., 2015; Sherwood & Jeffery, 2000). The approach to promoting PA in the present study is to emphasise the wide range of benefits associated with a physically active lifestyle. This message was tailored for the target population through addressing the personal determinants, using the planning protocol of IM for the State of Mind Ireland – Higher Education (SOMI-HE) intervention.

1.2 THE SOMI-HE INTERVENTION

In a brief synopsis, the SOMI-HE programme is a two-part, three-hour-long intervention, pedagogically designed to engage a maximum of 150 students per sitting. Large cohorts of students can attend 2 x 90-minute interactive sessions across two weeks. The students are active agents within the programme and participate in the discussion, reflection, and positive mental health activities, which are aimed to increase wellbeing, resilience, and levels of PA. (*see Figure 1.1*). The SOMI-HE intervention has two over arching objectives:

1) To develop knowledge and application of positive mental health strategies to increase wellbeing, resilience, and reduce mental health stigma among young adults (18 to 29-year-olds).
2) To increase student levels of PA according to the international guidelines (150 minutes of moderate to vigorous intensity physical activity per week).

Day 1

Workshop A

Positive mental health

PART 1

- Understanding wellbeing and positive mental health - Everyone has mental health
- Mental fitness: stress, resilience, and vulnerability
- Mental health, emerging adults, and 'one good adult'
- Neuroplasticity – mindfulness and positive affirmations

PART 2

- Exercise has been known to cause health and happiness
- The five ways to wellbeing
- The transtheoretical model of change
- SMART – don't find the time, make time

Day 2

Workshop B

Mental health first

PART 1

- Everyone has mental health- let's talk stigma
- Mental health literacy and responding to mental health issues
- Mental fitness – 'the stress bucket'
- Alcohol consumption and mental health

PART 2

- Maintaining wellbeing strategies – mindfulness
- Mental health literacy
- SMART – Resetting physical activity goals
- The Mental Fitness toolkit

Figure 1.1 – SOMI-HE intervention components, sequence and scope.

As already mentioned, the SOMI-HE programme was designed using a procedure known as IM (Bartholomew Eldridge et al., 2016). IM is a health promotion planning framework, comprising of several phases to ensure effective decision-making, appropriate theoretical selection, and the practical application of methodological considerations during each stage of an intervention design (Bartholomew Eldridge et al., 2016; L. K. Bartholomew & Mullen, 2011). IM has been proposed as a suitable systematic tool for developing innovative health promotion programmes for complex health problems through a collaborative, comprehensive theoretical approach (Ammendolia et al., 2016; Koekkoek, Van Meijel, Schene & Hutschemaekers, 2010; Mceachan, Lawton, Jackson, Conner & Lunt, 2008; Van Stralen et al., 2008). IM was an underpinning principle in the current study and this process guided the design and development of the aforementioned SOMI-HE (process to be discussed later in the thesis).

1.3 SIGNIFICANCE OF THIS STUDY

This longitudinal study contributes to research and knowledge in positive mental health promotion and intervention design across HEIs. The study evaluates the outcomes of a positive mental health intervention, designed to enhance the wellbeing, resilience, and PA among higher education students. This PhD is unique by its theory-based intervention design procedure (IM) and the combination of positive mental health components used alongside PA. It is important to acknowledge in this intervention that there is a deliberate shift from focusing on negative mental health or illness to instead embracing and promoting positive mental health indicators.

With the documented mental health concerns among the emerging adult population, there is a compelling case for promoting positive mental health through intervention programmes. It will take more than mere prevention to illness approach in responding to the mental health needs of population groups. Therefore, promoting positive mental health will gain wider societal and health benefits through closing the treatment gap and promoting lifelong health (WHO, 2019).

1.4 AIM AND OBJECTIVES OF THE RESEARCH

Aim of the research:

To design, develop, implement, and evaluate a positive mental health intervention designed to increase wellbeing, resilience and PA among higher education students.

Primary objectives:

- To collect baseline data on the wellbeing, resilience, and PA among higher education students (Chapter 4).
- To design an intervention programme using a systematic planning approach that is based on theory and evidence (Chapter 5).
- To evaluate if participation in the SOMI-HE intervention leads to an increase in wellbeing, resilience, and PA (Chapter 6).
- To evaluate the key short-term and long-term outcomes from participating in the SOMI-HE intervention (Chapter 6).

Secondary objectives:

- To identify the demographic determinants (gender and age groups) of student change in wellbeing, resilience, and PA over time.
- To interpret the short-term and long-term outcomes of SOMI-HE to inform the future development and enhancement of the intervention.

1.5 RESEARCH QUESTIONS

1) What are the baseline levels of wellbeing, resilience, and PA among a higher education population, and how do wellbeing, resilience, and PA levels conform with normative population expectations?
2) Is there an association between students in higher education meeting the recommended PA guidelines with levels of wellbeing and resilience?
3) What are the outcomes of using the evidence and theory-based process known as the IM procedure in the design of SOMI-HE?

4) Is the IM design of the SOMI-HE mental fitness intervention designed effectively for increasing levels of wellbeing, resilience, and PA?
5) What are the short-term and long-term outcomes of engaging with SOMI-HE?

1.6 THESIS OUTLINE

This thesis is organised in an article-based format. Following this introductory chapter, the literature review, and the methodology chapters, there will be three peer-reviewed articles (two published as leading author by the PhD student and one under review) in the form of three chapters (Chapter 4 to 6). The first two of these articles have been peer-reviewed and published in the previous edition of the Irish Education Studies journal (*Appendix A*) and the forthcoming Health Education journal (*Appendix B*). The third article is currently under review in the Psychology and Health journal. Each article is part of a story where the researcher takes a staged approach to explain the procedures and methodologies used at pivotal points of the research design.

Chapter Two, the literature review, is presented in a format that maps the researcher's knowledge development in the process of the intervention design. First, the researcher seeks to grasp a deep conceptual understanding of positive mental health. The chapter then explores the determinants of mental health and explains the adaption of a positive mental health approach to the intervention design. Finally, the literature review explains the rationale for the selected planning framework, IM, and provides a detailed description of the positive mental health components used in the intervention, particularly PA.

Chapter Three, the methodology chapter, illustrates the philosophical approaches and rationale for the methods used throughout each stage of the research. The researcher describes how the overall intervention study was conducted using a mixed-method approach.

Chapter Four, the baseline study, is the first of the three articles published in this research. It examines the wellbeing, resilience, and PA levels among Irish pre-service teachers and presents an argument for increased wellbeing awareness for the specific sample group in the study. The baseline study informed the researcher of the general level of wellbeing, resilience, and PA of the intervention's target population.

Chapter Five, the intervention design study, provides the reader with a description of the research procedures and results of adapting an intervention planning tool (IM). The purpose of this chapter is to showcase the rigorous approach to data collection and theory selection used to inform the development of the SOMI-HE intervention.

Chapter Six, the intervention evaluation study, investigates the impact of the evidence-based SOMI-HE Mental Fitness intervention on student wellbeing, resilience and PA. The researcher seeks to interpret the short-term and long-term outcomes of the intervention and assess the suitability of the IM-designed SOMI-HE intervention as a means to address the personal determinants of positive mental health.

Chapter Seven, the concluding chapter, summarises the findings from chapters 4 to 6 and discusses the implications of their findings. The researcher reflects on the strengths and limitations of the study before finally discussing future directions and concluding thoughts.

1.7 DEFINITION OF TERMS

Determinant: A determinant of health refers to a positive or negative aspect that leads to a change in health status, either for the benefit or non-benefit of the health of an individual or community (Farrell et al., 2008; Keleher & Murphy, 2004).

Emerging adulthood is a theory on the development among young people from their late teens through their mid-20s in the United States and Europe. It is seen as the age of identity explorations, the age of instability, the self-focused age, the age of feeling in-between, and the age of possibilities (Jeffrey J. Arnett, 2012).

High-intensity activities are rare levels of energy expenditure that typically happen in daily life. They are more suited for athletic training programmes, for example, sprint running (Norton et al., 2010).

Intervention Mapping is a programme planning framework that assists health promotion planners in effective decision-making and use of evidence and theory (Bartholomew Eldridge et al., 2016).

Mental fitness is a positive term without connotations of illness implied by mental health or mental illness. The wider community could understand it in a similar way

to physical fitness. It is measurable and can be improved in a similar way to physical fitness (Robinson et al., 2015).

Mental health promotion is concerned with achieving positive mental health and wellbeing in the general population and addressing the needs of those at risk from, or experiencing, mental health problems (M. Barry, 2009).

Mental health is more than more than the absence of mental disorder. It is determined by a variety of socioeconomic, biological, and environmental factors. Mental health can be viewed as a continuum which can range and change at various stages in our lives. Everyone has mental health (WHO, 2018; Galderisi, Heinz, Kastrup, Beezhold & Sartorius, 2015; Manwell et al., 2015; Vaillant, 2012).

Mental illness refers to conditions that affect cognition, emotion, and behaviour (e.g., schizophrenia, depression, autism etc.) (Manderscheid et al., 2010)

Moderate-intensity activities range from 3 and 6 times the resting levels of metabolism (3-6 METs), or have a relative intensity of between 55 to 70% of maximun heart rate. (Norton et al., 2010). Moderate intensity PA provides the most health benefits, which include the reduced risk of cardiac disease, depression, diabetes, and cancer (Kyu et al., 2016; Blair, 2007).

Moderate to vigorous intensity physical activity (MVPA) is any activity with a metabolic equivalent (MET) value between 3 and 9.

Non-communicable disease (NCD) is a medical condition or disease that is not caused by infectious agents (non-infectious or non-transmissible). They are mostly diseases of a slow progression that last a long duration (Reiner et al., 2013).

Physical Activity: Physical activity is described as any body movement produced by the skeletal muscles that results in a substantial increase over resting energy expenditure (Bouchard et al., 2012). It includes a full range of human movement, ranging from hobbies to competitive sport or activities that are a part of daily living (Miles, 2007).

Positive Mental health and negative mental health are are often vaguely defined (Winzer et al, 2014). One common way to conceptualize these theoretical constructs is to view them as two poles of a continuum. Positive and negative mental health relate to each other. Some evidence suggests that the two dimensions may be independent rather than opposite ends of a single dimension (Aked et al., 2008)

Positive mental health interventions are associated with positive psychology – the study of positive emotion, positive character, and positive institutions (Martin E.P. Seligman et al., 2005).*Resilience:* The ability to bounce back from adversity (Smith et al., 2008).

Vigorous-intensity activity ranges from 6 and 9 times the resting levels of metabolism (6–9 MET) and has a relative intensity equivalent of between 70 to 90% of maximun heart rate. Examples include heavy lifting, aerobics, or fast bicycling. Time spent at this intensity usually involves short intervals (Norton et al., 2010). It is associated with rapid breathing and a greater increase in heart rate (Oberg, 2007). Relative to light and moderate intensity activity, vigorous-intensity activity is associated with additional health benefits (Chudasama et al., 2019)

Wellbeing is a state of equilibrium or balance that can be affected by life events or challenges. Wellbeing is maintained when individuals have the psychological, social, and physical resources they need to meet a particular psychological, social, and/or physical challenge (Dodge et al., 2012).

1.8 List of Abbreviations

BRS = The Brief Resilience Scale

HEI = Higher Education Institutions

IM = Intervention Mapping

MVPA = Moderate to Vigorous Physical Activity

PA = Physical Activity

PACE + physical activity measure = The Patient-Centred Assessment and Counselling for Exercise Plus Nutrition (PACE+)

PASCQ = The Physical Activity Stages of Change Questionnaire

SOMI = State of Mind Ireland

SOMI-HE = State of Mind Ireland-Higher Education

TTM = Transtheoretical Model

WEMWBS = The Warwick-Edinburgh Mental Wellbeing Scale

WHO- 5 = WHO-5 Wellbeing Index

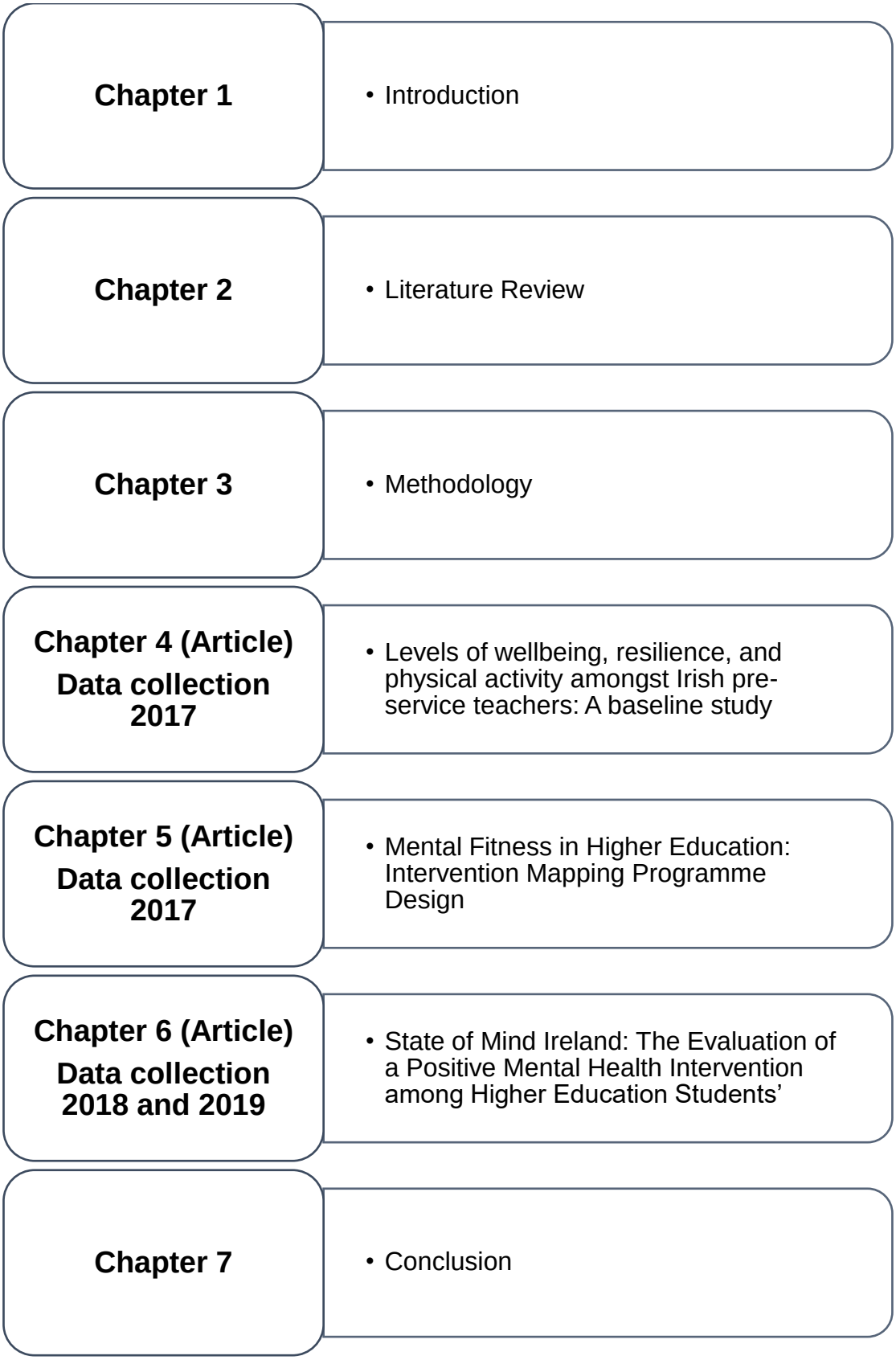


Figure 1.2 – Schematic overview of the thesis

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CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter provides an overview of the literature that describes the approach, rationale and components of the SOMI-HE intervention research. In the first section, relevant literature concerning various concepts of mental health and wellbeing are discussed. The concept of positive mental health is defined, and the link between positive mental health and mental fitness is discussed. Two models that explain the biopsychosocial and environmental determinants of mental health are interpreted, and an overview of the known cognitive determinants of mental health are described. The theory of emerging adulthood is then reviewed as it used a developmental theory to describe the population this research devotes its attention to. A rationale for the development of the SOMI-HE intervention for this emerging adult cohort is presented through an analysis of the literature on the condition of the mental health of the general emerging adult population and those attending higher education in the past decade.

The chapter proceeds to review a potential response to the discussed mental health concerns of emerging adulthood through health promotion. Five approaches to health promotion are defined and a description of positive mental health promotion is illustrated. Supporting research studies investigating the outcomes of positive mental health interventions are then examined. The key wellbeing components used in SOMI-HE include wellbeing, stress-vulnerability, resilience, mindfulness, mental health literacy, one-good adult and physical activity (PA) . Each component and method of measurement are examined and reviewed for both the psychological components and PA. PA is a significantly large component in SOMI-HE; therefore, the literature review closes with a discussion on the connection between PA and wellbeing. A schematic overview of the literature review chapter is presented in *Figure 2.1*. The following section begins with exploring the concept of mental health from various perspectives, given: ‘Everyone engaged in the task of promoting health starts with a view of what health is‘ (Naidoo & Wills, 2016, p.5).

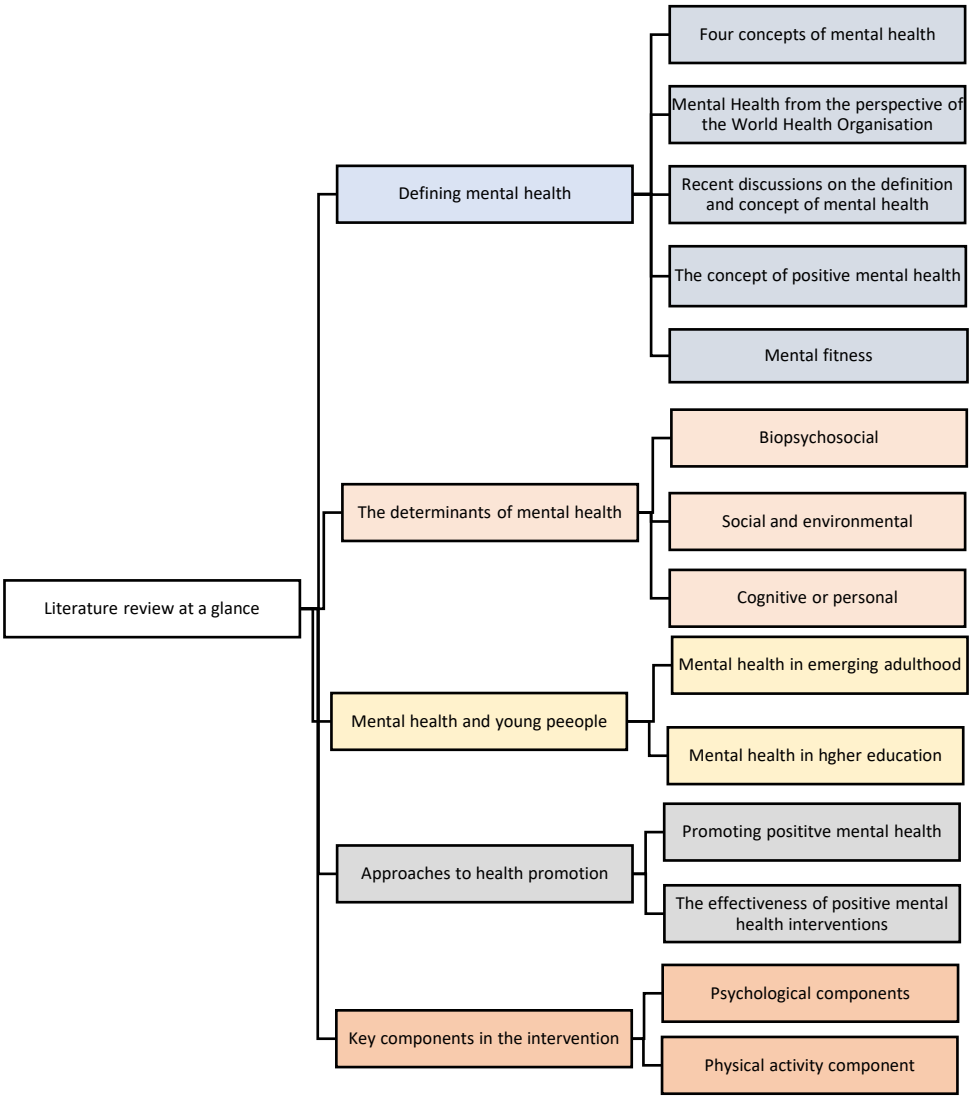


Figure 2.1 – Literature Review Schematic

2.2 The trouble with defining mental health

There has been a long-standing debate on what constitutes an accurate definition of mental health, dating back to the ancient philosophers (384 to 322 BC). Although Byzantine writings do not have specific reference to mental health or mental illness, concepts of wellbeing from Greek philosophy have provided the foundations for mental health practice and research to date (Ahonen, 2019; Muñoz-Negro, Mula-Ponce, López-Pérez, Martínez-Barbero & Cervilla, 2018). However, a universal agreement on the theoretical definition of mental health is likely to continue to evolve as considerable disagreement and debate continue concerning how we conceptualise and measure mental health (Cooke, Melchert & Connor, 2016).

Conceptual confusion is prevalent due to the differing values across cultures, classes and genders (World Health Organisation, 2005); (Vaillant, 2012; Galderisi, Heinz, Kastrup, Beezhold & Sartorius, 2017, 2015). Additionally, mental health is a complex issue not easily discussed due to the different language, norms, and assumptions that come from diverse experiences and beliefs (Cattan & Tilford, 2006). Furthermore, the terms 'mental health' and 'mental illness' are frequently used interchangeably (Leighton & Dogra, 2009). In the past 25 years, the stigma associated with mental illness has led to the term mental health to be used as a euphemism to describe the treatment when responding to those with diagnosed mental health d. An example of this is: 'This person is suffering from mental health' (Bhugra, Ventriglio & Bhui, 2016). Using the term 'mental health' in this way contributes to the confusion when differentiating between mental health and mental illness (Bhugra, Ventriglio & Bhui, 2016). It is also associated with the dated view of the medical model, where, where health assumes the absence of disease and can be treated with a medical approach (Naidoo & Wills, 2016). It insinuates that individuals are either mentally ill or mentally well (WHO, 2005; Ryff & Keyes, 1995).

To date, there is still no collective agreement on the correct meaning and use of the terms, 'mental health' and 'mental illness'. Westerhof & Keyes (2010) express that viewing mental health as just the absence of disease falls short of understanding a lifespan approach to mental health, maintaining it is a minimal outcome from a psychological perspective. Instead, Keyes and colleagues (2002, 2005, 2007) suggest that indicators of positive mental health are central to understanding mental health and not just mental illness. In a lifespan investigation into age differences of mental health, Westerhof & Keyes (2010) highlight that good mental health is created when individuals show positive symptoms in three domains: social, emotional, and psychological wellbeing. Westerhof & Keyes (2010) conclude from their research that, although older adults have fewer mental illness problems, often they don't experience better, more positive mental health than that of younger adults. This emphasises the idea that one may not have a mental illness, but also may not have complete or positive mental health. It implies that we all have mental health; however, the condition of mental health can vary.

As our understanding and perspective of mental health or illness progresses, professionals in the field of mental health look towards developing a more informed concept of positive mental health, by acknowledging that a multitude of interacting biopsychosocial factors determine mental health (Vidourek & Burbage, 2019; Thomas et. al., 2016; Slade, 2010; Department of Health and Children, 2006).

The following sections explore the current perspectives of defining mental health. A definition of mental health is essential to inform the health promotion approach of the research. Additionally, conceptualising what constitutes mental health in intervention is necessary for the appropriate selection of evaluation assessments that measure risk and protective factors of mental health (WHO, 2005).

2.2.1 Four concepts of mental health

In a systematic review of instruments that measure psychological health, Cooke et al. (2016) outline four main categories of mental health. The two most prominent and influential approaches to conceptualising wellbeing include the ancient Greek hedonic (Aristippus of Cyrene 435 to 356 BC) and eudemonic (Aristotle 384 to 322 BC) schools of thought (Cooke et al. 2016). Ancient theories did not directly address mental health. Nonetheless, they correspond closely to the current perspectives of positive mental health (Lamers, 2012). The hedonic approach focuses on pleasure and happiness. Therefore, happiness, in the hedonistic perspective, is measured by the totality of one's hedonic moments 'subjectively-determined positive mental states' (McMahan & Estes, 2011). It is often referred to as subjective wellbeing as it is directed towards the gains of pleasure attainment, enjoyment, satisfaction, comfort, and pain avoidance (Huta, 2016; Ryan & Deci, 2001). On the other hand, the eudemonic approach looks towards personal growth, meaning, self-realisation, ethics, authenticity, autonomy, and integration (Huta, 2016). It is about cultivation of personal strengths and contributing to the greater good (Ackrill, 1975). From the eudemonic perspective, the fulfilment of an individual's potential is seen as central to achieving psychological health (Ryan & Deci, 2001). Essentially, the term eudaimonia refers to wellbeing as distinct from happiness, described by hedonic perspectives. Instead, eudemonic theories maintain that not all desires have outcomes that a person might value, which, in any case, would hinder wellbeing (McMahan & Estes, 2011). Despite their differences, both of these perspectives – hedonic and

eudemonic – are seen as interlinked and necessary for human flourishing (Huta, 2016; Keyes, 2005; 2002). Hedonic and eudemonic aspects of wellbeing are a combination of indicators that reflect mental health. Therefore, both are essential to measure and enhance wellbeing (Ryan & Deci, 2001).

The third concept outlined by Cooke et al. (2016) is the quality of life (QoL) approach. QoL is considered to be a broad-ranging theory that interprets a person‘s physical health, psychological state, personal beliefs, social relationships, and their regard to their environment (Post, 2014). QoL is mainly associated with its application in the field of medicine, as it can measure the physical health and functioning associated with particular illnesses or conditions (Bart et al., 2018), for example, the WHOQOL-HIV Instrument (WHOQOL, 2002). QoL is often used in other disciplines, such as psychology and sociology (Burckhardt & Anderson, 2003). It is noted that the interchangeable use of wellbeing with QoL across various disciplines has made the definition of wellbeing ‘conceptually muddy’ (Morrow & Mayall, 2009, p.221 in Dodge, Daly, Huyton & Sanders, 2012). At the same time, it is argued that QoL has also enabled psychologists to identify, remediate or emphasise negative and positive indicators of wellbeing (Keyes, Corey et al., 2012).

The final category, the wellness approach, emphasises that mental health is more than just the absence of illness and instead looks at living a life filled with ‘optimal functioning’ (Cooke et al., 2016). In other research, wellness is understood as distinct from health, wellbeing, and QoL and described as an ‘evolving process toward achieving one’s full potential’ (Bart et al., 2018, p.15). Holdsworth (2019) presents both wellness and wellbeing under the umbrella of health and asserts ‘wellness is the freedom from illness and contains a lifestyle of prevention’ while ‘wellbeing is also wellness, but also includes happiness’ (2019, p.3). This resembles the eudemonic concept of wellbeing as it closely reflects the perspective that maintaining wellbeing is a method of activity and personal growth that maximises your personal ability to function (Cooke et al., 2016).

2.2.2 The concept of mental health from the perspective of the World Health Organisation

Since 1948 the WHO has defined health as: ‘A state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity’. In more

recent years, the WHO have also described mental health as: ‘A state of wellbeing in which the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community’ (WHO, 2001). These definitions are seen as progressive outlooks on health and mental health as they share a vision of optimal physical, psychological, and social functioning (Antonovsky, 1996). They combine both eudemonic and hedonic perspectives. The WHO intends to inclusively and positively promote mental health awareness through using the terms ‘wellbeing’ and ‘mental health’ interchangeably (WHO, 2001; 2004; 2005;). In an effort to reduce mental health stigma, the WHO links the prevention and promotion of mental health as symbiotic elements to responding to health issues worldwide (WHO, 2004). The WHO (2001) definition is an attempt to construct a unified theory with holistic consideration of environmental and individual factors, along with other aspects of human life and values such as society and culture.

In their endeavour to allocate for cultural diversity, the WHO (2004) also refer to mental health as an ‘individual resource’, which influences one’s quality of life. The WHO (2004) acknowledges that this ‘resource’ can be increased or diminished by the actions of society, leading the WHO to assume that the vast diversity in cross-cultural, class, and gender values means a consensus on a definition cannot be reached and, therefore, can only be conceptualised to avoid restricting its interpretation across cultures (WHO, 2004). The WHO concludes, in any case, that each health research and promotion context needs to be regarded uniquely, to understand a particular community’s concept of mental health, before engaging in mental health promotion (WHO, 2005).

The WHO (2020) clarifies key facts that describe mental health today, which include:

- Mental health is more than the absence of mental disorders.
- Mental health is an integral part of health; indeed, there is no health without mental health.
- Mental health is determined by a range of socioeconomic, biological and environmental factors.
- Cost-effective public health and intersectoral strategies and interventions exist to promote, protect and restore mental health.

2.2.3 Moving beyond the World Health Organisation's viewpoint of mental health

The WHO's definition of mental health contributed to the progress that lead to a groundbreaking change of attitude towards mental health. Health professions began to move away from the understanding that health is merely the absence of disease (Huber et al., 2011). Despite this advancment, the WHO's definition of mental health has also been heavily criticised for its fitness for purpose, due to the absoluteness of terminology that minimises an individual's response to life's challenges (Huber et al., 2011). Some maintain that referring to mental health as a 'state of wellbeing' could lead to misunderstandings in the process of identifying positive feelings and functions as critical factors in mental health (Galderisi, Heinz, Kastrup, Beezhold & Sartorius, 2015). In other words, the WHO perspective is seen as possibly too idyllic and overlooks the role of less preferred emotions and empathy in mental health. For example, situations where one is expected to be unwell, sad, or angry and yet demonstrates control of emotional, psychological, and social wellbeing could be considered unhealthy (Galderisi et al., 2015). Galderisi et al. (2015) propose a new and transcultural concept of mental health. Galderisi maintains:

> *…mental health is a dynamic state of internal equilibrium which enables individuals to use their abilities in harmony with universal values of society. Necessary cognitive and social skills; ability to recognize, express and modulate one´s own emotions, as well as empathise with others; flexibility and ability to cope with adverse life events and function in social roles; and harmonious relationship between body and mind represent important components of mental health which contribute, to varying degrees, to the state of internal equilibrium (2015, p.232)*

The Galderisi et al. (2015) definition of mental health aims to be holistic, flexible, and considerate towards acknowledging that every individual's pursuit of happiness varies. It demonstrates to us that people in good mental health are often sad, unwell, angry, or unhappy: 'This is part of a fully lived life for a human being' (Galderisi et al., 2015, p.231).

Vaillant (2012) argues that when defining mental health, we ought to view it in a positive light through focusing on the presence of 'multiple human strengths' as opposed to 'the absence of weaknesses', upholding that education, rather than medication, can improve brain function, to alleviate mental illness (p.93). This

strengths-focus perspective brings further clarity to the earlier discussion on the distinction between mental health and mental illness. Vaillant looks at the longitudinal protective approach to mental health rather than the responsive medical approach, determining that the facets of mental health, whether it be resilience, feeling positive emotions, emotional intelligence, or subjective wellbeing can vary between cultures, yet they all remain as relevant. He raises the issue of how mental health interventions should respond to mental health problems through analysing what facets of mental health are fixed, and what are changeable across populations. Slade (2010) upholds a similar view, stating that mental health workers know far less about promoting wellbeing than they do about treating illness. It is for this reason that the term 'wellbeing' is understood as more synonymous with conceptual approaches of positive mental health (Huppert & Ruggeri, 2017).

As acknowledged by WHO (2005), a globally accepted concept of mental health will continue to be subject to debate, and discovering a worldwide view of mental health may be hard to achieve when taking into account the diverse epistemic values of all societies and cultures (Manwell et al., 2015; Stepke, 2015; Vaillant, 2012). The WHO and other sources (Galderisi et al., 2015; Manwell et al., 2015; Vaillant, 2012) advise health promotors to follow a broad approach when defining mental health, to ensure sensitivity and inclusivity, while also maintaining respect for individual autonomy. Therefore, for contextual suitability in this thesis, the concept of mental health can be explored as facts of what mental health can be agreed upon:

- Mental health is different from mental illness, as everyone has mental health (Westerhof & Keyes, 2010)
- Mental health is more than the absence of mental disorder. It is determined by a variety of socioeconomic, biological and environmental factors, and an integral part of health. There is no health without mental health. (WHO, 2018a)
- Life is changeable and mental health is determined by many factors. Therefore, mental health is a dynamic state of internal equilibrium which often requires an active search for a new equilibrium, achieved with assistance of using various positive components, activities and resources (Galderisi et al., 2017)

While these perspectives of mental health have served as useful conceptions that have reformed the nature of treatment and response to mental health needs, there is increasing interest in exploring the concept of positive mental health (Barry, 2009).

Positive mental health acts as an entity of health promotion that focuses more on the general development of a wellbeing agenda from a policy and practice perspective.

2.3 THE CONCEPT OF POSITIVE MENTAL HEALTH

The concept of positive mental health is seen as fundamental to human development, and to coping with adversity (Chan, 2010). What constitutes positive mental health is essentially the feeling of happiness that comes with psychological resources, including self-esteem, mastery, and resilience to life's stressors (WHO, 2004). It has been described as the presence of social, emotional, and psychological wellbeing (Keyes, 2002). Positive mental health is understood as a positive approach to mental health. It emphasises positive wellbeing indicators and has a science investigating what makes people feel and function well (Lamers, 2012;Aked, Marks, Cordon & Thompson, 2008). Positive mental health interventions build enabling conditions of life and are 'not just interventions that decrease misery' (Seligman et al., 2009, p.233).

In 1958, Jahoda was one of the first to develop and expand upon the WHO's (1948) perspective of health (health is not merely the absence of illness). Jahoda maintained that 'mental health is an individual and personal matter involving a living human organism, or, more precisely, the condition of an individual human mind… it is improper to speak of a 'sick society' or a 'sick community'' (1958, p.10). Jahoda addresses the idea that mentally healthy behaviour or standards can vary with time, place, culture, and expectations, describing a multidimensional model of positive mental health. Her work distinguished six criteria:

1) Attitudes of an individual towards his own self.
2) The degree of growth, development, and self-actualization.
3) Coherence and continuity of personality.
4) Autonomy and self-determination.
5) An adequate perception of reality.
6) Environmental mastery.

These models demonstrate that mental health under the positive mental health perspective is best understood as a complex multidimensional phenomenon. Jahoda's work shaped the underlying theories and frameworks of current positive

psychology, defining positive mental health in terms of a list of attributes. However, it too came under criticism for its heavy influence by western culture's understanding of what constitutes and defines positive mental health (Murphy, 1978).

Keyes (2007) describes 'flourishing' as a term that refers to mental health in a positive light. According to Keyes (2007), to flourish means to feel good towards the life you are living, in which you are functioning well, through a combination of high levels of emotional (interest in life, satisfaction, and happiness), social (integration, coherence, acceptance, contribution, and actualisation) and psychological (autonomy, environmental mastery, personal growth, purpose in life, self-acceptance, and positive relations with others) wellbeing. Keyes (1998) and Keyes & Simoes (2012) present evidence that teach us that positive social community involvement supports a life well lived. The resources, skills, and experience gained through education and growing up are 'instrumental in negotiating the challenges' of the social world (Keyes, 1998, p.133). Similarly, Seligman proposes that, to flourish, one must interact with and experience positive emotions, engagement in life and work, positive relationships, meaningful life and work and accomplishments (Seligman, 2011). These positive psychological experiences can build positive traits which act as a buffer against ill mental health (Seligman & Csikszentmihalyi, 2001; Kawachi & Berkman, 2001).

In Manwell et al.'s (2015) international, multidisciplinary study investigating a preferred definition of positive mental health, a lack of consensus on the meaning of positive mental health was identified. Within their research, Manwell et al. (2015) investigate four definitions of positive mental health from WHO (2001), McKenzie (2014) in Manwell et al. (2015), the Public Health Agency of Canada (2006), and Huber et al., (2011). Only 20% of respondents were satisfied with the WHO's (2001) definition of mental health outlined earlier, while the majority of respondents (46%) rated the Public Health Agency of Canada (PHAC) (2006) as the definition most preferred. The popular PHAC (2006) definition is as follows: 'Mental health is the capacity of each and all of us to feel, think, and act in ways that enhance our ability to enjoy life and deal with the challenges we face. It is a positive sense of emotional and spiritual wellbeing that respects the importance of culture, equity, social justice, interconnections, and personal dignity' (Manwell et al., 2015, p.3). Despite the

popularity of PHAC's definition among the sample (which constituted 52% Canadian respondents), 30% of the study's participants said none of the four definitions was adequate and an agreement on the best definition of mental health failed to emerge. There was, however, a significant agreement among participants on the core concepts of mental health. These related to describing factors relating to the individual's capacity to effectively cope with change in his/her environment and interaction with society. To resolve the conflict between positive mental health perspectives, the researchers proposed a trans domain model of health intended to resolve the discourse dissonance in relation to a definition of mental health. This trans domain model (Manwell et al., 2015) is based on three main domains of health: mental health, physical health, and social health, as also outlined by both the WHO (2001) and Huber (2011). In *Figure 2.2* four overlapping, integrating areas between these domains are demonstrated as:

1) Autonomy: the capacity for control over one's self.
2 Sense of us: the capacity for relating to and with others.
3) Control: the capacity for navigating social spaces.

And, at the centre of the model with the highest degree of integration:

4) Agency: the ability to choose one's level of social participation, for example, to accept, reject, or change social, legal, or theological practices (Manwell et al., 2015, p.9).

The proposed model has congruence with Vaillant's (2012) perspective of positive mental health, arguing that finding a consensus in defining mental health is only possible by understanding the epistemological and moral variants that are present across cultures, system and values. This also supports Galderisi et al.'s (2017) position in that the definition of mental health is most influenced by the culture that defines it.

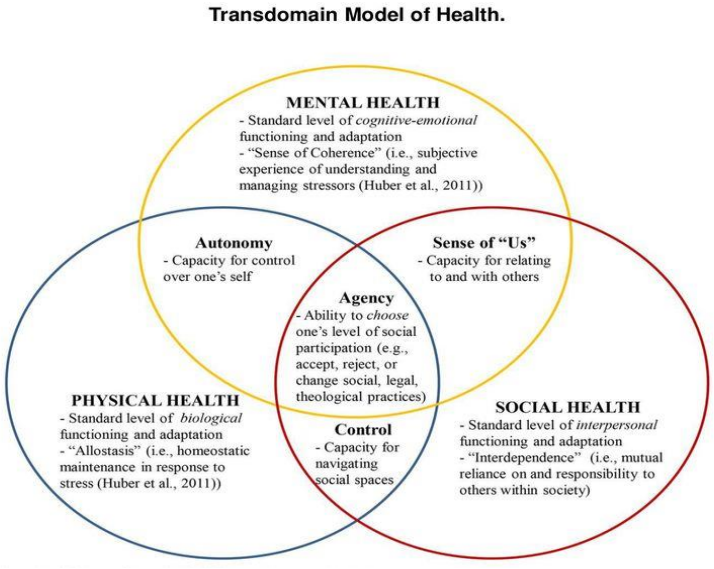


Figure 2.2 – A conceptual diagram of the trans domain model of health, taken from Manwell et al. (2015, p.9)

It is clear that researchers struggle to define a globally accepted concept of positive mental health. While it may be possible to define health among populations, the social domains that influence mental health vary too much across cultures to develop a universal statement of mental health (Manwell et al., 2015). It remains an essential subject, as conceptual confusion and stigma prevent a proactive approach to mental health (DeBate et al., 2018; Vidourek & Burbage, 2019). However, an alternative term, known as 'mental fitness' has recently been adopted to assist communities in understanding positive mental health behaviours (Breslin et al., 2018; Robinson et al., 2016).

2.3.1 Positive mental health and 'mental fitness'

'Mental fitness' has been proposed as a positive psychology approach to mental health (Robinson, Oades & Caputi, 2016). It reflects the work of renowned positive mental health psychologists and experts in the field, such as, Jung, (1933) Keyes (2007), Maslow (1968), Rogers (1962), and Seligman (2000). Mental fitness is a concept with strong connections to positive psychology, as it reflects the teaching that individuals can enhance mental health and have the ability to reach their potential to live a full and meaningful life (Vaillant, 2012). The term 'mental fitness' has provided a proactive and preventative method to support wellbeing as it is analogous with the term 'physical fitness'. In a Delphi study by Robinson et al.

(2016), the broader community understand ‘fitness’ as a level of potential in physical endurance, strength, and flexibility. Therefore, mental fitness can also describe one’s mental endurance, strength, and flexibility. This perspective portrays mental fitness as something that can be learned. Recognising that individuals can actively engage in increasing mental fitness by extending their potential to change, develop, adapt, and respond to the environment. According to Robinson et al. (2016, p.63), mental fitness can be defined as ‘the modifiable capacity to utilise resources and skills to flexibly adapt to challenges or advantages, enabling thriving’. Mental fitness, under Robinson’s conceptualisation, is based on four guiding principles. First, fitness is seen as a positive term without connotations of illness implied. Second, mental fitness could be understood by individuals, organisations, educational institutions, and their communities, in a similar way to physical fitness. Third, mental fitness is measurable. And finally, fourth, mental fitness can be improved in a similar way to physical fitness. These principles are supported by recent Irish research, suggesting the term ‘mental fitness’ as being less stigmatising at it normalises mental health and is less connected to mental illness (Breslin et al., 2018).

Mental fitness is seen as analogous to physical fitness (Naidoo & Wills, 2009), and a term deemed as ‘approachable’ and seen as less stigmatising for student athletes in higher education (Breslin et al., 2018, p.5). Growing evidence indicates that there are specific, intentional activities that benefit and increase the growth and development of the brain (Greenwood & Parasuraman, 2010; May 2011). The brain can remodel itself and a person can learn from experiences, just like with physical exercise, when you repeatedly stimulate a circuit in the brain, you strengthen it (Hanson, 2018). Neuroscience research indicates that interventions which develop pro-social behaviour and wellbeing can induce neuroplasticity impact on the brain (Davidson & Mcewen, 2012). Positive psychology and neuroscience have provided us with the knowledge that during our lifetime we can increase our brains fitness in strength, endurance, and flexibility through using valuable psychological resources and theories related to positive mental health outcomes (Oades, Steger, Delle Fave & Passmore, 2017).

‘Understanding the history and evolution of the concept of mental health is essential to understanding the problems it was intended to solve, and what it may be used for in the future’ (Manwell et al., 2015, p.10). However, it is equally important

for health professionals and promoters to understand the root causes of health problems and the impact of social surroundings on people's lives (Naidoo & Wills, 2016). These are referred to as health determinants. Subsequently, the following section explores the definition of a health determinant and explores the biopsychosocial and social and environmental influences on the mental health of individuals.

2.4 THE DETERMINANTS HEALTH AND MENTAL HEALTH

A determinant of health refers to a positive or negative aspect that leads to a change in health status, either for the benefit or non-benefit of the health of an individual or community (Farrell et al., 2008; Keleher & Murphy, 2004). Mental health and health is determined by a range of biological, psychological, social, economic, and environmental factors that interact in a multi-dimensional way (Naidoo & Wills, 2016; WHO, 2005). Understanding the determinants of risky, as well as health-promoting behaviours, is essential for behaviour change in health promotion and intervention design (Ganga, Kutty & Thomas, 2014; Kok, 2014). In this section, the advancements of models that depict the various determinants of health and mental health will be explored.

2.4.1 Biopsychosocial determinants of health

In 1977, the biopsychosocial approach to mental health was developed to provide a basis for understanding the behavioural determinants of disease, or factors which affect health (Engel, 1977) (*see Figure 2.3*). The biopsychosocial model highlights the interrelatedness of people's biological, psychological, and social functioning (Department of Health and Children, 2006). Engel (1977) argued for a more holistic approach to illness and psychological problems to replace the old biomedical model. This proposal identified the blurred line between the boundaries of being well and being sick when it comes to mental health. Engel's publication further highlighted that the problems of living are not always suited to the response of the biomedical model, arguing that, under this approach, mental health difficulties were reduced to diseases of the mind that could only be responded to by pharmacological interventions targeting biological disturbances (Babalola et al., 2017; Engel, 1977). It draws attention to the wider determinants that influence the cause and condition of

health. It has been regarded as reformation in medicine as it formulates health as a 'dynamic, interactional, but dualistic view of human experience, in which there is the mutual influence of mind and body' (Epstein, Borrell-Carrio & Suchman, 2004, p.581).

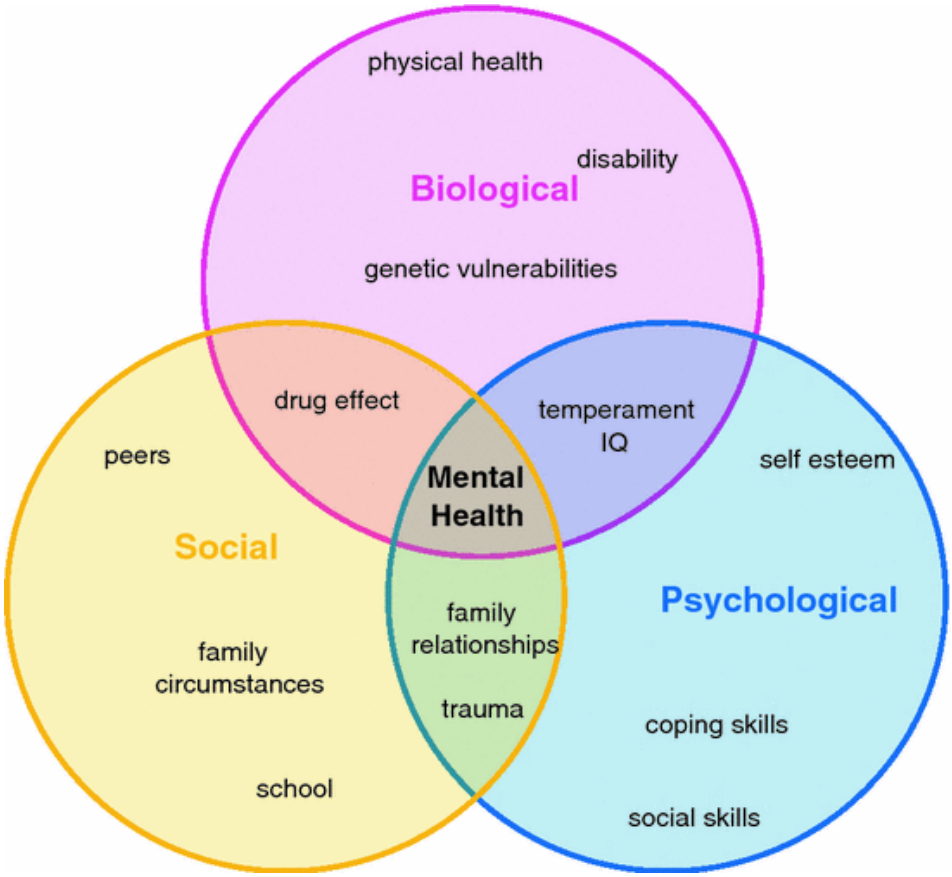


Figure 2.3 – An example of the biopsychosocial model of mental health – Taken from: (Mehta & Kapoor, 2018)

Even though the biopsychosocial model became the overarching general model for health, some researchers have criticised the biopsychosocial approach for being too vague and lacking content and validity (Bolton & Gillett, 2019). Nonetheless, the biopsychosocial model remains viable. This is because it highlights how the mental health and wellbeing of individuals and populations across all age groups is influenced by a range of complex factors, both within and outside the individual's control (Bolton & Gillett, 2019; Epstein et al., 2004). The biopsychosocial approach has allowed health professionals to understand the cultural beliefs and practices that often play a role in mental health problems and the best methods to support diverse populations (Babalola, Noel & White, 2017). After all, 'changing something requires understanding it first' (Kok et al., 2016, p.298). Although the behavioural approach

to health focuses on and explains lifestyle factors, health is also determined by a range of social and economic factors. At a structural level, these determinants reflect the unequal distribution of power and resources and frequently require political activity and change in social policy (Naidoo & Wills, 2016).

2.4.2 Social and environmental determinants of health

The WHO maintains that social determinants are 'the conditions in which people are born, grow, live, work, and age' (WHO, 2014, p.9). These conditions or circumstances are shaped by the distribution of money, power, and resources at global, national, and local levels (Irwin, Scali, Vega & Solar, 2005, p.4). Dahlgren and Whitehead (1991) refer to these broader determinants of health as 'layers of influence in health' (*see Figure 2.4*). In their social model of health, Dahlgren and Whitehead's components include: personal (age, sex, hereditary), interpersonal (individual lifestyle factors), micro-environment (social and community networks and living conditions), and the broader socio-political environmental conditions (governing and policy) that affect health. Their framework has helped researchers and policymakers to construct a range of hypotheses about the social and environmental determinants of health and the interactions between the various determinants, allowing modifiable influences on health to be amended through social policy (Dahlgren & Whitehead, 1991; Graham, 2004). Their arc illustrates that it is not just the environmental conditions which affect the health of people; the psychosocial factors such as economic status and postcode are also viewed as critical factors in determining health.

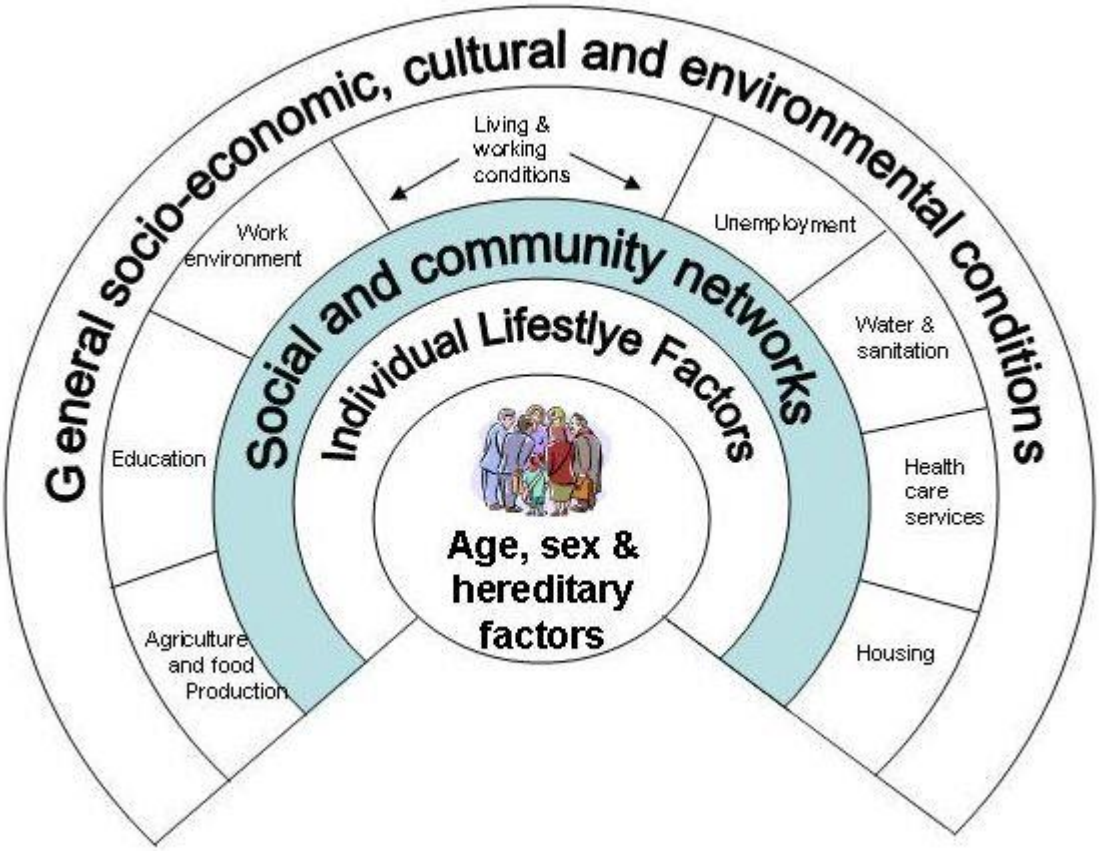


Figure 2.4 – Dahlgren and Whitehead's social determinants of health model. Taken from: (Dahlgren & Whitehead, 1991, P.X)

Many environmental determinants lie beyond the capacity of health interventions, as change often depends on the action taken by agents or groups across the layers of the environment (Kok, 2014). For example, if a national housing crisis is having a negative influence on the mental health of the student population, anything that is modifiable to address this determinant cannot be addressed by an educational intervention that does not have influence over the participants' environment. Instead, interventions in Dahlgren & Whitehead's (1991) interpersonal layer of ecological health aim to influence individual lifestyle factors that determine positive mental health. Barry (2009) asserts that, at the individual level, psychosocial determinants of positive mental health can be addressed, and coping skills as well as protective mental health behaviours can be enhanced by interventions that promote cognitive and emotional resources, such as, self-esteem, identity, self-efficacy, and resilience. These 'factors that rest with the individuals (people at risk) and are subject to their control or influence are referred to as personal determinants' (Bartholomew Eldridge

et al., 2016). These cognitive or personal determinants are explored in the following section.

2.4.3 Cognitive or personal determinants of health

Cognitive or personal determinants are factors of health that can be influenced by engaging people to think about making changes in their own behaviour or environment (Bartholomew Eldridge et al., 2016). They are usually referred to as 'social cognition models' as they focus on the thoughts and feelings individuals associate with health-related behaviours (Conner, 2010). Personal determinants usually include cognitive process such as knowledge, beliefs, attitudes, values, self-efficacy, outcomes, expectations and skills (Bartholomew Eldridge et al., 2016).

Investigating the vast influences of health behaviours that exist within an individual or group of individuals requires thorough investigation in order to prioritise the determinants that can be addressed by the intervention (Bartholomew Eldridge et al., 2016; Kok, 2014; Kok et al., 2016). Research indicates self-efficacy beliefs play an essential role in determining adolescent and adult positive thinking and happiness (Caprara & Steca, 2005; Caprarra, Steca, Gerbino, Paciello & Vecchio, 2006). Knowledge (Ojio et al., 2015), normative beliefs (Barksdale & Molock, 2008; Li, Denson & Dorstyn, 2018), attitudes toward help-seeking (Hunt & Eisenberg, 2010), and stigma (Spence, Owens-Solari & Goodyer, 2016) have been shown to influence help-seeking behaviours among adolescents and young adults. Personal determinants are addressed by interventions at an individual level. Such interventions are 'designed to promote cognitive and emotional resources such as self-esteem, identity, self-efficacy, and resilience, and to enhance coping skills and behaviours that promote and protect mental health' (Barry, 2009, p.9).

The next section, 2.4 explores the current literature on the mental health of young adults across the general population and in higher education in Ireland and abroad. Understanding the mental health indicators for different population groups is essential to supporting positive mental health at the individual or personal level. It enables us to advance our understanding of the field and address the personal, lifestyle, and broader social and environmental influences that determine the mental health needs of populations and individuals (Barry, 2009).

2.4.4 The Social Determinants of Mental health

The Lancet Commission on *'Global Mental Health and Sustainable Development'*, published a call to action in 2018 that aimed for a 'more holistic understanding of mental health that necessitates a coordinated, multisectoral response' (Eaton et al., 2018, p. 1). The commission recogises that mental illness is on the rise and commits to three guiding pricipals (Patel et al., 2018, p. 1561):

1. The expansion of mental health from the existing focus on clinically defined mental disorders to a broader dimensional approach to mental health.
2. The alignment of evidence from diverse fields, including the genetic, developmental, social, and biological determinants of mental health.
3. Uphold that mental health is a universal and basic human right.

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Patel and colleagues illustrate (figure 2.5) in a contemporary model that the determinants of mental health are unique to our diverse contexts, yet on an individual level, determinants can converge and interact. The convergent approach attempts to explain the causes of mental health and mental illness (Patel et al., 2018)

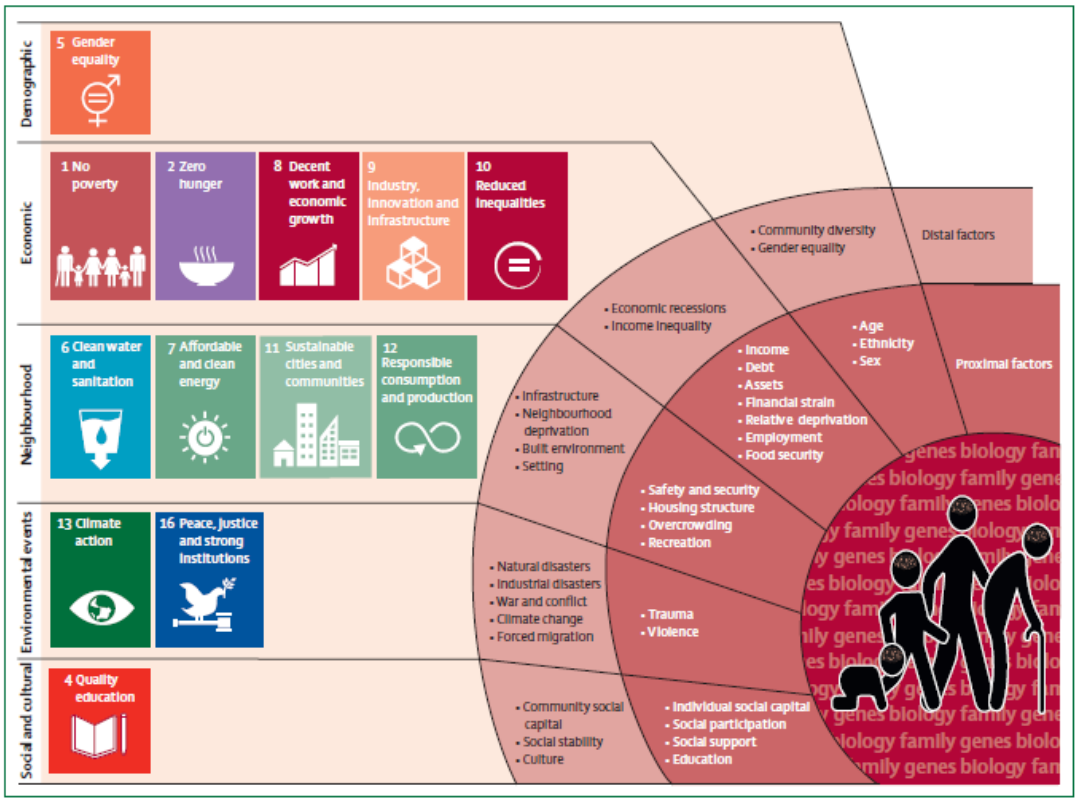


Figure 2.5 Social determinants of global mental health and the Sustainable Development Goals, Reproduced with Permission from the Lancet Commission on Global Mental Health and Sustainable development (Lund et al. 2018, Patel et al. 2018)

2.5 Mental Health and Young People

The developmental theory of Emerging Adulthood is investigated and reviewed as a suitable theory to describe the population this research is dedicated to. A rationale for the development and provision of positive mental health interventions in higher education settings is discussed through an analysis of the current research in positive mental health interventions in higher education settings.

2.5.1 Emerging adulthood

When discussing 'young people', this research refers to the developmental stage of 'emerging adulthood'. A theory coined in recent decades by Arnett (2000), this stage of development covers an age range of 18 to 29 years, but it has a particular focus on the 18 to 25-year range. The theory assimilates Erikson's theory of human development and the intimacy versus isolation stage of young adulthood (Erikson, 1968). However, Arnett claims emerging adulthood is a new developmental theory that addresses the societal and demographic changes that have taken place in recent

decades since Erikson's work (Arnett, 2000). A key feature of Erikson's theory of intimacy versus isolation is the importance of relationships and connections to recognise identity (Erikson, 1968). The theory of emerging adulthood is also recognised as a subjective, ambiguous time (Arnett, 2000). It can be viewed as the age of possibility, identity exploration, instability, and self-focus (Arnett, 2000; 2007). Emerging adulthood is a stage when a young person does not see themselves as an adolescent, yet neither see themselves as having reached adulthood (Arnett, 2016; Fussell & Furstenberg, 2005). Emerging adulthood has been proposed as an alternative developmental stage between adolescence and adulthood (*see Figure 2.6*), as young people in modern, industrialised, developed societies are experiencing more personal and social pressure at a much younger age, and yet taking on roles of adulthood (such as parenthood and marriage) at a much later age (Arnett, 2007; 2012; Fussell & Furstenberg, 2005).

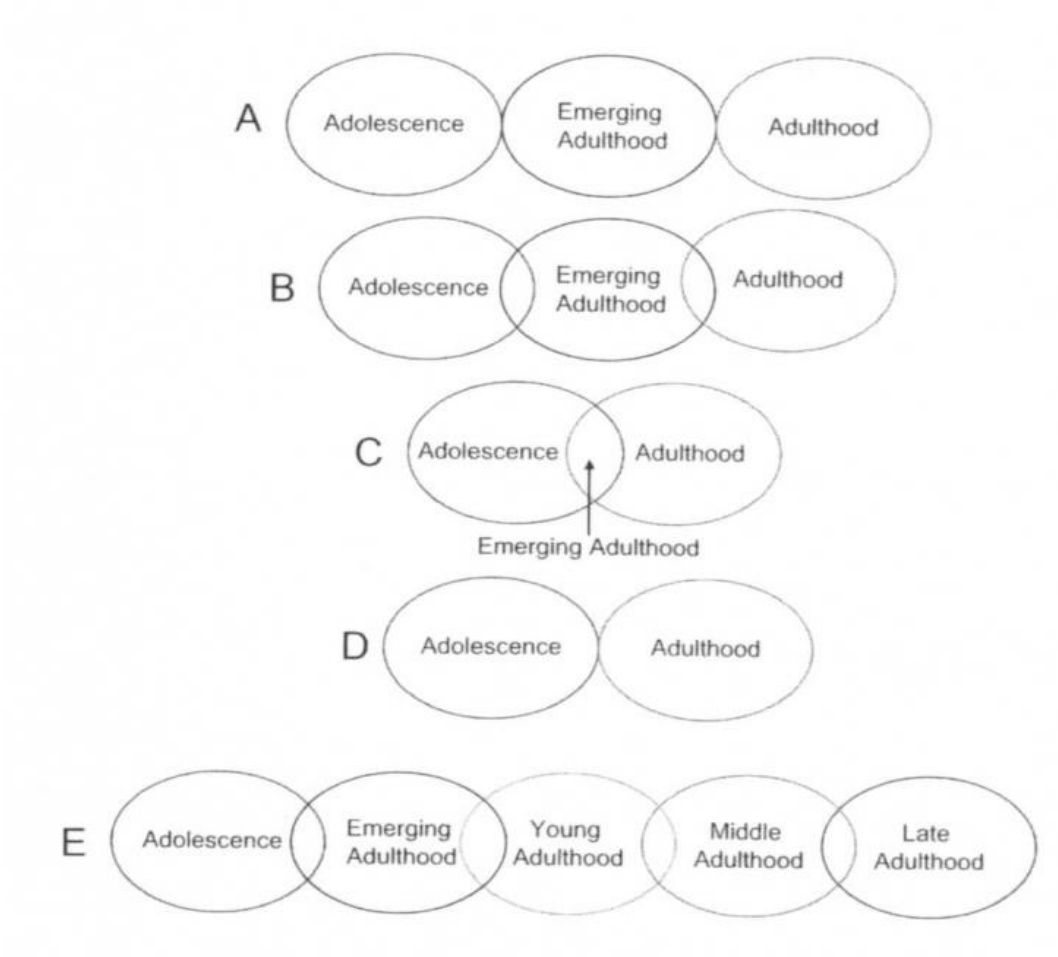


Figure 2.6 – Possible configurations of emerging adulthood. Taken from: Arnett (2007)

Some criticism of the emerging adulthood theory suggests that Arnett's developmental theory is not original (Syed, 2015) and that social researchers have been charting the territory of transition from adolescence to adulthood for some years (Côté, 2000; Waters et al., 2011). Arnett's development of the emerging adulthood theory recognises that the transition to adulthood has become increasingly prolonged. However, this theory cannot outline where maturity begins and ends. Development is domain-specific and, therefore, functioning is affected to various degrees (Hendry & Kloep, 2007). An additional critique posits that the emerging adulthood theory does not consider the variations of development that exists across cultures, as it assumes a general progression can be predicted for all youth (Nelson et al., 2004). As pointed out by Hendry & Kloep, some 1.5 billion individuals, living in developing countries 'do not experience adolescence, much less emerging adulthood!' (2007, p.76). Syed (2015) maintains it is inappropriate to create a life stage of development that is not suitable universally, as it becomes a theory only applied to those who are privileged enough to experience it.

Arnett contends that emerging adulthood theory has its uses as it is a new term for a new phenomenon (Arnett, 2007, p.70). Trible (2015) maintains that the theory of emerging adulthood will allow society to understand and build structures that will help support this age group with the appropriate methods. The theory has been used across various fields of research as a tool to understand the demographics of emerging adulthood in high-income countries (Lisznyai et al., 2014; Marcotte, 2008; Meredith O'Connor et al., 2014; Peer et al., 2015). According to Arnett (2015), young adults struggle with uncertainty, even as they enjoy the freedom of growing up. This age cohort faces anxiety, with the weight of adult responsibilities, and many still experience serious problems and developmental challenges. In conjunction with the challenges of this significant developmental age period, findings show that, not only do this age group carry the global burden for mental ill-health experiences, but 75% of adults with mental illness will have an onset of the illness by the time they are 25 years old (Kessler et al., 2007; Gore et al., 2011). In recent years the developmental theory of emerging adulthood has been flagged as a high risk demographic for developing and experiencing ill-mental health (Lisznyai et al., 2014; Schulenberg & Zarrett, 2006). This accentuates that this age group require

more sophisticated, adequate resourcing to provide effective, accessible, and inclusive services (Coughlan & Doyle, 2015).

2.5.2 Mental health among emerging adults in Ireland

Much Irish research outlines that the mental health problems of adolescents, and young adults is increasing in Ireland (Department of Health, 2016; Rochford, Morgan, Quinn & Farren, 2018; Sullivan, Arensman, Keeley, Corcoran & Perry, 2004; Lynch, Mills, Daly & Fitzpatrick, 2005). In an epidemiological study investistigating mental illness and psychopathology among young adults in Ireland, The Challenging Times Study was conducted with two groups of young people (1. young adolescents aged 11 to 13 years old; 2. young adults aged 19 to 24 years old) by a team of investigators from the Psychiatric Epidemiology Research across the Lifespan (PERL) Group, in the Royal College of Surgeons in Ireland. (Cannon et al., 2013). The research sought to examine the continuity and prevalence rate of mental illness, substance use, deliberate self-harm, and suicidality among young Irish people. The Challenging Times study suggests almost 1 in 5 young people (19- to 24-year-olds) were experiencing a mental illness at the time of the study, with anxiety disorder being the most prevalent type of illness reported (Cannon et al., 2013). In a unique longitudinal investigation, the Challenging Times Two study further demonstrated that the experience of a mental illness in mid-adolescence (12-15 years) can increase and track towards the chance of having a mental illness in young adulthood (19-24 years) (Cannon et al., 2013). The Challenging Times study provides clinically validated data on rates and determinants of mental disorders among Irish youth from 1131 surveyed young people, and 543 diagnostic clinincal interviews. Across the four countries (Germany, Ireland, the UK, the USA), Ireland appears to have the highest incidence rate of mental illness, at 56%, among 19- to 24-year-olds, while the lowest incidence rate is Germany, reporting 39% (Cannon et al., 2013).

In recent years, My World Survey (MWS-1 2012 and MWH-2 2019) gathered substantial data (n = 14, 306 in 2012 and n-= 18,749 in 2019) on mental health risks and protective factors of young Irish people. Two age groups were investigated: young people in second-level education (12 to 19 years) and young adults (17 to 25

years). The MWS-1 data revealed emerging adults had higher levels of distress than adolescents, with approximately 40% of them experiencing elevated levels of depression and anxiety. 2012 data further revealed that under a fifth of these young adults who were reporting severe levels of depression did not seek help (Dooley & Fitzgerald, 2012). In 2019, MWS-2 revealed that 58% of young adults appear outside the normal range for depression and anxiety, a significant increase from MWS-1 (Dooley, et al. 2019; Dooley & Fitzgerald, 2012). . In addition, females presented higher levels of anxiety than males, and among the top stressors for 17 to 25-year-olds were college, the future, and finances (Dooley , 2019). MWS-2 is a robust study with a range of diverse and seldom heard groups contributing to a large sample of 10,459 adolescents and 8,290 young adults attending higher education. It concludes with two questions emerging from the research: where and when is best intervene? and 2) how best to prevent further increases in psychological distress among young people in the future?

The Challenging Times Two study (Cannon et al., 2013), along with the MWS (2012; 2019), highlight the necessity of detection, intervention, and prevention strategies required to tackle the impact of mental ill-health among the young Irish population at various stages throughout life. Both studies identify the prominence of anxiety within the developmental age cohort in question and indicate that patterns of ill mental health can emerge across a young person's life. Despite this, mental health services in Ireland struggle to respond to the unacceptably high rates of mental-ill health among young people (McMahon et al., 2019; Dooley et al., 2019). Prevention is consistently recommended to support and protect the mental health of the young adult population in Irish research (Cannon et al., 2013; Dooley et al., 2019; Rochford et al., 2018).

2.5.3 Addressing Mental Health in Higher Education

Increased levels of student psychological distress is recognised as a concern for higher education students worldwide (Barkham, et al., 2010; Bayram & Bilgel, 2008; Bewick, et al., 2010; Houghton, et al., 2011). In 2016, the Mental Health Matters study was conducted across 22 higher education institutions (HEIs) in Ireland (Murphy, McKernan & Heelan, 2016). The research reported on the experiences of students with mental health difficulties in HEIs (Higher Education Institutions) and

uncovered the disparity between the influx of students attending college and the lack of services available towards mental health. In their research into mental health supports in HEIs, Murphy et al. (2016) described the number of students with mental health problems attending higher education as a 'tsunami' overwhelming on university mental health services, while students equally reported dissatisfaction with the continuity of support and the inconsistency of the service provision on college campus services (Association for Higher Education Access and Disability,2015; Broderick, 2017). The findings of Murphy et al. (2016) also indicate that attending university can be a particularly difficult time of transition for some students, particularly those with varying mental health problems. More recently, Murphy (2017) recommends a whole campus approach to both inclusion and promotion of mental health, specifically as part of induction programmes for ensuring access to information and support services to all students. This proposal is a welcome action as it may not only help those diagnosed with mental health problems to feel that college is accessible and supportive to them, but it may also provide awareness and a platform for those who are quietly struggling with ill mental health experiences to seek the help and information they need to continue and pursue their education.

There is an established need for preventative and protective mental health promotion interventions to help HEIs respond to the stress needs of students and promote positive mental health (Harding et al., 2019). The years of attending higher education are a critical time to create a culture of positive mental health through intervention and prevention of further consequences related to mental health problems and the associated stigma (Vidourek & Burbage, 2019). Evidence-based positive mental health programmes, aiming to develop mental health skills through using social and behavioural science theories of health behaviour, are effective in positively impacting student wellbeing (Winzer, Lindberg, Guldbrandsson & Sidorchuk, 2018; Conley, et al. 2013; Kok, Schaalma, Ruiter, Van Empelen & Brug, 2004). Effective positive mental health promotion and interventions must be designed collaboratively, using conceptual frameworks supported by theory and evidence-informed methods to respond to the assessed needs of a target population (Barry, 2009; Barry & Jenkins, 2007; Jané-Liopis, Barry, Hosman & Patel, 2005).

2.6 APPROACHES TO HEALTH PROMOTION

There are five main approaches to health promotion identified by Ewles & Simnett (2003 and Naidoo & Wills (2016): medical, educational, empowerment, social change, and behaviour change models. Each of these approaches has different objectives, based on their context and function. They assist health promotion practitioners to be deliberate in their own role and to consider their implicit values, aims, and implications of their chosen strategies (Naidoo & Wills, 2016). The aims, methods, and type of worker/client relationships of each of the five approaches to health promotion are described in *Table 2.1* (adapted from Naidoo & Wills, 2009)

Table 2.1 – Approaches to health promotion – adapted from Naidoo & Wills, (2009, p.76)

APPROACH	AIMS	METHODS	WORKER/CLIENT RELATIONSHIP
Medical	To identify those at risk of disease	- Screening individual risk assessment, e.g. body mass index measurement	- Expert-led - Passive - Confronting client
Behaviour change	To encourage individuals to take responsibility for their own health and choose healthier lifestyles	- Persuasion through one-to-one advice and mass media campaigns	- Expert-led - Dependant client/stakeholder - Possible victim-blaming ideology
Educational	To increase knowledge and skills about healthy lifestyles	- Information and exploration of attitudes through individual or small groupwork - Development of skills	- May be expert-led - May involve the client/stakeholder in the negotiation of the issue for discussion
Empowerment	To work with clients or communities to meet their needs	- Advocacy - Negotiation - Networking - Facilitation	- Health promotor is the facilitator - Client/stakeholder becomes empowered
Social change	To address inequalities in health – based on class, race, gender, and geography – adopting a population perspective	- Development & organisation of policy	- Entails social regulation - Is top-down

The health promotion approach of the current study falls within both the behaviour change and education approaches. A combination of psychological and learning theories, derived from the behaviour change and educational approaches described in *Table 2.1*, were adopted and used to inform the selection of theory types in the SOMI-HE intervention (*see Appendix K*). Intervention studies in HEI contexts indicate that skills practice and mindfulness and cognitive behavioural strategies are

particularly effective in enhancing mental health skills (Conley et al., 2013). Health promotion intervention planning requires good practice in adherence to systematic health promoting principles and the use of planning models to guide them (Naidoo & Wills, 2016). In the following section an overview of the procedures used in implementing effective health promotion interventions is outlined in brief.

2.6.1 Promoting positive mental health through intervention

Promoting positive mental health focuses on not only positive states but also positive characteristics which lead to positive emotional states such as engaging and meaningful relationships (Keyes et al., 2012). The promotion of positive mental health through intervention is effective in enhancing wellbeing (Lamers, 2012). Positive mental health promotion can intervene at various levels (individual, community, and structural) and stages (primary, secondary, or tertiary[1]), depending on the needs of an individual or population group (Barry, 2009; Mrazek & Haggerty, 1994). Barry (2009) maintains, for the entire spectrum of mental health interventions – including for people experiencing mental health problems and illnesss – the process of taking action to promote and enhance positive mental health must invest in research to understand the needs and complex determinants of mental health for differing population groups and communities. For example, in a study which set out to identify the predictors of psychological wellbeing in higher education students in New Zealand, components such as resilience, self-efficacy, mindfulness, and social supports were found to be associated with positive mental health (Harding, Lopez & Klainin-Yobas, 2019).

Promoting positive mental health is a new approach adapted by some government policies and institutions in recent years to promote health and wellbeing (Canadian Institute for Health Information, 2009; WHO, 2005). Barry (2009) dedicates a paper to discuss the concept of positive mental health in the context of mental health promotion and advocates that the concept of positive mental health is recognised as key to the development of effective mental health interventions (Barry,

[1] The three classifications of disease prevention include: primary prevention (seeks to decrease incidence of a disorder or illness), secondary prevention (seeks to lower the prevalence of a disorder or illness), and tertiary prevention (seeks to decrease the amount of disability associated with an existing disorder or illness). (Commission on Chronic Illness, 1957).

Clarke, Jenkins & Patel, 2013). Barry (2009) considers the prospect that changing and addressing society's mental health concerns will take more than a mere prevention to illness approach and, instead, maintains that the promotion of flourishing will gain wider societal and health benefits.

Promoting positive mental health has the potential to reduce the incidence and prevalence of mental illness over the life span (Bauer & Hämmig, 2014). More than ever, prevention is now crucial to improving the mental health of populations (Jorm & Yap, 2019). Mental health systems have become imbalanced with an overreliance on the treatment of mental health, forcing the 'prevention gap' (WHO, 2019; Jorm & Yap, 2019; Jorm, Patten, Brugha & Mojtabai, 2017). Taking a positive mental health approach aims not only to reduce the risk of ill mental health but also improve quality of life and promote flourishing (Keyes, 2007). Adults diagnosed as completely mentally healthy (or as flourishing) have the lowest level of health impairments, chronic physical diseases and conditions as the protective presence of positive mental health can reduce risk mortality due to behaviours such as smoking and physical inactivity (Keyes & Simoes, 2012).

2.6.2 The effectiveness of positive mental health interventions

There is robust evidence suggesting that positive mental health intervention programmes have significant positive effect on the mental health of all population groups (Teixeira, Coelho, Sequeira, Lluch I Canut & Ferré-Grau, 2019; Bjørnsen, Espnes, Ringdal, Moksnes & Eilertsen, 2017; Barry, Clarke, Jenkins & Patel, 2013; Seligman, 2011). Positive mental health education programmes are a blend of evidence-based learning from positive psychology (White & Kern, 2018). Effective positive mental health interventions generally include components such as mental health literacy[2] (Bjørnsen et al., 2017; Kutcher et al., 2016), personal strengths (Seligman, Steen, Park & Peterson, 2005), mindfulness[3] (Galante et al., 2018; Ma,

[2] Mental Health literacy (MHL) concerns the knowledge and abilities necessary to benefit mental health (Jorm, 2012).

[3] Mindfulness can include anchoring exercises such as focusing on body sensations, acknowledging emotional reactions, mental images, mental talk, and perceptual sensory experiences. A second concept of mindfulness describes it as an adapted attitude of acceptance of experience, even if it is difficult (Creswell, 2017).

Zhang & Cui, 2019; Kabat-Zinn, 2003), optimism[4] (Shoshani & Steinmetz, 2014) and goal setting (Bolier et al., 2013; MacLeod et al., 2008). There is also significant evidence that recognises the positive effect of using PA interventions as a means to enhance positive mental health (Barrantes-Brais, Sánchez-Ureña & Ureña-Bonilla, 2016; Biddle, Ciaccioni, Thomas & Vergeer, 2019; Penedo & Dahn, 2005). In a meta-analysis of psychological and exercise interventions, Barrantes-Brais et al. (2016), maintain that each type of intervention – positive mental health and PA – are similarly effective in impacting student wellbeing.

In a systematic review, Barry et al. (2013), investigated the outcomes of mental health promotion and prevention interventions designed for young people – aged 6–18 years – in low and middle income countries. The majority of the studies collated in this review interpreted school-based interventions, designed for a variety of purposes, such as, universal programmes implemented with children affected by armed conflict and life skills and resilience building interventions. Life skills and resilience building interventions align more closely with the current study; however, they generally targeted a younger cohort. Nonetheless, Barry's findings suggest that interventions had generally a positive impact on students' mental health through impacting students' emotional and behavioural wellbeing, including reduced depression and anxiety and improved coping skills. Intervention effect on gender varied across the studies. In some cases, females reported a more significant positive effect, while, in other studies, scores indicated mental health improvement in males only. The findings conclude that mental health promotion programmes in communities and schools have both effectiveness and sustainability in diverse cultural contexts, especially those adopting a whole school/community approach (Barry et al., 2013; Tennant et al., 2007).

Specific to higher education research in Ireland, students report that young people want informal mental health-promoting techniques and opportunities to talk to improve mental health knowledge (Chambers et al., 2015). In the first known systematic review and meta-analysis of mental health interventions specific to students in HEI's, evidence suggests that interventions promoting positive mental

[4] Optimism is a tendency to expect good things in the future. It is a 'mental attitude that heavily influences physical and mental health, as well as coping with everyday social and working life' (Conversano et al., 2010, p.28).

health can provide students with promising, yet shorter, lasting effects (3-6 months) than interventions that aim to prevent ill mental health (7-12 months) (Winzer et al., 2018). Winzer et al. (2018) categorise illness preventing interventions as those addressing symptoms of anxiety and depression, and positive mental health interventions as those that boost positive emotions and coping strategies. Furthermore, they assert that to maximise the effectiveness of interventions they must be delivered and recognised at a structural level or a 'whole setting' approach, as endorsed by other experts in the field (Hill, O'Mahoney & Yorke, 2017; Thorley, 2017). Murphy (2017) recommends that the promotion of mental health be included as part of compulsory induction programmes to higher education, while also advocating for the delivery of support services for all students to be provided. In supporting research, Murphy (2017) further advocates that 'whole college' approaches are required, specifically to ensure equity of participation for all students.

In an evaluative review of outcome research on universal mental health promotion and prevention programs for higher education students, Conley et al. (2013) examined 83 controlled interventions involving college, graduate, and professional students. The focus of each intervention had three key outcomes: social and emotional skills, self-perceptions, and emotional distress. The interventions in the study fell into one of six distinct categories:

1) Psychoeducation interventions which primarily provided information to participants on topics, such as: stress, coping, and ways to relax.
2) Cognitive-behavioural interventions that focused on how cognitions can be monitored and used effectively for behaviour change and monitoring of emotions.
3) Relaxation interventions that include practices, such as, muscle relaxation or guided imagery.
4) Mindfulness interventions, using techniques, such as, those developed by Kabat-Zinn (Kabat-Zinn, 2003).
5) Meditation and yoga interventions.
6) Other categories that include activities, such as, expressive writing and social skills (e.g. assertiveness, communication) interventions.

The findings indicate that class-led interventions, with supervised skills practice in mindfulness and cognitive behavioural strategies, are particularly effective in improving students' social and emotional skills, enhancing self-perceptions, and reducing levels of emotional distress, including depression, anxiety, and stress (Conley et al., 2013).

In the current study, the SOMI-HE is a class-led intervention with six main components: wellbeing, stress-vulnerability, stress-resilience, mindfulness, mental health literacy and PA. The components aim to reflect a positive mental health approach to programme development and implementation. They are later converted to skills-based activities, as described in Chapter 5 and Appendix K. The following components are used to inform the development of the intervention through uncovering deep conceptual knowledge of the current popular domains of positive mental health.

2.7 KEY COMPONENTS USED IN THIS STUDY INTERVENTION

The SOMI-HE programme components of SOMI-HE draws on a vast array of literature and sources from the scholarly writings of education, psychology, and PA. In this section of the literature review, the selected components of positive mental health used in the SOMI-HE intervention are reviewed and summarised. The criteria by which they were selected is described in full detail in Chapter 5. At this early stage, it is useful to the reader to know the key components of the SOMI-HE programme and how they are conceptualised and measured. The components include understanding wellbeing, stress-vulnerability, stress-resilience, mindfulness, mental health literacy, and PA.

2.7.1 Understanding Wellbeing

It is advantageous first to explore what is meant by the concept of wellbeing. However, similar to the introductory discussion on mental health, the term 'wellbeing' is challenging to define decisively, let alone spell (Dodge et al., 2012). In moral philosophy, 'eudemonia' was a term used to describe happiness and living well, in terms of cultivating personal strengths and greater good (McMahan & Estes, 2011). Aristotle believed eudemonia was an objective state, in which a flourishing life is depicted, despite experiencing many emotional states (Ross, 1999). Aristotle's eudemonia consisted of virtuous activities, which had purpose and meaning, built on

friendship, laughter, and honesty (Ackrill, 1975). Aristotle specifies to achieve eudemonia a human being can live and to find happiness in the contemplative life (Ross, 1999). Happiness, in Aristotle's view, supports the new perspective that 'mental health is more than the absence of disease', as discussed earlier. Seligman (2011) supports this ancient perspective of wellbeing, maintaining that happiness is a complex construct that ought to be measured by how we flourish, and that the goal of positive psychology should be to increase flourishing.

Wellbeing has also been argued from a hedonic perspective as a subjective state, whereby one person's measure of satisfaction may differ to another's. The hedonic perspective equates wellbeing with pleasure and happiness (Ryan & Deci, 2001), as opposed to the eudemonic view that sees wellbeing conceptualised as personal development (Ryff & Keyes, 1995). In any case, wellbeing is best understood as a dynamic process, which incorporates both subjective (thinking/feeling) and objective (having/doing) domains (White, 2008). Wellbeing has been described as a see-saw, whereby as an individual lives life, they are seeking to balance equilibrium between the challenges and the resources, or skills, they have to cope, with the trials they face (Dodge et al., 2012) (see *Figure 2.7*). 'In essence, stable wellbeing is when individuals have the psychological, social, and physical resources they need to meet a particular psychological, social and/or physical challenge' (Dodge et al., 2012, p.230). This definition concludes that maintaining wellbeing can be described as a state of equilibrium or balance that can be affected and changed by life events or challenges. The see-saw represents the drive of an individual to return to a set-point for wellbeing.



Figure 2.7 – The see-saw from Dodge et al. (2012). Taken from: (Dodge et al., 2012)

2.7.1.1 The Five Ways to Wellbeing

The New Economics Foundation (NEF), a centre for wellbeing in the UK, combine the early Grecian and modern thought on wellbeing as a holistic concept through recognising two main elements: feeling good and functioning well (Aked et al., 2008). Outlined by Marks et al. (2008), within these dimensions of wellbeing are feelings of happiness, contentment, enjoyment, curiosity, and engagement (feeling good or subjective wellbeing), along with experiencing positive relationships, having some control over life and having a sense of purpose (functioning well or objective wellbeing). The NEF used a broad evidenced-based study in the sector of positive psychology to create 'a set of actions that enhance an individual's wellbeing' (Aked et al., 2008, p.3.). The five actions – or 'ways to wellbeing' – from Marks et al., (2008) include: connect, be active, take notice, keep learning, and give. They are considered positive behaviours that promote positive feedback loops by prompting people into thinking about the things that are important in life and essential to maintaining wellbeing. *Table 2.2* describes 'The Five Ways to Wellbeing', adapted from (Aked et al., 2008). The NEF recommend varying activities, as repetition can reduce the impact or potency of over-dependency on any one action – this is referred to as 'hedonic adaption' (Lyubomirsky, 2012). Diversifying the elements of maintaining wellbeing is central to preventing a sense of duty and stagnation (Aked et al., 2008).

Table 2.2 – The 5 ways to wellbeing. Adapted from: (Aked et al. .2008)

Connect:
The NEF evidence indicates that social relationships are essential to promote wellbeing and act as a buffer against ill mental health. Spending time with the people around you – family, friends, colleagues, and neighbours – at home, work, school, or in your local community, is understood to be the cornerstone of life. Investing time in developing these connections will support and enrich an individual every day. 'Connect' presented as a key to any of the five sets of actions because feeling connected with, and valued by, others, is a fundamental human need.
Be active:
The second finding from the NEF cites the well-known fact that exercise is good for you. Regular physical activity of various intensities has biophysical and psychosocial benefits. For example, exercise can protect against cognitive decline and anxiety, and serve as a suitable treatment to health concerns. Exercise can also increase perceived self-efficacy in mastery to cope with adversity. Exercising makes you feel good and can encourage social interactions. It is not known whether regular exercise has a positive effect on wellbeing, or if a greater sense of wellbeing is a determinant of physical activity behaviour.
Take notice:
The NEF found that being curious, savouring the moment, and being aware of your senses – what you are feeling and the world around you – will help to regulate behaviour and choose behaviours that reflect your needs, values, and behaviours. Mindfulness has been described as having benefits in a wide array of outcomes. Interventions that internalise and achieve lasting behavioural change are most likely enhanced through increasing participant self-awareness.
Keep learning:
The activity of experiential and goal-directed learning plays a vital role in enhancing self-esteem, social interaction, life satisfaction, optimism, and efficacy, according to the NEF. Whether it's something new, a rediscovered interest, a different responsibility at work, learning to play an instrument; a new challenge created with goal setting and planning skills, increases wellbeing.
Give:
Evidence collated by the NEF suggests mutual cooperation is associated with the reward system of the brain, and, therefore, social participation is intrinsically rewarding. Feeling linked to the broader community creates connections with the people around you. Volunteering is associated with increased meaning in life, self-worth and a sense of purpose. Reciprocity is strongly associated with positive affect.

2.7.1.2 Measuring Wellbeing

Due to theoretical debate on the definition of wellbeing, measurement of wellbeing also faces much disagreement (Linton et al., 2016). Questionnaires are a useful means to gather data on wellbeing as they allow researchers to collect data on large samples of the population and quantify levels of wellbeing using wellbeing measurement tools (Michaelson et al., 2012). The Warwick-Edinburgh Mental Wellbeing scale (WEMBWBS) (Tennant et al., 2007) aligns with the five ways to wellbeing and their constructs (Michaelson et al., 2012). The Warwick-Edinburgh Mental Wellbeing scale (WEMBWBS) is research-informed and which focuses entirely on positive aspects of mental health (Tennant et al., 2007). Cooke et al. (2016) refers to these measurement tools as composite instruments, as they do not belong to any one approach to wellbeing, as outlined earlier in this chapter. The WHO-5 Wellbeing Index (WHO, 1998) has been validated as both a screening tool for clinicians, and as a method to assess wellbeing in research studies over time (Topp et al., 2015). The WHO-5 Wellbeing Index (WHO, 1998) and the Warwick-Edinburgh Mental Wellbeing scale (WEMBWBS) (Tennant et al., 2007) are sensitive to change and most useful for intervention and population studies (Taggart & Stewart-brown, 2015).

2.7.2 Stress

Stress may be viewed as ‘the occurrence of significant life events that are interpreted by the person as undesirable’ (Hankin & Abela, 2005, p.33). Stress is also necessary for survival as it is an evolutionary trait developed through the natural selection of adapted survival or protective defence mechanisms (Nesse, Bhatnagar & Young, 2010). Acute stress provides a survival advantage as it enables an organism to activate the ‘fight or flight’ response to an anticipated threat. Therefore, it is not always a negative consequence (Lupien, McEwen, Gunnar & Heim, 2009). Chronic stress, however, can affect all individuals physically and emotionally, due to a prolonged increase in elevated levels of cortisol (the stress hormone) (Goh & Agius, 2010). Chronic stress can contribute directly to illnesses such as heart disease, cancer and depression, among many others (Kinser & Lyon, 2014; Cohen, Janicki-Deverts & Miller, 2007).

Stress is a process of multiple mediators, known as ‘allostasis’ (McEwen, Gray & Nasca, 2015). At a cellular level, too much stress can affect our brain size, its structure, gene expression, and how the brain functions (Goh & Agius, 2010). The neuroanatomy of stress responses is depicted through various pathways in the brain and the body (Ulrick-Lai & Herman, 2010). The stress system is the central controller of the brain and activates appropriate responses to stressors. For example, increased levels of the hormone, cortisol, affects areas of the brain surrounding the hippocampus and the hypothalamic-pituitary-adrenal axis (HPA) (Goh & Agius, 2010). Stress can cause the HPA axis to activate a series of interactions between the endocrine glands in the brain and the adrenal glands in the kidneys (Rutten et al., 2013). On the recognition of stress, the HPA is activated and the brain releases stress hormones (Lupien et al., 2009). As the levels of the stress hormones rise, irreplaceable electric signals in the hippocampus system deteriorate – this has been referred to as the ‘neurotoxicity hypothesis’ (Lupien et al., 2009, p.441). The neurotoxicity hypothesis holds that prolonged exposure to stress hormones reduces the ability of the brain’s neurons to resist negative experiences, increasing the rate at which they are damaged by toxic challenges or adversity (Lupien et al., 2009). The hippocampus system – the centre for memory and emotions – is responsible for regulating the activity of the HPA axis (McEwen et al., 2015). Research indicates that if the HPA axis is weakened, resilience may decrease and result in a cumulative change that is referred to as ‘allostatic load and overload’ (McEwen et al., 2015; Guilliams & Edwards, 2010).

Stress can be managed through cognitive, behavioural, and psychological techniques (Varvogli & Darviri, 2011). Effective evidence-based approaches such as mindfulness, cognitive behavioural therapy, and guided imagery are examples of such evidence-based techniques effective in managing and preventing stress (Ellis, 2006; Lynch, Gander, Kohls, Kudielka & Walach, 2011; Varvogli & Darviri, 2011; Regehr, Glancy & Pitts, 2013). PA is also associated with reducing perceived stress and protecting against the negative emotional consequences of stress (Anderson & Shivakumar, 2013; Childs & de Wit, 2014; Penedo & Dahn, 2005).

2.7.2.1 The Stress-Vulnerability

The stress-vulnerability model from Zubin and Spring (1977) is a useful tool to highlight the strengths and vulnerabilities of an individual's social, biological, and psychological capacities. This piece of research was one of the first stress models designed for the purpose of clinician identification of relapses of many mental health conditions, or episodic illness, like schizophrenia and bipolar disorder. However, in more recent years, it is used to illustrate the adverse effects of stress on the body, both metabolically and neurologically (Goh & Agius, 2010). The stress-vulnerability model, as shown in *Figure 2.8*, is a simple diagram which illustrates the idea that people become ill when the stress they have becomes more than they can cope with. The vulnerability can describe our susceptibility to mental health problems and runs along a spectrum of resilience that is determined by our genetic make-up and life experiences (Zubin & Spring, 1977). Resilience is our individual threshold for coping with 'the load imposed' or adversities experienced (Zubin & Spring, 1977, p.114). The stress-vulnerability model is one of many, which attempt to illustrate and help us understand stress, its effect on our health, and how to prevent illness using adaptive skills to master stressful life events (Haddadi & Ali, 2010). The model highlights that in any case of mental illness, stress does not work in isolation. Research illustrates that there are other 'risk' factors, which contribute to the development of mental illnesses, multidimensional biopsychosocial factors that can be identified and, therefore, responded to using healthy biopsychosocial resources (Kinser & Lyon, 2014). The models show a way to reduce vulnerability and increase resilience to stressful life events, which can affect our mental health (Ingram & Luxton, 2005).

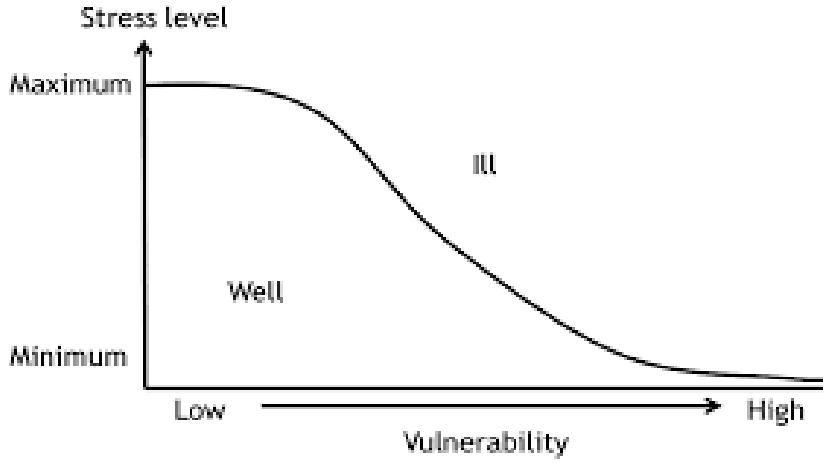


Figure 2.8 – The stress vulnerability model. Taken from Zubin and Spring (1977)

Vulnerability in this concept describes the combined internal and external effects of biological, psychological, social, and environmental factors which contribute to coping abilities for stress (Ingram & Luxton, 2005). Vulnerability exists alongside the continuum of resilience and implies that there are varying levels of resistance to ill mental health among all individuals (Haddadi & Ali, 2010). An individual's degree of vulnerability determines the severity and longevity of the consequences of a stressful event (Zubin & Spring, 1977). Biological vulnerability is linked to the concept of psychological vulnerability. It suggests that adverse cognitive reactions which emerge during stressful situations in childhood are uniquely processed. This later determines our individual cognitive development for the onset, relapse, and reoccurrence of mental illnesses such as depression (Scher, Ingram & Segal, 2005). Social vulnerability may be described as a community's or an individual's inability to withstand the impact of ill mental health, having experienced multiple stressors, such as loneliness, poverty, abuse, social exclusion, and inequality (Zahran, Peek, Snodgrass, Weiler & Hempel, 2011). Environmental factors consider how the wider socio-cultural and geopolitical situation in which people live can also affect an individual or a community's mental health (WHO, 2012).

2.7.2.2 Measuring stress

The most common method of measuring stress is through a self-report questionnaire, in which individuals respond to question regarding their own mental state (Andreou et al., 2011; Fornias et al., 2014; Lupien, 2013; Morgan et al., 2014). The Perceived

Stress Scale (PSS) has received considerable attention in the literature and was designed by Cohen, Kamarck & Mermelstein (1983) for those with at least a high school education. There are three versions of the PSS – the PSS-14, the PSS-10, and the PSS-4. The PSS instruments ask participants questions regarding their feelings and thoughts during the past month. The instrument measures 'the degree to which individuals appraise situations in their lives as stressful' (Cohen et al., 1983, p.385). Literature documents the most recent version, the PSS-10, is superior, in comparison to the other designed PSS versions (Lee, 2012). Dias, Silva, Maroco & Campos (2015) maintain, in the context of a university, that the PSS-10 presents adequate valid, reliable, and stable results. The 10-item version (PSS-10) showed better fit to the sample ($\chi^2/df = 10.69$; CFI = .90; GFI = .93; RMSEA = .09). The convergent validity was below recommended (AVE = .34; CR = .84) and a standardized Cronbach's alpha coefficient (α) indicated adequate internal consistency (α = .83). However, (Örücü & Demir, 2009) point out that the derived PSS-10 data from the university setting may be affected by biases, such as, social status, gender, subject area, time of semester, and level of study.

PSS-4 is also considered to have sound psychometric properties. However, some studies report limited internal reliability when compared to the PSS-14 (r = 0.60 vs r = 0.85), due to the small number of items used in the scale (Lee, 2012: Cohen, 1994; Cohen & Williamson, 1998).

2.7.3 Resilience

Resilience has been defined as the ability to bounce back or recover from stress' (Smith et al., 2008, p.?) or 'the capacity of a system to adapt successfully to significant challenges that threaten the function, viability, or development of the system' (Masten, 2018, p.16). Resilience is 'a dynamic process' encompassing positive adaptation within the context of significant adversity (Luthar et al., 2000). These adversities can be either life-threatening or traumatic experiences, such as, losing a loved one or surviving a natural disaster (Southwick et al., 2014). They can also be ongoing, such as, enduring poverty or bullying (Southwick et al., 2012). The term 'resilience' is an explanation for our individual vulnerability to, and our ability to cope with stress, of which the determinants can change over our lifespan or in various settings (Southwick et al., 2014). Resilience unveils the multidisciplinary

complexities of our social, psychological, environmental, and biological makeup, when responding to stress and, therefore, can be seen as a continuum which can vary at different times in our life (Lupien et al., 2009).

Resilience is a concept which links psychological and neurobiological perspectives, aiding us to understand methods to avoid the risks and manage the vulnerabilities of ill mental health (Rutten et al., 2013). In the US, the National Scientific Council on the Developing Child (2015, p.7) asserts:

> *There is no 'resilience gene' that determines the life course of an individual, irrespective of the experiences that shape genetic expression. The capacity to adapt and thrive, despite adversity, develops through the interaction of supportive relationships, gene expression, and adaptive biological systems.*

This scientific viewpoint explains stress sensitivity in the preventative sense, but, also, as the ability to recover from adversity-related ill health, through embracing qualities of wellbeing throughout the lifespan (Rutten et al., 2013; National Scientific Council on the Developing Child, 2015). From this perspective, resilience can be increased through positive lifestyle practices and understood as a multidimensional process, where one can harness resources to sustain wellbeing (Southwick et al., 2014). It can be enhanced and developed within an individual and promotes protective factors that support positive mental health outcomes (Luthar et al., 2000). Therefore, resilience is seen as a dynamic process that can be determined by genetic, epigenetic, developmental, demographic, cultural, economic and social factors (Rutten et al., 2013; Southwick et al., 2014). Resilience varies by context, personality, specific challenges, availability of resources, and the age of an individual (Southwick et al., 2014). Rutten et al. (2013) claim there are three essential domains for building resilience. The first and most important source of resilience stems from secure attachment with a 'primary caregiver' in the early years of development (Bowlby, 1969). Supportive, sensitive, and responsive caregiving influences the derived internal working model from which the child sees themselves as worthy, capable, and supported by others. This, in turn, affects the psychological development of the brain, which impacts emotional and social functioning. In the second domain, Rutten et al. (2013) maintain that positive emotions enable an appropriate stress response and act as a buffer to the negative emotions associated with stressful events and assist in swift recovery from mental health disturbances.

Rutten et al.'s (2013) final domain that supports the development of resilience is having a purpose in life. Having a purpose in life, whether it be through meaningful relationships, religion, or spirituality, promotes the experience of positive emotions and provides long-lasting internal rewards. Rutten et al. (2013) maintain that these three overlapping psychological and biological domains offer explanations for individual stress adaptation.

Smith, Tooley, Christopher & Kay (2010) maintain that to increase resilience, or to gain the ability to bounce back, the first requirement is personal and social resources that have been described in coping models from other researchers, such as, Moos & Holahan (2003). Positive personal and social characteristics, such as, optimism and supportive relationships, are positively associated with the adaptive process to life's stressors (Moos & Holahan, 2003). The second thing required, according to (Smith et al., 2010), is a learning history that enables self-efficacy (Bandura, 1994). Self-efficacy is increased through gaining experience in bouncing back, observing others bounce, and receiving verbal encouragement that instils the sense that one can bounce back (Smith et al., 2010). This perspective of resilience can inform the method of developing interventions that focus on preparing students for stressful life events and targeting specific features of resiliency, such as, optimism. Teaching resilience under this model may be an efficient use of intervention exposure time (Smith et al., 2010).

2.7.3.1 Measuring resilience

There is no gold standard in measuring resilience, despite its increased role in mental health research over the past two decades (Windle et al., 2011). This is likely due to the complexity of resilience as a construct, the ambiguity of its definition, and theoretical conceptualisations (Luthar et al., 2000). This emphasises the necessity to choose a resilience scale which matches the definition of resilience, as outlined in the research objective. Research now indicates that a variety of scales have been devised for measuring resilience (Salisu & Hashim, 2017; Windle et al., 2011). No one scale is preferred over the other, as each instrument must be selected appropriately to the population and context (Windle et al., 2011). A systematic review on resilience measurement scales for all age group populations carried out by Windle et al. (2011) investigated 15 specific resilience measures. The study found measures developed

for adults achieved higher quality scores. Three, in particular, emerged as the most reliable: the Connor Davidson- Resilience Scale (CD-RISC) (Connor & Davidson, 2003), the Resilience Scale for Adults (RSA) (Hjemdal et al., 2011), and the Brief Resilience Scale (BRS) (Smith et al., 2008).

The BRS (Brief Resilience Scale) has been used in the context of a university setting in previous research and has proven valid and reliable when examining resilience levels among higher education students (Amat et al., 2014). Factor analysis reveals a single factor with eigenvalues above 1.0, which accounted for 73.54% of the total variance (Amat et al., 2014). Additionally, the BRS has demonstrated satisfactory internal consistency (Cronbach's alpha ranging from .80–.91) and test-retest reliability (ICC-.69), which is central to the research process (Rodríguez-Rey et al., 2016; Smith et al., 2008). Authors argue that the BRS does not include the role of other important protective factors and resources in resilience, such as, family and community (Windle et al., 2011). In fact, the BRS is the only scale which does not measure resources that make resilience possible (Rodríguez-Rey et al., 2016).

2.7.4 Mindfulness

Mindfulness is recognised as an important treatment for mental health problems (Keng, Smoski & Robins, 2011). It is clinically efficacious in the domains of psychology and medicine (J. D. Creswell, 2017). Jon Kabat-Zinn is probably the most influential teacher of mindfulness meditation in America. He holds that you can train your mind to rest in awareness and change the nervous system by exposing it to new experiences. Mindfulness is described by Kabat-Zinn as 'moment-to-moment, non-judgmental awareness, cultivated by paying attention in a specific way, that is, in the present moment, and, as non-reactively, as non-judgmentally, and, as openheartedly as possible' (2015, p.1481). Historically, mindfulness is known as a Buddhist practice. It is central to the teaching of the Buddha (who was not actually Buddhist). There is nothing particularly Buddhist about mindfulness and it is not exclusive to Buddhist tradition. There are other traditions who practice mindful meditation (Kabat-Zinn, 2003). However, Buddhist scholarship has informed psychological research in mindfulness and mindfulness interventions. There are two popular approaches to mindfulness outlined by Creswell (2017). The first is the

concept that mindfulness grounds awareness of and attention to the present moment. This can include anchoring exercises such as focusing on body sensations, acknowledging emotional reactions, mental images, mental talk, and perceptual, sensory experiences. The second concept of mindfulness describes it as an adapted attitude of acceptance of experience, even if it is difficult.

2.7.4.1 The benefits of mindfulness

Mindfulness has shown to cultivate adaptive psychological function; therefore, it is positively associated with subjective wellbeing, reduced psychological problems, emotional reactivity, and improved regulation of behaviours (Keng et al., 2011). The practise of mindfulness is theorised to have an impression on the brain, and is, therefore, capable of bringing physical, cognitive, and emotional changes in one's life (Widdett, 2014). Neuroplasticity is the term used to describe the brains capacity for 'creating new neural connections and growing neurons in response to experience' (Siegel 2010 in Widdett, 2014). Brain Imaging research has examined the effects of both children and adult mindfulness interventions (C. C. C. Bauer et al., 2019; Gotink et al., 2016; Hölzel et al., 2016). These studies present evidence that mindfulness interventions are effective in making functional changes in the brain and reduced activity in the stress system of the brain (C. C. C. Bauer et al., 2019).

School-based mindfulness interventions have been implemented and evaluated as having efficacy in enhancing subjective wellbeing across many education settings (Felver et al., 2016; Kuyken et al., 2013; Napoli et al., 2005). In higher education settings, mindfulness-based intervention studies interpret that participation in mindfulness training maintains wellbeing and generates resilience to increased stress during certain times of the academic year, for example, exam time (Galante et al., 2018). Multiple meta-analysis reviews support these findings, maintaining mindfulness-based interventions are efficacious in preventing depressive symptoms among higher education students (Ma, Zhang & Cui, 2019; Regehr, Glancy & Pitts, 2013; Lynch, Gander, Kohls, Kudielka & Walach, 2011).

The benefits of mindfulness interventions depend on the type of intervention, dose, and exposure to the intervention and method in which the intervention is delivered, for example, face-to-face or through an app on a smartphone (J. D. Creswell, 2017; Felver et al., 2016). Creswell (2017) succinctly evaluates and

summarises the potential benefits of mindfulness under four domains: physical, mental, cognitive and affective, and interpersonal. Creswell's (2017) evaluation of the evidence of mindfulness interventions suggests such interventions can reduce the risk of stress-related physical health conditions, chronic pain, and the immune system response to infectious agents and pathogen. In terms of mental health, a growing number of research posits mindfulness interventions reduce symptoms of depression, anxiety, and post-traumatic stress disorder (C. C. C. Bauer et al., 2019; Elder et al., 2014; Gotink et al., 2016). Studies investigating the cognitive and affective outcomes of mindfulness interventions show improved sustained attention, problem-solving, and working memory performance (Semple, 2010). Few initial studies investigating the interpersonal outcomes of mindfulness interventions maintain that mindfulness can improve relational outcomes such as increased compassion and relationship satisfaction (J. D. Creswell, 2017).

2.7.4.2 Measuring Mindfulness

Mindfulness is ordinarily measured by means of standard self-assessment instruments (Sauer et al., 2013). Mindfulness scales have varied conceptual differences. Therefore, there is no one scale that can be exclusively recommended as representing all the essential aspects of mindfulness (Park et al., 2013). There are a growing number of mindfulness scales available in mindfulness research, as they are a well-known methodology and can be used with ease (Baer et al., 2004). Measuring the effect of an intervention that teaches mindfulness requires careful selection of a tool that captures the particular aspect of mindfulness that is targeted by the intervention (Park et al., 2013). It is argued by some scholars that it is not possible to conclude whether self-report scales can accurately measure mindfulness (Grossman, 2008). Grossman (2008) argues the critical issues surrounding the psychometric measurement of mindfulness go under-debated and deserve significant consideration of the following six issues. First, the diverse concepts and perspective of mindfulness. Second, the limited knowledge of instructors. Third, varying participant interpretation (semantic understanding) of the scale items. Fourth, perceptual differences in how mindful people believe they are versus how mindful they actually are. Fifth, biases associated with the beliefs of long-term practitioners of mindfulness. Sixth, problems with the validation of the instruments, as a consequence of issues one to five. Grossman concludes, however, that researchers

ought not to give up hope and use methods such as a qualitative approach, or focus measuring on the 'putative' effects on wellbeing as a result of mindfulness training (Grossman, 2008, P.407).

The recently developed Applied Mindfulness Process Scale (AMPS) (Li, Black & Garland, 2016) was created to measure how participants in mindfulness-based interventions (MBIs) use mindfulness practice when facing challenges in daily life. In other words, investigating how they are mindful during adversity and stress. The AMPS (Applied Mindfulness Process Scale) has 15 items representing three domains of applied mindfulness:

1) The decentring domain: 'The metacognitive process of viewing thoughts, feelings, sensations, and the sense of self, not as veritable realities but as ephemeral, insubstantial phenomena within the field of awareness, was identified by all three interviews as an essential component of mindful achievement'.
2) Positive emotional regulation: 'Tapping into the use of mindfulness to cope by refocusing attention on to positive emotional experience and positively reappraising adverse life events' (Li, Black & Garland, 2016, p.12).
3) Negative emotion regulation: 'The use of mindfulness to cope by reducing emotional distress') (Li et al., 2016, P. 8).

The AMPS demonstrated good internal consistency (Cronbach's α), ranging between 0.91- 0.94, as well as adequate nomological validity with related constructs (e.g., stress, depression, trait mindfulness, anxiety, and general well-being) (Li et al., 2016). The instrument is suitable to disseminate among a student population and positive scores correlate with the highly regarded Mindful Attention Awareness Scale (MAAS) (Brown & Ryan, 2003). The AMPS has been recommended as most suitable to gain insight into how individuals use mindfulness to cope with stressful life events (Berk et al., 2019; Li et al., 2016).

2.7.5 Mental Health Literacy (MHL)

Mental Health Literacy (MHL) was first coined as the 'knowledge and beliefs about mental illnesswhich aid their recognition management or prevention' (Jorm, Korten & Jacomb, 1997, p.182). It consists of several components, including:

1) The ability to recognise specific illness or different types of psychological distress.
2) Knowledge and beliefs about risk factors and causes.
3) Knowledge and beliefs about self-help interventions.
4) Knowledge and beliefs about professional help available.
5) Attitudes which facilitate recognition and appropriate help-seeking.
6) Knowledge of how to seek mental health information (Jorm, 2000).

MHL (Mental health literacy) research worldwide shows that people are unable to recognise the signs of a mental illness (Jorm, 2012). Such knowledge would be advantageous for early help-seeking and intervention, particularly for vulnerable groups in the community, such as, adolescents and higher education students (Reavley et al., 2012). As mentioned earlier, the concept of MHL has evolved over time (Bjørnsen et al., 2017). Mental health researchers and professionals assert the current definition of MHL is narrow in its sole focus on mental illness. In an investigation into the conceptual understanding of MHL among young adults, MHL was regarded as a term that takes more than illness into consideration and, instead, includes a broad range of determinants associated with communicating about mental health (Chambers et al., 2015). Indeed, MHL has become more debated as a concept that not just focuses on mental illness, but, as a complex determinant inequality and help-seeking barrier (Kutcher et al., 2016). A systematic review indicates that education intervention programmes developed with evidence and theory-based design are required to develop MHL and enable others to support and respond to those experiencing mental health problems (Breslin et al., 2017, 2018).

2.7.5.1 Measuring Mental Health Literacy (MHL)

Similar to each of the above reviewed positive mental health components and their measurement tools, MHL is also considered a multi-faceted concept, with various perspectives on what constitutes the definition of MHL (Matt O'Connor et al., 2014). Jorm et al. (1997) designed an interview vignette to asses MHL. The vignette describes an individual with a mental health difficulty and participants respond to questions relating to the issue described. A number of methodical limitations have been identified with the MHL vignette interview approach, and as a result, alternative measures (particularly measures that generate an MHL total) have been

made available (O'Connor et al., 2014). In a systematic review critically appraising the quality of studies evaluating the measurement properties of mental health knowledge tools, there was a significant discrepancy in the prevalence between tools measuring the mental health knowledge of adults (majority) and young people (minority) (Wei et al., 2016). Additionally, due to overall mixed evidence of measurement properties of MHL measurement instruments, the researchers recommended to colleagues in the field to consider using MHL assessment tools with reliable measurement properties, supported by strong validating evidence (Wei et al., 2016).

The Mental Health Knowledge Schedule (MAKS) was explicitly designed to assess stigma and mental health knowledge among the general public (Evans-Lacko et al., 2010). Knowledge and attitudes are often seen as predictors of intentions to seek help (Rüsch et al., 2011). The MAKS comprises of six items related to mental health stigma: help-seeking, recognition, support, employment, treatment, and recovery; and six items inquiring about mental illness and mental health-related conditions: depression, schizophrenia, bipolar disorder, drug addiction, grief, and stress. The MAKS items are scored by responses ranging from 1 to 5 (strongly agree to strongly disagree). Items 6, 8 and 9 were reverse coded to reflect the value of the correct response. The MAKS questionnaire was evaluated in three studies carried out by Evans-Lacko et al. (2010). It shows moderate to substantial test-retest reliability and validity is supported by extensive review by experts (Evans-Lacko et al., 2010). The MAKS has demonstrated to be a feasible instrument for investigating and tracking stigma-related mental health knowledge among university students and young people (Breslin et al., 2018; Chisholm et al., 2016; Sari & Yuliastuti, 2018).

2.7.6 One Good Adult

The presence of a supportive non-parental adult who provides social support to an adolescent is referred to as 'one good adult' (Sterrett et al., 2015). 'One good adult' is said to offer protective and resilience-building support to a young person (Hurd et al., 2009). They are a 'natural mentors' (Beam et al., 2002) that are associated with a young person's improved psychological functioning, self-esteem, decreased behaviour problems, substance use, and emotional distress (Sterrett et al., 2015). Findings from Irish research investigating youth mental health presented that one

good adult is associated with a range of positive wellbeing indicators and protective and resilience factors, such as, feeling connected, self-confident, and future-looking, with the ability to cope with problems. On the contrary, the absence of one good adult or the presence of one bad adult is linked to higher levels of distress and anti-social behaviour and increases the risk for suicidal behaviour (Dooley & Fitzgerald, 2012; Hurd et al., 2009).

2.7.6.1 Measuring the presence of one good adult

The measurement of the presence and effect of one good adult has been measured via a combination of methods including: survey questions, focus group interviews, and psychometric scales (Beam et al., 2002; Hurd et al., 2009; Weisz et al., 2007). To the author's current understanding, there is no reliable, validated tool to measure the presence of one good adult and help-seeking behaviour in young people. Other Irish research utilised an adapted measure referred to as 'Formal and Informal Help Seeking' by Saunders, Resnick, Hoberman & Blum (1994) (Dooley & Fitzgerald, 2012). A similar version of the 'Formal and Informal Help Seeking, by Saunders, Resnick, Hoberman & Blum (1994) has previously been used in other Irish research with a young population (Daly, 2006). The measure is a three-item questionnaire asking participants if they have experienced serious mental health problems in the last year. The second item asked participants: 'When you have problems, do you talk about them with anyone? If yes, who would you talk to? Family, friend, no one?'. Finally, participants were asked: 'Who would you talk to first if you had problems with your family, a friend, a romantic relationship, school, depression or alcohol and drug use?'

2.8 PHYSICAL ACTIVITY AND MENTAL HEALTH

The health benefits of PA are well documented (Cekin, 2015; Eime et al., 2013; Reiner et al., 2013; Warburton et al., 2017) and, therefore, PA constitutes a significant component of the SOMI-HE intervention programme. Throughout this section of the literature review, a thorough review of PA research and measurement methods are reviewed.

2.8.1 Physical Activity (PA)

A definition of PA, according to Miles (2007), includes a full range of human movement, ranging from hobbies to competitive sport or activities that are a part of daily living. These activities include: leisure-time PA, sport, deliberate exercise, transportation, occupational work, and chores. The Irish Department of Health similarly describes PA in practical terms, inclusive of active play, walking or cycling for transport, dance, traditional games, recreational pastimes, gardening, housework, sport, or deliberate exercise (Department of Health, 2016). These are broad definitions of PA, purposely all-embracing, in order to inclusively and directly reflect that PA is considered 'as any bodily movement produced by skeletal muscles that result in an increase in metabolic rate over resting energy expenditure' (Bouchard, Blair & Haskell, 2012, p.12). These definitions and domains recognise that there are many ways, modes, and types of PA (Eime et al., 2013).

2.8.2 Physical Fitness

Bouchard et al. (2012) maintain that there is no universal or standardised definition of physical fitness (PF), nor are the authors agreed upon components of PF (physical fitness) evaluation. A generally accepted definition of PF is: 'The ability to carry out daily tasks with vigour and alertness, without undue fatigue, and with ample energy to enjoy leisure-time pursuits and meet unforeseen emergencies' (US Physical Activity Guidelines Advisory Committee 2008, p.683). PF has obvious different interpretations of the definition, often dependent upon the context for which it is being measured. For example, in athletic competition and performance-related assessments, the measure of PF would go beyond the definition of: 'The ability to carry out tasks with undue fatigue' (US Physical Activity Guidelines Advisory Committee 2008, p.683). Performance-related fitness is specific to the athletic sporting domain, while the focus of the existing research reflects that PF is the variability between individuals as a result of their occupational work, lifestyle, and heredity PA levels (Bouchard, Blair & Haskell, 2012). The current research supports the health-related fitness concept of PF, and, therefore, adopts the traditional perspective that refers to fitness as cardiovascular fitness, muscular strength and endurance, muscle flexibility, and body composition (Caspersen et al., 1985).

2.8.2.1 Physical Activity Levels and Energy Expenditure (EE)

PA level patterns can be categorised in terms of the frequency, intensity, time and type (FITT) (Bouchard et al., 2012). The FITT principle, composed of the four aspects of exercise (frequency, intensity, time, and type) can be tailored to provide a recommended dosage of PA or exercise prescription in the context of health care (Berryman, 2010). Frequency and time refer to how often and how long one engages in actively moving. Intensity refers to how hard a person is working at a level that activity demands. The type describes the kind of activity, including aerobic, balance, flexibility, and resistance training (Miles, 2007; Berryman, 2010). These patterns of PA result in rising levels of energy expenditure (EE), exceeding resting levels (or basal rate) (Hills et al., 2014). Therefore, methods of measuring and evaluating EE (energy expenditure) and PA use different approaches (Hills et al., 2014). Energy expenditure or metabolic equivalents tasks (METs) are the measure of the amount of oxygen consumed while at rest (Hills et al., 2014; Ndahimana & Kim, 2017). The MET concept is a process of expressing the energy cost of physical activities as a multiple of the resting metabolic rate (Jetti, Sydney & Blumchent, 1990). Moderate intensity levels of PA require an EE between 3 and 8 METs (Owen, Healy, Matthews & Dunstan, 2012). Moderate intensity PA provides the most health benefits, which include the reduced risk of cardiac disease, depression, diabetes, and cancer (Kyu et al., 2016; Blair, 2007). Light intensity, which is also considered beneficial in terms of some potential health benefits, demands a lower energy expenditure of 1.9-2.9 METs (Füzéki E., Engeroff & Banzer, 2017; Hills et al., 2014).

Estimating PA and assessing EE in individuals is critical in a global context where increasing rates of obesity and type 2 diabetes mellitus and other non-communicable diseases (NCDs) are on the rise (Hills et al., 2014). Categories of physical intensity have been described by Norton, Norton & Sadgrove (2010). They provide a range of physical activities and their corresponding MET values that are essential for researchers investigating patterns of PA in the population. The five categories outlined by Norton et al. (2010) include: Sedentary, light, moderate, vigorous, and high intensity activities. They were designed to assist researchers and practitioners to standardise terminology when capturing PA data. Each category describes the level of physiological stress or energy demand experienced by an

exercising or non-exercising individual, progressing in intensity produced by various activities. An example is provided of each category of intensity to clarify:

1) Sedentary usually comprises of activities such as driving a car.
2) Light intensity activity could involve household walking.
3) Moderate-intensity activities are likely to involve gentle swimming or walking.
4) Vigorous-intensity activity could include jogging or cycling at a pace that makes you 'breathe harder or huff and pant' (Norton et al., 2010, p 500).
5) High-intensity activities are rare levels of energy expenditure that don't typically happen in daily life. They are more suited for athletic training programmes, for example, sprint running.

2.8.3 Sedentary Behaviour

Sedentary behaviour (from the Latin sedere, 'to sit') may include sitting during commuting, at work, in the home, and as leisure time (Ainsworth & Macera, 2012; van der Ploeg & Hillsdon, 2017). The term has been more recently defined as time spent engaged in sitting or lying down activities (Owen, Healy, Matthews & Dunstan, 2012). Sedentary behaviours are those that require low levels of EE when awake (typically requiring between 1 and 1.5 METs) (Owen, Healy, Matthews & Dunstan, 2012). Research shows that too much sedentary behaviour has a negative impact on health, increasing one's risk of type 2 diabetes, obesity, cardiovascular diseases, depression, and cancer (Fornias et al., 2014). A recent study exploring the association between sedentary behaviour and non-communicable diseases among factory workers in Thailand (n = 1133) found sitting over 10 hours per days was significantly associated with NCDs and cardiometabolic risk factors (Jalayondeja et al., 2017). The effects of whether occupational or habitual sedentary behaviour can be negated through increased levels of exercise are debated (Ekelund et al., 2016). It appears as though it is a matter of how sedentary and how active one is. Individuals with high levels of moderate to vigorous PA can attenuate the increased health risks of high volumes of sedentary time (Ekelund et al., 2016). However, it is often documented that one can meet the recommended guidelines in PA, and spend too many hours per day participating in sedentary behaviour (Sedentary Behaviour Research Network, 2013).

2.8.4 The Rationale for Physical Activity Recommended Guidelines

The Global Recommendations on PA for Health aim to address a variety of health outcomes, including cardiorespiratory health (coronary heart disease, cardiovascular disease, stroke, and hypertension), metabolic health (diabetes and obesity), musculoskeletal health (bone health and osteoporosis), cancer (breast and colon cancer), functional health and depression (WHO, 2010a). Adults who are insufficiently physically active have a higher risk of all-causes of mortality when compared with those who meet the recommended guidelines of 150 minutes per week (WHO, 2010b). The WHO reported in 2010 that an estimated 23% of the global population of healthy adults (18 years +) did not meet the recommended PA guidelines (WHO, 2010a). It is widely known that physical inactivity is a significant contributor to global mortality and that PA is a recognised preventative measure for weight gain and obesity problems (Department of Health and Children, 2005). It had been referred to as the 'greatest public health problem of the 21st century' (Silsbury et al., 2015).

2.8.5 Recommended Guidelines for Physical Activity

The (WHO, 2018b) has extensively segregated the recommended levels of PA into three age-related groups: 5-17 years old, 18-65 years old, and 65 years old and above. The WHO (2010; 2018) continues to advocate that, in order to maintain and/or improve physical and mental health, adults in this age group should take part in at least 150 minutes of PA per week. For additional benefits, adults should engage in up to 300 minutes per week. These scientifically informed guidelines are essential for policy planning and public health interventions as they provide a starting point for developing national objectives and frameworks (WHO, 2010). In the United States, the 2018 Physical Activity Guidelines Advisory Committee suggest that the recommended target range is 500 to 1,000 MET-minutes of moderate-to-vigorous physical activity (or 150 to 300 minutes per week of moderate-intensity physical activity) (Department of Health & Human Services, 2018). The same report concluded that bouts, or episodes, of 10 minutes or more of moderate-to-vigorous physical activity of any duration may counts toward meeting the target range in the daily accumulated total volume of physical activity (Department of Health & Human Services, 2018).

In Ireland, the national guidelines for PA participation (Department of Health, 2016a; Department of Health and Children & Health Service Executive, 2009), replicate the WHO's (2010) Global Recommendations on Physical Activity for Health and the European Union's Physical Activity Guidelines (European Commission, 2008). The recently devised national PA plan in Ireland – Get Ireland Active (Department of Health, 2016a) – drew on the Toronto Charter for Physical Activity (Global Advocacy for Physical Activity, 2010). The Get Ireland Active plan features as a prominent component from the Healthy Ireland Framework (2013-2025) to improve the health and wellbeing of the Irish nation. Through promoting increased PA levels across the population, focusing on modifying unhealthy lifestyle habits and promoting awareness of the benefits of PA, the Get Ireland Active plan aims to go beyond awareness and education alone. It advocates equality and access to opportunities to increase PA across sectoral participation and uses evidence-based strategies in implementation (Department of Health, 2016a).

2.8.6 Physical Activity in Ireland

Initiated by the Irish Sports Council (ISC), the Irish Sports Monitor (ISM) has been recording data and trends on the nation's participation in PA since 2007. In 2015, a survey carried out by the ISM reported that 30.2% of the Irish adult population is highly active. In 2017, the ISM recorded an increase in the highly active proportion of the population (32.6%) (Sport Ireland, 2018). 'Highly active' equates to the international recommended PA guidelines of 30 minutes of moderate-intensity activity, five days per week. Since 2015, there has been a minor decline for males in sports participation (47.2 % in 2015 versus 45.3 % in 2017) and a minor increase in female participation (39.3 in 2015 versus 40.8 in 2017). Similar to previous years, women were significantly less likely to meet the recommended guidelines than men (WHO, 2016; Irish Sports Monitor, 2017). Both nationally and globally, it is reported that more young men than women (18-25-year-olds) engage within the recommended levels of PA (WHO, 2016). In 2017, the gender gap in sports participation (4.5%) was narrower than at any point recorded since the ISM was introduced in 2007 when the gender gap was 15.7% (Sport Ireland, 2018). The Healthy Ireland survey (2016) released results of health trends across the adult

population in Ireland (Department of Health, 2016b). In relation to PA, the findings indicated that although 65% of people are aware of the 150 minutes per week physical activity guidelines, only 32% of people participating in the study completed the sufficient, recommended amount of PA per week. In higher education, the Student Activity and Sports Study (SASSI) Report was commissioned by Student Sport Ireland to investigate sports and PA among students in Ireland (Murphy et al., 2016). 31 colleges and over 9,000 students participated in the study. The results indicate that 64% (71% male; 58% female) were categorised as highly active (in line with meeting the recommended PA guidelines), while 36% (29% male: 42% female) were insufficiently active to meet the minimum PA guidelines (Murphy et al., 2016).

2.8.7 General Health Benefits of Physical Activity

Throughout the centuries, PA has been recognised as a fundamental factor for good health and longevity (Chudasama et al., 2019). Yet, in the 21st century, physical inactivity has been referred to as a 'pandemic' and a leading cause of one in three deaths (in the developed world) (Reis et al., 2016; Hardman & Stensel, 2009). Physical inactivity (the term used to describe people who do not meet the PA guidelines (Thivel et al., 2018)), is said to be one of the four leading risk factors for mortality in both Ireland and globally, behind smoking, high blood pressure, and high blood glucose (Woods et al. 2017; Kohl, Craig, Lambert, Inoue, Alkandari & Leetongin, 2012).

It is now well documented and clinically proven that regular PA participation can enhance quality of life, particularly physical wellbeing, as it can reduce the risk of mental illness, chronic diseases or non-communicable diseases[5] (NCDs) (Gill et al., 2013; Humphreys, McLeod & Ruseski, 2014; WHO, 2014). NCDs include coronary heart disease, cancer, chronic obstructive pulmonary disease (COPD), and diabetes (Lee, Shiroma, Lobelo, Puska & Blair, 2012). Therefore, to respond to the prevalence of NCDs, prevention and intervention in the form of PA is central to improving the health of individuals living with and without NCDs (Woods et al.,

[5] A non-communicable disease (NCD) is a medical condition or disease that is not caused by infectious agents (non-infectious or non-transmissible). They are mostly diseases of a slow progression that last a long duration (Reiner et al., 2013)

2017). In 2010, the WHO reported that NCDs account for 87% of all deaths in Ireland (WHO, 2010b). It is estimated that if physical inactivity were absent in Ireland, the occurrence of new coronary heart disease cases would reduce by 8.8%, new diabetes cases by 10.9%, breast cancer by 15.2%, and colon cancer by 15.7% (Lee et al., 2012 as cited in Woods et al., 2017).

Reis et al. (2016), as it seeks to be large scale and integrated across society with the intention of outgrowing the research and becoming embedded into the culture. Previous research by Di Pietro, Dziura & Blair (2004) found a correlation between exercise and weight status. Specifically, those who had reduced daily levels of PA had significant increases in weight gain, while those who maintained or increased their level of PA experienced sustained or decreased weight. Therefore, it is reasonable to assume that PA plays a significant role as a strategy for improving public health through preventing and responding to obesity, and the conditions that come with it. Additionally, regular participation in PA impacts body composition or Body Mass Index (BMI). PA contributes to lean muscle, which is developed through the increase of capillary density and decreases the fat content in the body (Miles, 2007). Opposing research would suggest that PA does not influence the risk of obesity, as critical factors such as diet are likely to impact the balance between energy intake and expenditure (Luke & Cooper, 2013). However, a weight og evidence supports that low PA levels are associated with weight gain and obesity (excess weight) (Bouchard, Blair & Haskell, 2012). Obesity in individuals results from long term energy imbalance, whereby energy intake exceeds expenditure (Bouchard, Blair. & Haskell, 2012). Furthermore, in terms of causality, physical inactivity is a risk factor for chronic disease and NCDs, such as, cardiovascular heart disease, hypertension, stroke, colon cancer, breast cancer, type 2 diabetes, asthma, and osteoporosis (Humphreys et al. 2014).

The effect of PA on the immune systems is another well researched physiological benefit of PA (Fernandez et al., 2018). In most cases, PA has a positive influence on the body's immune system (Nieman & Wentz, 2019). However, the level of physical exertion can have both positive and negative effects on the immune response (Miles, 2007; Hamer & Steptoe, 2016). Some literature has concluded that the role of exercise and PA within immune system functioning remains undetermined (Plowman & Smith, 2014). Nonetheless, research has shown that individuals who

are physically active maintain greater control of the nervous system and have lower inflammatory responses during times of stress (Nieman & Wentz, 2019). This, in turn, suggests that PA can contribute to inhibiting stress reduced inflammatory processes (Hamer & Steptoe, 2016). Conversely, extended or prolonged bouts of heavy exertion may cause a temporary altered immunity to opportunistic infections (Walsh et al., 2011) however, regular moderate exercise may stimulate beneficial changes to the immune responses to bodily stress. (Nieman & Wentz, 2019).

2.8.8 Mental Health Benefits of Physical Activity

In addition to the benefits of PA on physical health, PA is also strongly associated with psychological wellbeing across all age groups and genders (Eime et al., 2013; Malcolm et al., 2013; Martin & McCann, 2005; Murphy et al., 2018. Research strongly indicates that increased PA is associated with improved mood and reduces the symptoms of depression and anxiety (Anderson & Shivakumar, 2013; Callaghan, 2004; Portugal et al., 2013). Furthermore, higher levels of PA are regarded as a protective factor in preventing suicide ideation (Vancampfort et al., 2018). Specific to students in HEI's, binary logistic regressions were carried out on the data collected in the SASSI report (Murphy et al., 2016) in Ireland to examine the association between PA, gender, and perceptions of overall health, mental health, and happiness. Results verify previous mental health and PA research, maintaining that highly physically active students – those who meet the recommended 150 minutes per week guideline – were more likely to report greater overall health and higher mental health and happiness scores compared with their inactive peers (Murphy et al., 2018). These findings are consistent with other international research that recognises the mental health benefits of PA specifically in the higher education student population (Snedden et al., 2019; Tyson et al., 2010).

The exact mechanisms and neurobiological impact that supports the cognitive and mental health benefits of PA are not fully understood (Helmich et al., 2010; Lubans et al., 2016). However, there are numerous studies and narrative reviews investigating the relationship between PA and affective states (Biddle, Ciaccioni, Thomas & Vergeer, 2019; Gaudlitz, Von Lindenberger, Zschucke & Strohle, 2013; Hamer & Steptoe, 2016). In a systematic review of 22 studies reporting on the neurobiological outcomes of PA on cognitive, psychological and behaviour

mechanisms by Lubans et al., (2016), the findings summarise improved cognitive performance, including attention, maturity, and cognitive flexibility in young people. Psychosocial mechanisms had an effect on physical self-concept and indicators of wellbeing such as self-esteem, self-concept and social connectedness. While behaviour mechanisms, such as self-regulation, have conflicting research outcomes, the researchers identified a gap in the literature examining the effect of PA on potential behaviour changes that impact psychological wellbeing. PA is associated with various dimensions of psychological wellbeing. Research, although voluminous, is both complimentary and controversial due to diversity in scientific methods and weak research design (Biddle & Mutrie, 2008). One underlying outcome emerging from all research investigating the effect of PA on mental health is that virtually none shows negative effects.

2.8.9 The Determinants of Physical Activity

The complexity of the biopsychosocial and environmental influences on involvement in PA makes it challenging to single out the specific influences that explain how certain population groups begin and maintain PA behaviours across the life course (Biddle & Mutrie, 2008) (Biddle & Mutrie, 2008). However, understanding why people do and do not engage in PA is essential for interventions that aim to encourage increased participation in physically active behaviours (Biddle, Gorely & Stensel, 2004). Biological determinants of PA over the lifespan can include age, gender, health status, and physical fitness levels (Aleksovska et al., 2019). Education, ethnicity, socioeconomic status, occupation, self-efficacy, and stress are also considered important life-course correlates of the psycho-social determinants of PA (Cotter & Lachman, 2010; O'Donoghue et al., 2018). While environmental determinants can include space, resources, schools, neighbourhood features, such as, paths and street lights are identified as associated with PA levels (Carlin et al., 2017). Deliens et al., (2015) completed a qualitative study exploring the determinants of PA and sedentary behaviour in Belgian University students (n = 46). Deliens et al., (2015) report that specific to the higher education student population, determinants influenced by an individual (or personal) factors comprise of perceived enjoyment, self-discipline, time, and convenience. Social influences that exist for this cohort incorporate parental control (or lack of), modelling, and social support.

Environmental determinants consist of availability and accessibility to sports activities, travel time/distance and price and the influence from the media in the macro-environment. In Ireland, the Student Activity and Sports Study Ireland report (SASSI) by (Murphy et al., (2016) investigated the determinants of PA at an individual and institutional level. The key individual (or personal) determinants of PA associated with an increased likelihood of being in the high active group were knowledge, motivation, and goals and coping planning. Social influence was the most prominent institutional determinant, with students reporting they were less likely to participate in PA unless they 'did not have anyone to do physical activity with' (Murphy et al., 2016, p.43).

2.8.10 Tools for measuring physical activity

The benefits of PA participation are many, and the adverse effects of sedentary behaviour on both physical and mental wellbeing are now a public health concern (Bouchard, Blair. & Haskell, 2012). As a result, PA participation measurement is now becoming an increasingly relevant thematic area (Sylvia 2015). In order to survey and inform the international guidelines for PA, measurement methods must be both reliable and valid. However, these measurement considerations remain a challenge (Helmerhorst et al., 2012). Research suggests that there are no standard means for measuring PA (Misra, Upadhyay, Krishnan, Sharma & Kapoor, 2014) and PA research is often burdened with the task of selecting the most appropriate measurement to reflect the research question sufficiently (Sylvia, 2015). Studies aiming to develop effective interventions for young students are most beneficial through mixed methods to reduce subjectivity, and social desirability bias (Martínez-Andrés et al., 2012; Dössegger et al., 2014). Therfore, PA in the broadest sense is a multi-dimensional construct and often requires a multi-dimensional investigation (Sylvia, 2015). In this section, an overview of the reliability and validity of various measurement methods available to researchers will be discussed. The main methods of measuring PA include subjective methods (self-report questionnaires, self-report activity diary) and objective methods (direct observation, accelerometer devices, pedometer devices, heart rate monitor devices, and the doubly labelled water method) (Sylvia, 2015). Particular attention will be given to the selected methods of PA in this research, specifically self-report questionnaires.

2.8.11 A Review of Subjective Physical Activity Measurement Methods

Self-report Questionnaires: Self-report physical activity questionnaires (SRPAQs) are the most common method of PA assessment (Castillo-Retamal et al., 2011; Chu et al., 2015). SRPAQs are considered feasible, cost-effective, practical, and convenient in large scale research studies (Helmerhorst et al., 2012; Silsbury et al., 2015; Sylvia. 2015). SRPAQs are regarded as an essential and economical tool to assess and survey the risk of illness in heterogeneous populations, to examine the aetiology of disease in large observational studies, and to evaluate the effects of interventions (Helmerhorst et al., 2012).

In terms of general reliability, SRPAQs are considered more reliable at a group level than an individual level (Sylvia, 2015). These measurement tools are also deemed more appropriate for adults than for children, and less suitable to those who have cognitive limitations, such as immaturity or memory degeneration (Helmerhorst et al., 2012). SRPAQs are vulnerable to measurement inaccuracies, subjectivity, such as social desirability bias, and external factors such as seasonal variation, and questionnaire complexity (Sylvia, 2015). As mentioned earlier, the nature of PA is multidimensional and individualistic; therefore, selecting the right measure to suit the dimensions of PA is imperative to achieving consensus in research (Silsbury, 2015). In many cases, although SRPAQs are the most popular method to measure the PA of an individual or a group. They have been shown to correspond poorly to objective PA measurement methods, such as accelerometers (Rääsk et al., 2017). This particularly applies to self-report assessments, where participants are requested to estimate their perceived level of exertion. It is argued that the use of SRPAQ's may lead to misclassification of the participant's level of PA (e.g., low, moderate or intense levels) (Rääsk et al., 2017).

Misperceptions are additionally influenced by the different levels of interpretation of the questionnaire's content (Silsbury et al., 2015; Yu et al., 2015). In spite of this, when comparing SRPAQ's to the doubly labelled water (DWL) method[6], other research with adults concludes that self-report PA questionnaires are considerably accurate in measuring and determining discrete categories of PA level

[6] The Doubly labelled water (DLW) method is consider a gold standard for assessing total energy expenditure during PA. It is discussed in more detail further below.

(low, moderate, or intense) (Ishikawa-Takata, Tabata, Sasaki, Rafamantanantsoa, Okazak, Okubo, Tanaka, Yamamoto, Shirota, Uchida, 2008). We must also consider how SRPAQs vary from what they measure, on how data are reported, the quality of data, and how data is collected (Sylvia, 2015). Helmerhorst et al. (2012) maintain that the validity of SRPAQs cannot be extrapolated to other populations, ethnicities and geographical locations. This highlights the importance of a judicious selection of appropriate PA questionnaires to reflect the research question and suit the target population. This, in turn, makes international comparison studies challenging, and highlights that the reliability and validity of every SRPAQ may vary depending on why what and how any research in PA is being conducted (Misra et al., 2014). The following scales are examples of self-report physical activity questionnaires that measure PA levels, behaviours, attitudes and efficacy toward PA.

International Physical Activity Questionnaire (IPAQ) and the Global Physical Activity Questionnaire (GPAQ). Both the IPAQ and the GPAQ are used to measure the levels of activity in four domains: leisure time, occupational, household, and transport, along with a question regarding sedentary behaviour. The IPAQ- short was developed as an instrument for cross-national monitoring of PA by an International Consensus Group, which met in Geneva in 1998 (Craig et al., 2003). The GPAQ was developed by the WHO for the same purpose (surveillance of PA in different countries) in 2010 (World Health Organization, 2010).

Both the GPAQ and the IPAQ show significant validity as a self-report tool when correlated with PA levels recorded by accelerometers (Rääsk et al., 2017; Hoos, Espinoza, Marshall & Arredondo, 2013). In some instances, the IPAQ has been shown to have slightly lower levels of agreement between self-reported activity and accelerometer recorder activity counts when compared to that of the GPAQ (Bull, Maslin & Armstrong, 2009). The IPAQ has been recognised for its test-retest reliability and more researched than the recently designed GPAQ (Silsbury et al., 2015; Hoos et al., 2013). The IPAQ has undergone vigorous stages of development (Misra et al., 2014). Additionally, the GPAQ was initially designed as an interview-administered assessment but has since been used for self-administration. The GPAQs validity and reliability in this format have been verified as a useful tool for evaluating programmes aiming to increase levels of PA (Hoos et al., 2013; Misra et al., 2014). Yet, compared to the IPAQ, it is not as thoroughly

researched and widely used as the more well-known IPAQ. Research has shown that both the GPAQ and IPAQ tools are equivalent when used as a method to measure PA in large groups of young adults (Misra et al., 2014).

PACE+ physical activity measure: The PACE + physical activity measure (Prochaska, Sallis & Long, 2001) is a two-item screening tool used among adolescents in primary care. Participants are asked: 'Over the past seven days, on how many days were you physically active for a total of at least 30 minutes per day?' and 'Over a typical or usual week, on how many days are you physically active for a total of at least 30 minutes per day?' Responses are numbered 0-7 days. The PACE + demonstrates excellent test-retest reliability across multiple groups and subgroups of adolescents in the US ($r = 0.40$, $p < 0.001$; test-retest ICC = 0.77) (Prochaska et al., 2001) and moderate validity ($r = 0.34 – 0.49$, $p<0.01$) to identify youth not meeting PA guidelines alongside the ActiGraph GT1M and GT3X accelerometers in children in Ireland (Hardie, Murphy, Rowe, Belton & Woods, 2015). In studies assessing the reliability of the PACE + in higher education student populations in Ireland, results indicate the PACE + has strong test-retest reliability (intraclass correlation coefficients - 0.70) and showed high accuracy of those not meeting the PA guidelines (73.5%) (Murphy et al., 2017). A significant association between accelerometery and PACE+ was found in females only. However, the PACE+ remains suggested as useful and suitable for measuring those meeting and not meeting the PA guidlelines in the higher education population (Murphy et al., 2017).

Self-Report Activity Diary: Self- report activity diaries provide detailed data as the participants are required to record and recall their PA throughout the day (Sylvia, 2015). For example, the Bouchard Physical Activity Record (BAR) is a well-known PA log, whereby participants identify movement behaviours, performed every 15 minutes over three days. Activities are rated on a scale of level 1 (sedentary) to level 9 (highly intense) (Bouchard, Tremblay, Leblanc , Lortie, Savard, 1983). Self-report activity diaries are often administered in conjunction with objective measures in order to record activities, which cannot be recorded by certain devices, such as swimming (Strath et al., 2013; Sylvia, 2015).

Self-report activity diaries have similar issues and strengths in validity and reliability to that of the SRPAQ's. Self-report activity diaries are referred to as practical, low cost, and low participant burden (Prince et al., 2008). Sylvia et al.

(2015) and Strath et al., 2013) insinuate the opposite, however, and refer to the BAR instrument (Bouchard, Tremblay, Leblanc , Lortie, Savard, 1983) as burdensome for those with cognitive dysfunction. Although self-report activity diaries can induce social desirability bias, they also have potential in recording significant momentary assessments that provide an increased understanding of social and physical contexts (Strath et al., 2013). Similar to questionnaires, research suggests activity diaries provide a good subjective measure of PA but require adapting to specific populations and cultures (Strath et al. 2013).

2.8.12 Physical actvity self-determination, motivational readiness for change and self-efficacy measurment tools

The Behavioural Regulation in Exercise Questionnaire-2 (BREQ-2): The Behavioural Regulation in Exercise Questionnaire-2 (BREQ-2) (Markland & Tobin, 2004) is a 19-item questionnaire that measures the stages of the self-determination continuum (Deci & Ryan, 1985) with respect to motivation to exercise. Using a 5-point Likert scale (0=not true for me, 4=very true for me), BREQ-2 investigates five sub-scales of exercise motivation (amotivation, external regulation, introjected regulation, identified regulation, and intrinsic regulation). The revised and modified BREQ-2 demonstrates good factorial validity across all subscales (M = .76; range .53–.90; p's < .001) and proves to be a useful tool for researchers assessing behavioural regulation for exercise (Crăciun & Rus, 2012; Mahony et al., 2019; Markland & Tobin, 2004). The BREQ-2 has been used on the student population to assess the validity and reliability of college students' responses to the Behavioural Regulation in Exercise Questionnaire (BREQ-2) in physical activity and wellness courses (D'Abundo, Sidman, Milroy, Orsini & Fiala, 2014). Internal consistency reliability coefficients ranged from 0.749 to 0.894 in the student study. Authors concluded that the BREQ-2 is a suitable assessment of exercise motivation for pre/post-course measurement and may help identify college students' methods to address the needs of those individuals identified as not motivated to exercise (D'Abundo et al., 2014).

The Physical Activity Stages of Change Questionnaire (PASCQ): The Physical Activity Stages of Change Questionnaire (PASCQ) (Marcus & Simkin, 2003) was designed to assess the Stages of Motivational Readiness for Change Model (SOC)

from Prochaska & DiClemente (1983) in individuals as they move through a series of stages in adopting and maintaining a new habit. More commonly known as the Transtheoretical Model (TTM), the TTM is an integrative, biopsychosocial model that seeks to conceptualize the processes of intentional behaviour change that include five distinct stages: pre-contemplation, contemplation, preparation, action, and maintenance (Prochaska & Velicer, 1997). According to the TTM, change is a process that unfolds over time, involving progress through a series of non-linear stages (Prochaska, Redding & Evers, 2008). The PASCQ was designed to test and determine the stage and motivational readiness to change PA behaviour (Marcus & Simkin, 2003). The PASCQ Questionnaire is a four-item questionnaire with a 'yes' or 'no' response scored by an algorithm. For example, if an individual's response to question one is no, and question two is no, they are identified as being in the pre-contemplation stage. By matching where an individual lies on the stage of change, an appropriate intervention strategy can be implemented (Marcus & Lewis, 2003). Additionally, a tailored or targeted message can be delivered to an individual, providing information directed towards the unique motivational needs, interests and concerns of a participant (Marcus & Forsyth, 2003). The reliability of the PASCQ was tested with the test-retest method (ICC 0.78-.85) (Marcus & Forsyth, 2003). The validity of the instrument was determined as satisfactory by comparing this to other direct measurements of PA (accelerometer, maximum oxygen consumption (VO2) method) (Cardinal, 1995; Marcus & Simkin, 2003). Other studies have also found the reliability of the PASCQ as acceptable among middle school students (age 12- 14 years) (ICC 0.92) (Cengiz et al., 2014). A review provides substantial evidence in support of the validity and reliability of the PASCQ (Spencer, Adams, Malone, Roy & Yost, 2006). The PASCQ has been used among the college student population in recent years (Mettling et al., 2018).

The Exercise Self-Efficacy Scale (ESE scale): Self-efficacy measures self-efficacy to regulate exercise by proposing to the participant various scenarios of challenges that would impede PA behaviour performance (Bandura, 1977a, 2006). Without obstacles, individuals are more efficacious; therefore, the ESE scale was designed to measure the perceived self-efficacy to regulate exercise in situations when it is hard to maintain an exercise routine. The questionnaire is designed to be adapted, and investigators decide which questions are included or omitted. Thirteen

items from Bandura's (2006) original eighteen item scale were included and scored from 0 to 100 (0 = cannot do at all, and 100 = highly certain can do) in the given situations. Accordingly, individuals who obtained a 0 were not at all confident in the skills in maintain regulatory exercise in a given situation (e.g. when I am feeling anxious). The ESE has been used in previous studies among a college sample population (Sabo et al., 2019) and has shown good validity (Everett et al., 2009) and moderate test-retest reliability (ICC -0.59) (Cornick, 2015). The ESE has demonstrated good internal consistency ($\alpha = .88$).

2.8.13 A Review of Objective physical activity measurement methods

Accelerometer Devices: Accelerometers are electromechanical devices which measure acceleration forces, both statically and dynamically Invalid source specified.. The data gathered from these motion sensors are used to evaluate the frequency and intensity of PA over a specified time period. Using these devices adds to the objectivity of the PA research findings, and gives a direct observation of PA intensity, frequency and duration (Lee & Shiroma, 2014; Rääsk et al., 2017). Accelerometers collate considerable quantities of data and are suitable for large studies (Sylvia et al., 2015). Using accelerometers is most beneficial to research when considered part of a collaborative approach to the methodology (Coohen, Mannion & Morrison, 2007; Troiano, McClain, Brychta & Chen, 2014). Much research has been carried out to compare the associations between data from self-report methods and accelerometers across various population groups (Colley et al., 2019; Guo et al., 2019; Shiroma et al., 2015). Some research suggests that accelerometer data can enhance the accuracy of the results of participant questionnaires, as they highlight that individuals may under and over-report their PA, alongside the use of accelerometers (Rääsk et al., 2017; Hoos, Espinoza, Marshall & Arredondo, 2013).

Accelerometers can add to the objectivity of research, but in the endeavour to increase objectivity, accelerometers can in the process induce participatory reactivity bias (Sylvia, 2015). Accelerometer measurement methods are considered more accurate when monitored alongside self-perception feedback from the participants (Kipp & Weiss, 2015). Therefore, a PA self-report instrument should also be used in

the process of using accelerometers in order to collate as much data as possible and to promote compliance (Kipp & Weiss, 2015).

There are also some limitations in obtaining accurate PA assessments on small groups. Multiple data collection points are necessary to achieve valid results as limited information is provided to the researcher from accelometry (Kipp & Weiss, 2015; Linda & Luecken, 2008). An accelerometer cannot detect walking intensity, nor can many of the devices be used for certain activities, such as swimming or weight lifting (Lee & Shiroma, 2014). The strength of accelerometers lies in the collection of functional data on each participant's total daily activity, average daily activity, and mean minutes per day spent in different activity intensities over a period of time. These devices are not limited by the recall and response bias of questionnaires (O'Neill et al., 2017). Recent research maintains, when compared to that of the DLW (Double Labelled Water) method, newer models of accelerometers appear to give more validity to research when carried out with expertise (Silsbury et al., 2015).

The well-known ActiGraph accelerometer (Pensacola, Florida, USA) demonstrates highly accurate counts of the frequency and intensity of accelerations and decelerations (Steeves et al., 2015). However, in some research, when compared to other devices, the results on the most reliable accelerometer remains inconclusive, as different monitors gave different readings (Vanderloo. D'Alimonte, Proudfoot, Timmon, 2015). This highlights the interpretation of data related issues when using varying monitors. It indicates the importance of using the same branded accelerometers throughout the research. Research in the Actigraph accelerometer maintains data is only considered valid, if there are more than 600 minutes of monitoring per day, for at least 5 out of 7 days per week for adults (O'Neill et al., 2017). However, accelerometers remain regarded as exceptionally accurate in reading levels of sedentary behaviour, and giving a precise profile of the respective PA intensities (Atkin et al., 2012; (O'Neill et al., 2017).

Pedometers: This device measures the number of steps taken through a belt, or waistband is worn motion sensor (Strath et al., 2013; Sylvia, 2015). Pedometers provide accurate data for running and fast walking when compared with accelerometers (Sylvia, 2015). Pedometer devices are relatively inexpensive. However, they also present some disadvantages. Pedometers can only measure

horizontal accelerations that spring from the hip. Therefore no upper body motions can be recorded (Sylvia, 2015). Pedometers are a useful measurement tool for analytical epidemiological studies, but lower levels of data can be stored when compared to accelerometers (Thomas, Silverman & Nelson, 2015). Furthermore, wearing pedometers can induce subject reactivity (Sylvia, 2015). This subjectivity may only last for one week with a more accurate estimation of steps recorded in the subsequent week (Clemes & Deans, 2012).

Coincidently, subject reactivity has also been recognised for its potential in PA intervention. Pedometers are not only an assessment tool, but also a means to increase walking behaviour, and motivate through built-in functions (McKenzie, Cohen, Sehgal Williamson & Golinelli, 2006; Strath et al., 2013; Bassett, Wyatt, Thompson, Peters & James, 2011). The Yamax Digiwalker (Model CW-701) is the most widely used pedometers, as it has produced the highest accuracy in controlled field studies (McKenzie et al., 2006).

Direct observation : In comparison to questionnaires and interviews, direct observation allows for the evaluation of a researcher's criteria of an individual's particular behaviours during PA through monitoring or recording (Thomas, Nelson, Silverman, 2015; Strath et al., 2013). This flexible method is used to collect contextual information and specific details of the PA, which reflects a research question directly (Sylvia, 2015).

Deciding on what behaviour to observe is unique to each study, and yet there are a wide variety of validated PA measurement instruments designed to generate data while observing individuals (Sylvia, 2015; McKenzie et al., 2006). Reliability is ensured through generating data systematically with procedures to categorise, activity code, and measure frequency, latency and duration of behaviour during PA (Strath et al., 2013). Direct observation is a popular method in children's PA studies, as children are unable to report their perceived levels of activity accurately and also often engage in PA in bouts of time (Knowlden, 2015). Direct observation has some disadvantages, including the restriction of space, high cost, time-consuming, required expertise and controlled environment and the potential for subject reactivity (Sylvia, 2015; McKenzie, 2006).

2.8.14 A Review Objective Energy Expenditure measures

Indirect Calorimetry: This form of measurement method of PA is primarily performed under controlled conditions, such as a laboratory. It is considered a gold standard measurement method of energy expenditure during PA and is frequently used as a scientifically-based approach to prescribing a dietary plan to patients for prevention and treatment of obesity (Strath et al., 2013; Rosado, Kaippert & Brito, 2013). Oshima et al., 2017 summarises that indirect calorimeters analyse respiratory gases of patients to measure their oxygen consumption (VO2), and carbon dioxide production (VCO2) and derive energy expenditure by the Weir's equation (Weir, 1949). It is expensive, requires a high degree of technical expertise, equipment, and it is only suitable for short time assessments of PA and energy expenditure (Strath et al., 2013).

The Doubly Labelled Water (DWL) Method: The Doubly Labelled Water (DLW) method is an isotope-based technique used to measure the metabolic rate of individuals (Lifson & McClintock, 1966). The DLW (doubly labelled water) method is based on the theory that after a dose of two stable isotopes; 2H2 (Deuterium) and 18O (Oxygen 18), the two isotopes equilibrate with total body water and then eliminate differentially from the body. Deuterium (2H2) leaves the body like water, while 18O leaves as water (H2O) and carbon dioxide (CO2). CO2 production can then be calculated by subtracting 2H elimination from 18O elimination (Strath et al., 2013 ; Schoeller Van Santan, 1982). Compared to the Indirect Calorimetry method, the DWL method measures energy expenditure in free-living conditions, over a time period of ten to twenty days (Strath et al., 2013).

The DWL method is infrequently used in PA research as is time consuming, costly and has a high subject burden (Bouchard et al.,2012). DWL also cannot capture qualitative data, is not suitable for measurements of a large group of people, and does not provide information about the context of PA (Sylvia, 2015; Strath et al., 2013; Bouchard et al., 2012). However, it continues to be a considered a standard gold method of measuring energy expenditure and is used to validate other measures of PA assessment, and nutrition due to its accuracy and reliability (Tooze et al., 2004).

2.9 CONCLUSION

In the early sections of the literature review chapter, the author has examined various perspectives on mental health. The introduction presents a rationale for the adoption of a positive mental health approach in health promotion and intervention design. The prevention of mental illness and promotion of mental health are presented as separate objectives. However, they have overlapping aims (Robinson et al., 2016). The World Health Organisation highlights since 1988 ‘public health is the science and art of promoting health, preventing disease, and prolonging life through the organised efforts of society (Acheson, 1988). Therefore, taking a promoting, proactive and protective approach to mental health, particularly targeting prevention, is becoming increasingly important because a reactive, treatment approach to mental health from many perspectives are largely not working (Jorm & Yap, 2019; World Health Organization, 2016). A positive mental health or ‘mental fitness’ approach is adopted by the SOMI-HE intervention research as according to the literature, positive mental health or flourishing enhances life-long health (Keyes, Corey et al., 2012; Keyes & Simoes, 2012).

In Section 2.3, the literature examines the biopsychosocial, broader socio-ecological and personal determinants of health, and carefully examines the complex dimensions necessary to consider for effective intervention design. ‘To promote and enhance positive mental health effectively requires an understanding of how mental health is conceptualised, the nature of its determinants and how their influenced varies across population groups’ (Barry, 2009, p.5). The modifiable determinants of the SOMI-HE intervention are identified as personal or cognitive determinants. In intervention design, cognitive determinants most likely include cognitive process such as knowledge, beliefs, attitudes, values, self-efficacy, outcomes, expectations and skills (Bartholomew Eldridge et al., 2016). In section 2.4, the characteristics of the ‘emerging adults’ population group at the centre of this research were described (Arnett, 2000). They are flagged as a vulnerable population group to mental health problems in Ireland (Dooley et al., 2019). The need for preventative measures that promote positive mental health among the emerging adults is indicated by the literature (Harding et al., 2019; Murphy, 2017; Karwig, Chambers & Murphy, 2015;). HEIs are recognised to be well-positioned to respond to the mental health needs of their students through mental health promotion and intervention (Thorley,

2017). The literature highlights a lack of predicitve models that identify the determinants of mental health for specific population groups, such as emerging adults or higher education students. Understainding the exact determinants of mental health for the current research will require bespoke investigation throughout the current research.

Section 2.6 examines the approaches to health promotion. The current SOMI-HE intervention is determined a combination of educational and behaviour change approaches that focus on developing positive mental health. Recent findings suggest positive mental health intervention programmes have significant positive effect on the mental health on all population groups (Teixeira et al., 2019; Bjørnsen et al., 2017; Barry et al.2013; Seligman, 2011). Three systematic reviews indicate that individual-level behaviour interventions designed to increase skills and knowledge of mental health are more likely to yield positive results among the emerging adult population and those attending higher education (Barry et al., 2013; Conley et al., 2013; Winzer et al., 2018).

In the closing of the literature review, section 2.7, the key components used in the SOMI-HE intervention (wellbeing, stress, resilience, mental health literacy, one good adult and physical activity) were described and conceptualised. Intervention designers must understand the programme they are evaluating (Bartholomew Eldridge et al., 2016). Therefore, each component was reviewed, then matched with potential assessment methods that would capture their positive mental health outcomes. The refined selected methods used to evaluate the SOMI-HE intervention are described in more detail in the following methodology chapter, however, the review reveals that challenges exist in measuring constructs such as wellbeing, resilience, and particuarly PA.

‘Positive mental health is a value in its own right; it contributes to the individual’s well-being and quality of life; and also contributes to society and the economy by increasing social functioning and social capital’ (Jané-Llopis, Barry, Hosman & Patel, 2005, p.9). It emerged from the literature review that the evidence supporting the efficacy of positive mental health intervention design continues to grow. What has been termed ‘the prevention gap’ highlights a continued over-reliance that on the treatment of mental health problems at the expense of prevention and protection (Jorm & Yap, 2019). Therefore, discovering effective and ineffective

methods of intervention is essential for the development of scientific knowledge in the field of positive mental health (Barry, Clarke, Petersen & Jenkins, 2019). To design, develop, implement, and evaluate a positive mental health intervention designed to increase wellbeing, resilience and PA among higher education students the research design had four primary objectives:

1) To collect baseline data on the wellbeing, resilience and PA among higher education students (chapter four).
2) To design an intervention programme using a systematic planning approach that is based on theory and evidence (chapter five).
3) To evaluate if participation in the SOMI-HE intervention leads to an increase in wellbeing, resilience and PA (chapter six).
4) To evaluate the key short term and long term outcomes from participating in the SOMI-HE intervention (chapter six).

The following chapter describes the research methodology. A mixed-methods approach is adopted to investigate these four objectives. Three components out of the six described (wellbeing, stress, resilience, mental health literacy, one good adult and physical activity) are measured in the current study. The components: wellbeing, resilience and PA are measured using a selection of five tools reviewed in sections 2.6and 2.7. Additional outcomes are measured using quantitative methods.

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Chapter 3
Methodology

3.1 INTRODUCTION

This chapter intends to describe the methodological rationale used throughout each stage of the research. The chapter describes how the overall study was conducted, specifically using a mixed-methods research design to:

- Collect baseline data on the wellbeing, resilience, and PA amongst higher education students (*Chapter 4*). This stage of the study is referred to as the baseline study. The study's full title, as published in Irish Educational Studies, is *'Levels of wellbeing, resilience, and physical activity amongst Irish pre-service teachers: A baseline study.'*
- Design an intervention programme using a systematic planning approach that is based on theory and evidence (*Chapter 5*). An intervention design procedure, known as Intervention Mapping (IM) was adopted. Data collected as part of this methodological procedure helped inform the design and construction of the intervention. The study's full title, as published in Health Education is '*Mental fitness in higher education: Intervention mapping programme design.'*
- Evaluate if participation in the SOMI-HE intervention leads to an increase in wellbeing, resilience and PA (*Chapter 6*), and to evaluate the key short-term and long-term outcomes from participating in the SOMI-HE intervention (*Chapter 6*). This phase of the research examined the effectiveness of the intervention, specifically as part of an evaluation study. The study's full title, as currently under review, is '*The outcomes of a mental fitness intervention programme for higher education students.'*

To begin, the researcher's philosophical position is described, alongside the theoretical and overall research framework (*see Figure 3.1*). A rationale for the various methodological decision-making stages are reported throughout, and data analysis procedures are explained. The chapter concludes with a summary of the validation procedures used to ensure trustworthiness.

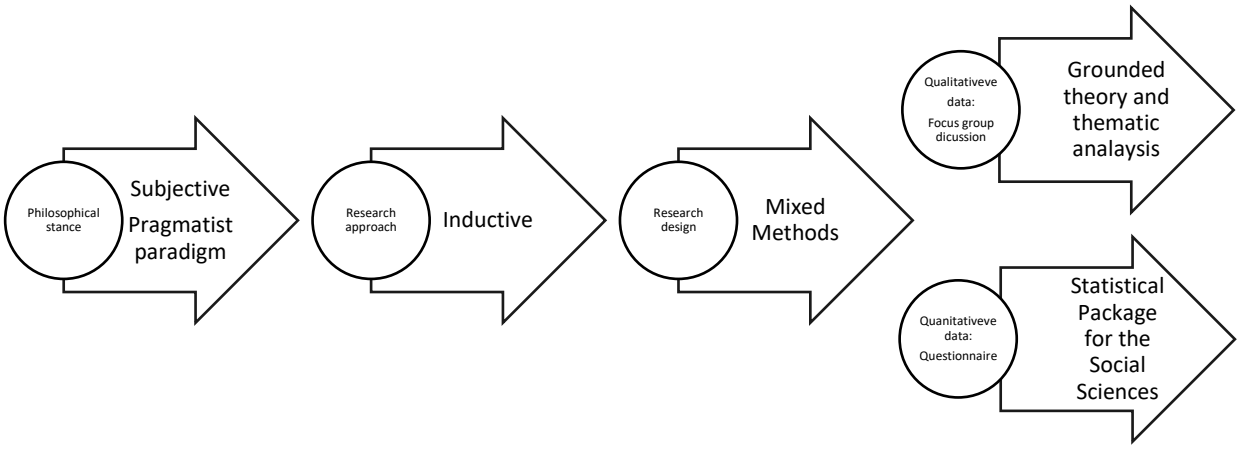


Figure 3.1 – Representation of the researcher's theoretical perspective, approach, methods and analysis procedure.

3.2 THE RESEARCHER'S PHILOSOPHICAL STANCE

The nature of this study required the researcher to consider a philosophical paradigm at the early stages of the research proposal. Scholars argue that empirical research should include explicit discussion about the paradigm(s) used (Creswell & Plano Clark, 2011). As the intervention designer, teacher, and evaluator, the researcher had a responsibility to problematise existing beliefs and investigate the stance held throughout each stage of the intervention's development. 'A paradigm is a philosophical world view or a general philosophical orientation about the world, and the nature of research that a researcher brings to a study' (Creswell, 2014, p.6). A paradigm refers to the researcher's system of beliefs about the world in the context of the research setting (Broom & Willis, 2007). It is often referred to as an ontological position in social research, which is similarly defined as 'the image of social reality upon which a theory is based' (Grix, 2002, p.77).

An ontological position is a belief system that reflects an individual's interpretation or reality or the 'study of being' (Crotty, 1998, p.10). Objectivism and subjectivism are frequently described as 'a continuum's polar opposite with varying philosophical positions aligned between them' (Holden & Lynch, 2004, p.4). The researcher's ontological position shapes the researcher's methodological decision making dependent on whether the researcher sees an external, independent reality (objective) or an experienced, constructed reality (subjective) based on social or

individual belief systems (Jackson, 2013). The perspective taken by the researcher will affect whether a quantitative approach is deemed necessary to fit an objective and measurable study, or whether a qualitative approach is deemed essential to encompass a subjective and interpretative study or a mixed-methods approach (Jackson, 2013). In the process of analysing the outcomes of health behaviour interventions subjectivity is unavoidable (Michie et al., 2018). The focus of this research is not only to determine whether a change would occur in the wellbeing, resilience, and PA levels of participants as a result of the intervention. It also aims to evaluate why change or no change occurred and inform future development of the intervention programme to enhance its effectiveness. From this ontological perspective, the nature of this research is identified as subjective.

Two well-known epistemological philosophical systems include post-positivism and constructivism. Post-positivism assumes that reality is concrete and an objectivity in inquiry can be achieved (Broom & Willis, 2007). Post-positivism is often associated with quantitative research methods. Constructivism or interpretivism focuses on understanding reality through 'subjective meanings that could explain the processes of decision-making and action' (Broom & Willis, 2007, p.24). Constructivism is similarly associated with qualitative research methods. Pragmatism emerged from the philosophical debate, termed the 'paradigm war', between post-positivism and constructivism (Tashakkori & Teddlie, 1998). The SOMI-HE intervention study adopted a pragmatic paradigm, specifically as pragmatism is about 'what works' and is often deemed to be a suitable approach for mixed methodological research designs (Creswell, 2014). It is argued that pragmatism has strong connections with mixed methods techniques, as it is not committed to any one philosophical approach (post-positivism or constructivism) (Creswell, 2014; Morgan, 2014). Pragmatist researchers are concerned with devising ways to extract knowledge about a problem by discovering action-based solutions to solve a problem (Creswell, 2014). The pragmatic researcher is required to adhere to subjective positions within research reflections, yet maintain objectivity within data collection and analysis (Shannon-Baker, 2016).

Morgan (2014) argues that pragmatism has roots that stem from Dewey's concepts of human experience and inquiry. Maintaining Dewey's insights (Dewey, 2008), the positivist and constructivist paradigms are equally essential claims about

the nature of human experience. In Dewey's perspective, the concept of experience always involves interpretation based on one's beliefs, while the concept of inquiry is a process by which those beliefs are examined. Morgan argues that Dewey's concept of inquiry may serve as a useful basis for researchers to join beliefs and actions in the process of inquiry and decision-making in research. Pragmatism bridges the dichotomies that exist in mixed methodological research and joins the hierarchies between positivist and constructivist approaches (Shannon-Baker, 2016). This current SOMI-HE research aimed to identify the needs of a sample population of higher education students by investigating how to best respond to these needs through designing an evidence-based intervention. In the endeavour to capture meaningful and robust data, it was necessary to select various methodological approaches, which incorporated aspects of both post-positivism and constructivism. Adopting the pragmatic paradigm throughout the study gave the researcher the freedom of choice to select their methodologies, techniques, and procedures, specific to the researcher's needs and purposes. Pragmatic inquiry focuses on knowledge as the changeable and a constantly revised product of experience (C. Biddle & Schafft, 2015).

Axiology refers to the values and ethical issues that guide our research choices (Kivunja & Kuyini, 2017). Under a pragmatic paradigm, values play a large role in interpreting results (C. Biddle & Schafft, 2015). Therefore, the researcher adopts both objective and subjective points of view throughout the research design where appropriate, and continually remained mindful of the personal values brought to the research. Throughout the implementation of each stage of the intervention research, ethical considerations are intertwined and explained in full detail in Section 3.5, Ethical procedures (Kivunja & Kuyini, 2017).

3.3 METHODOLOGY

Creswell & Plano Clark (2007) assert that the deductive researcher works from the 'top-down' – from theory to hypotheses – to data which can either add to or contradict an existing theory (p.23). In contrast, the inductive researcher is someone who researches from the 'bottom-up', using the participants views to build broader themes and generate a theory (p.23). The overarching theoretical approach in this

current research is inductive. A researcher can adopt an inductive theoretical movement throughout a study in order to work to discover answers to questions (Tashakkori & Teddlie, 2010). Inductive projects allow the researcher to extract meaning from each stage of this research (Creswell, 2014).

As part of this mixed methods research design, however, elements of the research are deductive. For example, in the baseline study, quantitative methods are used only. The underlying inductive style of this overall research, however, is maintained throughout the thesis to focus on developing a pattern of meaning from all of the data collected throughout each stage of the research process.

- Stage 1 in *Chapter 4*, described as the baseline study, is an inquiry into the current levels of wellbeing, resilience, and physical activity of Irish pre-service teachers. This stage of the research is primarily a quantitative study and, therefore, leans more toward a deductive approach.
- Stage 2 in *Chapter 5*, the intervention design study, outlines how a planning model is adapted, and the intervention is designed based on qualitative data which has been previously collected from relevant stakeholders included in the intervention design process. An inductive approach, therefore, was assumed.
- Stage 3 in *Chapter 6* is the intervention evaluation and methodological outcomes investigation. The study examines the impact of the intervention through equally weighted quantitative and quantitative methods. An inductive approach continued to be assumed here, specifically as the quantitative data results continued to be interpreted through the qualitative data lens.

3.4 A MIXED METHODS RESEARCH DESIGN

Each stage of the research required complementary techniques to capture the data that would inform the research agenda, which was to design, implement, and evaluate a mental fitness intervention. A mixed-methods strategy of inquiry was selected as the most appropriate method for this research. Mixed methods research involves combining qualitative and quantitative research data in a research study (Creswell, 2014). Quantitative (mainly deductive) methods are used to measure patterns of wellbeing, resilience, and physical activity (PA) throughout the research, while qualitative (mainly inductive) methods are used to identify unknown processes

in the study, such as the why and how certain phenomena occurred as a result of the intervention (Meissner et al., 2011). Qualitative data is inclined to take the form of open-ended questions without predetermined responses. The qualitative data in this research was collected using focus group interviews, a modified Delphi method exercise, and through the use of open-ended question techniques. Quantitative data usually includes closed-ended responses in methods such as questionnaires or psychological instruments. In this research, the quantitative data was collected using specific psychological and PA measurement instruments.

3.4.1 Rationale for using a mixed-methods approach

Studies aiming to develop effective interventions are most beneficial when using a mixed-methods approach, specifically to reduce subjectivity, strengthen the research rigor, and enrich data analysis (Creswell & Plano Clark, 2011). The current investigation sought not only to measure the impact of the intervention, but the research also investigated how best to design the intervention. A mixed-methods approach was necessary to answer the research questions at each phase: baseline, intervention design, and intervention evaluation. Mixed methods research is recommended for intervention researchers, as the research design combines approaches used to strengthen intervention design and implementation (Zhang, 2014). Several reasons outlined by Meissner et al. (2011) underline the adoption of mixed methods in this SOMI-HE research – the authors maintain that mixed-methods allow the researcher to look at a problem from various perspectives, contextualise the setting, and validate or compare results. It was essential in the process of the intervention design and evaluation to listen to the voices of the stakeholders and participants.

Additionally, qualitative components ‘add depth and meaning to empirical findings’, which can assist in assessing feasibility and the potential for intervention, through gathering preliminary evidence and informing researchers of the barriers to effective intervention design and adaption (Zhang, 2014, p.27). Conversely, quantitative methods can identify patterns and trends (Zhang, 2014). Using these combined research methods can enhance knowledge of the outcomes of the programme and can inform the development of future research as they are considered a ‘systematic and rigorous form of inquiry’ (Meissner et al., 2011).

3.4.2 Data integration

Creswell (2003) argues that the mixed methods researcher must address several questions on how best to organise data collection when using a mixed-methods approach. Such considerations include:

1) What is the implementation sequence of the mixed methods proposed in the research study?
2) What priority should be given to each method, based on the research methods?
3) At what stage, and how will, the data and findings be integrated?
4) Will an overall perspective be used in the study? The answer to questions 1 to 3 are answered in the same sequence below. The answer to question 4, however, was presented previously in the chapter, under *Section 3.2*, titled 'the researcher's philosophical stance'.

1) In the SOMI-HE study, data collection took an interactive approach, where data was collected both iteratively and in parallel (Fetters et al., 2013). Data were collected using two methods. In stage one (*Chapter 4*), quantitative methods were used only. In stage two (*Chapter 5*), the intervention framework is guided primarily on the qualitative data which was used to inform the development of the intervention (Fetters et al., 2013). While in stage three (*Chapter 6*), a multi-stage approach to data collection is utilised for the sequential data collection that aims to evaluate the design, implementation and assessment of the intervention (Fetters et al., 2013). (*see Figure 3.2*)

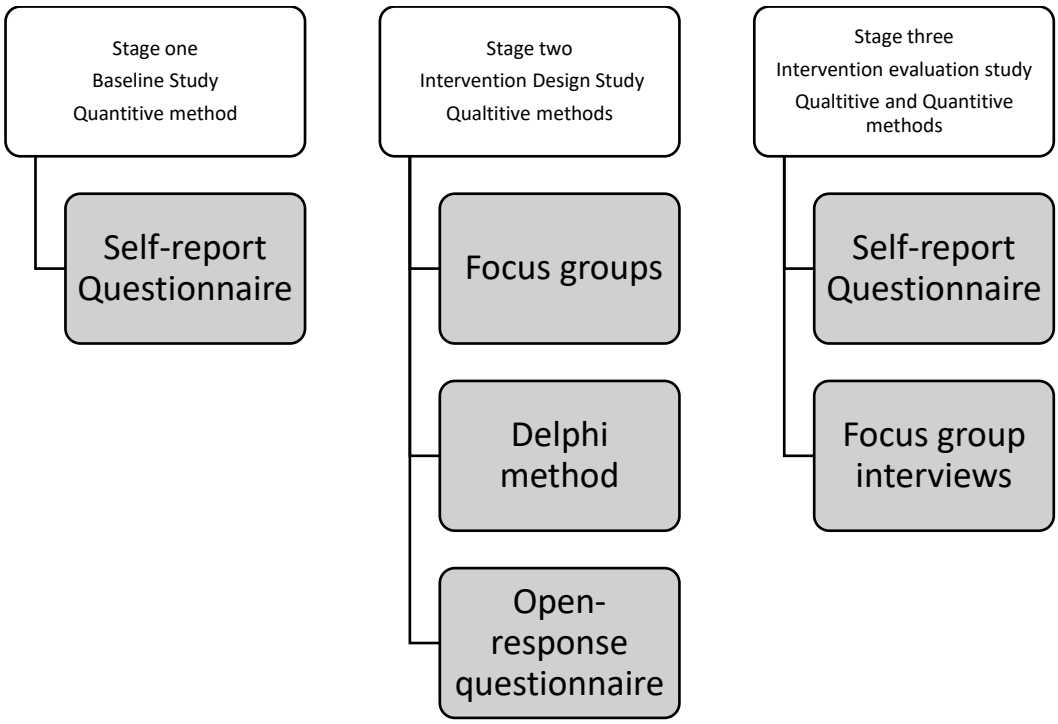


Figure 3.2 – Mixed-method implementation sequence

2) Throughout the research, quantitative and qualitative methods are devised in equal parts and, therefore, it is what Schoonenboom & Johnson (2017) refer to as an equal-status concurrent design. Both approaches in the study are placed at the centre of the qualitative-quantitative continuum and are seen as a process in which both components are in constant reciprocal action through to the end of the research process (Schoonenboom & Johnson, 2017).
3) A convergent parallel mixed-methods design is used to provide a comprehensive analysis of the research problem (Creswell, 2014). There were several points of interface in the data collected as part of stage 2 (intervention design) and stage 3 (intervention evaluation) in which both the qualitative and quantitative components were brought together. 'Having one or more points of integration is the distinguishing feature of a design based on multiple components' (Schoonenboom & Johnson, 2017, p.115). Stage 1 (the baseline study) collected quantitative data only and was not merged with any other data. Stage 2 integrated qualitative methods, including a Delphi technique, a focus group interview, and open-ended questioning to inform the design process of the intervention. Stage 3 combines quantitative and qualitative methods, including questionnaires and focus group interviews to evaluate the outcomes of the intervention.

Multiple models are available to develop techniques that take practical steps in data merging (Moseholm & Fetters, 2017). In this research, the data was integrated through an embedding process. Integration through embedding is when data is linked at multiple time points. This is particularly applicable for stage 3, when longitudinal data was collected at three time points with the same participants. The focus of the technique is to link the qualitative data with the quantitative data, specifically to clarify the outcomes of the measures (Fetters et al., 2013).

At the reporting level, the data integration is reported through narrative, whereby the researcher describes the findings in the final report. There are three ways of integrating through narrative: weaving, contiguous, and staged (Fetters et al., 2013). The staged approach (where results are reported in stages) best describes the reporting of the integration in stage 2 of the research, the intervention design. While the contiguous approach (presenting the findings in a single report but in different sections) more accurately represents stage 3 of the research, the intervention evaluation.

3.5 ETHICAL PROCEDURES

Ethics is the study of what should be done transparently in the domains of evidence, ethics, values, and procedures for all kinds of health promotion (Carter et al., 2011). The University College Cork (UCC) Social Research Ethics Committee (SREC) approved the study early in 2017 (Ethics log number: 2017-009). Participants included those from a selected third-level education setting. Permission to implement the research and intervention among students was granted by the senior management team within the selected department of the university. All participants invited to partake in the research were informed of their right to withdraw from the proceedings at any stage. Students were made aware they did not have to complete the research to complete the SOMI-HE intervention programme.

3.5.1 Letter of consent:

Each participating individual taking part in both quantitive and qualitative research methods were supplied with an information sheet describing the stages of data

collection, the methods used, and the purpose of the study and intervention programme (*refer to Appendix C*). All participants were guided through the information sheet and given adequate time to consider their consent.

3.5.2 Anonymising data and storage:

In the questionnaire, students were asked to provide their names. All participants were anonymised through assigning each individual with an identification (ID) number at the data cleaning stage. The participants had the option to complete the questionnaire via hard or soft copy. Soft copy questionnaires are secured under the researcher's login code on online software (Survey Monkey) used to administer the survey. The signed consent forms and hard copy questionnaires were kept in a secure location on the college campus and all relevant files with participants' names were deleted from the researcher's device and stored under the GDPR-compliant secure online domain provided by the college.

All focus group discussions were audio-recorded via digital dictaphone (Olympus Digital Voice Recorder WS-852), transcribed verbatim, and anonymised. The leading researcher, alongside four trained interviewers and five assistant study moderators, facilitated and took notes throughout each discussion over the three years of data collection. Assistant study moderators were consulted preceding each interview on their shared insights and interpretations of the participant discussions. These discussions were documented under the moderator's narrative of the interview. They were later used to recall any emotions or particular reactions from the interviewees at the early stage of data analysis. Though the leading researcher conducted the majority of interviews, it was not feasible for the leading researcher to transcribe all of the interviews. The interviews were transcrbed by Getset Transcriptions, a service sourced within the university context. Furthermore, it was not necessary for the leading researcher to transcribe all of the interviews, as a reliable research framework known as Thematic Analysis from Braun & Clarke, (2006) was employed.

3.6 PARTICIPANTS AND SETTING AT EACH STAGE OF DATA COLLECTION

Each stage of data collection had different methodologies and participant sample sizes involved. The participants and settings for each stage of the research are described again later (*Chapters 4 to 6*). They are listed here individually to provide the reader with an overview of the participants at each stage of data collection.

Participants and setting at Stage 1 – Levels of wellbeing, resilience, and physical activity amongst Irish pre-service teachers: A baseline study

In stage one, a clustered convenience sample of pre-service teacher educators (N=160 approximately) from a selected Irish higher education setting were invited to participate in this baseline study towards the university's second semester within year one of their postgraduate studies (March 2017). This particular higher education setting was chosen based on the proximity and accessibility to the research participants. Recruitment procedures involved local networking with the university department to provide the researcher with an opportunity to carry out the data collection. From the invited higher education students eligible to partake (N=156), an 82% response rate was achieved, and a final research sample size of 128 participants (29% male, 71% female) completed the surveys. In terms of age, 77% of the participants were in the age range of 18-27 years old and 23% of the sample was aged 27 years and older.

Participants and setting at Stage 2 – Mental fitness in higher education: Intervention mapping programmed design

In the second stage of the research, 99 participants assisted and contributed to the intervention mapping (IM) exercise, specifically as part of the redesign process to the SOMI programme. An expert planning team was also established prior to the data collection phases, comprising of a psychiatrist, two psychologists, a mindfulness teacher, a higher education student, five clinical mental health nurses, a higher education lecturer (with PA-specific expertise), a community health project manager, and two researchers. There were three points of data collection which included:

Delphi-exercise: Gathering expert opinion through a Delphi exercise was used to formulate an empirical consensus of the SOMI-HE programme content through collating data from a panel of discipline-specific experts (n=14).

Focus group interviews: Implementing two semi-structured focus group interviews with a representative sample of higher education, mixed-gender students (n=6). The sample was between 18 and 25 years old. These interviews were conducted on campus with students who had completed the previously established and existing SOMI programme in March 2017. The focus group aimed to:

a) Understand what students liked and disliked about the original SOMI, and

b) Discover the determinants and barriers to positive mental health behaviours, such as help-seeking and PA participation in higher education.

Evaluation questionnaires: Evaluation questionnaires were used to enable the researcher to capture higher education student feedback immediately after completing an existing SOMI programme. Summary findings were sought through a combination of closed and open-ended questions from a convenience sample (n=99). Three open-ended questions investigated participants' opinions on which aspects of the programme were useful or unhelpful, and which aspects needed change.

Participants and setting at Stage 3 – The outcomes of a mental fitness intervention programme for Higher Education students

In the third, and final, stage of the study, the researchers used a mixed-method longitudinal pre (immediately before intervention), post (two weeks after) and retention (seven months after) intervention evaluation design (*see Figure 3.3* for timeline). A clustered convenience sample of two cohorts of postgraduate students from the same degree programme, at the same stage of the study, completed the SOMI-HE study over two academic years. The programme was implemented at a local level within a university and incorporated into the formal lecture timetable at the discretion of the department's senior management team. Several attempts to secure a larger sample failed due to limited access to students, timetable restrictions, and student compliance to the research outside of formal timetable scheduling.

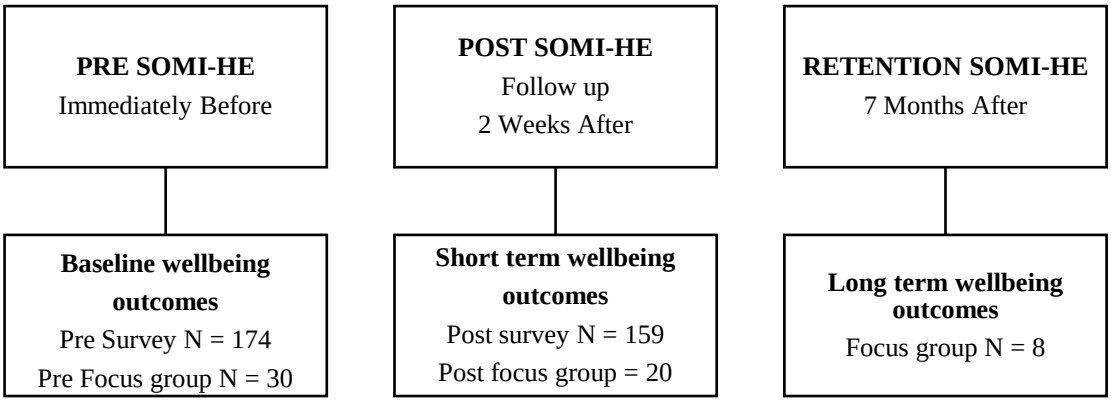


Figure 3.3 – Points of data collection in stage three of intervention evaluation

The delivery of the programme and collection of data was conducted on the selected university campus. Two weeks in advance of SOMI-HE implementation, the students were visited during a formal lecture in mid-January (2018 and 2019) by the research team and 10 trained undergraduate research assistants. A total of n=250 students were informed about the SOMI-HE programme content. Overall, 88% (n=220) attendance to the programme was achieved over two years, while 70% (n=174) of the consenting participants completed the study.

At the retention stage, too many variables (such as season and time of academic year) existed to collect reliable quantitatative data at a third point of data collection. Additionally, due to the short academic semester (12 weeks), the researcher had limited opportuntiy to collect survey data at a closer time point than the 7 month follow-up availed of. In the retention stage of data collection, therefore, focus groups were used only to collect data and the sample was limited to 8 participants. The same returning participants were invited to partake in the focus group discussion at each of the three stages of data collection. It was agreed by the researcher and supervisory team that consistent feedback from the same participants over time would inform an evolving story in the outcomes of the intervention.

3.7 QUANTITATIVE DATA COLLECTION METHODS

This section will provide a review of the selected self-report questionnaire instruments used in Stage 1 (baseline) and Stage (intervention evaluation). The selected tools include:

- The WHO-5 Wellbeing Index (WHO, 1998).
- The Warwick-Edinburgh Mental Wellbeing scale (WEMBWBS) (Tennant et al., 2007).
- The Brief Resilience Scale (BRS) (Smith et al., 2008).
- The PACE + physical activity measure (Prochaska, Sallis & Long, 2001).
- The Physical Activity Stages of Change Questionnaire (PASCQ) (Marcus & Simkin, 2003).

These instruments were deemed most suited to the research based on the literature review discussion on the key components of the intervention. There is little consistent evidence on how subjective wellbeing should be measured and what dimension of wellbeing should be included in a comprehensive instrument design (Linton et al., 2016). Instruments attempting to measure wellbeing through self-reported means need to carefully consider how wellbeing is conceptualised (Linton et al., 2016). There appears to be no gold standard to measure wellbeing and resilience. Nonetheless, the tools employed in this research focused on the positive aspects of mental health and are paired closely with the concepts of each component used in the intervention.

Self-report PA questionnaires are regarded as an essential and economical tool to assess and survey the risk of illness in heterogeneous populations, to examine the aetiology of disease in large observational studies, and to evaluate and compare the effects of interventions (Helmerhorst et al., 2012). The PA measurement questionnaire (The PACE +) assesses participants' levels of PA. The PA behaviour questionnaire (The PASCQ) measures participants' stage on the Transtheoretical Model (Prochaska & Velicer, 1997).

In terms of questionniare administration, prior to completing the questionnaire, each of the participants were provided with a letter of consent describing the content of the questionaire and focus group interviews. The participants had the option to complete the questionnaire via an online Surveymonkey link, or through a hardcopy format. The questionnaires took approximately 20 minutes to complete per participant.

3.7.1 Questionnaire measurement instruments

3.7.1.1 The WHO-5 Wellbeing Index

The WHO-5 Wellbeing Index (WHO, 1998) is a short, generic, self-administered, global rating scale. The questionnaire has five positively phrased items which include: 'I have felt cheerful and in good spirits', 'I have felt calm and relaxed', ' I have felt active and vigorous', ' I woke up feeling fresh and rested', and ' My daily life has been filled with things that interest me' (De Wit et al., 2007). The WHO-5 Wellbeing Index has been validated as both a screening tool for clinicians and as a method to assess wellbeing in research studies over time (Topp et al., 2015). The scale can also help to monitor the emotional wellbeing of patients as part of the clinical routine, and can aid in the recognition of signs of depression (Wu, 2014; Topp et al. 2015). In a systematic review evaluating the clinimetric validity of the WHO-5, the responsiveness/sensitivity of the WHO-5 across controlled clinical trials revealed that the mean sensitivity of the WHO-5 was 0.86, and the specificity was 0.81 (Topp et al., 2015). The WHO-5 Wellbeing Index has good test-retest reliability (ICC 0.81) and is found to be a suitable instrument to assess wellbeing over time and to compare wellbeing between groups (Schougaard, de Thurah, Bech, Holland & Christiansen, 2018; Topp et al. 2015). The scale is also suited across varying age groups, is culturally translatable, and can be used across diverse fields of practice and research (De Wit et al. 2007; Wu, 2014; Saipanish, Lotrakul & Sumrithe, 2009).

3.7.1.2 The Warwick-Edinburgh Mental Wellbeing scale (WEMBWBS)

The Warwick-Edinburgh Mental Wellbeing scale (WEMBWBS) (Tennant et al., 2007) was developed to enable the monitoring of mental wellbeing across the UK's general population (Stewart-brown & Janmohamed, 2008). The WEMWBS is a 14-item scale with five response categories on a Likert scale, specifically designed to measure both the subjective (hedonic) and objective functioning (eudemonic) aspects of positive mental wellbeing (Michaelson et al., 2012). The scale measures how often respondents have feelings of optimism, cheerfulness, relaxation, satisfying interpersonal relationships, and positive functioning (energy, clear thinking, self-acceptance, personal development, competence, and autonomy). The validity of WEMWBS has been assessed on student and adult populations and stands out as a robust tool (GFI = 0.91 and AGFI = 0.87), with good test-retest reliability (ICC 0.83)

(Tennant et al. 2007; Lloyd & Devine, 2012; Cooke et al. 2016). A cronbach's alpha coefficient indicates that there were strong internal positive correlations between WEMWBS items and a high internal consistency (0.87 (95% CI [0.85; 0.88], n = 1,517)) (Stewart-Brown & Taggart, 2015). The scale has been recommended for use in evaluating mental health promotion initiatives and programmes (Stewart-brown & Jnamohamed, 2008; Tennant et al. 2007; Coughlan et al. 2013; Maheswaran, Weich, Powell & Stewart-brown, 2012). It has shown good reliability, validity and acceptability to measure mental wellbeing at both a group and individual level for mental health interventions (Stewart-brown & Jnamohamed, 2008; Tennant et al. 2007).

3.7.1.3 The Brief Resilience Scale (BRS)

The Brief Resilience Scale (BRS) was designed 'to assess the ability to bounce back or recover from stress' (Smith et al. 2008). The BRS (Brief Resilience Scale) consists of six items: three negative and three positive. Respondents are asked to answer each question by indicating their agreement with each of the six statements by using the following scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. The BRS statements include: 'I tend to bounce back quickly after hard times', 'I have a hard time making it through stressful events', 'It does not take me long to recover from a stressful event', 'It is hard for me to snap back when something bad happens', 'I usually come through difficult times with little trouble', and 'I tend to take a long time to get over setbacks in my life'. Authors argue that the BRS does not include the role of other important protective factors and resources in resilience, such as family and community (Windle et al., 2011). In fact, the BRS is the only scale which does not measure resources that make resilience possible (Rodríguez-Rey et al., 2016). The BRS measures the ability to bounce back or recover from stress, measuring resilience at its most basic meaning (Smith et al., 2008). Factor analysis reveals a single factor with eigenvalues above 1.0, which accounted for 73.54% of the total variance (Amat et al., 2014). Additionally, the BRS has demonstrated satisfactory internal consistency (Cronbach's alpha ranging from .80–.91) and test-retest reliability (ICC-.69), which are central to the research process (Rodríguez-Rey et al., 2016; Smith et al., 2008).

3.7.1.4 PACE+ physical activity measure

The PACE + PA measure (Prochaska, Sallis & Long, 2001) is a two-item screening tool. Participants are asked: 'Over the past seven days, on how many days were you physically active for a total of at least 30 minutes per day?' and 'Over a typical or usual week, on how many days are you physically active for a total of at least 30 minutes per day?' Responses are numbered 0-7 days. The PACE + has previously demonstrated excellent test-retest reliability across multiple groups and subgroups of adolescents in the US ($r = 0.40$, $p < 0.001$; test-retest ICC = 0.77) (Prochaska et al. 2001) and moderate validity ($r = 0.34 – 0.49$, $p<0.01$) to identify youth not meeting PA guidelines alongside the ActiGraph GT1M and GT3X accelerometers in children in Ireland (Hardie Murphy, Rowe, Belton & Woods, 2015). The PACE+ self-report instrument, therefore, has acceptable validity for assessing non-achievement of the adolescent PA recommended guidelines. The validity of the instrument is found to be higher in females and increases with age. Continued use of the tool is recommended for the tracking of PA over time, including trends in youth population prevalence.

3.7.1.5 The Physical Activity Stages of Change Questionnaire (PASCQ)

The Physical Activity Stages of Change Questionnaire (PASCQ) (Marcus & Simkin, 2003) was designed to assess the Stages of Motivational Readiness for Change Model (SOC) from Prochaska and DiClemente (1983), specifically in individuals as they move through a series of stages in adopting and maintaining a new habit. More commonly known as the Transtheoretical Model (TTM), the TTM is an integrative biopsychosocial model that seeks to conceptualise the processes of intentional behaviour change that include five distinct stages: pre-contemplation, contemplation, preparation, action, and maintenance (Prochaska & Velicer, 1997). According to the TTM, change is a process that unfolds over time, involving progress through a series of non-linear stages (Prochaska, Redding & Evers, 2008). The PASCQ was designed to test and determine the stage and motivational readiness to change PA behaviour (Marcus & Simkin, 2003). The PASCQ Questionnaire is a four-item questionnaire with a 'yes' or 'no' response scored by an algorithm. For example, if an individual's response to question one ('I am currently physically active') is 'no', and question two ('I intend to become more physically active in the next six months') is 'no', the

respondent is identified as being in the pre-contemplation stage. By matching where an individual lies on the stage of change, an appropriate intervention strategy can be implemented (Marcus & Lewis, 2003). Additionally, a tailored or targeted message can be delivered to an individual, providing information directed towards the unique motivational needs, interests, and concerns of a participant (Marcus & Forsyth, 2003). The reliability of the PASCQ was tested using the test-retest method (ICC 0.78-.85) (Marcus & Forsyth, 2003). The validity of the instrument was determined as satisfactory by comparing this to other direct measurements of PA (accelerometer, maximum oxygen consumption (VO2) method) (Cardinal, 1995; Marcus & Simkin, 2003). Other studies have also found the reliability of the PASCQ as acceptable among middle school students (age 12-14 years) (ICC 0.92) (Cengiz et al., 2014). A review provides substantial evidence in support of the validity and reliability of the PASCQ (Spencer, Adams, Malone, Roy & Yost, 2006). The PASCQ has been used among the college student population in recent years (Mettling et al., 2018).

3.8 QUANTITATIVE DATA ANALYSIS

Quantitative data analysed in Stage 1's baseline study (*Chapter 4*) and Stage 3's intervention study (*Chapter 6*) are described rigorously in the chapters to follow. To avoid repetition, the data analysis will be described briefly in this section. All data was analysed using the Statistical Package for the Social Sciences, Version 24.0. A variety of statistical tests were implemented to respond to the research questions at research Stages 1 and 3. Outliers, extreme values, and incomplete survey responses were removed from all datasets, and, where any of the questionnaire scale data was incomplete, the responses were excluded from that specific scale analysis. Statistical significance was set at $p < .05$.

Self-report questionnaire. Stage 1: Baseline study: Statistical analysis in Stage 1 included an investigation into the mean scores of wellbeing, resilience, and PA levels of the sample population. Sample t-tests were used to determine whether the sample mean is statistically different from the normative population mean of the WHO-5, the WEMWBS, and the BRS. Gender differences in wellbeing, resilience, and PA were investigated using independent sample t-tests. For minutes of weekly PA participation, a binary variable was created, specifically composed of two groups,

those who met the recommended PA guidelines per week (150 min MVPA), and those who didn't (<150 min MVPA).

An additional independent sample t-test was conducted to compare the mean levels of wellbeing and resilience according to the identified two PA classification groups. Chi-Square tests for independence were also used to identify whether differences in the categories of wellbeing and resilience differed by PA classification groups (meeting and not meeting the PA guidelines per week).

Self-report questionnaire. Stage 3 – Intervention evaluation: Participants who completed both pre- and post-intervention self-report questionnaires were included in the study only. The WHO-5, WEMWBS, BRS, and PACE+ were totalled using mean score and standard deviation calculations and, where applicable, were categorised into subscales following the guidelines, as specified by the instrument authors. A mean cannot be interpreted for the PASCQ as it is a binary type (yes/no) questionnaire.

Levels of wellbeing, resilience and PA were computed and assigned to subgroups at both pre- and post- data collection points using the WHO-5 (depressive symptoms, poor emotional wellbeing, good emotional wellbeing), the BRS (low, normal, high resilience), PACE+ (meeting and not meeting the recommended PA guidelines), and PASCQ (pre-contemplation, contemplation, preparation, action, and maintenance) classification categories. As the WEMWBS instrument was not designed to have specific cut off points, it is not depicted in this research categorically.

A binary variable was further created for the PACE+ and the PASCQ scale items. Levels of PA using the PACE+ were categorised into 1) those meeting the recommended PA guidelines and 2) those who were not meeting the recommended PA guidelines. Using the PASCQ stages on the TTM, data was divided into either those on the: 1) lower (pre-contemplation, contemplation, preparation), or 2) upper stages (action and maintenance) of exercise readiness.

To address the identified research questions, differences in pre- and post-intervention scores for wellbeing, resilience, and PA were calculated using a combination of t-tests, McNamer's test, and repeated measures ANOVA. Paired sample t-tests investigated whether there were changes in mean levels of wellbeing, resilience, and PA at pre- and post-intervention. McNemar's tests were used to identify the changes in the binary variables created in the PACE+ and the PASCQ.

Individual repeated measures ANOVA were conducted to explore the changes in wellbeing, resilience, and the PA within-subject factors. The leading researcher in the statistical analysis controlled for sample demographic determinants, including gender (male or female) and age (18-25 years or 26 years plus).

3.9 QUALITATIVE DATA COLLECTION METHODS

Qualitative data was collected using three methods throughout the study. Focus group interviews, a Delphi exercise, and an open-ended evaluation questionnaire were used in Stage 2 (*Chapter 5*). Focus group discussions were the only qualitative method used in Stage 3 (*Chapter 6*). Due to word journal wordcount restrictions in the publication of the subsequent three chapters, some methods require further description. An extended explanation of the methods and analysis of each approach are described here (*see below*).

3.9.1 Focus group interview

Semi-structured focus group interviews were conducted in Stage 2 and Stage 3. In Stage 2, interviews (n=6) followed a programme evaluation guide, as outlined by Krueger and Casey (2009). The guide had 10 questions to ask participants, each of which were adapted from programme evaluation questions from Krueger and Krueger & Casey (2001;2015). These questions from Krueger (2015) were explicitly selected to learn what students wanted from a mental health education programme and what strengths the original SOMI athlete's mental health programme had, according to the participants. The questions were selected by the research team to elicit expressions, attitudes, and barriers to positive mental health. The adaption and development of each question aimed to understand the student's perception of their wellbeing, determinants of low engagement in PA and other wellbeing activities, and mental health stigma (*see Appendix E*). 'Key informants can supply information about needs, barriers, and previous programmes' (Altschuld & Kumar, 2010).

In Stage 3, focus group discussions were conducted using repeated questions at pre, post, and retention stages, of the intervention (n=30). Semi-structured focus group discussions again followed the recommended programme evaluation guidelines, as outlined by Krueger & Casey (2015). The methods aimed to capture

and monitor the impact of the programme at each of the three-time points (pre, post, and retention). Using interviews with a focus group can draw on group dynamics to generate more qualitative data, giving a deeper understanding of social phenomena that would not be attained purely from quantitative methods (Palinkas, 2014). 10 questions were devised, piloted, and verified by other members of the research team. Research questions 1-5 investigated students' knowledge, skills, and attitude towards positive mental health and strategies. Questions 6-9 sought to understand student PA levels, behaviours, and attitudes. Question 10 asked students what they hope to gain (at pre) and what they gained from the intervention programme (at post and retention). (*see Appendix H*)

3.9.2 Delphi method

The Delphi technique was used in Stage 2 to collect data as part of the intervention design procedure. The Delphi method is a group process used to survey and elicit the opinions of experts on a particular subject (Yousuf, 2007). In this research, it was used to formulate an empirical consensus of the SOMI-HE programme content by collecting data from a panel of experts (n=14) in specific disciplines listed previously (Linstone & Turoff, 2002). Experts were invited to respond to discussion points highlighted in the literature review and signpost potential responses to problems experienced by the target population group i.e. emerging adults in higher education. The majority of the experts were familiar with the original SOMI programme, and had delivered it to cohorts of students on previous occasions.

The Delphi method is long recognised as a suitable research and educational planning tool (O'Brien, 1978). It is usually an anonymous process. However, in this context, anonymity was not necessary as all stakeholders preferred to contribute to a common goal through an open discussion in both rounds. This was welcomed for this study, as anonymity can reduce the credibility of the study, making experts inaccessible for future consultation and research development (R. A. Green, 2014). Typically used as a quantitative technique (Rowe & Wright, 1999), this research used the Delphi method with a qualitative approach to engage participants holistically (Fletcher & Marchildon, 2014). In other studies, a qualitative approach to the Delphi method has provided a reliable means of hearing practitioners' and students' lived experience, bringing an evidence base and best practice to the real

world (Sharkey & Sharples, 2001). A modified Delphi exercise, adapted from Hiriscau (2016), followed six phases (*See Figure 3.4*).

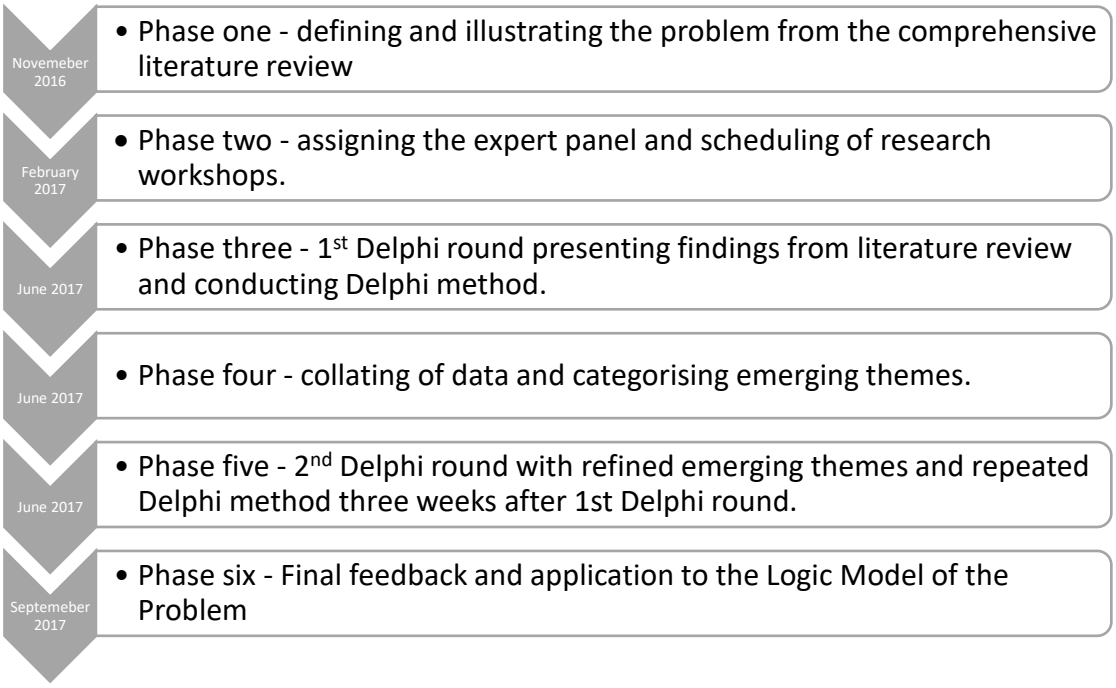


Figure 3.4 – Phases of the Delphi Process adapted from Hiriscau (2016)

Phase 1 – defining the problem: To begin, the researcher organised and extracted preliminary findings and critical discussion points on the mental health problems of emerging adults. The researcher would plan to present the findings of the literature review to the participating members in the Delphi exercise.

Phase 2 – assigning the expert panel: N=14 experts identified for the Delphi panel were invited to attend two research workshops. Relevant stakeholders included a psychiatrist, two psychologists, a mindfulness teacher, a higher education student, five clinical mental health nurses, a third-level education lecturer and PA expert, a community health project manager, and two researchers.

Phase 3 – 1st Delphi round: Data compiled in the literature review were presented to the expert panel. Stakeholder opinions were collected based on five themes emerging from the literature review, including: mental health literacy, wellbeing, resilience, help-seeking, and the PA participation of emerging adults. Using an innovative method, the researcher aimed to capture the planning group's feedback on potential SOMI-HE content, by asking open-ended questions mapped onto KWL charts (What

I know, Want to Know, What I Have Learned) (Ogle, 1986). This method aided the researcher in both facilitating a large group discussion and in collecting and recording responses to repeated points of discourse on the mental health of emerging adults attending higher education.

Phase 4 – collating of data: The opinions from experts were gathered from the first Delphi round. The proposed issues and key discussions were thematically grouped. The emergent themes were then reduced to a list of priority concepts and sub-concepts, to be addressed in the SOMI-HE programme content.

Phase 5 – 2nd Delphi round: The emergent themes were presented to the expert panel three weeks later and further development of each concept was developed through repeating the previously implemented KWL Delphi-exercise.

Phase 6 – final feedback: A final consensus of priority content was established for SOMI-HE through a final and simple content, thematic, analysis. Responses from phases 4 and 6 were mapped and categorised. Research-driven strategies that reflected the concerns of the expert panels were later selected through the guidance IM and the planning model applied to the intervention design (Chapter 4).

3.9.3 Open-ended evaluation questionnaire

In Stage 2 (*Chapter 5*), an evaluation questionnaire (n=99), designed to capture student feedback after completing a previous wellbeing programme, was distributed. Summary findings were sought immediately after programme delivery, through closed and open-ended questions from a convenience sample. The evaluation survey investigated student feedback on programme duration, location, facilities, timing, presenter, training aids, discussion opportunity, and training objectives on a 5-point rating scale (excellent, very good, good, fair, needs developement). Three open-ended questions investigated student opinions of what they felt was: useful, unhelpful, or, needed change, in the programme. (*see Appendix G*).

3.10 QUALITATIVE DATA ANALYSIS

Grounded theory is a framework designed to ‘develop a well-integrated set of concepts that provide a thorough theoretical explanation of social phenomena under study’ (Corbin & Srauss, 1990, p.4.; Glaser & Strauss, 1967). Noted by Chun Tie et

al. (2019), a significant characteristic of grounded theory is that it aims to generate theory that 'derived from the data, systematically gathered and analysed throughout the research process' (Strauss & Corbin, 1998, p.12). The grounded theory derives its theoretical underpinnings from Pragmatism (Corbin & Strauss, 1990). Qualitative and quantitative data can be generated using techniques that fall into the realm of grounded theory (Chun Tie et al., 2019). There are several characteristics to grounded theory, outlined by Creswell (2013), which feature in this current research. I will outline five:

- First, grounded theory involves a 'movement' that the researcher is attempting to explain. The current research has a focus on the impact of an action. The action is to develop an evidence-based programme and evaluate the outcomes.
- Second, in grounded theory, at the end of the research, the researcher aims to develop a theory. In this research, grounded theory would allow the researcher to formulate theory describing the outcome of the intervention design and evaluation.
- The third assimilation of this research with grounded theory is the role of reflection and memo writing. The researcher frequently recorded thoughts, significant moments, and ideas throughout the study. These annotations of the research experience harnessed creativity and self-awareness throughout the research study. However, they were not intended to be used as part of the data analysis and were not included in this research.
- Next, the current research study required a theory, such as grounded theory, for its flexibility. Flexibility allowed the researcher to use purposeful and meaningful methods of data collection at various stages of the research. For example, the primary form of data collection in grounded theory is interviewing. The Delphi method, however, is also considered a pragmatic approach to research, and can borrow from grounded theory (Brady, 2015).
- Finally, in grounded theory, data is analysed and structured by following a pattern that develops categories or themes through coding and this is reflected within many stages of the existing research.

On the other hand, grounded theory systematic procedures from Glaser, Strauss and Corbin do not entirely align with the current research, as the researcher did not use a

constant comparative analytical approach to data. The constant comparative approach to data analysis is used by the researcher to develop concepts from the data by coding and analysing the same time (Glaser & Strauss, 1967). The data is analysed, concurrently while it is collected. The constant comparative analytical approach to data has four stages:

- 1) Comparing incidents applicable to each category.
- 2) Integrating categories and their properties.
- 3) Delimiting the theory.
- 4) Writing the theory.

(Glaser & Strauss, 1967).

In the context of the SOMI-HE research, the stages of data collection had a specific purpose at various time points. As a result, it was more appropriate for the researcher to collect the relevant data successively and undertake the data analysis later, in order to build the research project. For example, in Stage 3 of data collection and analysis, all data was collected over two years, then collated and reported the subsequent year.

Additionally, the qualitative approach (constant comparative analytical approach to data), outlined by Glaser, Strauss and Corbin, did not suit the research design, as the methods align more closely with positivist assumptions, as they classify and force data into pre-conceived ideas throughout the research process (Charmaz, 2006). The constructivist perspective involves the inclusion of diversity, where various stakeholders are welcomed along with their views, values, beliefs and feelings that could contribute to the researcher's learning. 'It lies squarely in the interpretive tradition' (Charmaz, 2006, p.130). The constructivist grounded theory holds that theories are not discovered but instead created by the interpreter (Charmaz, 2008). It is for this reason that Braun & Clarke (2006) identify their theory of thematic analysis within constructive grounded theory. Braun & Clarke (2006) maintain: 'Thematic analysis means researchers need not subscribe to the implicit theoretical commitments of grounded theory.' Nonetheless, they maintain that all researchers carry within them a number of assumptions about the nature of data that need to be made transparent (Braun & Clarke, 2006, p.8).

While the constructivist grounded theory approach supports the framework of the qualitative methods used in the existing research, this procedure was not adopted as an analytical approach. The 'grounded theory approach is unsuitable for the researchers who seek to compare two separate sets of data that are gathered at different times' (Alhojailan & Ibrahim, 2012, p.7). In this research, there are various stages of data collection specifically used to measure pre and post outcomes as a result of the SOMI-HE intervention. Thematic analysis was, therefore, selected as it is a useful analytical tool suited to research with a pre-determined sample, aiming to compare different sets of evidence from various situations in the same study. Thematic analysis will be briefly introduced to the reader here. However, the procedure is described in greater detail in the data analysis section, as it more closely linked with analysis than qualitative assumptions (Maguire & Delahunt, 2017). For now, thematic analysis can be described as a 'method for identifying, analysing and reporting patterns (themes) within data' (Braun & Clarke, 2006, p.6). This research adopted thematic analysis as a method to analyse qualitative data, as it is a highly modifiable analytical approach that equipped the researcher with a methodological guideline that ensured trustworthiness (Nowell et al., 2017).

3.10.1 Focus group data analysis

Focus group data was analysed using thematic analysis (Braun & Clarke, 2006). Thematic analysis is used to organise, describe, and interpret data in rich detail (Braun & Clarke, 2006). The analysis follows a six-step procedure:

1) Become familiar with the data.
2) Generate initial codes.
3) Search for themes.
4) Review themes.
5) Define themes.
6) Write-up.

(Braun & Clarke, 2006) (*See Figure 3.5*).

Following the procedure provided by Bree & Gallagher (2016) in the current PhD study, themes were processed using Microsoft Excel (individually) and later refined and integrated using a thematic map. Bree & Gallagher (2016) provide researchers

with a physical process of managing data analysis that reflects the analysis framework (Braun & Clarke, 2006; Braun & Clarke, 2013).

Phase	Description of the process
1. Familiarising yourself with your data:	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2. Generating initial codes:	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes:	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes:	Checking in the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5. Defining and naming themes:	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells; generating clear definitions and names for each theme.
6. Producing the report:	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

Figure 3.5 – Phases of Thematic Analysis. Taken from Braun & Clarke (2006)

Data was extracted from the pre-existing coding framework that was shaped by the research questions. It was not advised as part of this existing research to use the research questions as themes (Braun & Clarke, 2006). Instead, research questions were allowed to evolve through the coding process. In Stage 2, themes were mapped to the intervention using the IM planning procedure, as outlined by Bartholomew Eldridge, Markham, Ruiter, Gerjo & Parcel, (2016). In Stage 3, using a thematic map, themes extracted from pre, post and retention stages, and were triangulated across three time points. Commonalities, differences, and changes across each of the focus group discussions informed the outcomes of the programme. Themes were further collapsed into five key themes/sub-themes, until a chronologically coherent

description of the participants' experience of the programme was achieved. An example of the coding procedure is demonstrated (*see Appendix J*).

3.10.2 Delphi method data analysis

Thematic content analysis is effective for Delphi research studies in mental health education (Sharkey & Sharples, 2001). Content analysis aims to produce a system of recording themes (Burnard, 1991). Content analysis is seen as similar to thematic analysis. However, the process of theme development within content analysis allows researchers to work with overt data, where classifications are easily achieved, and content can be obtained. Thematic analysis, on the other hand, assists researchers in making rich and complex nuances (Vaismoradi & Snelgrove, 2019). Content analysis was used to code, tally, and prioritise the results of the Delphi exercise, and achieve consensus on the SOMI-HE programme components.

3.10.3 Open-ended evaluation questionnaire analysis

The open-ended questions, used as part of the evaluation questionnaire, were analysed using the same thematic analysis steps used in the focus group data analysis (Braun & Clarke, 2006). The survey questions evaluating the SOMI-HE programme were directly inputted to Microsoft Excel and analysed using the same approach as described in the focus group discussion analysis from Bree & Gallagher (2016). Thematic analysis assisted the researcher in identifying key outcomes and significant messages carried by the programme to the students (Braun & Clarke, 2006; Bree & Gallagher, 2016).

3.11 TRUSTWORTHINESS

Creswell (2003) recommends that researchers acknowledge eight validation strategies, advising that researchers should engage in at least two verification processes. These verification strategies include: prolonged engagement, triangulation, peer review and debriefing, negative case analysis, clarification of researcher bias, member checking, rich, thick description, and external audit. These procedures often apply to qualitative forms of inquiry. However, many also address the quantitative validation procedures used in this research. There are six validation strategies relevant to the current researching, including:

Triangulation: 'The potential for 'knowing more' about a phenomenon through the use of different research methods in one empirical investigation is often discussed under the rubric of triangulation' (Moran-Ellis et al. 2006, p.45). The objective of triangulation is to use two or more methods in research to build a more comprehensive view of the study findings (Heale & Forbes, 2013). The current research used multiple methodological procedures (questionnaires, focus groups, Delphi technique, and evaluation surveys) with various participants (students, mental health experts, a higher education lecturer, and other researchers in the field) to extend the depth and quality of results in the overall findings.

Peer review or debriefing: Throughout this study, research supervisor, Dr Wesley O'Brien, and programme development mentor, Dr Martin Lawlor, were the researcher primary peer debriefers. At each stage of the research, PhD supervisors, Dr Wesley O'Brien and Dr Fiona Chambers, alongside additional mentors, peers and assistant investigators, aided the leading researcher on incidences, developments, and data, as they emerged. Colleagues specialising in quantitative statistical procedures were consulted in the data cleaning, analysis, and results stages. Colleagues specialising in qualitative thematic analysis reviewed the thematic analysis procedure and critiqued the lead researcher's examination of the results. At the end of every focus group discussion, students were debriefed, and prominent topics of dialogue were confirmed before the session was entirely concluded.

To ensure the trustworthiness of the qualitative data identified in the Delphi exercise, both rounds of data collection were reviewed by the senior researchers listed above. Additionally, in September 2017, further validity was sought from the expert panel through means of presentation on the development of the SOMI-HE programme. Eight members of the expert panel responded with verification and constructive suggestions.

In quantitative data, 'the validity of a scale refers to the degree to which it measures what it is supposed to measure' (Pallant, 2016, p.7). As demonstrated in the literature review and data collection methods, all self-report questionnaires were reviewed for content validity, criterion validity and construct validity.

Negative Case Analysis: Throughout the qualitative procedure of data analysis, the researcher remained open to listening out for contradictions or data that did not support findings. The researcher took measures to ensure validity in the process of

interpreting results. For example, in the intervention evaluation study, qualitative data was analysed first, so that it remained uninfluenced by the results of the quantitative data findings.

Clarifying researcher bias: Researcher bias can be referred to as a distortion of results influenced by the researcher's values or the interest of research funding bodies (Galdas, 2017). State of Mind Ireland (SOMI) funded this study. SOMI (State of Mind Ireland) are a mental health charity that aims to improve the mental health, wellbeing, and working life of sports participants and sporting communities throughout Ireland. SOMI actively promote positive mental health through the delivery of a programme designed for sports communities. The researcher was an independent agent awarded with a studentship in 2016 to design, implement, and evaluate a positive mental health programme for higher education students. At the early stages of the study, objectivity and openness to the findings were a frequently discussed matter. The overall objective of this study was to be part of an evidence-based programme that aimed to work effectively in preventing mental illness through the promotion of positive mental health and signposting. If the research programme was deemed ineffective, it is evidence that such a strategy is not helpful to the cause and, therefore, still a reported outcome. The lead researcher took measures to prevent such bias through the triangulation of results, peer consulting, and continually demonstrating reflexivity.

Member checking: Researcher bias might be reduced by actively involving the research participant in checking and confirming the results (Birt et al., 2016). Students who participated in the study were challenging to access and difficult to retain as part of follow-up research. Additionally, the majority of the qualitative data (other than that used in Stage 2) was analysed collectively. It was not feasible for the lead researcher to request that participants review the focus group interview interpretations. Where possible, the researcher did attempt to establish additional credibility by reviewing the Delphi method results with the participating expert panel.

External audit: The researcher consulted various external agents throughout data collection and data analysis to review the quantitative and qualitative procedures used. Over three years, the lead researcher presented and opened the research to external critique at approximately twelve formal presentations. The study was also

subjected to an academic review at the beginning of year three of the PhD. Seven college academics attended and critically reviewed the research progression and direction.

3.12 CONCLUSION

The purpose of this chapter was to describe and align the researcher's theoretical undercurrent with the methodological decisions made throughout each stage of the SOMI-HE research. Mixed methods research can enrich evidence through assisting the research to gain a better understanding of connections or contradictions between qualitative and quantitative data (Shorten & Smith, 2017). Mixed methodological research designs, however, are neither more nor less valid than other approaches to research. Validity in all research is gained with the quality of thoroughness and effectiveness in how the chosen methods are applied (Onwuegbuzie & Johnson, 2006). The position of the researcher was continually reflected upon and predispositions were challenged through welcoming criticism of the methodology and maintaining an open invitation to anyone who wished to participate in each stage of the study.

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3.14 Link to chapter four

Chapter 4 provides the researcher with a picture of the current levels of wellbeing, resilience, and physical activity amongst Irish pre-service teachers. It is a baseline study implemented using self-report tools to evaluate the levels of wellbeing, resilience and PA participation amongst Irish pre-service teachers (or emerging adults) in a higher education setting. The researcher conducted this study to contextualise the need for a mental health and physical activity intervention among the emerging adult population in higher education.

Chapter 4

Levels of wellbeing, resilience, and physical activity amongst Irish pre-service teachers: A baseline study

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4.1 ABSTRACT

The current study examines the wellbeing, resilience, and physical activity (PA) levels among Irish pre-service teachers. Participants were a sample of 128 higher education students (29% male, 71% female, mean age range 18-27 years old) who completed a self-report questionnaire, using a combination of established instruments for wellbeing, resilience, and PA. Descriptive data revealed that 39.1% presented with low levels of resilience and 74% were not meeting the PA guidelines for health. One sample t-test further revealed the sample population of higher education students had lower wellbeing ($t(127) = -3.05$, $p = .003$) and resilience ($t(127) = -6.48$, $p = .003$) levels, when compared to the population normative data. Results from the existing study suggest that a structured mental health and PA education awareness intervention for Irish pre-service teachers may be warranted, specifically to increase the lower than expected levels of resilience. The existing sample of pre-service teachers are at a critical time of transition, as they move forward into a profession where self-awareness of wellbeing is required at the beginning of their careers to sustain health both inside and outside of the classroom.

Key words: wellbeing; resilience; physical activity; pre-service teachers; intervention

4.2 INTRODUCTION

4.2.1 Higher education and mental health

While higher education can be an environment for positive and supportive student learning, for some there are risks and potential adverse consequences (Bewick, Koutsopouloub, Miles, Slaad & Barkham, 2010). A previous study in Ireland highlighted that students attending higher education were more likely to be involved in risk-taking behaviours and less likely to use positive coping strategies when dealing with anxiety and depression (Hope, Dring & Dring, 2005). In higher education, students represent an important, and distinct population with regards to mental health awareness and suicide prevention (Karwig, Chambers & Murphy, 2015). Recent data from the 'My World Survey' profiled the mental health of young people all over Ireland and found that approximately 62% of young adults (18 to 25-year-olds) attend higher education in Ireland, of which 40% report elevated levels of

depression and anxiety, with a low likelihood of help-seeking behaviour (Dooley & Fitzgerald, 2012). To add to this finding, Cannon, et al. (2013) assert by the age of 24 years, up to 1 in 5 young people will have experienced suicidal ideation. Cannon et al., (2013) also offer internationally comparable data which suggests that the lifetime rates of mental illness experienced among 19 to 24-year-olds in Ireland (56%) are similar to the United States of America and significantly higher than Germany (39%) and, Britain (43.8%). Consequently, the increasing prevalence of young people with mental health problems attending higher education in Ireland has been described as an 'over-whelming tsunami', as the college resources are unable to respond adequately (Murphy, McKernan & Heelan, 2016). Globally, young people carry the burden for mental illness, as research suggests that approximately half of all life time illnessess start by the mid-teen period, and three quarters by the mid 20's period. (Gore et al., 2011; Kessler et al., 2007). For this study, the demographic referred to as young people are recognised as 'emerging adults' (Arnett 2007; Arnett 2000). Emerging adults are individuals (18 to 29 years old) who are flagged as a vulnerable age group in modern society, as they are experiencing more personal and social pressures at a much younger age, while taking on the roles of adulthood (examples include parenthood, marriage) at a much later chronological age (Arnett, 2000; 2007). Many emerging adults thrive on the freedom of having fewer obligations previously structured by older adults, while some feel lost and experience mental health problems (Arnett 2007).

This stage, therefore, is perceived in the research as a significant opportunity for personal development, through the teaching of positive mental health education skills, and resilience for wellbeing (O'Connor et al., 2014). The promotion of positive student mental, emotional and social health is of critical importance in education (Weare, 2000), alongside the pursuit of high academic standards. Specifically, within higher education settings, there is a unique opportunity to educate student teachers about mental health, and to develop the skills and capabilities of individuals as a strategy to prevent negative mental health experiences (Holdsworth et al., 2017).

Wellbeing has been described as a difficult concept to define cross culturally due the dynamic, multifaceted constructs that constitute wellbeing (Dodge, Daly, Huyton & Sanders, 2012). In 2018, the World Health Organisation (WHO) define the concept of positive wellbeing as synonymous with the term mental health, consistently maintaining that 'mental health is defined as a state of wellbeing' (WHO, 2018). Positive mental health is positively associated with wellbeing and is considered an essential component of effective functioning at both the individual and a community level (Galderisi, Heinz, Kastrup, Beezhold & Sartorius, 2015; Vaillant, 2012; WHO, 2005). Dodge et al (2012) maintain that wellbeing is not static and that instead a balance point exists between an individual's resources and the challenges faced. This is portrayed as a see-saw portraying 'wellbeing is when individuals have the psychological, social and physical resources they need to meet a particular psychological, social and/or physical challenge' (Dodge et al., 2012), p. 230). Therefore, there are more challenges than resources in life, the see-saw dips, along with wellbeing, and vice-versa.

Resilience is well accepted as the ability to bounce back from negative emotional experiences or recover from stress (Smith et al., 2008; Tugade & Fredrickson, 2011). The concept of resilience is a dynamic process, encompassing positive adaptation within the context of significant adversity (Luthar, Cicchetti & Becker, 2000). These adversities may be life-threatening, traumatic experiences (such as losing a loved one), surviving a natural disaster, or they may also be ongoing, such as enduring poverty, or bullying (Southwick, Bonanno, Masten, Panter-Brick & Yehuda, 2014). Resilience is an explanation of our individual vulnerability and capacity to coping with stress, of which the determinants can change over the lifespan (Southwick et al., 2014). An appropriate response to stress is often considered a prerequisite to swift recovery from mental health disturbances (Rutten et al., 2013).

Decreasing stress and increasing resilience can help us respond to adversity appropriately by using techniques which are consequently central to maintaining wellbeing through the medium of experiencing positive emotions (Southwick, Litz, Charney & Matthew, 2012). Positive emotions and wellbeing can be increased and explored through mindfulness, meditation, socialising, optimistic thinking, writing

letters of gratitude, and regular physical activity (PA) participation (Rutten et al., 2013; Sharma, Madaan & Petty, 2006).

The behaviour of PA involves a full range of human movement, ranging from hobbies to competitive sport, or activities that are a part of daily living (Miles, 2007). PA is any bodily movement produced by skeletal muscles that result in an increase in metabolic rate over resting energy expenditure' (Bouchard, Blair & Haskell, 2012). PA levels and patterns can be categorised in terms of frequency, duration, intensity, and type. In Ireland, the national guidelines on PA levels, advise that adults should take part in at least 150 minutes of moderate intensity PA, or 75 minutes of vigorous intensity PA per week, similar to European and World guidelines (European Commission, 2008; WHO, 2010). In 2015, a survey carried out by the Irish Sports Monitor reported that 30.2% of Irish people are highly active (Irish Sports Monitor 2015). More recently, 'The Healthy Ireland Survey' of 2016 indicated similar findings, with 32% of Irish people being identified as sufficiently active (Department of Health, 2016). The Student Activity and Sports Study Ireland (SASSI) report found that 71% of males and 58% of females attending higher education were categorised as highly active, while 36% (29% male: 42% female) were categorised as insufficiently active to meet the recommended PA guidelines (Murphy et al., 2016).

Research has shown that regular PA participation is associated with positive mental health, as the behaviour appears to reduce anxiety, negative moods and depression through improved self-esteem, and cognitive function (Callaghan, 2004; Eime, Young, Harvey, Charity & Payne, 2013; Mikkelsen, Stojanovska, Bosevski & Apostolopoulos, 2017; Sharma et al., 2006). Regular PA participation has shown a positive association with resilience. Recent studies investigating regular exercise with emotional resilience in healthy adults showed physically active individuals' response to stress had a smaller decline in positive affect than those identified as sedentary (Childs & de Wit, 2014). Evidence has also shown that resilience is associated with several physiological benefits, including faster cardiovascular recovery, and lower salivary cortisol levels (a stress hormone) in the morning (Ulrick-Lai & Herman, 2010).

4.3 AIMS OF THE STUDY

The study aims to evaluate the levels of wellbeing, resilience and PA participation amongst Irish pre-service teachers (or emerging adults) in a higher education setting. Pre-service teachers refers to students specifically attending HEI's to become qualified teaching professionals. A quantitative methodology is used as part of this study design to collect data, using standardised, reliable, and validated instruments. The study outcomes will determine the justifcation for the development of a specified wellbeing intervention programme for pre-service teachers in higher education. Accurate measurement of young people's mental health and functioning is a critically important factor to inform policy development and provisions (Houghton, Keane, Murphy, Houghton & Dunne, 2011).

Two specific research questions will investigate:

1) If wellbeing, resilience and PA levels conform with normative population expectations.
2) If there is a positive association between meeting the recommended PA guidelines, with levels of wellbeing and resilience. In relation to pre-service teachers, specifically in the Irish context, the combined focus of wellbeing, resilience and PA levels are an under-reported area of research in Higher Education Teacher Education contexts.

4.4 METHODS

4.4.1 Population and setting

A clustered, convenience sample of pre-service teacher educators (N=160) from a selected Irish higher education setting were invited to participate towards the end of the students' second semester within year one of their postgraduate studies (March 2017).This particular higher education setting was chosen based on the proximity and accessibility to the research participants. Recruitment procedures involved local networking with the university department to provide the researcher with an opportunity to carry out the data collection. From the invited higher education students eligible to partake (N=156), an 82% response rate was achieved, and a final research sample size of 128 participants (29% male; 71% female) completed the

surveys. In terms of age, 77% of the participants were in the age range of 18-27 years old, and 23% of the sample was aged 27 years and older.

4.4.2 Ethics

All participants invited to partake in the research were informed of their right to withdraw from the proceedings at any stage. Each participant was supplied with an information sheet and written consent was provided prior to the completion of the self-report questionnaire. The University College Cork (UCC) Social Research Ethics Committee (SREC) approved the study early in 2017.

4.4.3 Procedures and measures

Self-Report Questionnaire

The self-report questionnaires were completed independently by each of the participants.The questionnaire included basic data on gender, age, education, interest in PA, level of PA per week, and three evidence-based self-report assessments of wellbeing and resilience; including the WHO-5 Wellbeing Index (World Health Organisation, 1998), The Warwick-Edinburgh Mental Wellbeing scale (WEMBWBS), (Tennant et al., 2007) and The Brief Resilience Scale (BRS) (Smith et al., 2008). The WHO-5 Wellbeing Index and the WEMWB Scale measure subjective perception of wellbeing, with a focus entirely on positive aspects of mental health (Tennant et al., 2007;Topp et al. 2015). The WEWMBS and the WHO-5 have been used previously in the university setting in Ireland (Davoren, Fitzgerald, Shiely & Perry, 2013; Downs, Boucher, Campbell & Polyakov, 2017; Karwig, Chambers & Murphy, 2015). The Brief Resilience Scale (BRS) (Smith et al., 2008) is used to measure resilience, or 'the ability to bounce back or recover from stress'. The BRS has also been used in the university context within previous studies and has been established as a valid and reliable instrument when examining resilience levels among higher education students (Amat, Subhan, Jaafar, Mahmud & Johari, 2014; Lai & Yue, 2014; Smith et al., 2008).

4.4.4 Measurement scales used in this study

(1) The WHO-5 Wellbeing Index (WHO-5)

The WHO-5 (WHO, 1998) scale has been validated as both a screening tool for clinicians and as a method to assess wellbeing in research studies over time (Topp et al., 2015). It is a reliable instrument, demonstrative of good test-retest reliability, and can assess all age groups above nine years old. This positively worded questionnaire comprises of a five-item rating on a 5-point Likert scale from 0 (= at no time) to 5 (= all of the time). The raw score is calculated by totalling the figures of the five answers, and a percentage ranging from 0 to 100 is obtained by multiplying the raw score by 4. The lower the total score is, the more likely the person is to be experiencing poor health and wellbeing. The higher the total score, the better the indicator of physical and psychological health. The WHO-5 categorises data into symptom indicator cut-off scores (de Wit et al. 2007). A score of below 28 indicates symptoms of depression, where an individual would be advised to seek medical attention. A score of below 50 suggests poor emotional wellbeing, while above 50 represents good emotional wellbeing (De Wit et al. 2007). In the current study, the WHO-5 wellbeing Index scale suggested good internal consistency. A Cronbach alpha value above .8 is preferable and acceptable to conduct further analysis in research (Pallant, 2016). The WHO-5 has a Cronbach alpha Value of .82, as outlined in the summary of the respective self-report instruments (*see Table 4.1*).

Table 4.1 – Cronbach Alpha values of self- report instruments

Reliability Statistics WHO-5 Wellbeing Index

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.816	.819	5

Reliability Statistics Warwick Edinburgh Mental Wellbeing Scale

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.884	.888	14

Reliability Statistics Brief Resilience Scale

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.880	.881	6

2) The Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS)

The WEMWBS (Taggart, Stewart-Brown & Parkinson, 2008) is a positive rating scale intended to support mental health promotion initiatives (Tennant et al., 2007). This instrument is recognised as an appropriate, reliable, valid tool to measure mental wellbeing at both a group and individual level for mental health interventions (Coughlan et al., 2013; Maheswaran, Weich, Powell & Stewart-brown, 2012; Taggart et al., 2008; Tennant et al., 2007). The WEMWBS is a 14-item scale, with five response categories on a Likert scale 1 (= at no time) to 5 (= all of the time). The results are calculated by the sum of the answers combined, a minimum score of 14 and a maximum score of 70. The results of the WEMWBS are presented as mean scores in the descriptive analysis only, as the WEMWBS was not designed to identify or screen levels with cut-off scores of wellbeing (Fellow, Stewart-Brown & Taggart, 2015). Similar to the WHO-5, in the current study, the WEMWBS suggested good internal consistency with a Cronbach alpha coefficient of .88 (*see Table 4.1*).

3) *The Brief Resilience Scale (BRS)*

The BRS (Smith et al., 2008) measures resilience or 'the abillty to bounce back form adversity'. The instrument consists of six items; three negative and three positive items. Respondents are asked to answer each question by indicating their agreement with each statement by rating 1 (= strongly disagree), to 5 (= strongly agree) (Smith et al., 2008). The BRS was scored using reverse-coding on the negatively phrased items 2, 4 and 6. The sum of the responses was then divided by the total number of questions answered. The scores were then interpreted, as outlined by Smith, Epstein, Ortiz, Christopher & Tooley, (2013) protocol; for example, a score between 1 and 2.99 represented low resilience, a score of 3.00 to 4.30 represented normal resilience, and scores between 4.31 and 6.00 represented high resilience..The instrument has demonstrated satisfactory internal consistency, and test-retest reliability in other studies (Rodríguez-Rey, Alonso-Tapia & Hernansaiz-Garrido, 2016; Smith et al., 2008). In the current study, the BRS also suggested good internal consistency, with a Cronbach alpha coefficient of .88 (*see Table 4.1*).

4) Physical activity

A self-report PA item questionnaire measured participant time spent engaging in intentional moderate to vigorous physical activity (MVPA), per week. A single item, multiple choice measure was developed and modified for this research, after a review of the literature (Milton et al., 2010). Consistent with other instruments, such as the Godin Leisure-Time Exercise Questionnaire (Godin & Shephard, 1997), the Global Physical Activity Questionnaire (World Health Organization, 2010) and the International Physical Activity Questionnaire (Craig et al., 2003) a seven day recall of average minutes per week was used to measure leisure time of MVPA (moderate to vigorous physical activity) . The wording of the single question was: 'Which box below represents the duration of time on average you spend each week doing intentional moderate to vigorous exercise per week?' (For example, team sports, cycling, running, swimming).

Seven multiple choice responses were provided. Participants selected one of the following: a) No time at all b) up to 30 minutes per week c) up to 60 minutes per week d) up to 90 minutes per week e) up to 120 minutes per week f) up to 150 minutes per week and g) more than 150 minutes per week.

4.5 DATA ANALYSIS

Data were analysed using the Statistical Package for the Social Sciences, Version 24.0 on 128 usable participant responses (with fully available data), out of a total 131 collected participant responses (98% of total sample). Data scales with incomplete responses, were were excluded from that specific point of the data analysis. Descriptive data were analysed to summarise the perceived mean levels of wellbeing, resilience and minutes of PA participation per week among the sample of participants. Data categorised the percieved levels of wellbeing and resilience, ranging from low to high category levels (as detailed in the above measurement scale protocol for wellbeing and resilience).

The mean scores for each measurement scale were normally distributed in this sample population. One sample t-tests were used to determine whether the sample mean is statistically different from the normative population mean of the WHO-5, the WEMWBS, and the BRS. Gender differences in wellbeing, resilience, and PA

were investigated using independent sample t-tests. For minutes of weekly PA participation, a binary variable was created, specifically composed of 1) those who met the recommended PA guidelines per week (150 minutes MVPA), and 2) those who did not meet the recommended PA guidelines per week (<150 minutes MVPA). An additional independent sample t-test was conducted to compare the mean levels of wellbeing and resilience according to the identified two PA classification groups. Chi-Square (χ^2) tests for independence were also used to identify whether differences in the categories of wellbeing and resilience differed by PA classification groups (meeting and not meeting the PA guidelines per week).

4.6 RESULTS

4.6.1 Descriptive results

The sample population mean score of wellbeing using the WHO-5 Wellbeing Index was 64.94 (± .69), the mean score for the WEMWBS was 48.29 (± 7.84), and the mean score for resilience, using the BRS, was 3.24 (±.79). In terms of the continuous PA variable, the mean number of weekly minutes of moderate-to-vigorous PA participation was 69.02 (±53.21) minutes. These descriptive data for the sample are further detailed in *Table 4.2*.

Table 4.2 – The mean scores for wellbeing, resilience and physical activity

	N	Minimum	Maximum	Mean	Std. Deviation
WHO-5	128	.00	100.00	64.9376	.68955
WEMWBS	127	27.00	70.00	48.2913	7.83977
BRS	128	1.00	5.00	3.2435	.79750
PA	128	0	150.00	69.0234	53.21942

The WHO-5, the BRS, and the self-reported weekly minutes of PA participation were computed and categorised into identified subgroups across the pre-service teacher participant sample. A moderate to high prevalence of participants demonstrate good emotional wellbeing (78.9%), and normal to high resilience

(60.9%), while the remaining figures illustrate that 21.1% of the pre-service teacher participants have depressive to poor emotional wellbeing, and 39.1% of participants have low levels of resilience. Over a quarter (26%) of the participants report meeting the weekly PA guidelines for health. The prevalence of wellbeing categories (depressive symptoms, poor emotional wellbeing, and good emotional wellbeing), resilience categories (low, normal and high) and PA categories (not meeting, and meeting MVPA guidelines) are presented in *Figures 4.1 to 4.3* below.

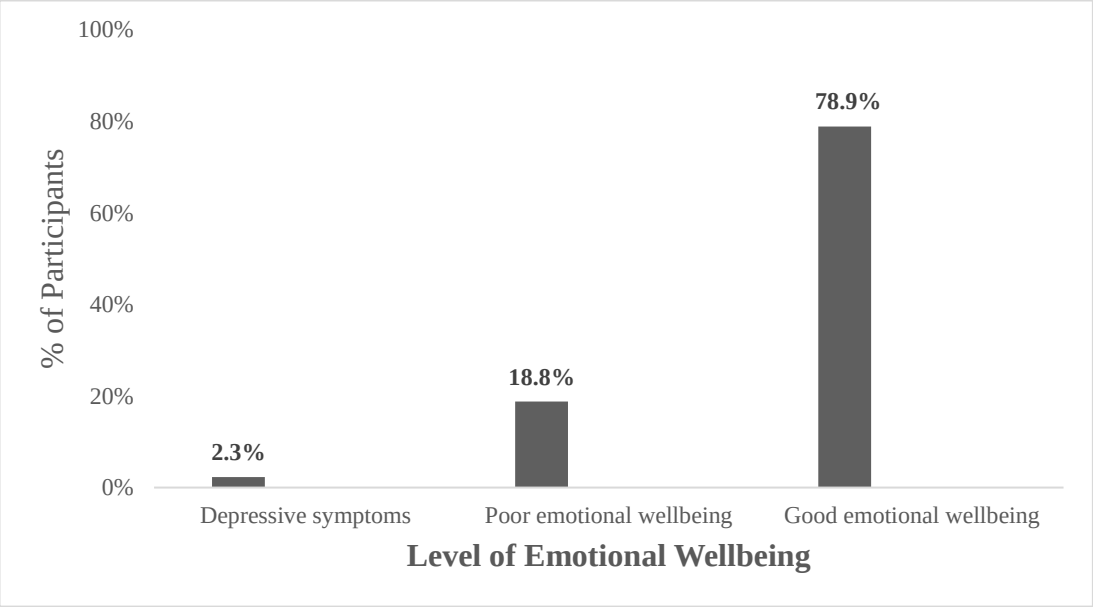


Figure 4.1 – The WHO-5 Wellbeing Index: Prevalence and Categories of Wellbeing

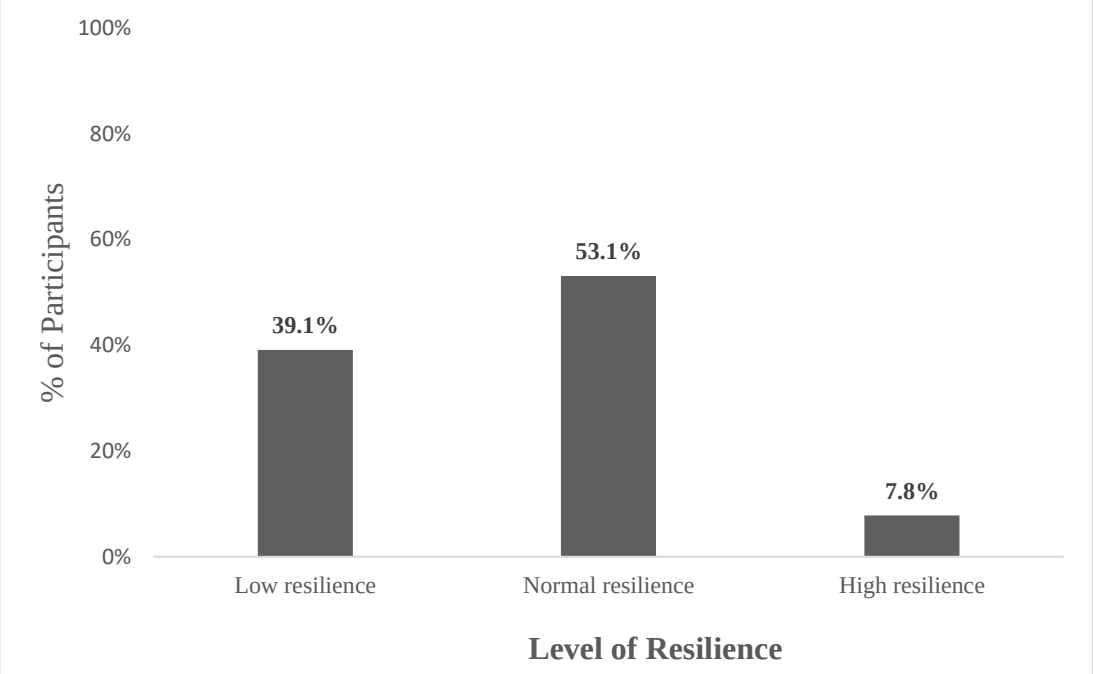


Figure 4.2 – The Brief Resilience Scale: Prevalence and Categories of Resilience

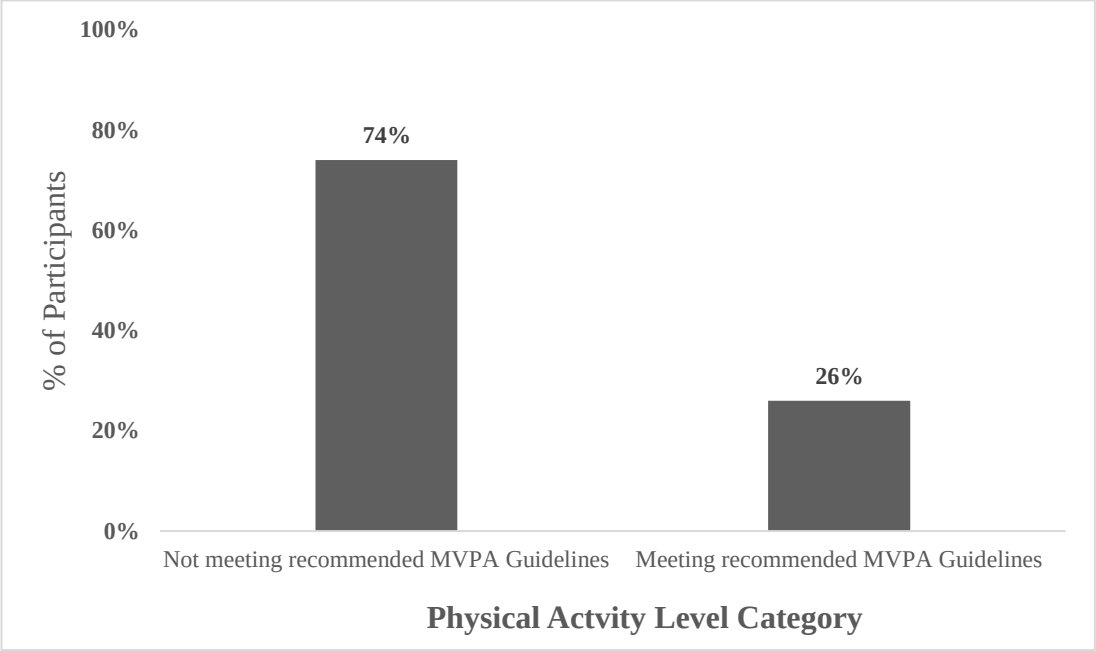


Figure 4.3 – The prevalence of those meeting and not meeting the moderate-to-vigorous physical activity (MVPA) guidelines

4.6.2 Comparing wellbeing and resilience to the normative population mean

An alpha level of .05 was used for all statistical tests. In calculating the mean participant WHO -5 wellbeing score (M = 64.94, SD = .69), a one-sample t-test revealed that the mean wellbeing for the current participants was significantly lower than the normative population (t(127) = -3.053, p = .003). Similarly, when using the WEMWBS instrument for a mean wellbeing score (M = 48.29, SD = 7.84), a significant difference was again observed (t(126) = -2.600, p = .010); the mean WEMWBS wellbeing score for the current participants was significantly lower than that of the normative population. In analysis of the BRS mean population score (M = 3.24, SD = 0.79), the current participants displayed significantly lower levels of resilience, when compared to that of the normative population t(127) = -6.476, p = .000).

4.6.3 Gender differences - wellbeing, resilience and physical activity

An independent sample t-test was conducted to compare the mean wellbeing, resilience and PA self-reported scores, as differentiated by gender. There were no significant differences in the mean wellbeing scores for males and females in the WHO-5 ($t(126) = .761$, $p = .448$), the WEMWBS ($t(125) = -.691$, $p = .491$), the BRS ($t(126), = -.165$, $p = .861$), or the mean PA self-reported minutes per week ($t(126) = -.014$, $p = .989$).

A chi-square test for independence (with Yates Continuity Correction), however, revealed a significant association between gender and PA guideline classifications x^2 ($1, n = 9.402$) $= .156$, $p = .002$. Specifically, more males (n = 46%) reported meeting the recommended weekly MVPA guidelines than their female counterparts (20%).

4.6.4 Meeting the Physical Activity Guidelines - Relationship with Wellbeing and Resilience

Over 70% of the pre-service teacher participant sample reported that they did not meet the recommended PA guidelines per week. Furthermore, an independent sample t-test observed a significant difference in wellbeing (WHO-5 instrument; ($t(125) = -2.689$, $p = .008$), between those meeting and not meeting the PA guidelines per week. Specifically, the independent sample t-test revealed that those who meet the PA guidelines are more likely to have a higher sense of wellbeing when compared to those who do not meet the PA guidelines. No statistical significance, however, was observed in meeting the PA guidelines and wellbeing using the WEMWBS instrument ($t(124) = -.605$, $p = .484$), or resilience, using the BRS instrument ($t(125) = 1.34$, $p = .183$).

Using a chi-square test to investigate the perceived categorical levels of wellbeing and resilience, alongside the two categories of students who meet and do not meet MVPA guidelines, the results found no significant association between PA guideline achievement and wellbeing, x^2 ($2, n = 127$) $= 3.78$, $p = .151$, phi $= .173$. A moderate statistical association, however, was observed between PA guideline achievement and categories of resilience, x^2 ($2, n = 127$) $= 7.00$, $p = .030$, phi $= .24$. When examined further, the Cramer' V analysis was interpreted in line with Cohen (1998, as cited in Gravetter & Wallnau, 2013), suggesting that those who are

meeting the PA guidelines may have lower levels of resilience, than those who do not meet the PA guidelines.

4.7 DISCUSSION

4.7.1 The wellbeing, resilience and PA levels of higher education students

This study aimed to evaluate the positive mental health, resilience, and PA levels amongst Irish higher education pre-service teacher participants (emerging adults) in a university setting. In a recent systematic review of the WHO-5 wellbeing index literature, Topp et al., (2015) provide comparable findings to our results, with their general population sample (n = 14,787) in Danish suburban and adult population studies reporting WHO-5 wellbeing mean score of 70. In the current study, the pre-service teacher's mean score of the WHO-5 wellbeing index is 64.9, slightly lower than that of the Danish population sample, as referred to by Topp et al., (2015). The current findings concur with a previous study in Ireland (n = 2,286), which reported that the adult mean WHO-5 wellbeing index was 67.8 (Delaney, Doyle, McKenzie & Wall, 2007). Furthermore, using the WEMWBS instrument as an additional wellbeing indicator of positive mental health, the existing study findings (M = 48.29) again correlate with other general adult populations, and university student population studies (aged 16 and above, n = 2,075) (Stewart-Brown & Taggart, 2015). Stewart-Brown & Janmohamed (2008) previously reported validated mean scores of 50.1 and 50.2, for ages 16 to 24 years old, and 25 to 34 years old, respectively. These findings highlight that our existing sample cohort may have slightly lower wellbeing when compared to that of the normative, comparative data. More specifically, the existing WEMWBS mean scores show similar patterns to other Irish research (Davoren et al., 2013) investigating the wellbeing of a representative sample of undergraduate higher education students (n = 2044, male wellbeing M = 50.2, female wellbeing M = 49.3). The current study findings observed that the majority of pre-service teachers in higher education present good emotional wellbeing (79%), and resilience (61%), while 21% of the sample were presented with poor wellbeing. In light of these descriptive findings for wellbeing, recent national data has outlined that one in five young people experience a mental health problem, at any one time in a general population (Cannon et al., 2013). The

reported positive wellbeing levels of postgraduate pre-service teachers in the current study, however, were higher when compared to that of Dooley & Fitzgerald's (2012) research, whereby 40% of the higher education student sample in Ireland reported low WHO-5 wellbeing scores.

In studies where wellbeing scores have been noted as much lower than the general population (Murphy et al., 2016), research suggests that higher education students have an increased likelihood of experiencing negative mental health problems, due to the stressors of education, paid employment, along with personal, social and developmental issues (Karwig et al., 2015). It is very plausible that these stressors also exist for the current research cohort. Interestingly, the resilience scores of the existing pre-service teacher sample were slightly lower, when compared to a previous undergraduate student population sample (n = 128, M = 3.53) as outlined in another international study conducted by the BRS creators (Smith et al., 2008). Resilience is well-established in the literature as the ability to bounce back and cope with stress (Smith et al., 2008). McMillan (2016) highlights that the stress levels in university often overwhelm students, which may be linked to the increasing prevalence of poor mental health among young adults, specifically attending higher education. While McMillan (2016) investigates the resilience of Higher Education students and not the impact of resilience on mental health, it can be noted from other literature that low resilience combined with increased stressors augments the likelihood of poor mental health and wellbeing (Goh & Agius, 2010; Rutten et al., 2013).

4.7.2 The importance of wellbeing awareness for pre-service teachers

The current higher education pre-service teacher sample are pursuing a profession that has been reported to have one of the highest work-related stress environments, and in particular, where newly qualified teachers (NQTs) in Ireland experience elevated levels of stress during the inception to their professional careers (Buckley, Abbott & Franey, 2017). It is reasonable to assume that the wellbeing of these existing pre-service teachers may soon evolve on the continuum to the low levels of wellbeing of Irish NQTs. The current levels of wellbeing observed amongst the existing sample may not only impact themselves but also the educational experiences of young learners in their care (Roffey, 2012). ‘Well teachers promote well

students' asserts McCallum & Price (2010), and awareness of wellbeing within postgraduate educational training may be an important stepping stone for teacher education, and NQTs in HEI environments. When broken down by gender, no significant differences emerged in the mean wellbeing and resilience scores for males and females, and this may be possible on account of the heavily skewed female sample participation. This is not unexpected in Irish education, where the teaching profession has predominantly more females than males (Eurostat, 2015). In terms of pre-service teachers, levels of resilience may also be considered an important element of personal development, which impacts life in the classroom. McCallum & Price (2010) discuss the protective influence of resilience factors, such as support networks, peer learning, professional development, and a healthy lifestyle on NQTs.

4.7.3 The relationship between PA participation, wellbeing and resilience

Numerous studies continue to show a positive association between exercise participation and resilience levels (Ho, Louie, Chow, Wong & Ip, 2015; Hamer & Steptoe, 2016). Childs & de Wit (2014) have previously identified a strong association between positive mood and healthy PA participation in adults. Other research suggests that PA is consistent with stress resilience, due to an enhanced regulation in responding to stress (Hegberg & Tone, 2015). Converse to this international evidence, surprisingly, our findings seem to suggest that moderate to high levels of resilience have little association with weekly PA participation. These unexpected findings highlight that there may be other psychological factors associated with resilience, independent of PA. However, this assumption also raises the importance of examining PA frequency, duration, and intensity and their relationshop with resilience in future studies.

Factors such as social engagement, self-esteem, self-efficacy, and the belief in one's capabilities may be the more probable mediators associated between PA participation and mental health (Gaudlitz, Von Lindenberger, Zschucke & Strohle, 2013). Furthermore, other research has ascertained that an association between resilience, coping behaviour, goal orientation, and academic passion in higher education students may exist (McMillan, 2016). The existing sample cohort appears to have different circumstances when compared to the typical undergraduate student

profile. It may be plausible that the existing participants are more goal-oriented for a career in secondary school teaching, and perhaps use other resources of resilience, such as social networks and experience. This emphasises the combined and dynamic biopsychosocial factors which contribute to an individual's level of resilience, and which changes over our lifetime (Lupien, McEwen, Gunnar & Heim, 2009). While it is well-established that exercise may help increase resilience and wellbeing (Childs & de Wit, 2014; Hegberg & Tone, 2015), research does suggest that resilience building is a multidimensional process, where one harnesses various strategies and resources to sustain wellbeing (Southwick, Bonanno, Masten, Panter-Brick & Yehuda, 2014).

Among the current pre-service teacher sample, the average self-reported amount of minutes spent engaging in weekly PA participation were well below the expected weekly guidelines (26% meeting the recommended guideline only). This finding was in part unexpected, as other Irish research has previously outlined that two-thirds of the student population meet the recommended PA guidelines (Murphy et al., 2016). Considering these previous research findings, it can be noted that most of those who participated in the Murphy et al. (2015) study were undergraduate students (n = 32,228). The current sample, however, included postgraduate pre-service teachers only.

When compared by gender, male and female participants closely aligned in terms of weekly MVPA participation (approximately 70 minutes total), yet statistically, male participants were more likely to achieve the recommended MVPA guidelines, when compared to that of female participants. This finding supports other recent Irish research highlighting that there is an increased likelihood of decreased PA participation among young women (Irish Sports Monitor, 2015; Murphy et al., 2015). It seems reasonable to assume that there were no gender differences in weekly PA minutes, possibly on account of the heavily represented female sample majority.

Finally, an association between meeting the recommended PA guidelines, and higher levels of wellbeing using the WHO-5 instrument among the current pre-service teacher sample did emerge. While there was no association between wellbeing and the PA guideline achievement using the WEMWBS instrument, the finding from the WHO-5 instrument supports the identified and thoroughly supported scientific research on the positive effects for exercise on mental health

(Mikkelsen et al., 2017). The lack of an association found in the current study between PA and the WEMWBS instrument supports that of Davoren et al., (2013). In this previous Irish study, Davoren et al., (2013) reported, however, that a positive association between PA, improved mood and a reduction in symptoms of depression does exist in higher education students.

4.8 LIMITATIONS

The existing cross-sectional baseline study has several limitations, despite the strength of accessing a relatively large convenience sample of postgraduate pre-service teachers in a university setting. Specific limitations included restricted access to balanced gender distribution. A heavily skewed female sample participated in the research, which could impact the representativeness and generalisability of findings. An increased, representative mixed-gender sample size may have allowed the research team to extrapolate more findings. However, the existing sample size does not undermine internal and external validity. It may be noted, however, that in Ireland the gender gap in secondary school teachers is largely represented by women (29% v 71%) (Eurostat, 2015). Self-reported PA participation was measured using a research designed question, rather than using widely accepted subjective, or objective PA measurement instruments. For these reasons, there are some potential sources of self-perception awareness bias, which may have affected some outcomes of the study. All self-report PA questions are vulnerable to measurement inaccuracies, subjectivity, such as social desirability bias, and external factors, such as seasonal variation and questionnaire complexity (Sylvia, 2015).

4.9 CONCLUSION

The findings of this research are somewhat unusual, specifically as they have taken both expected and unexpected turns in the process of investigation. As partly expected, there was an association between positive wellbeing and PA participation amongst Irish -service teachers, or emerging adults, in the university setting. It was, however, unpredicted to observe that those identified as sufficiently active would have lower levels of resilience when compared to those who were insufficiently active for their health.

The results suggest that males are more physically active than females, a finding consistent with most adult PA-based research. Continuation of this research will

endeavor to design a mental health awareness programme, specifically to address the particular needs of pre-service teachers in Ireland. Recent research investigating the effect of mental health training with higher education students encourages engagement in learning about mental health, specifically to enable students to support and offer help to someone else (Breslin et al., 2018).

McCallum & Price (2010) suggest that a focus on wellbeing during Initial Teacher Education (ITE), and in the early years of a teacher's professional career, may positively influence and enable NQTs to respond to the demands of their profession in a more productive and beneficial capacity. This highlights the role of the teacher educator in defining and promoting pre-service teacher wellbeing, and to facilitate to develop knowledge about mental health and strategies to maintain positive, mental health throughout their challenging, yet rewarding careers. This approach is a mutually beneficial endeavour, whereby what is in the best interest of the young pre-service teacher's wellbeing, is also in the best interest of their future students'wellbeing in the classroom and beyond.

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4.11 LINK TO CHAPTER 5

Chapter 5 provides the reader with a description of the research procedures and results of adapting an intervention planning tool, known as intervention mapping (IM). The purpose of this chapter is to showcase the rigorous approach to data collection and theory selection used to inform the development of the SOMI-HE intervention. (*See appendix K to O*).

Chapter 5

Mental Fitness in Higher Education: Intervention Mapping Programme Design

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5.1 ABSTRACT

Higher education institutions observe that many students are experiencing mental health issues, such as high levels of anxiety and stress. Young adults are recognised as a vulnerable group who carry the burden of mental health problems worldwide. Mental health interventions can be effective in positively influencing students' emotional and behavioural wellbeing. In the current study, the principles of Intervention Mapping (IM) were applied to guide the development, implementation, and evaluation of a specifically tailored mental health programme for a selected student cohort in a large HEI in Ireland. Mixed qualitative (Delphi technique and focus group discussions) and quantitative (survey) data were gathered to gain a broad perspective of mental health concerns and learning needs among a sample of higher education students (n = 99). Existing evidence guided by theoretical frameworks were blended to create a specifically tailored mental health programme to meet the needs of higher education students in Ireland. Results indicate that the established six-stages of IM provide an empirical process that has the potential to effectively respond to the mental health needs of students in higher education. IM identifies the priority needs of students in higher education and ensures that suitable behaviour change techniques for mental health are addressed. IM is a suitable method to critically and collaboratively develop a mental health intervention for the overall wellbeing of the general higher education student population, both nationally and globally.

Key words: Mental health, Mental health promotion, Education, Higher education, physical activity

5.2 INTRODUCTION

The inception of the State of Mind UK programme (2011) sought to increase awareness of mental health issues and wellbeing among professional rugby league players and their communities in England (Lawlor, Rae, Kelly & Moriarty, 2015). More recently, the State of Mind Ireland (SOMI) programme was established in 2015 as an organically evolving development from State of Mind UK. SOMI has the primary aim of highlighting issues surrounding mental health in sporting

communities across Ireland, through enhancing mental health literacy (Lawlor et al., 2015). SOMI has been identified as a skill-enhancing programme, aimed to increase levels of 'mental fitness' in young adults (Breslin et al., 2018; Lawlor et al., 2015). The term 'mental fitness' is accepted as emotional agility to stressful life events, defined as the "the modifiable capacity to utilise resources and skills to flexibly adapt to challenges or advantages, enabling thriving" (Robinson et al., 2016, p. 89). Ongoing and existent SOMI research with a selected student-athlete population deem 'mental fitness' as approachable terminology, and it is specifically seen as less stigmatising for student-athletes in higher education (Breslin et al., 2018). This SOMI research, specific to higher education student-athletes, determines that sport-specific mental health programmes can increase the effectiveness of mental health help-seeking behaviours and, to a lesser extent, knowledge of mental illness (Breslin et al., 2018; Breslin, Shannon, Haughey, Donnelly & Leavey, 2017). In light of the present article, it is important to contextualise that SOMI research has since targeted the general population of higher education students in Ireland, specifically as a long-term strategy to address the mental health and wellbeing climate of students within the higher education environment (Houghton, Keane, Murphy, Houghton & Dunne, 2011; Karwig, Chambers & Murphy, 2015a;. Murphy, McKernan & Heelan, 2016).

A nationwide study on young people in Ireland has previously revealed that approximately 40% of young Irish adults experience elevated levels of anxiety and depression (Dooley & Fitzgerald, 2012). Murphy et al., (2016) further described that the number of students in Ireland attending higher education with a formally declared mental health problem is as an 'overwhelming tsunami'. Higher education has significant potential to positively impact the mental health of young adults, through the provision of mental health knowledge, and the skills of wellbeing for large cohorts of young adults (Hunt & Eisenberg, 2010; Karwig et al., 2015). However, academic demands have also been found to be a contributing factor to mental distress among students higher education world-wide (Thorley, 2017; Usher, 2019) Several studies show rising levels of anxiety and depression among higher education students when compared to secondary school contexts (Bewick, Koutsopouloub, Miles, Slaad & Barkham, 2010; Dooley & Fitzgerald, 2012). It has been proposed that HEI's play an important role in responding to the mental health needs of students (Hunt & Eisenberg, 2010; Thorley, 2017).

Mental health promotion interventions for young people can have significant positive effects on students' emotional, and behavioural wellbeing, including reduced depression, anxiety and improved coping skills (Barry, Clarke, Jenkins & Patel, 2013; Doyle et al., 2017; Winzer, Lindberg, Guldbrandsson & Sidorchuk, 2018). In a study investigating the recognition of depression, help-seeking intentions, beliefs about interventions and stigmatising attitudes, Reavley et al. (2012) highlighted that there is a need for mental health literacy interventions, specifically targeting higher education students in Australia. Low mental health knowledge and help-seeking are reported among younger age groups, with student males less likely to recognise depression and most likely to associate with stigmatising attitude to mental health problems (Reavley et al., 2012;). The study concludes that interventions need to address stigma and not merely educate on the symptoms of depression in order to reduce barriers to help-seeking. Other research suggests that skills orientated programmes are effective in demonstrating the benefits for wellbeing, and have successfully improved students' social and emotional skills, by enhancing their self-perceptions, and reduced subsequent levels of emotional distress, including depression, anxiety, and stress (Conley, Durlak & Dickson, 2013; Karwig, Chambers & Murphy, 2015). Murphy (2017) recommends that the promotion of mental health be included as part of compulsory induction programmes to higher education, while also advocating for the delivery of support services for all students be provided. In supporting research addressing the barriers to responding to students with mental health difficulties in higher education, Murphy (2017) further advocates that 'whole college' approaches are required, specifically to ensure equity of participation for all students. Thorley (2017) maintains that buy-in and direction from senior leadership are a particularly integral component when considering the wellbeing and mental health needs of students in higher education.

SOMI as a national programme recognises the well-established, and strong positive associations between mental health and physical activity (PA) (Hegberg & Tone, 2015; Malcolm, Evans-Lacko, Little, Henderson & Thornicroft, 2013; Mikkelsen, Stojanovska, Bosevski & Apostolopoulos, 2017; Peluso & Guerra de Andrade, 2005; Portugal et al., 2013). Participation in regular PA for higher education students has proven to enhance wellbeing (Malcolm et al., 2013), increase resilience through protective factors (Hegberg & Tone, 2015), and alleviate

symptoms of anxiety, depression and stress states (Mikkelsen et al., 2017) through a number of factors, which include biological, social, and physiological health improvements. The most recent Student Activity and Sports Study Ireland (SASSI) report found that 71% of males and 58% of females, attending higher education, were categorised as highly active, when compared to the 36% (29% male: 42% female) who were identified as insufficiently active in terms of meeting the recommended PA guidelines for health (Murphy et al., 2016). Studies continue to show that sustained PA engagement among young adults in higher education can improve subjective wellbeing in young adulthood, despite the transitional nature of this stage of life (Cekin, 2015; Murphy et al., 2018).

The purpose of this study is to provide an innovative research-based approach in the re-design and development of an existing mental health and PA education intervention for higher education students in Ireland. This article documents the evidence-based process and protocol associated with the Intervention Mapping (IM) technique, as used through a case-study approach in a large higher education university context in the Republic of Ireland (Bartholomew Eldridge, Markham, Ruiter, Gerjo & Parcel, 2016). The article will guide the reader through the key features of quality associated with the revised SOMI programme for higher education students. Using IM, the programme has been designed for the general higher education population, and has been specifically developed to influence the complex determinants of mental health issues experienced by the priority population. IM may be well suited for designing higher education interventions, as the process is a multi-faceted practical approach tailored to the needs of a specific population, and has been used in similar contexts previously (Ammendolia et al., 2016; Boucher, Gagné & Côté, 2015). SOMI will be referred to as SOMI-Higher Education (SOMI-HE) for the remainder of this study to distinguish the previous research undertaken in SOMI (Breslin et al., 2018).

5.3 METHODS

Participants and Recruitment – Prior to the IM Process

The ethical approval for the SOMI-HE study was obtained from the Social Research Ethics Committee (SREC) at University College Cork in April 2017. 99 participants

assisted and contributed to the IM exercise, specifically as part of the re-design process to the SOMI programme. All participants were provided with an ethics information sheet and consent form by the Principal Investigators (PIs) prior to their participation in the research. An expert planning team was also established prior to the data collection phases, comprising of a psychiatrist, two psychologists, a mindfulness teacher, a higher education student, five clinical mental health nurses, a higher education lecturer (with PA-specific expertise), a community health project manager, and two researchers.

5.3.1 Intervention Mapping (IM)

IM is a health promotion planning framework, comprising of several tasks (Bartholomew & Mullen, 2011). This framework ensures effective decision making, appropriate theoretical selection, and the practical application of methodological considerations during each stage of an intervention design (Bartholomew Eldridge et al., 2016). There are six chronological steps associated with the IM process. *Figure 5.1* details the specific requirements within each of the IM phases and these phases create a layered blueprint of theoretically supported components, which address the associated causes and determinants of health and the corresponding practical mechanisms to health behaviour change (Bartholomew & Mullen, 2011). IM has been tendered as a suitable systematic tool for developing innovative health promotion programmes for complex health problems through a comprehensive theoretical approach (Ammendolia et al., 2016; Koekkoek, Van Meijel, Schene & Hutschemaekers, 2010; Mceachan, Lawton, Jackson, Conner & Lunt, 2008; Van Stralen et al., 2008). As part of this study's methodology, the six steps of IM will be outlined in the context of the revised SOMI-HE intervention.

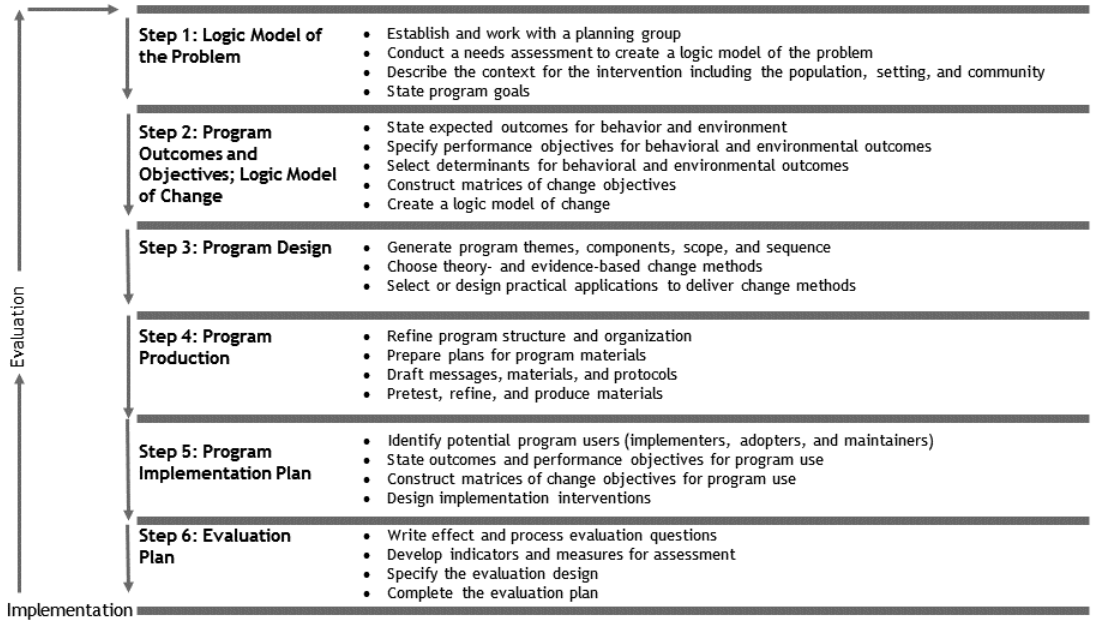


Figure 5.1 – The associated IM Steps (taken from Bartholemew, 2016, p. 13)

IM Step 1: Needs assessment, and the logic model of the problem

The first step of IM, as part the revised SOMI-HE programme was to establish a planning group to work with throughout the project, and to conduct a needs assessment of the targeted cohort, as a means of creating a logic model to the identified problem. The intervention aims to address the low levels of wellbeing and high levels of mental health issues among higher education students through an educationally robust programme.

'Changing something requires understanding it first' (Kok et al., 2016)

Conducting a needs assessment to create a logic model of the problem for the SOMI-HE programme design included an assessment of multiple components, comprising of scientific, epidemiological, and behavioural perspectives of the at-risk group through 1) a comprehensive literature search of the mental health problem among higher education students, 2) gathering expert opinion through a Delphi-exercise on the programme content, methods to address the mental health problem and the personal determinants of risky and health-promoting behaviour 3) identifying the behavioural determinants associated with low levels of higher education students mental health through focus group discussion 4) evaluating the student feedback on the strengths and needs of a previously used SOMI programme.

1) Literature review

The first element of the needs assessment involved a comprehensive literature review undertaken by the PI's and research team, who assessed the population, their risk, and the specific low levels of mental health among higher education students. The literature review served to understand the current national mental health and PA trends, their associated health determinants, and the barriers connected with mental health issues surrounding stigma and lack of PA among young adults. The information gathered from the literature review speciaifically intended to stimulate discussion for the Delphi Method. Literature was gathered from existing databases which include PsycInfo, Scopus and SPORTDiscus, while research-informed Irish data was collected using Google Scholar. Search themes included: mental health literacy, wellbeing, resilience, help-seeking, and the PA participation of young adults.

2) Delphi-exercise

Traditional to the Delphi method, the literature review informed the development of the Delphi-exercise (Dalkey & Helmer, 1962).The Delphi technique is a group process used to survey, and elicit the opinions of experts on a particular subject (Yousuf, 2007). In this research, the Delphi-exercise was used to formulate an empirical consensus of the SOMI-HE programme content through collating data from a panel of discipline-specific experts (n = 14) (Linstone & Turoff, 2002). The Delphi method is recognised as a suitable research and educational planning tool (OBrien, 1978). Delphi method is usually an anonymous process, however, in this study anonymity was not necessary as all stakeholders preferred to contribute to a common goal of improving higher education student mental health through open discussion. Anonymity can reduce the credibility of the study, making experts inaccessible for future consultation and research development (Green, 2014). Typically used as a quantitative technique (Rowe & Wright, 1999), this research used the Delphi methods as part of a qualitative approach to holistically engage participants (Fletcher & Marchildon, 2014). The non-anonymised Delphi process was modified through facilitating two rounds of structured panel discussions based on repeated open-ended questions within the domains of mental health and PA

participation of young adults. Data collected in the literature review were presented to the panel. Stakeholder opinions were specifically collected based on five themes; including:

1) Mental health literacy.
2) Wellbeing.
3) Resilience.
4) Help-seeking.
5) The PA participation of young adults.

Using an innovative method, the facilitator gathered consensus on these themes through asking the expert panel to respond to the repeated open-ended questions mapped on a KWL chart in both rounds of the Delphi exercise. KWL (Ogle, 1986) explores comprehension and activates background knowledge of a topic through investigating: What we know, want to know, and what we have learned. In other studies, a similar qualitative approach to the Delphi Method has proven to be a reliable means of hearing practitioners and the students lived experience, bringing evidence-based practice to the real world (Sharkey & Sharples, 2001). A modified Delphi exercise, adapted from Hiriscau (2016), followed six phases over a nine-month period (*see Figure 5.2*).

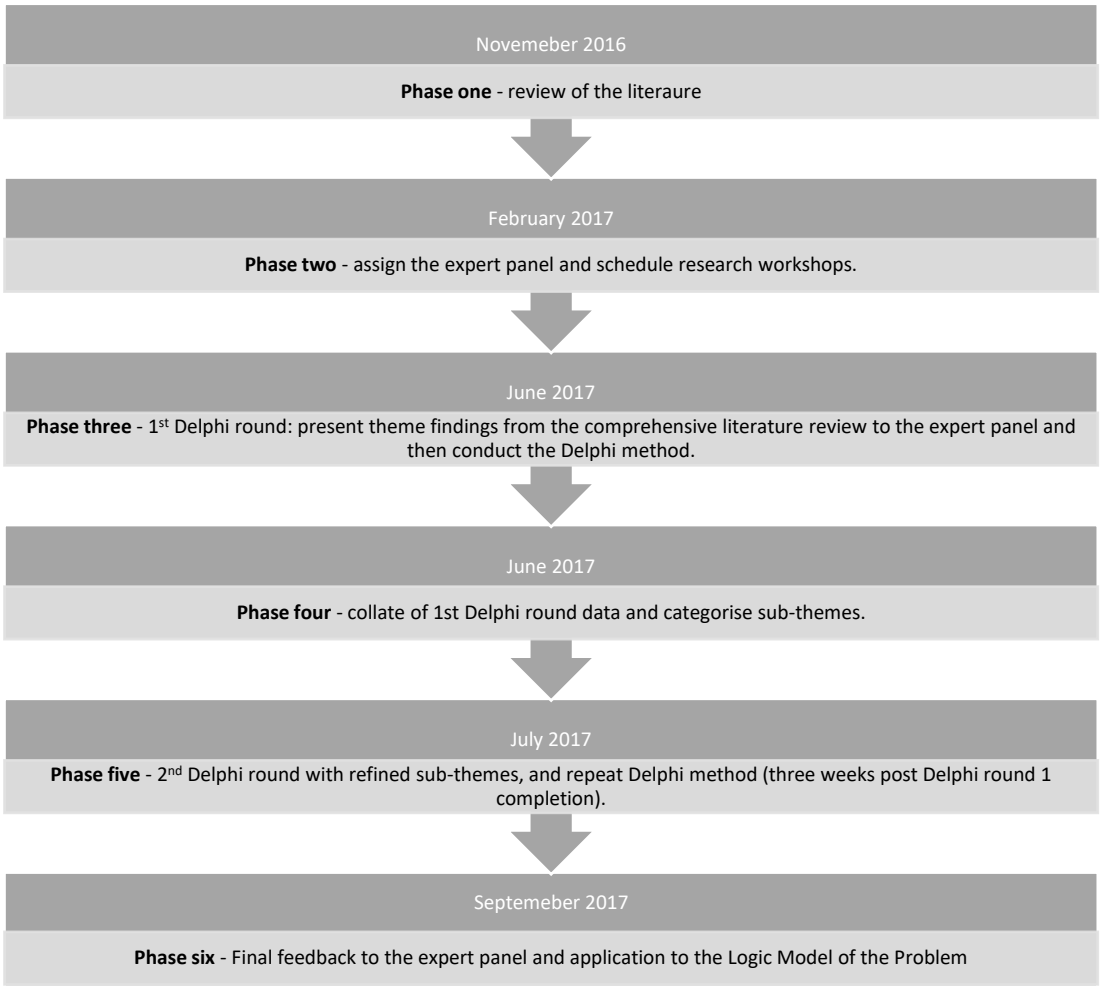


Figure 5.2 – Delphi exercise, adapted from Hiriscau (2016)

3) Student Focus Group

The third element of the needs assessment data collection for SOMI-HE consisted of focus group (FG) interviews, with a representative sample of postgradute higher education, mixed-gender students (n = 6). Two semi-structured FG interviews were conducted on campus with students who had completed the previously established and existing SOMI sport programme in March 2017. The SOMI sport programme was specifically designed to education sporting communities about mental health. The focus group aimed to:

a) Understand what students liked and disliked about the original SOMI.
b) What were the determinants and barriers to positive mental health behaviours, such as help-seeking and PA participation in higher education.

Lasting approximately one hour in duration, the FGs were held shortly after the students received the existing SOMI programme. The first five questions were selected specifically to learn about what students wanted from a mental health education and PA promotion programme in higher education (Krueger & Casey, 2015). The remaining five questions designed by the research team aimed to further understand issues and determinants surrounding students' mental health behaviours. These questions were created based on the emergent themes from the comprehensive literature review, including mental health literacy, wellbeing, resilience, help-seeking, and the PA participation of young adults.

4) Student Evaluation Questionnaire of existing SOMI Programme

The final element of the SOMI-HE needs assessment included an evaluation questionnaire designed to capture higher education student feedback immediately after participants had completed the existing SOMI programme. Summary findings were sought through closed, and open-ended questions from a convenience sample (n = 99). The evaluation instrument measured participants satisfaction with the existing SOMI programme duration, location, facilities, timing, presentation style, training aids, discussion opportunities, and training objectives through the use of a five-point rating scale (excellent, very good, good, fair, needs improvement). Three open-ended questions investigated participants' opinions on what aspects of the programme were useful, unhelpful, and needed change.

IM Step 2: Identification of programme outcomes, performance objectives and developing a matrix of change objectives.

The Logic Model of change designed in step two of the IM process for SOMI-HE provides the intervention with a solid foundation, specifying who and what will change as a result of the intervention (Bartholomew Eldridge et al., 2016). In step two, the determinants of both risky and health-promoting behaviours are analysed. These behaviour determinants are understood as generic, modifiable, aggregates of beliefs' specific to the target population (Kok et al., 2016). Behaviour determinants usually include cognitive process such as knowledge, beliefs, attitudes, values, self-efficacy, outcomes expectations and skills (Bartholomew Eldridge et al., 2016). These determinants are matched to appropriate theories that may effectively change

the behaviours identified (Kok, Bartholomew, Parcel, Gottlieb & Fernández, 2014).The product of IM step two is a set of matrices outlining the behavioural change determinants required to achieve the desired mental health and wellbeing outcomes. These outcomes are more specific than traditional programme goals and objectives, these matrices are exact intervention foci statements of what participants should accomplish in the completion of the revised SOMI-HE programme (Bartholomew Eldridge et al., 2016; Bartholomew & Mullen, 2011).

IM Step 3: designing the programme using theory and practical strategies

In step three of IM for SOMI-HE, the logic model of change, as created in step two informed the generation of programme ideas, themes, components, scope, and sequences for the revised SOMI programme. Behaviour change theories suitable to the target population, programme duration, and style of delivery were identified as evidence-based approaches and transformed into Behaviour Change Techniques (BCT's) to address the programme objectives (Abraham & Michie, 2008b; Bartholomew Eldridge et al., 2016; Bartholomew & Mullen, 2011; Hagger, Keatley & Chan, 2014; Kok et al., 2016). Conditions for the effective selection of BCTs must:

1) Target a determinant that predicts behaviour.
2) Be able to change that determinant.
3) Be translated into a practical application tailored to the learning needs and context of the higher education student population (Kok et al., 2016).

IM Step 4: Production of the Revised SOMI-HE Programme

Step 4 of the IM process was a creative phase, in which the research team used the core BCT's, as outlined in step three to produce messages, resources, and activities. Step 4's pilot testing of the SOMI-HE programme was implemented by exposing key components to a small sample of higher education students (n=50) and to a selected sample from the Delphi expert panel (n=4). An anonymous evaluation feedback sheet asked the participants from the pilot programme production exercise for their thoughts and recommendations.

IM Step 5: programme implementation plan

The fifth step of the IM process for SOMI-HE requires the implementation of another matrix development, similar to step two (Bartholomew Eldridge et al., 2016). As part of this stage, the research team is advised to conduct a needs assessment for the implementation of performance objectives, with personal and external determinants. The research team accessed the students through local-level approaches, making formal links with selected academic departments and individual lecturers in the selected higher education setting. Through this collaborative and local-level approach, adoption of the programme depended on the uptake of an interested programme co-ordinator and/or lecturer within the university. The PI's refer to this as 'championing' in the research.

IM Step 6: evaluation plan

The final step of the IM process for SOMI-HE comprises of the evaluation plan for the revised SOMI programme. A quasi-experimental pre and post-test study was conducted with two groups of postgraduate degree student teachers, repeated over two years, specifically to determine whether the programme reached its goals in changing the behaviours associated with the determinants, using a mixed-methods research design.

5.4 DATA ANALYSIS

The multi-stage, mixed methods data collection described in step one and the design of SOMI-HE (steps 2 to 6) were completed over a 15-month period (November 2016 to February 2018). The first stage of data collection in the IM process as parts of the needs assessment, the literature review, was completed using empirically robust and peer-reviewed sources only. Key themes from the literature review were identified through summarising studies relative to the mental health and PA levels among higher education students. Furthermore, the data from the first and second round of the Delphi process were analysed using a thematic approach (Braun & Clarke, 2006; Maguire & Delahunt, 2017). Thematic content analysis is effective for Delphi research studies in mental health education (Sharkey & Sharples, 2001). To ensure the trustworthiness of the qualitative data in both rounds, themes identified were reviewed by the two other senior researchers. Additionally, further validity in terms

of the thematic content analysis was sought from members of the expert panel. The semi-structured FG interviews were recorded via Digital Dictaphone (Olympus Digital Voice Recorder WS-852), transcribed verbatim, and anonymised. An inductive thematic analysis was used to identify themes, organise, describe and interpret data in rich detail (Braun & Clarke, 2006)).The analysis followed a six-step procedure as outlined by Maguire & Delahunt (2017). Finally, the SOMI evaluation survey was analysed descriptively using Statistical Package for the Social Sciences (SPSS). The open-ended questions from the evaluation form were analysed using similar thematic approaches, as applied in the Delphi Method and the semi-structured FG interviews. The data retrieved from step one of the IM exercise specifically informs the results for the design and implementation of the SOMI-HE programme to follow.

5.5 RESULTS

Outcomes from the IM process for SOMI-HE are described in this section, according to the previously identified six steps of the (Bartholomew Eldridge et al., 2016) protocol. Step one of the results from the IM process provides data from the needs assessments and the design of the logic model of the problem (*see Figure 5.3*). Each of the remaining IM steps (two to six), are then informed by the results from step one of the IM process for SOMI-HE.

IM Step 1: Needs assessment, and the logic model of the problem results

1) Logic Model of the Problem: Literature Review Results for SOMI-HE.

The literature review investigated the mental health and PA levels of students attending higher education. Five key themes were identified; 1) mental health literacy, 2) wellbeing, 3) resilience, 4) help-seeking, and 5) PA participation of young adults in higher education. Substance use, social support, knowledge, skills, stigma, attitudes, barriers and mental health literacy were prominent cognitive, social and behavioural determinants of positive mental health among young adults attending higher education (Davoren, Fitzgerald, Shiely & Perry, 2013; DeBate, Gatto & Rafal, 2018; Reavley et al., 2012; Kickbusch, 2008; Bröder et al., 2017; Gulliver et al., 2012). Social support, gender, sedentary behaviour, planning with

others, knowledge, skills, self-efficacy, motivation, perceived barriers and substance-use were common determinants of PA engagement in the general and young adult population (Condello et al., 2017; Deliens, Deforche, De Bourdeaudhuij & Clarys, 2015; Rovniak, Anderson, Winett & Stephens, 2002; Vainshelboim, Brennan, LoRusso, Fitzgerald & Wisniewski, 2019).

2) Logic Model of the Problem: Delphi Method Results for SOMI-HE.

The expert panel responses to the KWL activity highlighted issues of priority under the concept of mental health literacy. The expert panel emphasised how the college social system can impact low help-seeking behaviour, and low use of resilience-building strategies, asserting that mental health literacy and sign-posting are major areas of importance for early intervention. The expert panel determined that there is a need to normalise and give students the language to recognise mental health in order to raise awareness, reiterating the concept that we all have mental health. Under the theme of wellbeing, the expert panel discussed students experiencing high levels of stress and anxiety. They recognised PA as a method to enhance wellbeing through increased connections with others, and as a strategy to reduce stress/anxiety. Teaching students' mindfulness was another consensus strategy, which was consistently identified as a method to engage higher education students to pay attention to their own mental health and as a strategy to increase their sense of wellbeing. Under the resilience theme, the panel emphasised that during the higher education cycle, students have the absence of one good adult. In each round of data collection, the association between 'one good adult' and higher levels of resilience were consistently outlined. The theme of resilience overlapped with the fourth theme, help-seeking. The panel continually referred to other Irish research (Dooley and Fitzgerald, 2012) indicating the association between having one good adult and positive, protective indicators of mental health. Finally, PA for positive mental health was identified as a key area for content development in SOMI-HE. The expert panel also agreed that motivation to begin and sustain PA behaviours were problematic for many higher education students, many of which commented that in stressful times, PA was most likely to drop off. The emerging behaviour determinants extrapolated from these themes included the environment, knowledge, skills, self-efficacy, motivation, outcome expectations, risk perception, and

perceived barriers; these themes were mapped accordingly onto the logic model of the problem (*see Figure 3*) and incorporated into the subsequent IM steps for SOMI-HE.

3) Logic Model of the Problem: Focus Group Results for SOMI-HE.

Focus groups interviews were held to evaluate student reflections and feedback on the original SOMI. Doing so was complimentary to the above Delphi findings, offering students an opportunity to elaborate on their experience of participating in a mental health intervention programme. These findings indicate that students determine there is a need for such programmes, however, if programmes are not tailored to the needs of students, they are less likely to find the programme engaging and therefore less effective. The findings of the focus groups have been thematically organised into five key themes.

1.) *Provision is compassion.* This first theme determined by the FG research was the students expressed the need for mental health interventions for themselves and other young adults attending higher education. Students discussed the challenges of stigma and the necessity to offer more support to students through increasing mental health literacy. One female postgraduate student highlighted what it meant to be allocated the time-out from regular lectures to learn about wellbeing. Expressing that she appreciated the priority and attention shown to the student cohort by providing them with the opportunity to complete the programme she asserted:

> *I think a lot of us know a lot about wellbeing, but I think it is nice actually to get the terms and get the actual information'. Another female participant stated: 'Yes. There could be people in our class that are struggling and don't recognise they are struggling, but if they went to the course, they could see that they are…'*

2.) *Reducing barriers - stigma is work in progress:* When asked whether programmes can reduce mental health stigma, participants maintained they felt programmes like SOMI would be effective in reducing stigma but also

felt that higher education mental health services still needed to develop this area for students. A male postgraduate participant gave his general overview of mental health stigma, expressing:

> *I think they (HEIs) have got an awful lot better… but I think there is still a long way to go. I think mental health issues still exist. We are open to talk about it now but we weren't before.*

His female postgraduate peer reiterated his point and shared a common perspective:

> *'Something is still wrong. The stigma is still there but I think the programmes… are helping. It is getting there'.*

For this reason students suggested that programmes should be mandatory for all to attend so that the reach and effect of the programme are maximised. Two female participants conversed and exchanged the view that if the programme is left voluntary for students to attend, it would not be as effective. One female postgraduate student stated if the programme was optional: 'the same kind of people are going to come, the problem is the people that you are not going to be able to reach.'

While her undergraduate peer agreed: 'I think it should be mandatory in your course, and it should be mandatory to go.'

Students revealed they enjoyed learning new concepts and language, emphasising that terminology used in SOMI, such as 'mental fitness' was seen as a merit of the programme as it was less stigmatising. One female undergraduate student announced: 'when you say something like "fitness" everybody knows what physical fitness is and when you say mental fitness it may prompt you more to look after yourself'. Her peer concurred and responded:

> *It sounds nicer. When people hear the words "mental health" they think about the negative disorders that people have, Whereas the word fitness is more positive, so people may have less stigma towards it.*

Participants predominantly reported that they felt 'talking' was the most important factor in maintaining wellbeing. Poor communication, knowledge, skills, and access to services were seen as barriers to maintaining positive mental health.

3.) *We need to connect:* This theme explored the students want for connection and active engagement with the programme material. Participants felt they had little time for discussion in the previously delivered SOMI programme stating: 'we could have had more of an open discussion, more time for feedback and opinions'. The students discussed at large that the programme did not help them to connect with one another and engage in a meaningful mental health discussion. A female postgraduate participant suggested: 'Maybe reduce the PowerPoint's because there was a lot of slides.' This theme also highlighted the necessity for relatable material and resources to be considered as relevant to the revised SOMI-HE. The previously existing SOMI programme was originally designed for sporting communities, therefore, there were many components of the programme that the selected sample of higher education students could not identify with. One undergraduate female participant reported: 'I just didn't connect with it…'

4.) *Mindfulness:* The fourth theme indicated participant enjoyment of learning about and using mindfulness. A female undergraduate student expressed how she enjoyed the effect of mindfulness:

> *I think talking about the ways that you could improve your mindfulness (was interesting). I really `liked the way that you actually went through it (mindfulness) and did the exercise because I felt relaxed doing it. I was almost falling asleep; I was really relaxed.*

This feedback emphasised the extent to which practical strategies and skills can enable students to experience the perceived outcomes from participating in positive health behaviours.

5.) *Exercise is good for your health*. The final theme captured student recognition of the benefits of PA for wellbeing. Students described already knowing PA is good for their health, however, there are barriers to success in achieving the benefits of PA. For example, students felt they cannot prioritise PA. A postgraduate student expressed how she felt PA was another stressor that would inhibit her academic progress:

> *We all know we should (exercise), but it is doing it (is the problem). We all have lessons to plan and reflections to write and they all have to be done*

before tomorrow, and if you go for a walk first and you do feel better when you come back but you also know that you are going to be up past 12, 1 o'clock.

In this case, there was tension between the perceived benefits and the perceived drawbacks of taking the time to be physically active. Students perceived both time limitations and a heavy workload as inhibiting factors to increasing PA, directly expressing that: 'it's just finding the time to do it… it sounds like an excuse but it is just so hard'. Social influence and appearance were seen as motivators that increase student PA, whereas limited time, fear of judgement, knowledge, access to facilities, lack of routine and motivation were seen as barriers. Behavioural determinants of positive wellbeing strategies themed from the FG discussion include the environment, knowledge, skills, motivation, self-efficacy, poor attitudes and perceived barriers.

4) Logic Model of the Problem for SOMI-HE: Evaluation Form Results

The descriptive evaluation questionnaire data from SOMI revealed that participants' had their highest satisfaction with the 'SOMI presenter' (M = 4.6 out of a max value of 5.0, SD = 0.730) and had their lowest satisfaction with the 'discussion opportunities' (M = 3.0 out of a max value of 5.0, SD = 1.07). The qualitative data from the open-ended questions in the SOMI evaluation questionnaire presented similar findings to the previously mentioned semi-structured SOMI FG. Data analysis suggests that higher education students were most satisfied with how the programme raised awareness of stress and the overall benefits of PA participation. Existing SOMI components, such as the 'Five-ways to Wellbeing' (Aked, Marks, Cordon & Thompson, 2008), mindfulness, 'one good adult' (Dooley & Fitzgerald, 2012) and neuroplasticity emerged as the most helpful components of the existing SOMI programme. Participants reported an appreciation towards the friendliness of the presenter and their normalisation of attitude towards mental health. The least helpful elements of the programme included a lack of engagement and discussion, limited time and an absence of clear take-away resources. Participants reported dissatisfaction towards accessing the programme around their formal academic time-table, and the provision of unrelated sporting orientated material. .

The combination of results from all four methods of the needs assessment data collection were combined and mapped to create the Logic Model of the Problem in step two of the IM process for SOMI-HE (*see Figure 5.3*). Determinants were triangulated, prioritised and matched to their changeable behaviours within the reach of the intervention programme. The final selected determinants comprised of knowledge, skills, self-efficacy, motivation, risk perception, poor attitudes, barriers and outcome expectations.

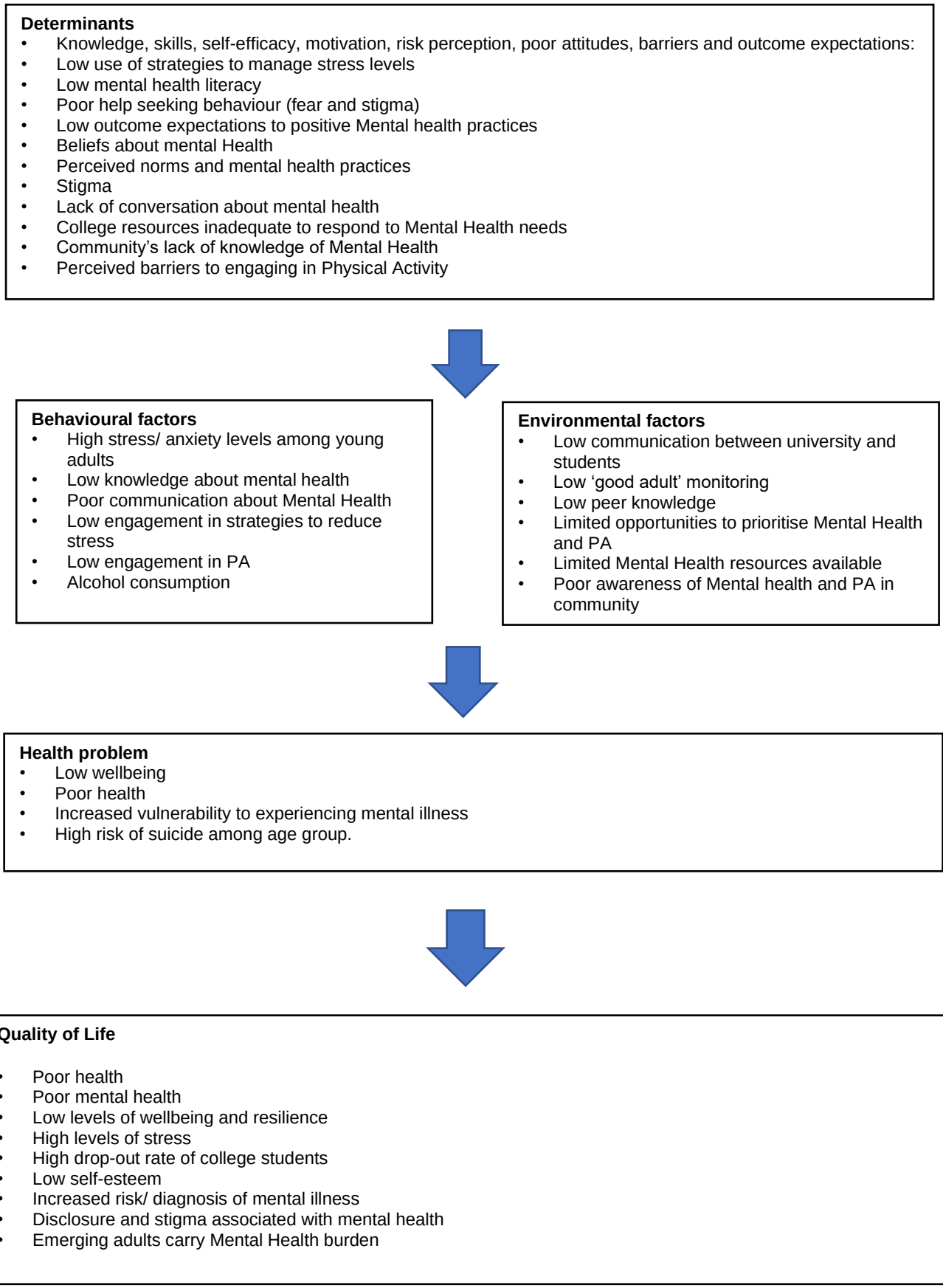


Figure 5.3 – SOMI-HE Logic model of the problem mapped from the data collected in step one of IM (Bartholomew Eldridge et al., 2016)

IM step two: Identification of programme outcomes, performance objectives, and change objectives results

Based on the needs assessment, as carried out through the robust protocol in step one of the IM process for SOMI-HE, the overall behaviour outcomes for the students in higher education were defined as follows:

- Develop knowledge and application of positive mental health strategies to increase mental fitness through evidence-based practices.
- To reduce mental health stigma among higher education students and promote help-seeking behaviour.
- To increase levels of PA according to the international guidelines.

Matrices of change were designed to address the selected changeable determinants identified in the Logic Model of the Problem. Through writing specific change objectives as exemplified in *Table 5.1*, the programme designer can clarify explicitly what needs to change in both the behaviour and the environment to improve health and quality of life.

Table 5.1 – Example Matrix of Change created in SOMI-HE

Outcome 1: To gain knowledge and practical application of positive mental health strategies and increase student awareness of their mental health needs

Performance/ behaviour objectives	Determinant 1 **Knowledge/ Awareness**	Determinant 2 **Attitudes and barriers**	Determinant 3 **Skills**	Determinant 4 **Self-efficacy**	Determinant 5 **Outcome expectations/ motivation**
Have increased knowledge of positive mental health, stress, and resilience.	Express on the concept of positive mental health and wellbeing	Understand that stress is a normal part of life	Recognise that students already maintain some positive mental health strategies & highlight need to use other varied methods	Belief in the ability to monitor and manage stress with mindfulness	Explain that discussing mental health is important to normalise and destigmatise mental health conversation.

IM Step 3: Designing the programme using theory & practical strategies results

The revised SOMI HE programme was designed to be delivered to a maximum of 150 students per sitting, with a dosage of to 2 x 90-minute sessions across two weeks – this revision increased the dosage and duration of the existing SOMI programme from a standalone 75-minute intervention. This revised programme duration and dosage alteration was in response to the findings of the student FG's in parallel to the advice from the expert panel as part of the Delphi-exercise. The revised SOMI-HE programme was created as an interactive learning experience in direct response to the proposals made throughout the research process in step one of the IM i.e. the needs assessment. An additional interactive higher education student workbook was also designed to complement the revised audio-visual programme, specifically as a strategy to increase active student engagement.. Some relevant components from the existing SOMI programme were maintained in the re-design phase of SOMI-HE. For example, 'The Five Ways to Wellbeing' (Aked et al., 2008) and 'One good adult' (Dooley & Fitzgerald, 2012) were the preferred components of the existing SOMI programme, which were favoured by the students, as indicated by the results of step one's needs assessment (Aked et al., 2008) Guided by the research informed data from Bartholomew and colleagues (Abraham & Michie, 2008a; Bartholomew Eldridge et al., 2016; Kok et al., 2016), the most suitable theoretical models were chosen to identify appropriate theoretical determinants. From the theories selected, a list of BCT's, as applicable to the SOMI-HE content were selected from the taxonomies produced by Abraham & Michie (2008b), Bartholomew Eldridge et al, (2016), Bartholomew & Mullen (2011), Hagger et al., (2014), Kok et al., (2016). The BCT's were then developed into icons as coding indicators, later used as a further strategy for the development of a facilitator's manual in the revised SOMI-HE programme. A sample taxonomy of the BCT's in SOMI-HE are exemplified in *Table 5.2*.

Table 5.2 – Taxonomy of Behaviour Change Techniques - Samples from SOMI-HE

Icon	Taxonomy of behaviour change techniques (methods)	Theories
 **Elaboration**	Elaboration - Stimulating the learner to add meaning to the information processed. Methods used to elaborate are effectively encouraged through discussion. Discussion allows for thought processing of information and may help contribute to long term recall.	Social Cognitive Theory (Bandura, 1977) Operant conditioning (Skinner, 1938)
 **Guided practice**	Guided Practice- Prompt individuals to rehearse and repeat the behaviour various times, discuss the experience, and provide feedback.	Social Cognitive Theory (Bandura, 1977)

Theoretically sound intervention strategies to impact behaviour change were included in this stage of the programme design for SOMI-HE. Bartholomew Eldridge et al.(2016) assert this enables planners to develop a solid foundation in theory and evidence through ensuring that planners select methods that are congruent with scientific evidence. Each of the behaviour outcomes and the associated theoretical methods were matched with their determinant, along with an application strategy that was deemed appropriate to positively impact the determinant (*see Table 5.3*). These strategies often incorporate student-related workbook (WB) activities, completed by the participants as the SOMI-HE programme unfolds.

Table 5.3 – Methods and application strategies to address behavioural outcomes and their determinants in SOMI-HE

Behavioral outcome	**Determinants & change objectives**	**Method**	**Application**	can be negative **Slide**	**Workbook**
Have increased knowledge of positive mental health, stress, resilience and positive mental health strategies.	Knowledge on the concept of positive mental health and its impact on wellbeing	Elaboration	The word tree (group brainstorm – what is mental health). Highlight perspective of mental health	Slide 4 Slide 5	WB p.3

IM Step 4: Programme production for the revised SOMI programme results

The interactive SOMI-HE presentation, alongside the two developed student workbooks, were piloted with a sample of n = 30 undergraduate university students in January 2018. Students were exposed to short segments of the SOMI-HE programme for 20 minutes over a six-week block, typically before the end of a weekly lecture. Student participants who completed the pilot of SOMI-HE reported enjoyment in these revised presentation and wellbeing components, however, feedback suggested that there was a mismatch between the volume of group activities between sessions one and two. The revised theoretical structure of the SOMI-HE programme appealed to the expert panel of members, and the revised interactive application strategies were seen as coherent and engaging.

IM Step 5: programme implementation plan results

As this IM process for SOMI-HE was part of a single site, convenience sample, case-study approach in a higher education setting, the programme implementation plan consisted of contacting four respective academic departments within the university. E-mail correspondence comprised of contacting each department administrator and providing information about the SOMI-HE programme and research. If the department expressed interest in championing the SOMI-HE programme, and allocating provision for programme delivery to students in higher education within the formal lecture timetable, the research team proceeded to meet face-to-face with the head of department, and the teaching faculty. The research team and the department worked together to schedule advertisement visits and programme delivery days during allocated lecture time slots. Two of the four contacted academic departments successfully agreed to allocate the intended 2 x 90 minutes sessions of the SOMI-HE intervention to their higher education enrolled students. The research team continues to develop and amend step five's programme implementation plan, as the impact of the programme depends not only on its effectiveness of design but also the effectiveness of its dissemination (Bartholomew Eldridge et al., 2016). Step five,

programme implementation plan, will be returned to and implemented following the intervention evaluation analysis (step 6).

IM Step 6: evaluation plan

In the sixth step of the IM process for SOMI-HE, the evaluation and data collection plan were developed to determine the programme efficacy for the revised SOMI-HE, in an attempt to add to the body of research that defines evidence-based interventions (Bartholomew Eldridge et al., 2016). The evaluation process is described in the following section of the thesis, chapter 6.

5.6 DISCUSSION:

This study documents the research-informed IM process for the re-design and development of a mental health and PA promotion intervention programme for higher education students, known as SOMI-HE. The systematic steps of IM used as part of the SOMI-HE programme have successfully drawn on a variety of pedagogical approaches, through using evidence-based decision-making protocol, identified at each stage of the programme design (Bartholomew Eldridge et al., 2016). Through the research-informed process of IM, the alignment of the SOMI-HE programme to the objectives, methods, and evaluation strategies has allowed for the creation of a rigorous and robust programme, aimed specifically at the targeted higher education student population. The research employed as part of step one in IM involved an extensive investigation into the modifiable determinants, regarding the low levels of mental health and PA participation among young adults (students) in higher education. The most prominent modifiable determinants for mental health and PA, selected as part of this study, include knowledge, attitudes, barriers, skills, motivation, outcome expectations, self-efficacy, and the perceived environment. These specific determinants concur with previously acceptable international wellbeing intervention studies (Ammendolia et al., 2016).

IM as part of the revised SOMI-HE programme compelled the research team to foster innovative problem solving, however, the lengthy duration required in each of the steps in the design stage, particularly step one was of concern in terms of fluid research dissemination. The IM process, as part of the revised SOMI-HE programme, took approximately sixteen months for research design, development

time, and the evaluation procedure as part of step six in the IM process is currently ongoing. This extended timeline for programme design and evaluation has been identified as a challenge by other researchers in the field, using IM (Ammendolia et al., 2016; Mceachan et al., 2008; Van Stralen et al., 2008). In response to this lengthy duration of IM, the research team endorses that the process helped to minimise error, and fulfil a rounded, ecological perspective of the health problem, as part of the revised SOMI programme.

IM acknowledges that humans and human behaviours are part of a complex system (Kok, 2014), therefore, there are specific limitations within the environmental conditions of meaningful and sustainable behaviour change. An effective environment, or organisational level response for higher education students is to integrate the intervention within university/college courses, specifically as means of improving the outcome, as previously done within the PA-promotion construct (Plotnikoff et al., 2015). In the current study, however, the research team did not have an association with the environmental agents of higher education for organisational change. In combat to this barrier, the revised SOMI-HE programme utilised an array of multi-theoretical approaches for intended personal behavioural changes (Kok, 2014), and worked locally to evaluate the programme.

In terms of sustained behavioural changes to mental health and PA participation for young adults, this IM process has found that the revised SOMI-HE programme could have been lengthened in terms of duration and dosage of frequency to improve the programme's potential impact to influence positive behavioural change. For example, within the field of mindfulness (a component of the revised SOMI programme), research suggests that even 3-4 brief sessions of mindfulness training can buffer negative mental health ill effects (Creswell, 2017). The current revised SOMI-HE intervention is only in a position to offer an experience of learning mindfulness twice, and therefore, has a low dosage of intervention exposure.

At this stage of the IM process, it is not possible to draw conclusions about the effectiveness of the revised SOMI-HE programme, however, the process is firmly rooted through a theoretically designed and research-informed approach. In terms of viability, the ratio of time spent designing the revised SOMI-HE programme, in comparison to the dosage and delivery time is exceptionally disproportionate in the context of higher education. Although the research team found the IM process to be

exceptionally thorough and research-informed, specific stages, such as step three's creation of the matrices were challenging.

5.7 Conclusion

In this study, the authors provide a detailed description of how HEIs can use IM to develop a mental health, and PA programme, which specifically seeks to respond to the wellbeing needs of young adults in higher education . IM provides an opportunity to theoretically support intervention programmes for large cohorts of young adults in HEIs. This SOMI-HE three-hour programme is an innovative learning pathway for students, specifically the rigorous planning undertaken, research-derived protocol, and theoretically, novel pathways created between problems experienced by the target population, and their proposed solutions. The final product detailed in this study of the IM process is a blueprint to a programme known as SOMI-HE, which is created through intelligent design and content development, by various and relevant multi-sectoral stakeholders, invested in the wellbeing of young adults. The subsequent actions to follow include step five's implementation plan to create a method of effectively disseminating SOMI-HE, and step six's evaluation plan for examining the effectiveness of SOMI-HE. This will most likely require 'buy-in' from senior leadership for the prioritisation of student wellbeing as an integral component of university strategic planning and policy, as previously flagged in the literature (Murphy, 2017; Thorley, 2017).

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Chapter 6

State of Mind Ireland: The Evaluation of a Positive Mental Health Intervention among Higher Education Students

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6.1 ABSTRACT

This study evaluates the impact of the State of Mind Ireland-Higher Education (SOMI-HE) Mental Fitness intervention on student wellbeing, resilience, and physical activity (PA) participation. A mixed-methods research design, comprising of a self-report questionnaire, and semi-structured focus group interviews at pre, post and follow-up phases were employed. Participants were a sample of 134 higher education students (29% male: 71% female; mean age range 18 to 25 years old). The quantitative outcome measures of wellbeing, resilience and PA data were analysed using SPSS version 26.0, (IBM, Armonk, NY, USA) with appropriate statistical analysis. Qualitative data were analysed using thematic analysis to capture the long-term outcomes and impact of the intervention. The results indicate a significant intervention effect on participants' wellbeing ($t(120) = -4.27$, $p < 0.001$), PA levels ($t(126) = 3.91$, $p < 0.001$) and motivational readiness for exercise change ($\chi 2$ (1, n = 131) = 6.9, $p < 0.009$ (2–sided). Qualitative findings suggest a sustained long-term increase in PA and resilience skills for positive mental health, and reduced stigma and barriers to positive mental health. The findings demonstrate the effectiveness of the SOMI-HE evidence-based intervention, and beneficial outcomes of a salutary approach to higher education student mental health.

6.2 INTRODUCTION

Despite the rising mental health problems among students attending higher-level education in Ireland and abroad, young people remain a neglected population and are substantially overlooked from both a risk prevention and health promotion point of view (Usher, 2019; Thorley, 2017; Murphy, 2017; 2011; Gore et al., 2011). The demands of change and adaption, specifically associated with opportunities and risk in attending higher education is particularly recognised for making emerging adults vulnerable to too much stress, and as a result, depreciated health (Harding, Lopez, & Klainin-Yobas, 2019; Dalky & Gharaibeh, 2019; Peer, Hillman, & Van Hoet, 2015; Bewick, Koutsopouloub, Miles, Slaad, & Barkham, 2010). The years of attending higher education are a critical time to create a culture of positive mental health through intervening and preventing further consequences related to mental health problems (Vidourek & Burbage, 2019). Higher Education Institutes (HEIs) can

holistically aim to see students thrive and reach their lifelong potential if they respond with positive mental health promotion to the well-established need for preventative and protective mental health intervention (Thorley, 2017; Hunt & Eisenberg, 2010; Harding et al., 2019).

Positive mental health is seen a fundamental to human development, and to coping with adversity (Chan 2010). It is a science emphasising wellbeing indicators that assist individuals to feel and function well (Aked et al., 2008). The terms positive mental health and mental wellbeing are frequently used interchangeably (Tennant et al. 2007). Promoting positive mental health or mental wellbeing at the societal, community and individual level involves building and supporting individual resilience, creating supportive environments and addressing the broader determinants of mental health (Barry, 2009; WHO, 2005). What constitutes positive mental health is essentially the feeling of happiness that comes with psychological resources, including self-esteem, mastery and resilience to life's stressors (WHO, 2004).

'Mental fitness', is a concept with strong connections to positive mental health, specifically as it reflects the teaching that we can enhance mental health through cognitive, behavioural and psychology education (Vaillant 2012). Mental fitness is associated with mental resilience (Robinson, Oades, and Caputi 2015). Resilience can be described as ones 'ability to bounce back from stress' (Smith et al., 2008, p.166), while mental fitness can be defined as 'the modifiable capacity to utilise resources and skills to flexibly adapt to challenges or advantages, enabling thriving' (Robinson et al., 2016, p. 63). Mental fitness implies that similar to physical fitness, during our lifetime we can increase our brains fitness in strength, endurance, and flexibility through using valuable psychological resources and intentional activities that increase growth and development of the brain (Oades et al. 2017; Greenwood and Parasuraman 2010; May 2011). This is known as neuroplasticity which describes the brain's capacity for reshaping and 'creating new neural connections and growing neurons in response to experience' (Siegel, 2010, p. 34). The term 'mental fitness' is adopted by current intervention research as it deemed approachable (less stigmatising), positive, and bolsters that mental wellbeing is improvable (Breslin et al., 2018; Robinson et al., 2016).

The endeavour to establish effective positive mental health interventions to fuel resilience and enhance the lifelong quality of life is a purposeful investigation to

safeguard the health of society (Keyes & Simoes, 2012; Tugade & Fredrickson, 2011). Evidence-based positive mental health programmes in schools and colleges that aim to develop positive mental health or mental fitness skills in youth through using social and behavioural science theories of health behaviour are effective in positively impacting student wellbeing levels (Winzer, Lindberg, Guldbrandsson, & Sidorchuk, 2018; Barrantes-Brais, Sánchez-Ureña, & Ureña-Bonilla, 2016; Conley, Durlak, & Dickson, 2013; Kok, Schaalma, Ruiter, Van Empelen, & Brug, 2004). Effective positive mental health interventions generally include components such as mental health literacy (Bjørnsen et al., 2017; Kutcher et al., 2016), personal strengths (Seligman, Steen, Park & Peterson, 2005), mindfulness (Galante et al., 2018; Ma, Zhang & Cui, 2019; Kabat-Zinn, 2003), optimism (Shoshani & Steinmetz, 2014) and goal setting (Bolier et al., 2013; MacLeod, Coates & Hetherton, 2008). Significant evidence also recognises the positive effect of using physical activity (PA) interventions as a means to enhance positive mental health (Barrantes-Brais, Sánchez-Ureña & Ureña-Bonilla, 2016; Biddle, Ciaccioni, Thomas & Vergeer, 2019; Penedo & Dahn, 2005).

It is well documented and clinically proven that regular physical activity (PA ()physical activity (PA)) participation enhances the quality of life, as it can reduce the risk of ill mental health and non-communicable diseases (NCD's) (Gill et al., 2013; Humphreys, McLeod, and Ruseski, 2014; WHO, 2010). PA (physical activity) participation is also strongly associated with positive psychological wellbeing across all age groups and genders (Murphy et al., 2018; Eime et al., 2013; Malcolm et al., 2013; Martin & McCann, 2005). Furthermore, PA interventions are proven to enhance the mental health of various age groups and contexts (Rodriguez-Ayllon, Cadenas-Sánchez., Estévez-López, 2019; Malcolm, Evans-Lacko, Little, Henderson, & Thornicroft, 2013; Biddle & Asare, 2011; Biddle & Mutrie, 2008). There is significant evidence that recognises the positive effect in using PA interventions as a means to enhance positive mental health (Biddle, Ciaccioni, Thomas, & Vergeer, 2019; Barrantes-Brais, Sánchez-Ureña, & Ureña-Bonilla, 2016;). In a meta-analysis of psychological and exercise interventions, Barrantes-Brais et al., (2016) maintain that each type of intervention (positive mental health and PA) are similarly effective in impacting student wellbeing. Emerging adults in Irish HEI's (Higher Education Institutes) who engage in regular bouts of PA

participation are more likely to have higher perceived wellbeing when compared to physically inactive emerging adults (O' Brien, Lawlor, Chambers, Breslin, & O' Brien, 2019; Murphy et al., 2018). Interventions designed to increase PA have significant outcomes among higher education populations when embedded within a university/college course, or designed using comprehensive models of behaviour change, such as the transtheoretical model (Plotnikoff et al. 2015; Kwan et al. 2019; Woods, Mutrie, and Scott 2002). Higher Education is a pivotal period to engage young adults in healthy behaviours, particularly recognising the role of PA participation and wellbeing (Murphy et al., 2018). Regular PA participation, therefore, should be regarded as a viable tool for improving subjective well-being in emerging adults (O' Brien, Lawlor, Chambers, O'Brien, 2020).

The challenge, however, with creating effective PA and positive mental health interventions is often the struggle to ensure interventions are designed collaboratively, using conceptual frameworks, and supported by theory and evidence-informed methods to respond to the assessed needs of a target population (Bartholomew Eldridge, Markham, Ruiter, Gerjo, & Parcel, 2016; Barry, 2009; Barry & Jenkins, 2007; Jané-Liopis, Barry, Hosman, & Patel, 2005). At a structural level it also means that addressing the personal, social and environmental determinants of risky, as well as health promoting behaviours, is essential for behaviour change and intervention design (Naidoo and Wills 2016). Dahlgren & Whitehead, (1991) describe a social ecological theory of health and refer to the determinants of health as 'layers of influence'. The layered components of the social ecological model include personal (age, sex, hereditary), interpersonal (individual lifestyle factors), micro-environment (social and community networks and living conditions), and the broader socio-political environmental conditions (governing and policy). The Dahlgren & Whitehead (1991) framework has helped researchers and policymakers to construct a range of hypotheses about the social and environmental determinants of health. It acknowledges the interactions between the various determinants of health, allowing modifiable influences on health to be amended through social policy (Dahlgren & Whitehead, 1991; Graham, 2004). Many environmental determinants lie beyond the capacity of health interventions, as change often depends on the action taken by agents or groups across the layers of the environment (Kok, 2014). However, Barry (2009) asserts that, at the individual level,

psychosocial determinants of positive mental health can be addressed, and coping skills as well as protective mental health behaviours can be enhanced by interventions that promote cognitive and emotional resources, such as, self-esteem, identity, self-efficacy, and resilience. The SOMI-HE intervention specifically aimsed to addressaddress the determinants of positive mental health and PA at thean individual level, as outlined by Barry (2009). This situates the currentis intervention primarily atin the interpersonal level level of the environment. Nonetheless, theThe SOMI-HE intervention, however, also aims to operate across multiple levels of the environment throughby acknowledging that mental health is impacted bythrough the interdependence of personal and broader social, economic and environmental determinants.

6.3 THE PURPOSE OF THIS STUDY

It is against the backdrop of the concern for low levels of wellbeing, resilience and PA among higher education students that the State of Mind Ireland-Higher Education (SOMI-HE) intervention was developed (O' Brien et al., 2019; O' Brien et al., 2020). The present study aimed to evaluate the impact and effectiveness of the SOMI-HE Mental Fitness intervention in increasing wellbeing, resilience, PA level and motivational readiness for PA change. The specific objectives were to 1) investigate if student engagement with SOMI-HE can increase short-term indicators of subjective wellbeing, resilience and PA participation 2) identify the demographic determinants (gender and age groups) of change in wellbeing, resilience ad PA over time 3) establish the long-term outcomes of engaging with SOMI-HE.

6.4 MATERIAL AND METHODS

6.4.1 Participants and setting

It is against the backdrop of the concern for low levels of wellbeing, resilience and PA among higher education students that the SOMI-HE intervention was developed (O' Brien et al., 2019; O' Brien et al., 2020). The present study aimed to evaluate the impact and effectiveness of the SOMI-HE Mental Fitness intervention in increasing wellbeing, resilience, PA level and motivational readiness for PA change. The specific objectives were to 1) investigate if student engagement with SOMI-HE can increase short-term indicators of subjective wellbeing, resilience and PA participation 2) identify the demographic determinants (gender and age groups) of change in wellbeing, resilience ad PA over time 3) establish the long-term outcomes of engaging with SOMI-HE.

6.4.2 Ethical considerations

The University College Cork Social Research and Ethics Committee reviewed and approved this study (Log No 2017-009) on March 3rdin March, 2017. The University College Cork (UCC) Social Research Ethics Committee (SREC) approved the study early in 2017. Prior to participation in SOMI-HE, each participant was supplied with an information sheet, and written consent was a pre-requisite prior to the completion of specific data measurements. All participants invited to partake in the research were informed of their right to withdraw from the proceedings at any stage. Iin the situation where a student became distressed by the survey, interview or programme content, internal and external university . Additional support service information was provided. For example, on each student's consent form at the startbeginning of data collection provided such support service information, and the these contact points were also reinforced on the student take-home workbook, at the end of the intervention. in the situation where a student became distressed by the survey, interview or programme content. Students were aware that the research was an optional component for completing the SOMI-HE intervention programme.

Researcher bias can be referred to as a distortion of results influenced by the researcher's values or the interest of research funding bodies (Galdas 2017). Ethical awareness is the undercurrent of this study. The research objective is to create evidence-based interventions that are aimed to work effectively in preventing ill mental health through the promotion of positive mental health. If the research programme was deemed ineffective, it is evidence that such a strategy is not helpful to the cause, and is therefore, still a reported outcome. The lead researcher took measures to continually demonstrateing reflexivity and prevent such bias through external auditing, peer consulting negative case analysis, and triangulating theof results (Creswell 2003).

6.4.3 The SOMI-HE intervention programme

The SOMI-HE intervention programme was designed using a procedure known as Intervention Mapping (IM) (Bartholomew Eldridge et al. 2016). Intervention Mapping (IM) has been proposed as a suitable systematic tool for developing innovative health promotion programmes for complex health problems through a collaborative, comprehensive theoretical approach (Ammendolia et al. 2016; Koekkoek et al. 2010; Mceachan et al. 2008; Van Stralen et al. 2008). The SOMI-HE is a two-part, three-hour-long intervention, pedagogically designed to engage a maximum of 150 students per sitting. A dosage of 2 x 90-minute sessions across two weeks sees large cohorts of students participate in discussion, reflection, and positive mental health activities, through audio-visual presentations and engagement with an interactive student workbook – a take-home resource specifically designed to influence behaviour change in each of the intervention components (see table 6.1). Examples of intervention behaviour change strategies include guided practice, elaboration, conscious raising, chunking of information, discussion, empathy training and modelling (Michie et al. 2018; Abraham and Michie 2008; Kok et al. 2004). For a full description of the SOMI-HE intervention design procedure, content selection and delivery rollout, please refer to O' Brien et al. (2020). The current research tested the hypothesis that the SOMI-HE intervention (as designed using the IM framework) could increase perceived wellbeing, resilience, PA levels and motivation readiness for PA change.

Table 6.1 State of Mind Ireland-Higher Education (SOMI-HE) intervention components, sequence, and scope.

Day 1
Workshop A—Positive mental health
PART 1
Understanding positive mental health—Everyone has mental health
Mental fitness: stress, resilience, and vulnerability
Mental health, emerging adults, and ‘one good adult’
Neuroplasticity—mindfulness and positive affirmations
PART 2
Exercise has been known to cause health and happiness
The five ways to wellbeing
The transtheoretical model of change
SMART—don’t find the time, make time
Day 2
Workshop B—Mental health first
PART 1
Everyone has mental health—let’s talk stigma
Mental health literacy and responding to mental health issues
The stress-vulnerability bucket analogy
Alcohol consumption and mental health
PART 2
Maintaining wellbeing strategies—mindfulness
Mental health literacy
SMART—Resetting physical activity goals
The Mental Fitness toolkit

6.5. MATERIAL AND METHODS

6.5.1 . Participants and setting

As part of this study, the principal investigators (PIs) used a mixed-method longitudinal intervention design, specifically to explore the impact of the SOMI-HE intervention programme on indicators of positive mental health. Mixed methods research is recommended for intervention researchers, as the research design combines approaches used to strengthen intervention design and implementation (Zhang, 2014). Several reasons outlined by Meissner et al. (2011) underline the adoption of mixed methods in this SOMI-HE research – the authors maintain that mixed-methods allow the researcher to look at a problem from various perspectives, contextualise the setting, and validate or compare results. It was essential in the process of the intervention design and evaluation to listen to the voices of the stakeholders and participants.

Additionally, qualitative components of research add depth and meaning to empirical findings, which can assist in assessing the feasibility and the potential for intervention, through gathering preliminary evidence and informing researchers of the barriers to effective intervention design and adaption (Zhang, 2014, p.27). Conversely, quantitative methods can identify patterns and trends (Zhang, 2014). Using these combined research methods can enhance knowledge of the outcomes of the programme, and can inform the development of future research as they are considered a 'systematic and rigorous form of inquiry' (Meissner et al., 2011).

Eligibility criteria included all students attending Higher Education over the age of 18 years. A clustered, convenience sample of two mixed-gender student cohorts from the same degree programme completed the SOMI-HE study over two academic years. The participants in this study were allocated discretionary time from their formal timetable to complete the SOMI-HE intervention programme. Access to students was made available by a 'champion' of the research in the host institution. The intervention was delivered by the lead researcher. The lead researcher was formally introduced to the participants as a research student and had no previous association with the participants of the intervention in any capacity.

The SOMI-HE study was implemented twice - in February 2018 and 2019. Each time the intervention was delivered, data was collected across three-time points, specifically to assess the short term and long term wellbeing outcomes at baseline (pre-intervention), post-intervention (2 weeks) and at follow-up phase (7 months after intervention completion) (see figure 2). A total of 250 participants were eligible and informed about the SOMI-HE from a programme content, scheduling, research, and ethical consent perspective. Overall, 88% (n = 220) of the sample attended the programme, while 70% (n = 174) of the sample provided consent for completing the research element to the study. Out of the 174 consenting participants, 134 were included in the study (29% male and 71% female). Seventy-five per cent of participants were aged between 18 and 25, 14% were aged between 26 and 29, and the remaining 11% of the sample was 30 years and over. The majority of the students (84%) were in their first year of a postgraduate education programme.

6.5.2. Ethical considerations

The University College Cork Social Research and Ethics Committee reviewed and approved this study (Log No 2017-009) in March, 2017. Prior to participation in SOMI-HE, each participant was supplied with an information sheet, and written consent was a pre-requisite prior to the completion of specific data measurements. All participants invited to partake in the research were informed of their right to withdraw from the proceedings at any stage. In the situation where a student became distressed by the survey, interview or programme content, internal and external university support service information was provided. For example, each student's consent form at the beginning of data collection provided such support service information, and these contact points were also reinforced on the student take-home workbook, at the end of the intervention. Students were aware that the research was an optional component for completing the SOMI-HE intervention programme.

Researcher bias can be referred to as a distortion of results influenced by the researcher's values or the interest of research funding bodies (Galdas, 2017). Ethical awareness is the undercurrent of this study. The research objective is to create evidence-based interventions that are aimed to work effectively in preventing ill mental health through the promotion of positive mental health. If the research

programme was deemed ineffective, it is evidence that such a strategy is not helpful to the cause, and is therefore, still a reported outcome. The lead researcher took measures to continually demonstrate reflexivity and prevent such bias through external auditing, peer consulting negative case analysis, and triangulating the results (Creswell, 2003)

6.6 STUDY DESIGN AND PROCEDURES

Qualitative and quantitative approaches are necessary to give depth and breadth of research in social and behavioural sciences (Dezkin & Lincoln, 2011). Interventionists looking to develop evidence-based practice can enhance intervention design and research rigour through the use of mixed-method research design (Zhang, 2014). A wellbeing questionnaire comprising of several empirically valid and reliable psychometric and PA scales, and repeated semi-structured focus group discussions were utilised for pre and post-intervention data collection time points, while semi-structured focus group discussions only were used for the follow-up stage of data collection.

6.6.1 Quantitative participants and recruitment

A self-report wellbeing outcomes questionnaire was utilised to obtain quantitative data, specifically as it provides large amounts of data unattainable by way of qualitative methods, is easily analysed and regarded as unbiased due to the standardised parameters for reliability and validity (Mertens & Wilson, 2019). Approximately 20 minutes prior to the intervention rollout, the students had the option to complete the survey online using SurveyMonkey™, via a link or hard copy distributed by the research team. The survey consisted of several standardised questionnaire instruments.

6.6.2. Qualitative participants and recruitment

During the introduction of SOMI-HE (two weeks in advance of its delivery), focus group volunteers were requested to email the researcher. Thirty-two students contacted the leading researcher, expressing interest for focus group participation

within 24 hours. A total of 30 participants completed the pre-intervention semi-structured focus groups interviews, while 22 participants completed the post-intervention semi-structured focus group interviews. At 7-months follow up, the research team retained 8 participants from the original pre/post sample for the semi-semi structured focus group interview (see figure 2.). Focus group discussions composed of 21 female and 9 male participants at pre, 15 female and 7 males at post, and 6 female and 2 males at follow-up.

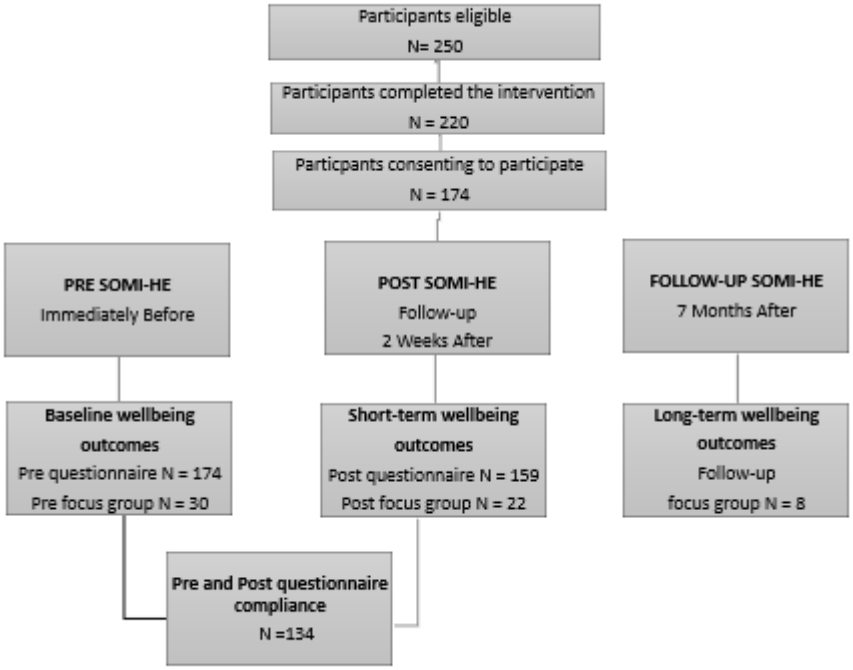


Figure 6.1. CONSORT diagram of data collection at pre, post and follow-up intervention stage.

6.7 MEASUREMENTS

Self- report wellbeing outcomes questionnaire

Participant demographic characteristics were obtained and measured to determine the impact of the programme on the following variables: wellbeing, resilience, and PA participation:

The Warwick-Edinburgh Mental Wellbeing scale (WEMWBS) (Tennant et al., 2007)*:* The WEMWBS was developed to enable the monitoring of mental wellbeing across the UK's general population (Stewart-brown & Janmohamed, 2008). The

WEMWBS is a 14 item scale validated with student and adult populations and stands as a robust tool, with excellent test-retest reliability Intraclass Correlation Coefficients (ICC) at 0.83 (O'Brien et al., 2019; Tennant et al., 2007). The scale has been recommended for the use in evaluating mental health promotion initiatives and programmes at both a group and individuals level (Stewart-brown & Jnamohamed, 2008; Tennant et al., 2007; Maheswaran, Weich, Powell, & Stewart-brown, 2012). The results of the WEMWBS are presented as mean scores in the descriptive analysis only, as the WEMWBS was not designed to screen cut-off scores of wellbeing (Fellow et al., 2015).

The Brief Resilience Scale (BRS) (Smith et al., 2008)*:* The BRS measures resilience or 'the ability to bounce back from adversity'. The instrument consists of six items with a higher score indicating higher levels of resilience. The BRS has demonstrated satisfactory internal consistency and test-retest reliability (ICC.69) (Rodríguez-Rey et al., 2016; Smith et al., 2008). The scale has also been used in the context of a university setting in previous research, and has proven valid and reliable when examining resilience levels among higher education students (O'Brien et al., 2019; Amat, Subhan, Jaafar, Mahmud, & Johari, 2014;). The score of the BRS can be categorised. A score between 1 and 2.99 represents low resilience, a score of 3.00 to 4.30 represents normal resilience, and scores between 4.31 and 6.00 represent high resilience.

The Patient-Centred Assessment and Counselling for Exercise Plus Nutrition (PACE+ physical activity measure) (Prochaska, Sallis, & Long, 2001): The PACE+ is a two-item screening tool used among adolescents in primary care. Participants (over 18 years) are asked: 'Over the past 7 days, on how many days were you physically active for a total of at least 30 minutes per day?' and 'Over a typical or usual week, on how many days are you physically active for a total of at least 30 minutes per day?' Responses are numbered 0 – 7 days. A composite average of the 2 items yields a score of days per week the participants can accumulate 30 minutes of MVPA. A binary score can be created using PACE+ with five or more days per week categorised as meeting the recommended PA guidelines for health. The PACE+ demonstrates excellent test-retest reliability across multiple groups and

subgroups of adolescents (ICC 0.77) (Prochaska et al., 2001). In studies assessing the reliability of the PACE + in higher education student populations in Ireland, results indicate that the PACE + has strong test-retest reliability (ICC .70), and shows high accuracy of those not meeting the PA guidelines (73.5%) (Murphy et al., 2017).

The Physical Activity Stages of Change Questionnaire (PASCQ) or Transtheoretical Model (TTM) (Marcus & Simkin, 2003): The PASCQ was designed to assess the stages of motivational readiness for change mode in individuals as they move through a series of stages on the Transtheoretical Model (TTM). The TTM is an integrative, biopsychosocial model that seeks to conceptualize the processes of intentional behaviour change that include five distinct stages: pre-contemplation, contemplation, preparation, action, and maintenance (Prochaska & Velicer, 1997). The PASCQ is a four-item binary questionnaire with a 'yes' or 'no' response scored by an algorithm. For example, if an individual's response to question one ('I am currently physically active') is 'no', and question two ('I intend to become more physically active in the next six months') is 'no', they are identified as being in the pre-contemplation stage on the TTM. By matching where an individual lies on the stage of change, an appropriate intervention strategy can be implemented (Marcus & Lewis, 2003). The PASCQ demonstrates very good test-retest reliability (ICC 0.85) (Marcus & Forsyth, 2003). The validity of the instrument was determined as satisfactory when compared to other direct measurements of PA (accelerometer, maximum oxygen consumption VO2 etc.) (Cardinal, 1995; Marcus & Simkin, 2003). The PASCQ has been used among the college student population in recent years (Mettling et al., 2018).

6.8 FOCUS GROUP DISCUSSIONS

Semi-structured focus group discussions followed the recommended programme evaluation guidelines, as outlined by Krueger & Casey (2015). Focus group discussions were conducted using repeated questions at pre, post and follow-up intervention stages. This method aimed to capture and monitor the outcomes of the programme based on the expressions of the returning participants. Ten questions

were devised, piloted, and verified by other members of the research team. Research questions 1-5 investigated student's knowledge, skills and attitude towards positive mental health and strategies. Questions 6-9 sought to understand student PA levels, behaviours, and attitudes. Question 10 asked participants what they hope to gain (at pre) and what they had gained from the intervention programme (at post and follow-up).

All focus group discussions were audio-recorded via Digital Dictaphone (Olympus Digital Voice Recorder WS-852), transcribed verbatim and anonymised. The leading researcher, four trained interviewers and five assistant moderators facilitated and took notes throughout each discussion. Assistant moderators were consulted proceeding each interview on shared insights and interpretations of the participant discussions. The process of data analysis was verified by a qualitative research consultant within the university.

6.9 DATA ANALYSIS

Self-report questionnaire: Participants who completed both pre- and post-intervention self-report questionnaires were included in the study only, and where any of the questionnaire scale data were incomplete, the responses were excluded from that specific scale analysis. In a case by case analysis of extreme values, using detrended Normal Q- Q Plots and Box Plots for each scale, if data appeared inconsistent or invalid, outliers were removed. This led to a reduction in sample size, however, contaminant observations may affect bias of the statistical result in various ways (Zijlstra et al., 2011).In intervention studies, 70 participant cases provide adequate power to detect a moderate effect for an intervention (Abraham and Russell 2008). A Cronbach's alpha coefficient indicated good internal consistency for the WEMWBS (α =.88), the BRS (α = .84), the PACE+ (α =.87) and the PASCQ (α = 1.0). In each of the scales used, the score did not appear to suffer from floor and ceiling effects in either sample.

Several statistical tests were used to interpret the data collected, using Statistical Package for the Social Sciences (SPSS), Version 26.0 for Windows. The WEMWBS, BRS, and PACE+ were totaled using the mean score and standard deviation calculations. A mean cannot be interpreted for the PASCQ, as it is a binary

type questionnaire. Levels of resilience and PA were computed and assigned to subgroups at both pre- and post-intervention data collection points. A binary variable was created for the PACE+ and the PASCQ scale items. Specifically, levels of PA using the PACE+ were categorised into 1) those meeting the recommended PA guidelines and 2) those who were not meeting the recommended PA guidelines. Using the PASCQ stages on the TTM, data were divided into either those on the 1) lower (pre-contemplation, contemplation, preparation) or 2) upper stages (action and maintenance) of exercise readiness. To address the previously identified research questions, differences in pre- and post-intervention scores for wellbeing, resilience and PA were calculated using a combination of t-tests, McNamer's test and repeated measures ANOVA. Gender differences wellbeing, resilience and PA at pre-intervention were investigated using independent sample t-tests. Paired sample t-tests investigate whether there were changes in mean levels of wellbeing, resilience, and PA at pre- and post-intervention. McNemar's tests were used to identify the changes in the binary variables created in the PACE+ and the PASCQ. Individual repeated measures ANOVA were conducted to explore the changes in wellbeing, resilience, and PA using controlled demographic determinants including, gender (male or female) and age (18-25 years or 26 years plus). Statistical significance for all tests was set at $p < .05$.

Focus groups: Using a thematic analysis approach, outlined by Braun & Clarke (2006), the data was analysed through reading, re-reading, generating codes, searching for themes, defining and naming themes, and reporting. The questions were presented through a deductive approach and interpreted through an inductive approach lens. All data was extracted from the pre-existing coding frame that was shaped by the research questions. Following the procedure provided by Bree & Gallagher (2016), themes were initially processed using Microsoft excel. Bree and Gallagher (2016) provide researchers with a physical process of managing data analysis that reflects the thematic analysis framework, as described by Braun & Clarke (2006). The process is considered a scientific tool to assist the thematic analysis and triangulation of qualitative data, collected by organising, coding and classifying data through using colour and sorting features of Microsoft Excel (Maguire & Delahunt, 2017). Using a thematic map, themes were matched across

three-time points (pre, post and follow-up), and commonalities/differences across each of the focus group discussions were integrated and reported using a contiguous approach (Fetters et al., 2013). Thematic analysis was used to evaluate the core themes expressed by the participants overall, followed by a convergence triangulation process, specifically to verify and validate the quantitative data (Heale & Forbes, 2013).

6.10 RESULTS

6.10.1 Self-report questionnaire findings

Descriptive results

Study participants included one hundred and thirty-four higher education students, who were matched as part of the pre- and post-intervention data collected. Table 6.2 provides an overview of the demographic characteristics of the SOMI-HE study sample. Table 6.3 presents the mean scores for the each of the scales, as differentiated by gender, at both pre- and post-intervention data collection stages of SOMI-HE.

Table 6.2 Partic*ipant demographic data.*

Gender	**Count**	**Percentage (%)**
Male	**39**	**29.1**
Female	**95**	**70.9**
Age		
18-25 years	100	74.6
26-29 years	19	14.2
30 years +	15	11.2
Level of Education		
Undergraduate	19	14.2
Postgraduate	115	85.8
Year of study		

First-year	113	84.3
Second-year	17	12.7
Third-year	4	3.0
Type of course		
Education	100	74.6
Engineering	19	14.2
Science	13	9.7
Business	2	1.5

Figures 6.2 to 6.4 illustrate the pre- and post-intervention descriptive data for the BRS, PACE+ and PASCQ instruments, according to the data's categorical cut-off points.

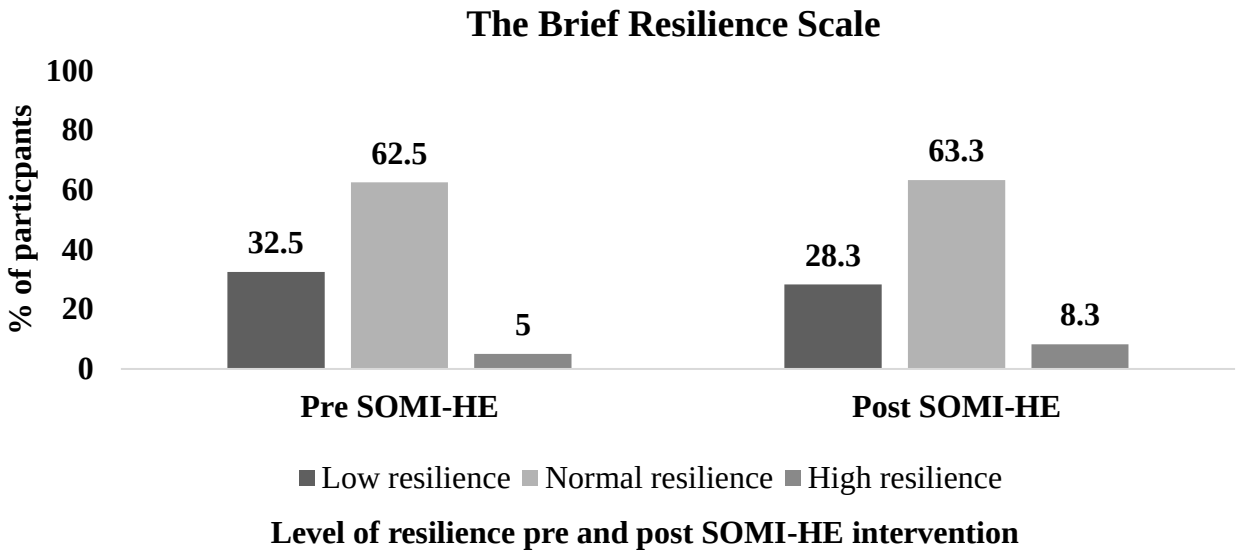


Figure 6.2 Levels of resilience pre- and post-SOMI-HE intervention.

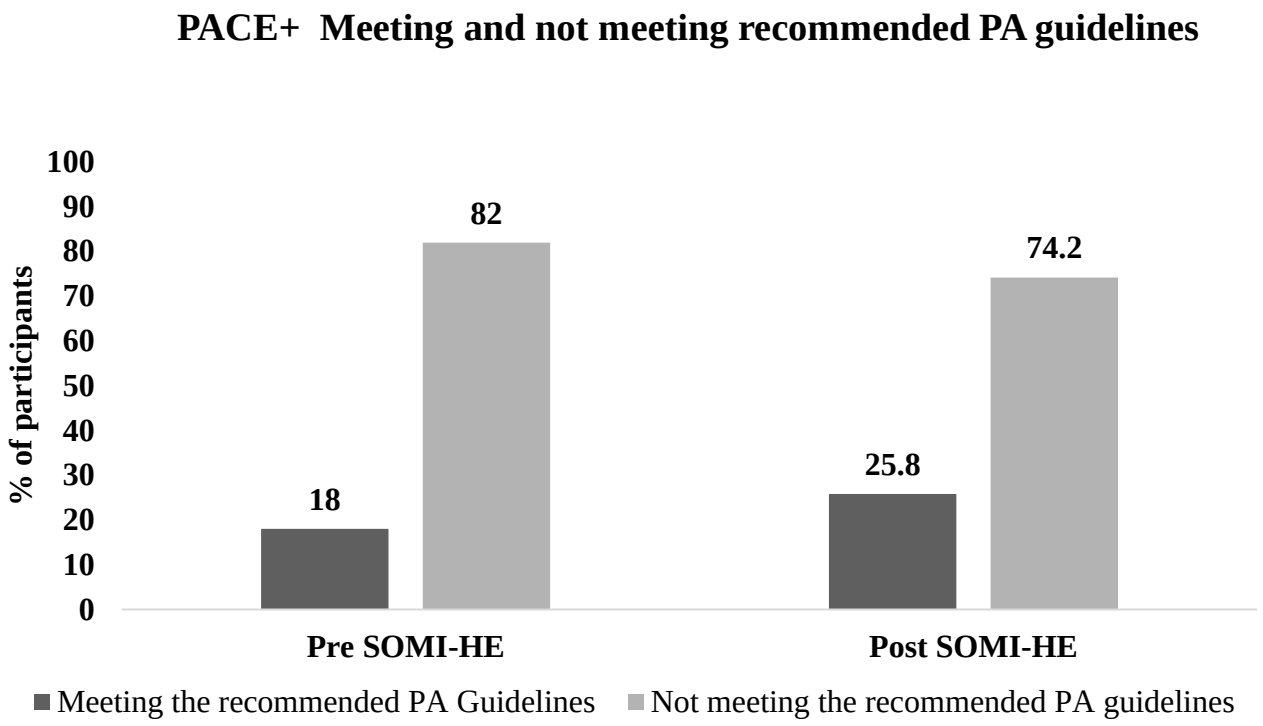


Figure 6.3. *Percentage of students meeting/ not meeting the recommended PA guidelines pre and post SOMI-HE intervention.*

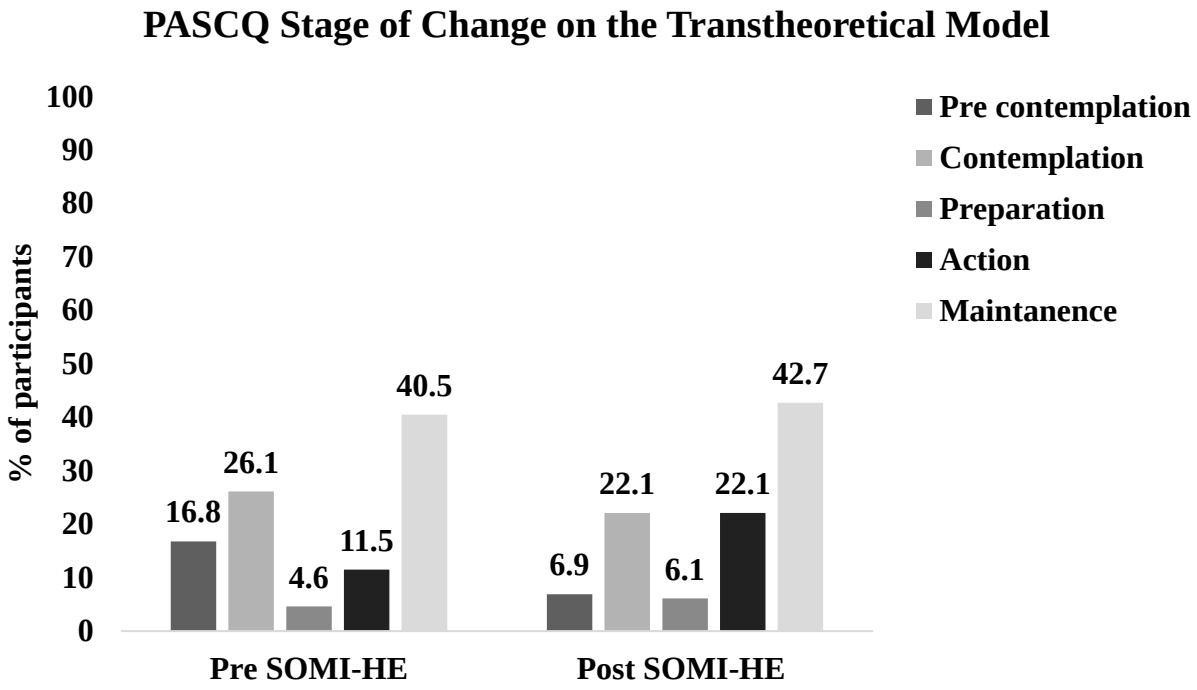


Figure 6.4 *Percentage of students on each stage of the TTM pre and post-SOMI-HE intervention.*

6.10.2 Wellbeing, Resilience, PA, and the SOMI-HE Intervention

A paired sample t-test was conducted to evaluate the impact of the SOMI-HE intervention on participants' perception of their wellbeing, resilience, and PA. There was a statistically significant increase in wellbeing scores using the WEMWBS from pre (M = 44.52 ± 7.53) to post (M = 48.28 ± 7.52), t (120) = −5.27, $p < 0.001$ (two-tailed). The mean increase in wellbeing scores using the WEMWBS was 3.76, with a 95% confidence interval ranging from −5.17 to 2.35. The BRS did not indicate a change over time (see Table 2). In relation to PA levels, the PACE+ results suggest that there is a statistically significant change in PA level between pre (M = 2.96 ± 1.6) and post (M = 3.5 ± 1.70), t (126) = 3.91, $p < 0.001$ (two-tailed). In all instances, the eta squared statistic (50) indicated a large effect size. A McNemar's test used to measure whether the intervention had a significant impact on increasing the number of participants meeting the recommended PA guidelines indicated that there was no significant change over time ($\chi 2$ (1, $n = 131$) = 2.72, $p < 0.096$) (2–sided)). To interpret the effect on participants' TTM stage of change toward PA participation, an additional McNemar's test showed that the two levels of lower and upper stages of exercise readiness within the TTM were different over time, ($\chi 2$ (1, $n = 131$) = 6.9, $p < 0.009$ (2–sided)), with a 13% increase in participants moving from the lower stages at pre-intervention to the upper stages of exercise readiness on the TTM at post-intervention.

Table 6.3. *Descriptive means for the Warwick Edinburgh Mental Well Being Scale, Brief Resilience Scale and PACE+ pre- and post-State of Mind Ireland—Higher Education intervention.*

	N	Pre SOMI-HE Mean Score (SD)	Post SOMI-HE Mean Score (SD)	t	df	Sig (2-tailed)
WEMWBS	124	44.52 ± 7.53	48.28 ± 7.52	−5.27	120	0.000 **
Male	37	47.20 ± 7.21	49.23 ± 6.72			
Female	87	43.47 ± 7.43	47.91 ± 7.82			
BRS	120	3.17 ± 0.68	3.25 ± 0.61	−1.75	119	0.083
Male	35	3.47 ± 0.58	3.40 ± 0.60			
Female	85	3.05 ± 0.69	3.19 ± 0.62			
PACE+	126	2.96 ± 1.6	3.5 ± 1.70	−3.91	125	0.000 **
Male	37	3.26 ± 1.54	4.08 ± 1.49			
Female	89	2.84 ± 1.6	3.29 ± 1.73			

Note: SD = standard deviation. ** indicates $p < 0.01$.

6.10.3 Gender Differences Wellbeing, Resilience, and PA at Pre-Intervention

An independent sample t-test was conducted to compare the mean wellbeing, resilience, and PA self-reported scores differentiated by gender at pre-intervention. A significant difference in the mean wellbeing scores for males (M = 47.205, SD = 7.21) and females (M = 43.47, SD = 7.44) using the WEMWBS (t (119) = 2.503, p = 0.014) was revealed. Similarly, a significant difference in the mean resilience scores for males (M = 3.47, SD = 0.58) and females (M = 3.05, SD = 0.69) the BRS (t (118) = 3.096, p = 0.002) was identified. There was no significant difference in the mean PA self-reported scores using the PACE+ (t (124) = 1.317, p = 0.190).

6.10.4 Demographic Determinants (Gender and Age Groups) of Changes in Wellbeing, Resilience Ad PA over Time

A series of 2 × 2 independent repeated measures ANOVA were conducted using the WEMWBS, the BRS and PACE+ to investigate if wellbeing, resilience and PA scores differ between the demographic determinants of gender and age (between-

subject factors) at the pre- and post-intervention stages. For each of the repeated measures ANOVA's, Mauchly's test indicated that the assumption of sphericity had been violated, X^2 (0.0) = 0.000, p = 0.0. Therefore, degrees of freedom were corrected using Greenhouse–Geisser estimates of sphericity (ε = 1.0). Among both of the demographic determinants for gender and age, the results show there were no significant differences to wellbeing over time in gender (F (1.0, 119.0) = 2.32, p = 0.130) or age (F (1.0, 119.0) = 0.051, p = 0.821). In relation to resilience, the results show that there was a statistically significant effect for time on gender, with females showing a greater increase in resilience levels (F (1.0, 118) = 0.59, p = 0.045), while there no significant increase in resilience among the age groups (F (1.0, 118.0) = 0.023, p = 0.879). There was no significant effect of time on gender for PA levels at pre- and post-intervention stages (F (1.0, 113) = 1.50, p = 0.224) or age group F (1.0, 124.0 = 0.010, p = 0.920).

6.10.5. Focus Group Findings

Five prominent core themes emerged from the qualitative data across each of the three time- points, which indicated that higher education settings are an essential environment for positive mental health promotion, specifically in responding to the needs of the young adult population.

(1) Stress stigma—a barrier broken by peer connection. At pre-intervention, participants expressed concern for the mental wellbeing of their peers, reporting that they observe high levels of stress and anxiety among their age group. Participants were worried about their low levels of mental health literacy, and therefore, felt burdened with concern for their efficacy towards helping someone else. One female postgraduate participant asserted: 'You can see in the course that there are lots of people who are struggling…'. At the post-intervention stage, the reflections made by the participants turn more inward. The participants discuss how the programme addressed the stigma related to personal stress and discussed the benefits of knowing that 'everyone has mental health'. Participants moved towards feeling less isolated in experiencing high levels of stress at post-intervention. When discussing the activities in SOMI-HE, a female postgraduate reflected: 'You can feel a little bit isolated I

think, you've got so much to do. It was really nice to see that everyone is kind of dealing with the same issues.' At the follow-up phase, participants recalled the relief of stigma associated with stress and discussed how the programme addressed their understanding of stress. Participants highlighted again that they had felt isolated, and once they spoke to their peers through the medium of the SOMI-HE intervention, they felt connected. Participants observed that you cannot see the signs of stress or poor mental health in yourself or others if you are not connecting. This was particularly evident in an exchange between a female and male peer at follow-up: The young female expressed: 'I thought I was the only one to feel anxious and stuff, now it's like wait, there are so many more people that feel that same way as me. I can actually open up a bit here now.' Her male peer agreed: 'You can actually... I even find this year in the course I do tell people I feel a bit anxious and I don't feel…I'm not ashamed of it.'

(2) The perceived barriers to positive mental health. At pre-intervention, participants frequently discussed barriers that include concepts such as mental health literacy, stigma towards mental illness, resilience skills, time, personal wellbeing negligence and academic pressure. At post-intervention, participants responded to a discussion on the programme outcomes. The barriers addressed included increased mental health literacy, reduced mental health stigma, enhanced resilience-building skills and self-awareness of their personal mental health or wellbeing. In a discussion on stigma, one participant summarises the type of barriers addressed by the intervention.

> *…mental health courses or wellbeing courses in today's world, they're all kind of focussed on speaking up and ignoring the stigma. I found this course actually gave you techniques of what you can actually do besides just talking out about it, and it actually showed you how to manage and what you should actually do besides just having the confidence to speak about it in the first place.*

The SOMI-HE programme activities provided participants with efficacy and skills to overcome their perceived barriers to positive mental health. One female participant

reported: ‘the programme helped me identify my own capacity and resilience… it helped me think about what I was going to do to get that stress level down’. At follow-up, the long-term perceived barriers addressed by the programme again included mental health literacy, stigma, resilience skills, self-awareness, and peer connection. Participants expressed having enhanced efficacy to make positive decisions for their wellbeing and how to respond to the wellbeing needs of others. One male postgraduate participant discussed how modelling compassion and promoting positive mental health can help individuals and the broader community, asserting:

> *I think it spreads around, say like the community, even if I was talking to one of the lads it would be “are you alright?” or “do you need a hand with this?” or whatever. So, it definitely feeds into other people if you start doing it. It’s a knock-on effect basically.*

(3) Help-seeking—A determinant not addressed by the SOMI-HE programme. In the original SOMI-HE programme design, help-seeking was understood as a determinant of positive mental health. SOMI-HE, therefore, had signposting components that directed participating students to college support services. At the pre-intervention stage, participants frequently discussed the burden of not being able to help their peers with mental health problems. At post-intervention, participants conveyed a continued lack of knowledge on the types of mental health supports, therapies, treatments, and their costs. Follow-up data reiterated this, with participants articulating they had no road map to follow in the event of needing to help others. For one participant, the absence of knowledge of how to support her peer outside of college dismayed her, as she revealed:

'

(4) A realization—exercise is good for you. During the pre-SOMI-HE discussion, PA emerges as the most commonly used method of stress management. Participants often reported being more physically active prior to attending college. Participants maintained that the barriers that prevented them from increasing their PA levels included effective time management, poor mental states, tiredness, and third-level academic workload challenges. A participant who had previously studied nutrition expressed: ‘diet and exercise would be a big part of my life, but I do think your

academic work will suffer…it's really hard to try to find the balance'. At post-intervention, participants communicated a change in efficacy toward their ability to be more physically active while at college. Participants made statements such as: 'You have to actually make time and to take responsibility and ownership'. At follow-up, the participants reported a lasting influence from the programme on their PA levels and efficacy toward increasing their PA. They discuss a positive effect from engaging in PA and reflected on the increased awareness of the benefits of PA for positive mental health. One male participant reflected:

> *I made more of an effort during the summer. Knowing how it (PA) affects your mental health, knowing that it will benefit you and you won't regret it…it's that realisation I suppose that only good things can come from it.*

Another female peer described recognising that PA is a tool to help her cope with stress, disclosing:

> *I think the whole exercise element really kind of hit me as well… I kind of realised that, no, I have to exercise to think clearly and all that… I thought I had to run away from my problems, I actually have to go for a run to actually face them.*

(5) The gap is essentially being provided with an opportunity to learn. It was identified at the pre-stage of data collection that participants felt they needed more support from higher education institutions to cope with the challenges and changes that come with attending college, upholding they 'don't think enough is being done.' Many participants identified that they needed to learn skills as they do not feel they adequately look after their mental health. A female undergraduate participant disclosed:

> *I find it extremely difficult to juggle everything together. If I was given the tools and maybe told maybe how I could do my work and then still have a social life and still be happy… I do get very, very stressed I must say. Before coming here, before this course, I used not to get stressed. I'd find myself getting very anxious I have to say*

During post-intervention data collection, participants reflected that not only did they report learning new skills, strategies and efficacy to discuss mental health, they also reported an increase in awareness of how they were not looking after their mental health previously. Participants identified that maintaining wellbeing and building resilience was something that you must work on. A male participant stated while reflecting on his mental health awareness that:

> *…you can lose track of sight, and you might lose focus… I just learned from it that you need to take a step back and think about yourself as well.*

Follow-up focus group discussions indicate there is a lasting positive effect from exposure to a positive mental health intervention, such as the SOMI-HE. Participants describe an increase in self-awareness and positive mental health strategies, including mindfulness, meditation, PA, connecting with others and using positive affirmations. One female postgraduate participant voiced her efficacy to maintain her wellbeing stating: 'I genuinely came out feeling ya, I've got this'.

6.11 DISCUSSION

This study aimed to examine the outcome of an evidence-based behaviour change intervention programme designed to promote the wellbeing, resilience, and PA levels of higher education students. It has been well documented that low levels of PA participation and poor mental health are an increasing concern among the emerging adult population attending higher education (Usher, 2019; Harding, Lopez, & Klainin-Yobas, 2019; O' Brien et al., 2019; Murphy et al., 2016). The need to promote positive health through intervention in higher education settings has been recognised as a viable and effective method to address the health concerns of this age group (Dalky & Gharaibeh, 2019; Harding et al., 2019; Winzer et al., 2018; Barrantes-Brais et al., 2016; Regehr, Glancy, & Pitts, 2013).

Evidence-based interventions designed using the IM protocol from Bartholomew Eldridge et al., (2016) have been recognised for assisting health promotors in developing the best possible intervention (O' Brien et al., 2020). Evidence emerging from the quantitative statistical and the qualitative focus groups

findings in the current research suggest that the SOMI-HE intervention engenders short-term and long-term effects within the variables of positive mental health. Through combining both qualitative and quantitative data methods, converging data results indicate complimentary positive mental health outcomes. Participants reported an increase in perceived levels of wellbeing and a reduction in barriers over time towards positive mental health. Barriers such as mental health literacy, stigma, resilience skills and self-awareness of personal mental health were identified as positive mental health obstacles reduced through engaging with SOMI-HE. These identified barriers are interrelated, and when weaved together, they highlight the co-dependency of intervention components, such as stigma, mental health literacy, resilience and wellbeing, similar to other intervention research (Barry et al., 2013; Reavley et al., 2012). In other Irish research, higher education students report that young people want informal mental health-promoting techniques and opportunities to talk about improving their mental health knowledge (Chambers et al., 2015). It seems plausible to assume that SOMI-HE is an effective medium that gives HE students that opportunity for developing their understanding of wellbeing and mental health knowledge, as it provides participants with a necessary platform for learning about mental health and resilience skills. Mental health systems have become imbalanced, with an overreliance on the treatment of mental health, forcing the 'prevention gap' (WHO, 2019; Jorm & Yap, 2019). SOMI-HE proposes as a method to close that 'gap' through using positive mental health strategies to reduce the incidence and prevalence of mental illness over the life span (G. F. Bauer & Hämmig, 2014).

Addressing stigma, and particularly 'stress stigma', was positively associated with positive mental health, as participants described how discussing mental health with peers helped them to feel less isolated and more connected. Social relationships are essential to promote wellbeing and act as a buffer against ill mental health (Aked et al., 2008). This finding emphasises how social connection was promoted through the intervention and gives prominence to the idea that individuals do not adapt to stress in isolation, instead they need a community when learning to build resilience to stress (Southwick et al., 2012). The issue of limited connection with peers reiterates how the environmental change that comes with attending higher education does not always lend itself to providing students with the essential social support

systems and personal resources that contribute to building resilience and maintaining wellbeing. Therefore, to effectively increase wellbeing while attending higher level education, it is essential to acknowledge and evaluate the importance of the broader social and environmental layers that determine positive mental health (Dahlgren & Whitehead, 2006). The SOMI-HE intervention was designed to primarily address interpersonal determinants of mental health; however, due to the interconnectedness of the layered components of the social ecological model, it would appear that their engagement with the programme was influenced at the micro layers of the environment through enabling social connection. Participants upon completion of the programme appreciated the occasion and embraced the intervention as a time to discuss mental health with peers. This accentuates the importance of having the capacity to address the broader social and environmental determinants of mental health for dynamic intervention design. For example, González-Zamar et al., (2020) argues that the impact of the learning environment and practical applications of learning in higher education can either benefit or impede upon students' sense of belonging and wellbeing. Therefore, to adequately enhance social wellbeing in higher education, organisations need to consider the impact of the educational space and learning methodologies that influence students' communication and interpersonal relationships. The programme, however, had little or no impact on the broader social and environmental determinants of mental health, as the implementation of the programme was subject to the permission of an agent in the broader layers of the student's environment. This emphasises the role of pursuing collaboration and consensus within an institution for meaningful change and indicates that to truly maximise the outcomes of positive mental health interventions, they must be delivered and recognised at a structural level or a whole setting approach, as endorsed by other experts in the field (Winzer et al., 2018; Hill, O'Mahoney, & Yorke, 2017; Thorley, 2017). Inaccessibility to influence the broader layers of the programme are deemed a weakness of the intervention study. A strategic lead responsible for implementing effective interventions are necessary for successful government and policy level 'buy-in' within the university context.

Diverging results indicate there was no significant impact on students perceived level of resilience (the ability to bounce back from adversity) using the BRS (Smith et al., 2008), while contradictory focus group findings identified an

increase in resilience building skills, at both short and long-term phases. Several factors need to be considered to explain these findings. Firstly, it could be argued that time is a typically influential factor in acquiring any new skill. Consequently, it is challenging to measure outcome resilience levels as part of a short-term data collection strategy (Joyce et al., 2018). This consideration has also been found in previous studies (Breslin et al., 2018). However, in this instance it could also be a question of accuracy of what we are measuring. Resilience can be conceptualised and measured as either an *outcome* in the face of adversity or a *process* of cognitive, emotional reactions and behaviours that facilitate both resistance to and recovery from stress (Southwick et al., 2012). It is possible that the BRS outcome-oriented measurement of resilience does not reflect the underlying assumption of the SOMI-HE intervention that positive mental health can be improved and that mental fitness can be developed to achieve further growth and optimal functioning (Robinson et al., 2015). Afterall, building resilience is considered a dynamic biopsychosocial process (Southwick et al., 2014). Therefore, to reduce the measure of resilience to a single outcome of resilience level rather than resilience processes fails to recognise the broader factors associated with resilience. An individual's level of resilience is circumstantial and determined by the available resources and skills that drive them to learn, grow and adapt to their experiences and environment (Robinson et al., 2016; Southwick et al., 2014). Therefore, resilience cannot be measured in isolation – it needs to be put into action with the focus not on resilience outcome level per se, but on the capabilities and resources that are associated with the outcome of resilience (Martin-Breen & Anderies, 2011). It is advantageous to accurately assess resilience intervention studies, by employing a combination of measures of resilience to 'provide clarity regarding which facets of resilience are related to psychological health and are most sensitive to change' (Joyce et al. 2018, p. 7).

The association between mental health help seeking and mental health literacy has been identified in previous studies (Jorm, 2012; Kelly et al., 2007). Teaching students about the benefits of mental health treatment may be an effective strategy to increase the prevalence of help-seeking behaviours (Vidourek & Burbage, 2019). Additionally, studies suggest that interventions that address mental health literacy also need to address stigma, rather than simply education about depression symptoms (Reavley et al., 2012). Stigma is a particular component of the SOMI-HE

programme that was effectively influenced by the intervention design process. However, despite these positive findings, help-seeking was identified as an unsuccessful outcome of the programme. It emerges that sign-posting components of SOMI-HE (such as consulting your GP) that ought to enable effective help-seeking were identified as an unsuccessful outcome of the programme. Results suggest that the programme did not give students a recovery 'road map' towards the various types of mental health professional support options, and costs outside of college. Students expressed a continued burden and dismay to adequately guide their peers to mental health recovery services. This finding is most likely an issue that can be identified as a shortcoming of mental health service provision that is much larger than that of the SOMI-HE intervention. Despite advances in the youth mental health services in Ireland, a structure that enables swift access to services and supports is still lacking (O'Reilly et al., 2015). These finding in the SOMI-HE research are in line with the first principal of the recent Global Framework for Youth Mental Health which emphasises the need for rapid, easy and affordable access to care to ensure that a young person in need of youth mental health services can gain access to a service without referral or 'gatekeepers' to cross. In Ireland, the journey has begun to remove GP's and emergency departments as the gateway entry to mental health care. McMahon et al., (2019) acknowledge that mental health services and supports in Ireland remain arduous, however they propose that in the next stage of development in youth mental care and support that a single free, confidential access point is needed to provide rapid and appropriate signposting for routine, urgent and emergency referrals. Until this time arrives, this is a concerning misalignment between the promoting help-seeking components of the SOMI-HE intervention and the actual availability of access to help.

Although the SOMI-HE programme did not significantly increase participants level of PA to the point of reaching the recommended weekly guidelines (150 minutes per week), there was a significant reported rise in PA minutes per week. Small changes in PA (even less than half of the current recommended 150 minutes per week of MVPA) can lead to marked and clinically relevant changes in health status (particularly in inactive populations) (Rhodes et al., 2017). Additionally, a significant proportion of participants moved from the lower stages of the TTM at pre-intervention to the upper stages of the TTM at post-intervention,

suggesting through using a multi-theory approach outlined by IM, the SOMI-HE intervention impacted participants motivational readiness for change in PA effectively (Buchan et al., 2012; O' Brien et al., 2020). When merging these PA findings with the post-intervention qualitative data, there was a positive change in student efficacy toward increasing their PA levels. Specifically, participants transitioned from framing time as a barrier for PA participation (pre-intervention) to acknowledging time barriers can be reduced by deliberately allocating the time to take part in PA. Self-efficacy found through PA interventions using the TTM to explain individual behaviours has been identified as a factor that contributes to the transition from the preparation stage to the action stage of the TTM among university students (Jeon et al., 2014). This reflects that the behaviour models used to inform the practical strategies in SOMI-HE were used effectively. Follow-up findings showed a continued long-term awareness and positive effect from engagement in PA as PA was conveyed as a mechanism to cope with life's stressors. Both psychological and exercise interventions show efficacy in improving wellbeing in college population studies (Barrantes-Brais et al., 2016). It is plausible to assume that an evidence-based intervention, such as SOMI-HE, designed by combining these two mechanisms (positive mental health and PA), is a complementary approach to increase third level student wellbeing

It would appear from the quantitative findings that the female proportion of the sample reported the lowest levels of wellbeing and resilience at pre-intervention. Similarly, other Irish research indicates that female university students report lower levels of wellbeing and resilience than males (Dooley et al., 2019; Karwig, Chambers, & Murphy, 2015). When investigating the demographic determinants (gender and age) contributing to change in wellbeing, resilience and PA over time, it would appear from the quantitative findings that the female proportion of the sample reported the most significant increase in resilience only. Gender specific effects are frequently reported in intervention studies, often with a more positive effect on females than males which may warrant further investigation into the efficacy of gender specific components within interventions (Barry, Clarke, Jenkins, & Patel, 2013).

6.12 LIMITATIONS

While the findings indicate the potential of the SOMI-HE mental fitness intervention, several limitations are noted. Firstly, the subjective nature of wellbeing is difficult to capture (Linton et al., 2016) and self-report PA tools are vulnerable to inaccuracies and subjectivity, such as social desirability bias, and external factors, such as seasonal variation, and questionnaire complexity (Sylvia, 2015). Nevertheless, the psychometric instruments used in this study were validated among similar populations samples and contexts. The participants provided their short-term responses to the WEMWBS, BRS, PACE+ and PASCQ scales at only two-time points, as intervention programmes are often limited to two quantitative data collection time points (Alessandri et al., 2017). Limited resources and access to groups of students restricted the opportunity to achieve and measure repeated outcomes, despite multiple attempts over two years. For this same reason, the 'dose' of the intervention was small, however, interventions can range from a short one-day programme (Breslin et al., 2018) to eight weeks (Bolier et al., 2013). Bolier et al. (2013) maintain that longer interventions have greater outcomes. Therefore, if permissible in the future, the exposure time to the SOMI-HE intervention components would be extended.

Gender distribution was weighted heavily by a majority female cohort, this is typical of gender disproportion in the study and the general profession of teaching in Ireland. Finally, there was no control group accessible in the study. A control group allows a researcher to draw a conclusion that any change that is identified in the intervention group is due to the exposure to the intervention being studied, rather than other factors unrelated to the study (Paulus et al., 2014). Future research design will incorporate randomized control groups, a third point of data collection, and additional scales measuring processes of resilience or mental fitness, as described by Robinson et al. (2015).

6.13 CONCLUSION

Despite these limitations, this study makes an important contribution to positive mental health promotion programme planning and implementation research. The

planning process known as Intervention Mapping, as described in O' Brien et al., (2020) has resulted in a novel and extensive mental fitness promotion intervention, that posits to decrease stigma, increase wellbeing, peer connection, resilience skills, mental health literacy, PA levels and motivational readiness for PA change.. Findings indicate that some intervention components, such as help-seeking require augmentation. The current positive mental health intervention research process intends to take a cyclical approach to future research design and programme development. The findings of the current research will inform future programme adaptions and evaluation methods.

Promoting positive mental health requires senior 'buy-in' and direction (Thorley, 2017). Dissemination of such a programme alone depends on the layers of the social and environment, which relies on the approval of institution leadership; or individuals who 'champion' research in positive mental health for communities (O' Brien et al., 2020). Effective health promotion programmes will have little impact if they are never used. Therefore, in a situation where an organisation is in a position to adopt the programme, a systematic plan of implementation would be essential for sustained and impactful adoption (Bartholomew Eldridge et al., 2016). Successful dissemination of such interventions that reach the 'real-world' setting require implementation frameworks, such as RE-AIM (Reach, Effectiveness – Adoption, Implementation, Maintenance) (Bartholomew Eldridge et al., 2016; Glasgow et al., 2019). Continued research will take such steps, as outlined comprehensively by IM (Bartholomew Eldridge et al., 2016).

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Chapter 7

Discussion and Conclusion

7.1 OVERVIEW OF THE THESIS

The purpose of the SOMI-HE study was to:

1) Examine the levels of wellbeing, resilience and PA of emerging adults in higher education.
2) Develop an evidence-based intervention specifically for the target cohort.
3) Evaluate the outcomes of engagement with the intervention.

The SOMI-HE research is a response to the well-documented presence of mental health problems and low levels of PA participation found among emerging adults in Ireland, and abroad (Cannon et al.2013; Dooley & Fitzgerald, 2012; Murphy et al., 2016). The purposefully developed SOMI-HE intervention was designed to address the mental health needs of emerging adults in higher education, and embraces an approach that values the association between positive mental health and PA participation (Mikkelsen, Stojanovska, Bosevski & Apostolopoulos, 2017). PA is seen as a useful vehicle to promote other aspects of positive mental health, particularly through developing social connections essential for wellbeing (Aked, Marks, Cordon & Thompson, 2008). Positive mental health and PA interventions come in their many forms - either singularly addressing mental health or PA, or through a combination of both (Barrantes-Brais, Sánchez-Ureña & Ureña-Bonilla, 2016). In any aspect of health promotion, the most effective interventions are evidence-based, theoretically supported, and designed through the voices of multiple and relevant stakeholders (Bartholomew Eldridge, Markham, Ruiter, Gerjo & Parcel, 2016).

In Chapter 4, the objective of the baseline study was to contextualise the need for mental health and PA interventions among the emerging adult population in higher education. The specific study aim was to evaluate the levels of wellbeing, resilience and PA participation amongst Irish pre-service teachers in a higher education setting. The chapter found that pre-service teachers in higher education have lower levels of wellbeing and resilience than the population norm, with almost 75% of the sample not meeting the recommended 150 minutes of PA participation per week. The study highlights how higher education students represent a distinct population in regards to mental health concerns and needs (Hope, Dring & Dring, 2005; Karwig, Chambers & Murphy, 2015). The study further discusses how the developmental stage of

emerging adulthood can make many vulnerable to facing mental health problems (O'Connor et al., 2014). HEIs are flagged as having a particularly advantageous position to educate, protect and prevent vulnerability of mental illness and negative mental health experiences (Holdsworth et al.,2017).

The baseline study also highlighted an association between positive wellbeing and PA participation. However, it was observed that those identified as being sufficiently active had lower levels of resilience, when compared to those who were insufficiently active. This emphasises the combined and dynamic biopsychosocial factors which contribute to an individual's level of resilience, which can change over our lifetime (Lupien et al. 2009). The study reinforces that factors such as social engagement, self-esteem, self-efficacy, and the belief in one's capabilities may be the more probable mediators associated between PA participation and mental health (Gaudlitz et al. 2013). While it is well-established that exercise may help increase resilience and wellbeing (Childs and de Wit 2014; Hegberg and Tone 2015), research maintains that resilience-building is a multi-dimensional process, where one harnesses various strategies and resources to sustain wellbeing (Southwick et al. 2014).

In addition, the baseline study draws attention to the particular sample of pre-service teachers participating in the research, as it emphasises that this cohort are at a critical time of transition into a profession where self-awareness of wellbeing is required. Teachers that understand how to increase their personal wellbeing have a tremendous capacity to further promote positive mental health among their students. 'Well teachers, promote well students' (McCallum & Price, 2010, p. 20). Through the medium of promoting teacher wellbeing, interventions can begin to effect the broader social and environmental influences of mental health of the students. Teachers that understand the multi-dimensional factors that contribute to positive mental health will endeavour to promote and model wellbeing for younger generations, while also learning how to maintain healthy and happy workplace practices. The outcomes of this first study illustrated the need for continued research in the effective development of a positive mental health intervention to increase student's wellbeing, resilience and PA in higher education in Ireland.

In Chapter 5, the researcher took a rigorous approach to data collection and theory selection to inform the development of the intervention. With many studies

reiterating the positive effect of PA for positive mental health (Eime et al., 2013; Malcolm et al., 2013; Martin & McCann, 2005; Murphy et al., 2018), the intervention was designed to enhance both aspects of wellbeing – mental health and PA – through using positive mental health components and behaviour change techniques. The purpose of this study was to document the evidence-based process and protocol associated with the IM technique (Bartholomew Eldridge et al., 2016). Through the research-informed process of IM, the alignment of the SOMI-HE programme to the objectives, methods, and evaluation strategies, allowed for the creation of a robust programme (*see Appendices K to O*).

The most prominent modifiable behaviour determinants for mental health and PA, selected as part of this study, include knowledge, attitudes, barriers, skills, motivation, outcome expectations, self-efficacy, and the perceived environment. For effective health interventions, researchers must acknowledge that humans and human behaviours are part of a complex system (Kok, 2014). Subsequently, there are specific limitations in the effectiveness of the SOMI-HE intervention. SOME-HE is limited to addressing the personal determinants of postive mental health only, therefore, the intervention cannot address the broader social and environmental conditions that contribute to meaningful and sustainable behaviour change. Instead, the intervention purposes to teach students how to promote positive social and environmental influences on their mental health through behaviour change techniques that aim to prompt students toward healthier behaviours.

IM proved to be an effective protocol, as it compelled the researcher to use collaborative and innovative approaches in creating a final educational tool designed to engage learners. Utilising IM resulted in the development of a novel and effective positive mental health promotion intervention. The process of using IM, however, also indicated to the researcher that an effective environment, or organisational level response, for higher education students is essential to integrate the intervention within university/college courses. The study described how the process of designing SOMI-HE through using IM is firmly rooted in a theoretically designed and research-informed approach. Despite the extensive and research-informed stages using IM, the ratio of time spent developing the SOMI-HE programme, in comparison to the dosage and delivery time is exceptionally disproportionate in the context of this research. IM is therefore particularly suited to interventions securely

in position to acts as an integral component of university strategic planning and policy. Intervention 'buy-in' from senior leadership is essential for successful dissemination (Murphy, 2017; Thorley, 2017).

Chapter 6 examined the outcomes of the SOMI-HE intervention programme, which was designed to promote the wellbeing, resilience and PA levels of higher education students after two weeks (post) and seven months (retention). The study was completed with an emerging adult cohort in higher education over two years with postgraduate students from the same degree programme. The outcomes of the programme were both promising and informative for the future development of mental health intervention programmes and research.

Firstly, the need to promote positive health through intervention in higher education settings has been recognised as a viable and effective method to address the health concerns of this age group (Dalky & Gharaibeh, 2019; Harding et al., 2019; Winzer et al., 2018; Barrantes-Brais et al., 2016; Regehr, Glancy & Pitts, 2013). Findings suggest that the SOMI-HE intervention increased the short-term perception of wellbeing, self-report PA levels, and PA motivational readiness for change, while findings also observed an increase in students' long-term wellbeing, resilience skills, mental health literacy, exercise self-efficacy, and appreciation for the benefits of PA. Students reported a reduced sense of the barriers to positive mental health. They expressed achieving a more profound comprehension of their personal capacity for stress and an ability to identify their resources of resilience after completion of the SOMI-HE programme.

There was no significant impact on students perceived level of resilience (the ability to bounce back from adversity (Smith et al., 2008) reported in the short-term quantitative findings. Resilience remains to be understood as a multi-dimensional concept and there are various social and environmental factors that contribute to building resilience which simply lie outside the reach of the SOMI-HE intervention. As pointed out, it could be argued that time is a typically influential factor to developing any skill, and therefore it is difficult to measure an increase resilience levels as part of a short-term data collection strategy (Joyce et al., 2018). Moreover, it must be acknowledged that building resilience is considered a dynamic biopsychosocial process (Southwick, Bonanno, Masten, Panter-Brick & Yehuda, 2014), and factors associated with resilience, particularly extend to the social

surroundings (Keyes, 1998). If SOMI-HE is to effectively increase student resilience, the broader social and environmental influences (social and community networks and living conditions) on health must be recognised as central to a students' capacity to increase resilience. In order to do this, interventions must be delivered and recognised at a structural level or a whole setting approach (Hill, O'Mahoney & Yorke, 2017; Thorley, 2017). For example, unintendedly the intervention addressed one social influence on mental health – friendship. Individuals who adapt to stress do not do so in isolation; they do so with available resources, other human beings (Southwick, Litz, Charney & Matthew (2012). Engagement with the SOMI-HE intervention provided students with an opportunity to connect and address 'stress stigma' (the fear of admitting isolation while experiencing stress and anxiety). Participants formed friendships through completing the behaviour change activities in the SOMI-HE intervention and expressed value in being provided with the space to learn about mental health and build social connections together. Therefore, the provision of the SOMI-HE intervention alone begins to address the broader levels of socio-environmental determinants of mental health and multidimensional nature of resilience. The intervention moved beyond the personal and individual behaviour determinants of health as it emphasised and demonstrated to students that resilience can be found through connecting with peers. It highlights that higher education settings are a key context for promoting positive mental health and the actions and provisions they take can have enormous potential to enhance and increase students' resources of resilience (Barry, Clarke, Petersen & Jenkins, 2019).

The research also showed room for intervention improvement in terms of mental health literacy (an ability to recognise specific mental illness, risk factors and causes, self-treatments and seek available professional help) (Jorm, 2000). Students maintained they had a better understanding of how to protect their mental health, identify mental health problems in themselves and others, and find sources of mental health support. However, the programme did not give students a recovery road map that clearly directed them towards the various types of mental health professional support options, therapies, and costs outside of college. It is essential that future programme development in the area of mental health literacy is augmented to increase the knowledge, beliefs, and attitudes towards the positive outcomes from

help-seeking behaviour among higher education students and the peers (Jorm, 2012; Reavley et al., 2012).

7.2 SOMI-HE RESEARCH STRENGTHS

Throughout this study, the researcher aimed to remain self-aware, reflexive, and openly interpretive to the themes identified in the data. The methodologies were implemented with continued awareness of the researcher's and the participants' positionality (Charmaz, 2008). When interpreting data, it was fundamental to the researcher to objectively focus on developing an intervention with integrity to investigate and evaluate whether the SOMI-HE intervention is a method that would effectively address the targeted mental health needs of young adults at the centre of the research. Imperfections exist in the study, however, meticulous planning and stakeholder consultation are evident throughout each stage of the research process.

Quantitative methodology

Chapter 2 and Chapter 3 present an openness to learn and to adopt methods most suitable to the intervention research by carrying out comprehensive reviews on appropriate measurements tools and techniques. The tools selected to measure wellbeing (WHO-5 and WEMWBS), resilience (BRS) and PA (PACE+ and PASCQ) were a combination of subjective self-report instruments deemed reliable and valid in other research similar to the context of the SOMI-HE study. Each tool demonstrated excellent internal consistency, as described in the methodology chapter. There is no gold standard to measure resilience and limited cosistant evidence prescribes how subjective wellbeing should be measured (Windle, Bennett & Noyes, 2011). The tools used in this research focus on the positive aspects of mental health and are paired carefully with the concepts of each component used in the intervention and the concept of positive mental health.

Self-report PA questionnaires are regarded as an essential and economical tool to assess and survey the risk of illness in heterogeneous populations, to examine, evaluate and compare the effects of interventions (Helmerhorst et al., 2012). The self-report PA questionnaire selected for PA measurement in the current study has been validated as a short questionnaire suitable for assessing attainment and non-

attainment of the PA recommendations among Irish youth, with higher validity in females and with an increase in age (Hardie Murphy, Rowe, Belton & Woods, 2015).

Qualitative methodology

Using a mixed-method research design is another pivotal strength of this research. Mixed methods allow researchers to explore various perspectives and relationships that exist between the research questions in health studies (Shorten & Smith, 2017). Qualitative data made the quantitative data purposeful as it allowed for an interpretation of the evidence once the data was merged. Additionally, the validity of the quantitative findings was sought through triangulation, which intended to strengthen the research conclusions. A mixed-method approach in intervention research is ideal for understanding 'the context in which evidence-based interventions are implemented and is the key to understanding intervention results and the success or failure of implementation efforts' (Zhang, 2014, p. 32). In this research, both methods of data collection served the future of this research with excellent direction and informative strategies for improvement.

Theory and evidence planning approach

The selected planning health promotion protocol, intervention Mapping (IM), played a significant role in anchoring the design of the SOMI-HE intervention research. IM ensured that the design of the SOMI-HE intervention was systematically informed by theory, evidence and relevant stakeholders.(Bartholomew Eldridge et al., 2016). Bartholomew Eldridge and colleagues (2016) celebrate that good theory guides effective action. Therefore, theory was used to understand and repond to the mental health needs of young adults attending higher education. Furthermore, IM is an iterative process, which made the researcher continually aware of the consequences of decisions made in relation to the specified objectives. The process ensured that there were no inconclusive decisions made in the research and programme design, by securing the alignment of objectives, theories, practical strategies, and evaluation (Kok, Schaalma, Ruiter, Van Empelen & Brug, 2004).

Trustworthiness

Researchers must demonstrate that qualitative research has been conducted in a rigorous, methodical and meaningful manner through recording, systemising and disclosing the method of analysis (Nowell, Norris, White & Moules, 2017). Thematic analysis is used to identify themes, organise, describe and interpret qualitative data in rich detail (Braun & Clarke, 2006). A procedure provided by Bree and Gallagher (2016) was used to process the thematic analysis using Microsoft excel. Bree and Gallagher (2016) provide researchers with a physical process of managing data analysis that reflects the thematic analysis framework, previously described. The process is considered a scientific tool to assist the thematic analysis and triangulation of qualitative data collected by organising, coding and classifying data through using colour and sorting features of Microsoft Excel (Maguire & Delahunt, 2017). This method of data analysis emphasises the importance of increasing the validity and reliability of findings through rigorous analysis of data. A step by step example of pre-SOMI-HE data analysis using thematic analysis and Bree and Gallagher's Excel procedure is provided in the Appendices (*see Appendix J).*

7.3 SOMI-HE RESEARCH LIMITATIONS

Despite the many positive outcomes identified in the current study, there are some drawbacks and limitations to consider for future research in the field.

Quantitative methodology

There are different types of enquiry into wellbeing and resilience; therefore, researchers need to be cognisant of selecting the right tool (Linton, Dieppe & Medina-Lara, 2016; Taggart & Stewart-brown, 2015; Windle et al., 2011). The divergence between the quantitative and qualitative outcomes in relation to resilience prompts the researcher to consider if the right measurement tool (BRS) used in the study accurately captured the impact of the programme on student resilience. The BRS scale was selected to measure the student's ability to bounce back from adversity. However, it was likely to have been implemented too soon after the intervention to measure if there was any impact on student resilience levels. It could be argued that time is a typically influential factor in acquiring any new skill.

Consequently, it is challenging to measure outcome resilience levels as part of a short-term data collection strategy. To add to the discussion on the multi-dimensional concept of resilience earlier in the study, other authors argue that the BRS does not include the role of other critical protective factors and resources in resilience, such as family and community (Windle et al., 2011). A solution for future research limited by time constraints and access to students would include using an additional resilience scale, which focuses more on the protective resources that facilitate resilience rather than a resilient level outcome. A potential scale is recommended in the following section i.e. the future directions. In relation to PA measurement, even the most advanced PA measurement tools used in health promotion have their limitations (Knowlden, 2015). The PACE+ and the PASCQ have been validated in other research. However, a PA researcher must always keep in mind that self-report PA questionnaires are vulnerable to measurement inaccuracies, subjectivity, social desirability bias, and external factors, such as seasonal variation, and questionnaire complexity (Sylvia, 2015).

This brings us to consider a second noteworthy limitation of the quantitative data. The timeframe between pre and post data collection was limited to four weeks or two weeks after the intervention. The researcher opted for a two-week follow-up with the accessed sample in an effort to reduce additional variables that could affect the already subjective measurement methods. The academic semester is short (12 weeks), therefore, repeated wellbeing and PA measurements have fewer windows of opportunity for gathering data that is not subjected to specific changes, e.g. exam time at the end of the semester. The data for the current study were collected in the middle of the spring semester. Other research interventions vary in their pre- and post-intervention data collection interval of time collection points from immediately after (Breslin et al., 2018), to one week (Doyle et al., 2017) to up to three months (Bolier et al., 2013).

Finally, there was no control group accessible in the study. A control group allows a researcher to draw a conclusion that any change that is identified in the intervention group is due to the exposure to the intervention being studied, rather than other factors unrelated to the study (Paulus et al., 2014). The current positive mental health intervention research process intends to take a cyclical approach to future research design and programme development. The findings of the current

research will inform programme adaptions and the research design will incorporate randomised controlled trial groups, a third point of data collection, and additional scales measuring the processes of resilience and mental fitness, as described by Robinson et al. (2015).

Compliance

Compliance was always a concern in the current study, and attaining a third point of quantitative data collection was a concern from the early stages of planning. This was due to three reasons. First, the third time point of data collection was significantly later in the year when the students had begun a new term of semester. Too many variables existed at this time point of quantititive data collection that would impact the reliability of the findings. Secondly, a restriction of access to the sample prevented the researcher from securing the quanititve data element at a more immediate time point – the academic term was short (12 weeks), and the SOMI-HE research could only be implemented in the time frame generously provided by a 'champion' of the research within the School of Education in the University. Thirdly, from an ethical perspective, the SOMI-HE intervention research serves to act as support to the welbeing of students in higher education. Participants in the study were aready under significant time-table demands and stress. Cognisant of the previous two rationals, it was decided that additional absorbtion of the participants already constraint schedule was deemed potentially unnecessarily stressful on students. Therfore a third point of data collection was unfit for this early design of the SOMI-HE research.

Postgraduate students were the only participants in this research. This was due to one reason only. Six other attempts to secure department data collection and intervention roll-out dates with undergraduate students across the college had failed over two years. College department compliance was frequently abandoned as scheduling students to access the programme for four hour over two weeks meant specific programme level 'buy-in'. Agreed consensus from various department staff was consequently unachievable.

7.4 FUTURE DIRECTIONS

In the procedure of evaluating the outcomes of the SOMI-HE programme, the researcher was receptive to critical feedback which would inform future programme development. Qualitative data identified that participants sought additional knowledge in the realm of mental health literacy. Such feedback will be responded to and the design of this segment of the programme will be augmented to enhance the programme outcomes. The researcher proposes to design a help-seeking algorithm that will indicate to students possible formal and informal mental health support service routes for varying degrees of mental health problems.

If permissible, the intervention would also be extended and longer time would be provided to students to engage in positive mental health strategies and behaviour change techniques. Longer interventions have greater outcomes (Bolier et al., 2013).

Effective health promotion programmes will have little impact if they are never used. Therefore, in a situation where an organisation is in a position to adopt the programme, a systematic plan of implementation would be essential for sustained and impactful adoption (Bartholomew Eldridge et al., 2016). In such an instance, the researcher would have to return to the IM step five. Step five ensures that health promoters effectively develop a programme implementation intervention plan using existing intervention implementation science. In step 5 of IM, planners will want to:

a) Identify programme adopters, implementers and maintainers.
b) State outcomes and performance objectives.
c) Construct matrices of change objectives for implementation interventions.
d) Design implementation intervention.

When scaling up, intervention planners are recommended to use dissemination and implementation frameworks, such as RE-AIM (Reach, Effectiveness – Adoption, Implementation, Maintenance) to influence and measure the impact of the programme and its reach in the 'real-world' setting (Bartholomew Eldridge et al., 2016; Glasgow et al., 2019) (*see Figure 7.1*). 'RE-AIM is a well-known and easy to explain organising framework or "roadmap" for planning, especially with regard to encouraging consideration of context and setting, and implications for what works in "real life" (Kwan et al., 2019, p. 7). The use of RE-AIM is to encourage all those involved in intervention planning, evaluating, funding and policy making to pay

more attention to essential programme elements that can improve the sustainable adoption and implementation (Glasgow et al., 2019; Glasgow, Vogt & Boles, 1999). It is a framework that has been used by programme planners to guide and define decisions and targets for intervention impact and reach in university settings (Kwan et al., 2019).

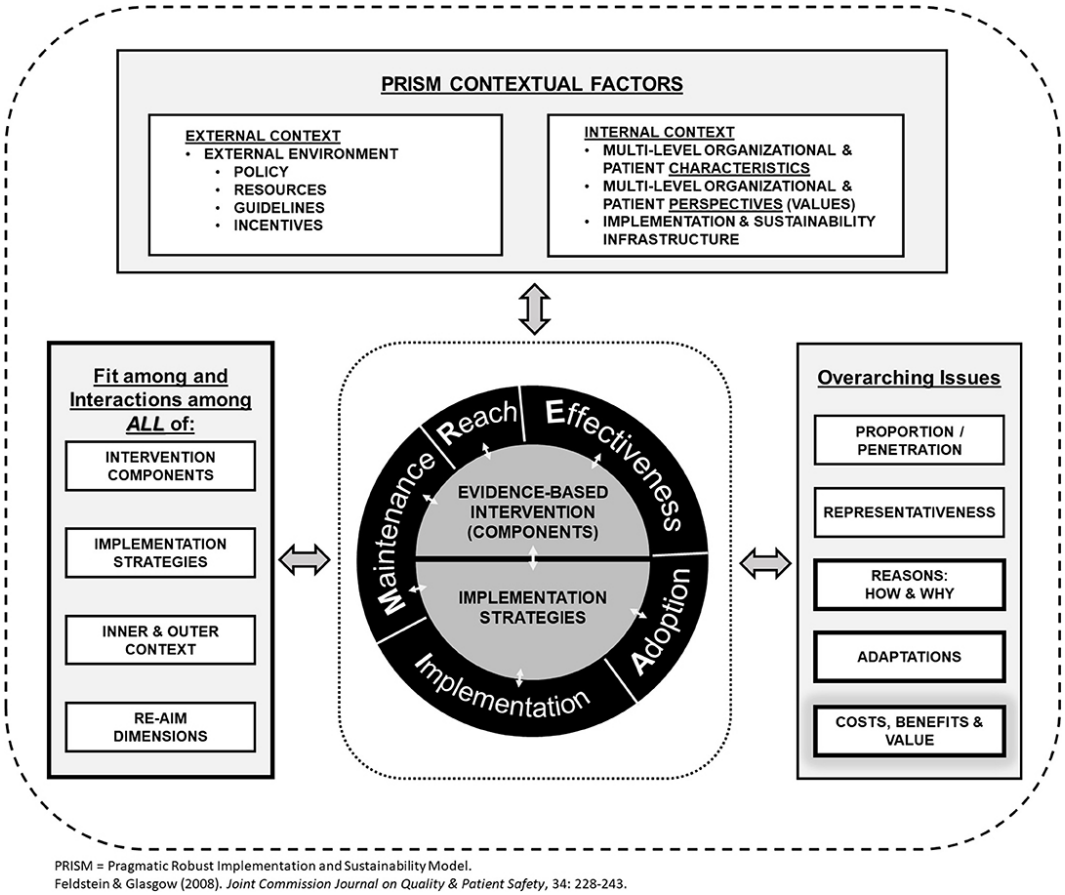


Figure 7.1 – Revised, enhanced RE-AIM/PRISM 2019 model.
Taken from: Glasgow et al., (2019)

The next cycle of programme implementation and evaluation will seek to include an additional resilience measurement tool and a third point of data collection. A potential resilience measurement tool includes The Connor-Davidson Resilience Scale (CD-RISC-25) (Connor & Davidson, 2003). The CD-RISC-25 is potentially more appropriate to use alongside the BRS scale to measure factors and resources such as personal competence, trust in one's instincts, tolerance of negative affect, positive acceptance of change, secure relationships and control. The CD-RISC-25 has been found to be an appropriate scale to measure mental fitness, as it measures

the presence of an individual's resilience resources and skills, rather than one's perceived resilience levels (Robinson, Oades & Caputi, 2016).

Additionally, using a PA self-efficacy tool from Bandura (2006) scale may be a useful method to inform and interpret how the intervention can increase PA self-efficacy among participants in both the short- and the long-term.

The SOMI-HE study was carried out with the intention to create a mental health resource that would assist young people in protecting and promoting positive mental health. The concept of positive mental health has the potential to be a part of a response to the mental health needs of young people in Ireland and globally. The research has highlighted that the social and environmental influences of health cannot be ignored, and that positive behaviour change can only occur when the environment allows it to. Everyone has mental health; therefore, positive mental health is in everybody's interest.

7.5 IMPLICATIONS FOR POLICY AND PRACTICE

In recent years, mental health policies, research and practices have been moving in a different direction, specifically with a new positive mental health agenda both nationally (Department of Health and Children, 2006; Health Service Executive, 2018) and internationally (WHO, 2013; WHO, 2005). Implications of the SOMI- HE intervention research aligns closely with three layers of policy and practice; internationally, nationally and locally.

International level policy:

Firstly, by adopting a mental health promotion approach, the SOMI-HE intervention supports the basic framework of health promotion, as outlined in the Ottawa Charter (WHO, 1986). In the Ottawa Charter for Health Promotion, the principles of health promotion practice are based on an empowering, advocating, participative and collaborative process, which aims to create supportive environments and increase control over health and its determinants (WHO, 1986). Globally, it is now recognised that to respond to the burden of mental illness, treatment approaches alone are not sufficient (Barry et al., 2019; Jorm & Yap, 2019; WHO, 2016). The WHO have advocated since 2005 that promoting positive mental health is part of a

salutogenic approach to mental health as it is efficacious in engaging population groups in mental health promotive behaviour that limit risk factors (WHO, 2005). The international WHO Mental Health Action Plan 2013-2020 envisions:

> *'a world in which mental health is valued, promoted and protected, mental disorders are prevented, and persons affected by these disorders are able to exercise the full range of human rights and to access high quality, culturally-appropriate health and social care in a timely way to promote recovery, in order to attain the highest possible level of health and participate fully in society and at work, free from stigmatization and discrimination' (WHO, 2013, p. 9).*

The WHO 2013-2020 action plans aims to:

1) Strengthen effective leadership and governance for mental health.
2) Provide integrated and responsive mental health and social care services in community-based settings.
3) Implement strategies for promotion and prevention in mental health.
4) Strengthen information systems, evidence and research for mental health.

The proposed actions to meet these aims must include a multi-sectoral strategy using universal and targeted interventions for promoting mental health and preventing mental illness and suicide through reducing stigmatisation, discrimination and human rights violations. Mental health promotion interventions are recommended to be individualised and 'responsive to specific vulnerable groups across the lifespan and integrated within the national mental health and health promotion strategies' (WHO, 2013, p. 17). The SOMI-HE intervention is a potential action strategy appropriate for implementing community-based strategies for promotion and prevention in mental health (WHO, 2019). Although universities are not explicitly listed as a community platform for mental health promotion by the WHO (2019), school-based settings are listed, and therefore it can be assumed that these environments can include education contexts, inclusive of HEIs.

National-level policy:

There is no one size fits all action plan that is suitable to all countries. Therefore, each country's government has been advised that ministers must take a leadership

role to adapt the Action Plan to their specific national circumstances (WHO, 2013). Nationally, the SOMI-HE intervention is associated with policies in both mental health and PA participation in Ireland. In 2006, A Vision for Change was published as a mental health framework ‘for building and fostering positive mental health across the entire community, and for providing accessible, community-based specialist services for people with mental illness' (Department of Health and Children, 2006, p. 8). The Vision for Change policy has had a slow uptake, mainly due to the unassigned resources for successful implementation (Mental Health Commission, 2009). Under the National Service Plan 2020, the Health Service Executive Ireland (HSE) have committed to giving continued support in implementing the Vision for Change mental health strategy document (HSE, 2020). Under the Vision for Change (2006) policy, positive mental health promotion interventions that aim to protect mental health and decrease risk factors for developing mental health problems should be incorporated across various settings and communities (Department of Health and Children, 2006). Higher education settings are specifically outlined as a community group targeted for positive health promotion in the Vision for Change document. It was recommended by the 2006 Vision for Change policy that a Health Promoting College Network be developed and implemented. In 2008, the WHO developed an existing framework for developing health-promoting university projects (Tsouros et al., 2008; 1998).

In relation to national policy specific to PA, the SOMI-HE intervention programme can also be linked with the Healthy Ireland Physical Activity plan that aims to increase PA participation levels across the whole population (Department of Health, 2016). The SOMI-HE intervention can contribute to the development of a national database for sharing examples of quality evidence-based practice and programmes, as referred to in the Healthy Ireland Physical Activity policy. Additionally, an action area relative to the higher education setting outlined by the Healthy Ireland Physical Activity plan advises for health-promoting colleges to include the promotion of PA in the built environment. Two of the UCC action areas linking to the current study include:

1) Mental health and wellbeing.
2) Physical activity and active transport.

Under the UCC Health Matters Strategic Goals and Action, the first goal outlined by UCC is to ensure that the student and staff health and wellbeing are centralalised in the process of reviewing, developing and implementing current and future university policies, procedures and plans. Actions outlined to by the UCC Health Matters Strategic plan include:

1. Increase support for policy change and development through the creation of a policy committee sub-group tasked with drafting a written position for UCC Health Matters.
2. Secure senior level engagement and approval (University Management Team - Strategy/University Management Team - Operations).
3. Support Health Matters to become a recognised champion for health and wellbeing across the campus by providing an independent budget, permanent premises and staff for UCC Health Matters.
4. Develop strategies with staff and students to increase awareness of the Health Matters brand and how it can support staff/student health and wellbeing.

The SOMI-HE intervention can be linked with UCC Health Matters action plan as it is a pragmatic approach that fosters an emphasis on the benefits of positive health promotion, as supported by international and national guidelines (Department of Health and Children, 2006; WHO, 2019;WHO, 2005). The SOMI-HE intervention is a positive mental health strategy that serves to increase wellbeing, however, the UCC Mental Health policy for staff (2019) currently focuses on responding ‘to the mental health needs of all its students, in particular to those students experiencing a period of mental distress or mental illness’. Positive mental health promotion is not a feature of this particular document. Additionally, the extensive initiatives advocated by UCC Health Matters seem to focus heavily on mental health services and do not include allocated time for students to learn about positive mental health recovery through learning environments which enhance health (UCC Mental Health Matters, 2019; UCC Health Matters Steering Group, 2012). Delivery of positive mental health intervention programmes requires the development of health and social policy, which extends beyond the treatment focus of current mental health service delivery (Barry, 2009). Consequently, at a local level, it appears that mental health policy currently excludes positive mental health-promoting initiatives that focus on

increasing wellbeing. A mental health prevention gap is, therefore, observed at the local level. Designing mental health course content and delivery in a way which promotes positive mental health and wellbeing is recognised as an effective resource for HEIs. Comparable data in the UK suggests that more than half of HEI settings do not adopt a mental health promotion and prevention initiative (Thorley, 2017). Thorley (2017, p.68) suggests 'embedding an accredited wellbeing module into undergraduate courses, in order to build students resilience' could be an efficient method to promote positive mental health effectively at the university level. This proposed solution could serve as a viable method to effectively promote positive mental health, and ensure effective intervention dissemination as part of the existing continuity focus within SOMI-HE.

7.6 Closure to the PhD journey

The SOMI-HE intervention study brings to light the impact of the broader social and environmental influences on mental health and PA participation among third level education students. The research raises the question as to what institutions and policymakers are doing to close the gap between prevention and treatment in responding to the mental health needs of various population cohorts. The objective of this research was to provide a means to effectively close the gap in mental illness prevention through signposting and promoting positive mental health for emerging adults. The study found that, when emerging adults are provided with the preventative skills that enhance wellbeing, they are increasingly enabled to protect and promote positive mental health for life. It has been argued that positive mental health has the potential to contribute to lifelong health and flourishing (Keyes & Simoes, 2012), therefore, achieving above-average psychological health is not the remit of medicine, but of education (Vaillant, 2012). As Antonovsky asserts: the choice is to do nothing or to ask a community what can be done 'to strengthen the sense of comprehensibility, manageability and meaningfulness of the persons who constitute it' (1996, p16).

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APPENDICES

Appendix A: Editor Acceptance notification of baseline study

24th Nov-2019

Article: Levels of wellbeing, resilience, and physical activity amongst Irish pre-service teachers: A baseline study

Journal: Irish Educational Studies (RIES)

Article ID: RIES 1697948

Dear Niamh O' Brien,

I am pleased to inform you that your article is now in production. As Production Editor, I will be liaising with the corresponding author (O'Brien) during the production process. If you have questions or corrections please ask the corresponding author to send these to me to ensure that I do not receive any conflicting instructions.

The corresponding author will be contacted when article proofs are ready for review. Please make any corrections via the corresponding author.

• The DOI of your paper is: 10.1080/03323315.2019.1697948. Once your article has published online, it will be available at the following permanent link: https://doi.org/10.1080/03323315.2019.1697948 .

When the article has published, you will receive 50 e-prints to share with colleagues. This will enable you to give 50 friends, colleagues, or contacts free access to an electronic version of your article. See our guide to sharing your work.

You will be sent a message alerting you to the publication of your article on Taylor & Francis Online (https://cats.informa.com/PTS/in?t=lop&m=1697948&op=2). To ensure that you receive your alerts and information from Taylor & Francis Online, please add info@tandfonline.com to your safe senders list.

Please visit our author services website for more information about the production process or for guidance on authors' rights, promoting your article, and other useful topics.

Yours sincerely,

Bharathi Ramachandran

Email:RIES-production@journals.tandf.co.uk

Appendix B: Editor Acceptance notification of intervention design study

17-Jan-2020

Dear O Brien, Niamh; Lawlor (RIP), Martin ; Chambers, Fiona; O Brien, Wesley

It is a pleasure to accept your manuscript HE-09-2019-0042.R1, entitled "Mental Fitness in Higher Education: Intervention Mapping Programme Design" in its current form for publication in Health Education. Please note, no further changes can be made to your manuscript.

Please go to your Author Centre at https://mc.manuscriptcentral.com/he (Manuscripts with Decisions for the submitting author or Manuscripts I have co-authored for all listed co-authors) to complete the Copyright Transfer Agreement form (CTA). We cannot publish your paper without this.

All authors are requested to complete the form and to input their full contact details. If any of the contact information is incorrect you can update it by clicking on your name at the top right of the screen. Please note that this must be done prior to you submitting your CTA.

If you have an ORCID please check your account details to ensure that your ORCID is validated.

By publishing in this journal your work will benefit from Emerald EarlyCite. As soon as your CTA is completed your manuscript will pass to Emerald's Content Management department and be processed for EarlyCite publication. EarlyCite is the author proofed, typeset version of record, fully citable by DOI. The EarlyCite article sits outside of a journal issue and is paginated in isolation. The EarlyCite article will be collated into a journal issue according to the journals' publication schedule.

FOR OPEN ACCESS AUTHORS: Please note if you have indicated that you would like to publish your article as Open Access via Emerald's Gold Open Access route, you are required to complete a Creative Commons Attribution Licence - CCBY 4.0 (in place of the standard copyright assignment form referenced above).

You will receive a follow up email within the next 30 days with a link to the CCBY licence and information regarding payment of the Article Processing Charge. If you have indicated that you might be eligible for a prepaid APC voucher, you will also be informed at this point if a voucher is available to you (for more information on APC vouchers please see http://www.emeraldpublishing.com/oapartnerships

Thank you for your contribution. On behalf of the Editors of Health Education, we look forward to your continued contributions to the Journal.

Sincerely,

Dr. James Woodall
Editor, Health Education
J.Woodall@leedsbeckett.ac.uk

Appendix C: Ethical Approval and consent letter

Participant Information and Consent (2018)

Title of study

State of Mind Ireland (SOMI): an investigation into the impact of a mental health awareness programme (SOMI) among third-level students in Ireland

Principal Investigator and contact:

Dr. Wesley O Brien, Sports Studies and Physical Education Department, the School of Education, 1 & 2 Lucan Place, Western Road, University College Cork, 021 490 2319. wesley.obrien@ucc.ie

Dear student, You are being invited to participate in a research study to evaluate your experiences of physical activity and mental health, in advance and prior to a mental health intervention programme known as State of Mind Ireland (SOMI). This research aims to develop, adapt and enhance the instructional design of SOMI, specifically designed to increase its potential as a mental health intervention and prevention tool for third-level students.

Background to the State of Mind Programme

State of Mind is an educational programme adopted and reframed by the HSE and UCC. However, State of Mind was originally established in England in 2011 by the United Kingdom Super League (Rugby). State of Mind's design sought to not only bring heightened awareness of mental health issues among sportsmen and women, but also to improve the mental health and wellbeing of rugby league players and their communities. It has since gained momentum and is used by the National Rugby League Australia and most recently, by many GAA sporting communities in Ireland.

State of Mine Ireland in UCC

State of Mind Ireland (SOMI), a partnership between UCC and the HSE wants to get third level students and their communities talking about positive mental health. Raising public awareness of positive coping strategies and building community resilience via participation in sport & recreation is the ethos. The research, which commenced in April 2017, aims to embed the State of Mind Programme into the Irish University context. This educational programme has been nominated as an

exemplar programme in promoting positive mental health (MIND UK, 2014; Rae et al., 2016; NHS HM Government, 2017). The key components of the SOMI training intervention involves a 2 x 90 minute presentation and skills practice which will improve your understanding of how stress may affect you and how best to cope with difficult times in life and college through comprehensive educational design.

Research stages and methods

There are three stages to this research, the pre (before you complete SOMI), the post (five to ten working days after you complete SOMI) and the retention stage (8-16 weeks after you complete SOMI. There are four methods of data collection which will be collected at each stage listed above. These methods include questionnaires, focus group discussions, Questionnaires will be administered to the entire group of participants, however, you may also be asked to participate in a short focus group discussion.

You are invited to consent to all of the methods at each stage, however it is important you know that your entire contributions to the research are completely voluntary. You may complete the SOMI programme without participating in this research. You may complete the questionnaires (whole group research) only without participating in the focus group discussion.

Confidentiality

All information will be anonymised. You will be assigned an identification number in order to correlate results and responses to the programme in the questionnaire. All information obtained will only be viewed by the study team. Results of the research may be presented at future academic or research conferences, or within research journals. Any presentations or publications will be based on the overall result of the research, and it will not be possible to identify any individual.

SOMI Consent (Please provide your number so we can text you to invite you back)

Signature: _____	Date: _____
Print: _____	Phone: _____

Thank you for your time and for contributing to our research. If you have become concerned or distressed by any of the content or questions in this research please avail of our student counselling service in UCC.

Student counselling and development:
Telephone: +353 (0)21 490 3565 Text: 087 215 25 05
Email: counselling@ucc.ie
Location: Ardpatrick House, College Road, Next to College Car Park.
Opening Hours: 9.30 am-1.00 pm (except between 10.30am and 11.00am-2.15 pm-4.15 pm.

Yours sincerely,

Niamh O Brien. (PhD candidate)

Appendix D: Baseline study - Wellbeing student Questionnaire 2017



Pre State of Mind Ireland and UCC MAR/APR 2017

Participant Overview

1. Please provide your name.

2. Please provide your phone number.

3. What is your gender?

- ○ Male
- ○ Female
- ○ Transgender
- ○ Other

4. How old are you?

- ○ 18-20
- ○ 21-23
- ○ 24-26
- ○ 27 and over

5. What is your ethnicity?

- ☐ Irish
- ☐ Irish traveller
- ☐ Other (please specify)

6. How would you describe your sexual orientation?

- [ ] Straight
- [ ] Lesbian
- [ ] Gay
- [ ] Bisexual
- [ ] Other
- [ ] Prefer no to answer

7. What level of education are you in?

- ◯ An undergraduate student
- ◯ A post graduate student

8. what year are you in?

- ◯ First year
- ◯ Second year
- ◯ Third year
- ◯ Fourth year

9. Are you in employment?

- ◯ No
- ◯ Full-time paid
- ◯ Part-time paid
- ◯ Volunteer

10. What type of course are you studying?

- ◯ Arts/humanities
- ◯ Engineering
- ◯ Science
- ◯ Business
- ◯ Law
- ◯ Medicine and health
- ◯ creative arts/ drama/ music
- ◯ education
- ◯ Other (please specify)

11. Which box below represents the duration of time on average you spend each week doing intentional moderate to vigorous exercise per week? (For example team sports, running, cycling, swimming etc.)

- ○ No time at all per week
- ○ Up to 30 minutes per week
- ○ Up to 60 minutes per week
- ○ Up to 90 minutes per week
- ○ Up to 120 minutes per week
- ○ Up to 150 minutes per week
- ○ More than 150 minutes per week



Pre State of Mind Ireland and UCC MAR/APR 2017

* 12. We would like to ask about your perception of your ability to be resilient, that is to bounce back from adversity using the Brief Resilience Scale (BRS)

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I tend to bounce back quickly after hard times	○	○	○	○	○
I have a hard time making it through stressful events.	○	○	○	○	○
It does not take me long to recover from a stressful event.	○	○	○	○	○
It is hard for me to snap back when something bad happens.	○	○	○	○	○
I usually come through difficult times with little trouble.	○	○	○	○	○
I tend to take a long time to get over set-backs in my life.	○	○	○	○	○

13. We would now like to ask you about your feelings and thoughts on your mental health well-being, using the Warwick- Edinburgh Mental Well-being Scale (WEMWbS)

Please tick the box that best describes your experience of each over the last 2 weeks.

	None of the time	Rarely	Some of the time	Often	All of the time
I've been feeling optimistic about the future	○	○	○	○	○
I've bee 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	○	○	○	○	○

14. We would like to ask you about your wellbeing using the WHO-5

Please indicate for each of the five statements which is closest to how you have been feeling over the last two weeks.

	At no time	Some of the time	Less than half of the time	More than half of the time	Most of the time	All of the time
I have felt cheerful and in good spirits	○	○	○	○	○	○
I have felt calm and relaxed	○	○	○	○	○	○
I have felt active and vigorous	○	○	○	○	○	○
I woke up feeling fresh and rested	○	○	○	○	○	○
My daily life has been filled with things that interest me	○	○	○	○	○	○

Appendix E: Intervention design study - focus group questions 2018

Focus group script and plan

***Equipment**:: Name tags, pens, paper, questions, phone to record, Notepad*

Meet at greet as students arrive

Introduction

- Afternoon, my name is Niamh O Brien, I'm a research student here in UCC, and I am investigating the State of Mind Ireland Programme. This research aims to develop, adapt and enhance the instructional design of SOMI, specifically designed to increase its potential as a mental health intervention and prevention tool for third-level students.
- State of Mind Ireland (SOMI), a partnership between UCC and the HSE, wants to get third level students and their communities talking about positive mental health. Raising public awareness of positive coping strategies and building community resilience via participation in sport & recreation is the ethos.
- Each of you has been invited to participate in the first stage of this research, and we appreciate your time and contributions.
- Xxxxx is a moderator on the room today and XXXX is the assistant. XXXX will be in charge of recording, note taking and at the end of this focus group, they will summarise today's conversation.
- Throughout, we will record our discussion, so we do not miss any of the comments. Often we miss things people say with just and paper.
- I cannot predict how long this focus group will take. It intends to be no longer than 40 minutes.
- Staying is not compulsory, and you are free to leave at any time. However, your voices are valuable to this research and we welcome you all to express your thoughts at any time.
- We have a couple of ground rules to help us today:
    1. If you have a phone, please silence it, but if you must answer it, please step outside too.
    2. There are no wrong answers today. You don't need to agree with others, but it is helpful to listen carefully and equally share your views.

3. My job is to guide the conversation and make sure that we finish on time. I may push us along in stages to make sure we have completed the discussion on time.

Meet and greet

1. Please tell the group your name, along with something you are looking forward to in the near future. (Moderator draw seating plan with names)

Post SOMI focus group topics

The first five questions are adapted suggestions from Krueger & Casey (2015) for formative programme evaluation.

1. Thinking back on the SOMI programme, what did you like best about it? What has been most helpful to you? (Round Robin)
2. Thinking back, what did you like least about the programme? What was least helpful to you? (Round Robin)
3. If you were telling a friend about SOMI, what would you say are the essential accomplishments of the programme?
4. Can you list on paper some issues you think the programme does not address? Can you explain and discuss why you wrote these? (Free listing on paper)
5. What words and sentences come to your mind when I mention the concept of 'mental fitness' (Free listing on paper)
6. What do you think are the most important factors in maintaining mental health and well-being?
7. After completing SOMI-HE, what are your perception of the role of physical activity in well-being and mental health?
8. What do you think are the most significant influences for participation in physical activity, and what you think are the most significant barriers?
9. All in all, after completing SOMI-HE, do you believe you adequately look after your mental health currently or are there things you feel you can improve on? (Round Robin)
10. Finally, are educational programmes on mental health effective in colleges for reducing stigma around negative mental health experiences?

Thanks to students for attending.

Appendix F: Intervention design study Delphi exercise template 2018

K What I **k**now	W What I **w**ant to know	L What I have **l**earned

Appendix G: Intervention design study - SOMI Sport (2017) evaluation questionnaire

Evaluation State of Mind Ireland MAR/APRIL 2017

1. To what extent were the objectives of the training achieved?

2. Please rate the each of the following:

	Excellent	Very Good	Good	Fair	Needs
Duration	○	○	○	○	○
Location	○	○	○	○	○
Facilities	○	○	○	○	○
Times	○	○	○	○	○
Presenters	○	○	○	○	○
Training aids	○	○	○	○	○
Discussion opportunity	○	○	○	○	○
Training objectives	○	○	○	○	○

(a) Comments:

(b) If your response to any of the above is 'Fair' or 'Needs Improvement' please make specific suggestions for improvement.

3. Please list the main learning gained from this training.

4. What aspects of the programme were most useful?

5. What aspects of the programme were least helpful?

6. What changes would you suggest if this programme were to be run again?

Appendix H: SOMI-HE wellbeing questionnaire used at pre and post intervention

State of Mind Ireland and UCC 2018-2019

1. Personal overview

1. Please provide your name (this will be transferred to a code and made anonymous)

2. Please provide your email address and phone number (just so we can send you a link for the post survey in two weeks.)

Email

Phone

3. What is your gender?

- ○ Male
- ○ Female
- ○ Transgender
- ○ Other

4. How old are you?

- ○ 18-25
- ○ 26-29
- ○ 30-39
- ○ 40 and over

5. What is your ethnicity?

- ☐ Irish
- ☐ Irish traveller
- ☐ Other (specify if you like)

6. What level of education are you in?

- ○ An undergraduate student
- ○ A post graduate student

7. what year are you in?

- ◯ First year
- ◯ Second year
- ◯ Third year
- ◯ Fourth year

8. Are you in employment?

- ◯ No
- ◯ Full-time paid
- ◯ Part-time paid
- ◯ Volunteer

9. What type of course are you studying?

- ◯ Arts/humanities
- ◯ Engineering
- ◯ Science
- ◯ Business
- ◯ Law
- ◯ Medicine and health
- ◯ Creative arts/ drama/ music
- ◯ Education

Other (please specify)

2. Wellbeing, stress and resilience questionnaires

1. We would now like to ask you about your feelings and thoughts on your mental health well-being, using the Warwick- Edinburgh Mental Well-being Scale (WEMWbS)

Please tick the box that best describes your experience of each over the last 2 weeks.

	None of the time	Rarely	Some of the time	Often	All of the time
I've been feeling optimistic about the future	○	○	○	○	○
I've bee 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	○	○	○	○	○

2. We would like to ask you about your perceived wellbeing over the past **two weeks** using the WHO-5 Wellbeing Index.

Please indicate for each of the five statements which is closest to how you have been feeling over the last **two weeks.**

	At no time	Some of the time	Less than half of the time	More than half of the time	Most of the time	All of the time
I have felt cheerful and in good spirits	○	○	○	○	○	○
I have felt calm and relaxed	○	○	○	○	○	○
I have felt active and vigorous	○	○	○	○	○	○
I woke up feeling fresh and rested	○	○	○	○	○	○
My daily life has been filled with things that interest me	○	○	○	○	○	○

3. We would like to ask about your perception of your ability to be resilient, that is to bounce back from adversity using the Brief Resilience Scale (BRS)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I tend to bounce back quickly after hard times	○	○	○	○	○
I have a hard time making it through stressful events.	○	○	○	○	○
It does not take me long to recover from a stressful event.	○	○	○	○	○
It is hard for me to snap back when something bad happens.	○	○	○	○	○
I usually come through difficult times with little trouble.	○	○	○	○	○
I tend to take a long time to get over set-backs in my life.	○	○	○	○	○

State of Mind Ireland and UCC 2018-2019

3. Physical Activity levels and norms.

1. Physical Activity Stages of Change-Questionnaire (Transtheoretical model TTM)

Please select Yes or No.
Physical activity or exercise includes activities such as brisk walking, jogging, cycling or any activity in which the exertion is at least as intense as these activities.

	No	Yes
I am currently physically active.	◯	◯
I intend to become more physically active in the next six months.	◯	◯
I currently engage in regular physical activity.	◯	◯
I have been regularly physically active for the past six months	◯	◯

2. Physical activity is any activity that increases your heart rate and makes you get out of breathing some of the time.
Some examples of physical activity include running, brisk walking, biking, dancing, swimming soccer and surfing (Moderate to vigorous physical activity).
Over the past **7 days**, on how many days were you physically active for a total of at least 30 minutes per day? (PACE+ physical activity measure)

◯ 0 days ◯ 1 day ◯ 2 days ◯ 3 days ◯ 4 days ◯ 5 days ◯ 6 days ◯ 7 days

3. Over a **typical or usual week**, on how many days are you physically active for a total of at least 30 minutes per day?

◯ 0 days ◯ 1 day ◯ 2 days ◯ 3 days ◯ 4 days ◯ 5 days ◯ 6 days ◯ 7 days

Appendix I: SOMI-HE focus group script used in pre, post and retention data collection

FOCUS GROUP SCRIPT AND PLAN 2018/ 2019

Need: Name tags, pens, leaves of paper, questions, phone to record, Notepad (activities can be an option for larger groups)

Meet at greet as students arrive

Introduction

- Afternoon, my name is Niamh O Brien, I'm a research student here in UCC, and I am investigating the State of Mind Ireland Programme. This research aims to develop, adapt and enhance the instructional design of SOMI, specifically designed to increase its potential as a mental health intervention and prevention tool for third-level students.

- State of Mind Ireland (SOMI), a partnership between UCC and the HSE, wants to get third level students and their communities talking about positive mental health. Raising public awareness of positive coping strategies and building community resilience via participation in sport & recreation is the ethos.

- Each of you has been invited to participate in the first stage of this research and we appreciate your time and contributions.

- Xxxxx is a moderator on the room today, and XXXX is the assistant. XXXX will be in charge of recording, note taking and at the end of this focus group, they will summarise today's conversation.

- Throughout, we will record our discussion, so we do not miss any of the comments. Often we miss things people say with just and paper.

- I cannot predict how long this focus group will take. It intends to be no longer than 40 minutes.

- Staying is not compulsory, and you are free to leave at any time. However, your voices are valuable to this research and we welcome you all to express your thoughts at any time.

We have a couple of ground rules to help us today:

- If you have a phone, please silence it, but if you must answer it, please step outside too.
- There are no wrong answers today. You don't need to agree with others, but it is helpful to listen carefully and equally share your views.
- My job is to guide the conversation and make sure that we finish on time. I may push us along in stages to make sure we have completed the discussion on time.

Meet and greet

Please *tell the group your name, along with something you are looking forward to in the near future. (Moderator draw seating plan with names)*

Getting started

Pre SOMI focus group topics

1) Do feel there is a need for mental health training interventions to raise mental health awareness?
2) Do you feel your knowledge of mental health is adequate?
3) Do you feel you adequately look after your mental health?
4) What are the main causes of stress in college life?
5) What methods do you use to manage stress?
6) Do you feel you are adequately physically active?
7) Do you know what the recommended weekly guidelines are?
8) Would you like to be more physically active?
9) What do you think are the most significant influences for participation in physical activity, and what you think are the most significant barriers?

10) What do you hope to gain from completing the SOMI programme?

Post SOMI focus group topics

1. Did the SOMI programme meet your expectations?
2. Do you feel it responds to the needs of the participants?
3. Do you think SOMI has improved your knowledge of mental health?

The following questions are adapted suggestions from Krueger & Casey (2015) for formative programme evaluation.

1. Thinking back on the SOMI programme, what did you like best about it? What has been most helpful to you? (Round Robin)
2. Thinking back, what did you like least about the programme? What was least helpful to you? (Round Robin)
3. If you were telling a friend about SOMI, what would you say are the important accomplishments of the programme?
4. Can you list (on paper for large groups) some issues you think the programme does not address? Can you explain and discuss why you wrote these? (Free listing on paper for large groups)
5. What words and sentences come to your mind when I mention the concept of 'mental fitness' (Free listing on paper)
6. After completing SOMI, what is your perception of the role of physical activity in well-being and mental health?
7. Do you feel confident in your ability to overcome barriers which prevent us from engaging in mental health?
8. After completing SOMI, do you believe you adequately look after your mental health currently or are there things you feel you can improve on? (Round Robin)
9. Finally, are educational mental health programmes like SOMI effective in colleges for increasing mental health awareness and reducing stigma around negative mental health experiences?

The assistant summarises the discussion, then asks if there was anything missed or overlooked.

Thanks to students for attending.

Appendix J: Focus group thematic analysis procedure (Bree & Gallagher, 2016)

The data analysis consisted of six steps as outlines by **(V. Braun & Clarke, 2006)**:

1. **Familiarising yourself with your data:**

   Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.

2. **Generating initial codes:**

   Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.

3. **Searching for themes:**

   Collating codes into potential themes, gathering all data relevant to each potential theme.

4. **Reviewing themes:**

   Checking in the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic „map" of the analysis.

5. **Defining and naming themes:**

   Ongoing analysis to refine the specifics of each theme and the overall story the analysis tells; generating clear definitions and names for each theme.

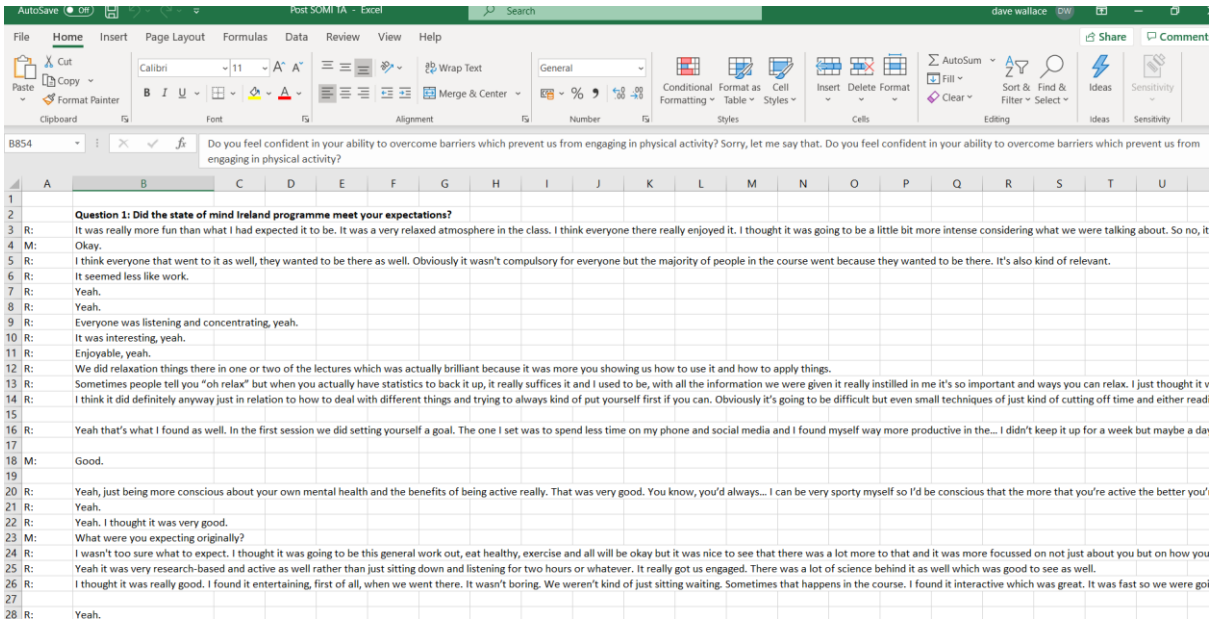
6. **Producing the report: Description of the process**

   The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

Using Microsoft Excel to code and thematically analyse qualitative data: a simple, cost-effective approach (Bree & Gallagher, 2016)

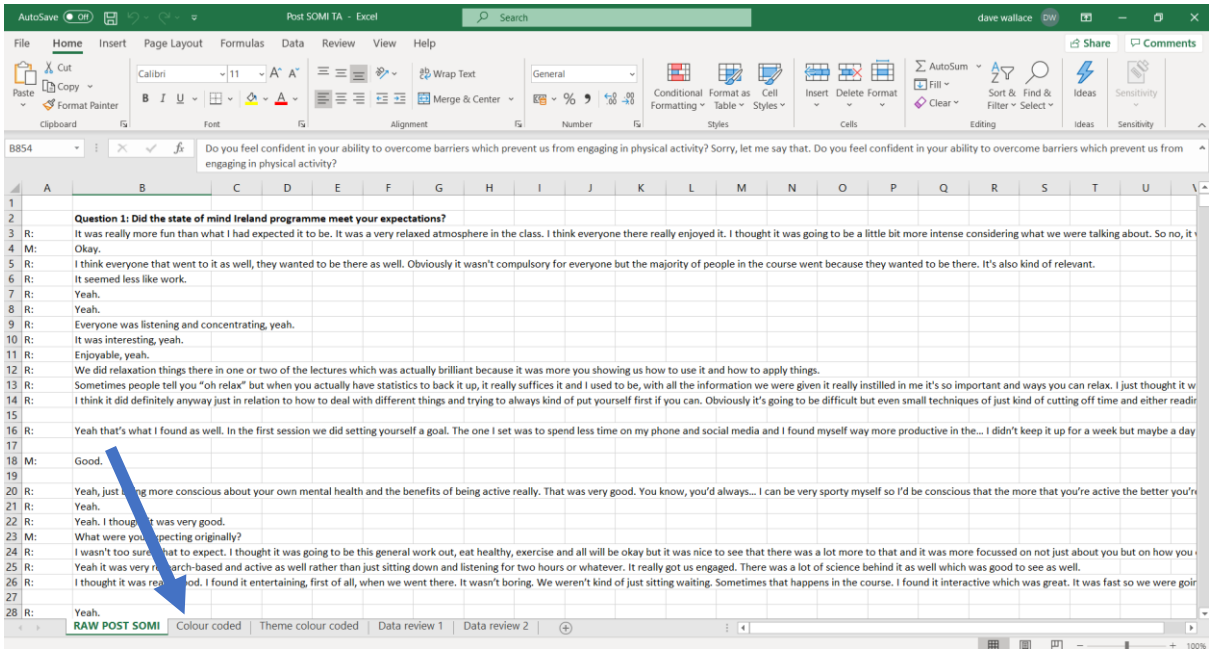
The qualitative analysis procedure was implemented using Microsoft Excel. This process followed the guidelines of Bree and Gallagher (2016) and reflects the six phased system recommended by Braun & Clarke, (2006). The physical process of following thematic analysis had traditionally been with a pen, paper and the cutting out and placement of themes identified. The following steps describe how all focus group data were analysed following Bree and Gallagher's method. This method maps the phases of thematic analysis using technology. An example of the post-SOMI-HE transcription analysis steps is provided here.

Step 1: The transcripts were organised per question and transferred to a Microsoft excel worksheet. Moderator responses are marked M, and respondents are marked R.



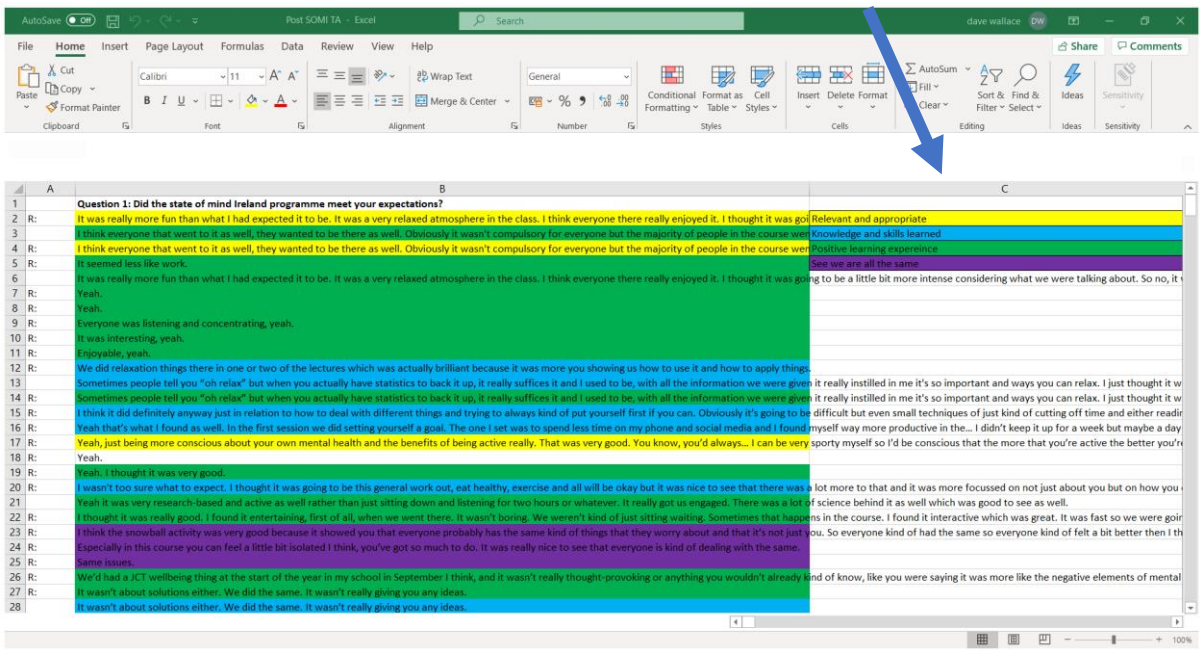
		B
1		
2		**Question 1: Did the state of mind Ireland programme meet your expectations?**
3	R:	It was really more fun than what I had expected it to be. It was a very relaxed atmosphere in the class. I think everyone there really enjoyed it. I thought it was going to be a little bit more intense considering what we were talking about. So no, it
4	M:	Okay.
5	R:	I think everyone that went to it as well, they wanted to be there as well. Obviously it wasn't compulsory for everyone but the majority of people in the course went because they wanted to be there. It's also kind of relevant.
6	R:	It seemed less like work.
7	R:	Yeah.
8	R:	Yeah.
9	R:	Everyone was listening and concentrating, yeah.
10	R:	It was interesting, yeah.
11	R:	Enjoyable, yeah.
12	R:	We did relaxation things there in one or two of the lectures which was actually brilliant because it was more you showing us how to use it and how to apply things.
13	R:	Sometimes people tell you "oh relax" but when you actually have statistics to back it up, it really suffices it and I used to be, with all the information we were given it really instilled in me it's so important and ways you can relax. I just thought it v
14	R:	I think it did definitely anyway just in relation to how to deal with different things and trying to always kind of put yourself first if you can. Obviously it's going to be difficult but even small techniques of just kind of cutting off time and either readi
15		
16	R:	Yeah that's what I found as well. In the first session we did setting yourself a goal. The one I set was to spend less time on my phone and social media and I found myself way more productive in the... I didn't keep it up for a week but maybe a da
17		
18	M:	Good.
19		
20	R:	Yeah, just being more conscious about your own mental health and the benefits of being active really. That was very good. You know, you'd always... I can be very sporty myself so I'd be conscious that the more that you're active the better you'
21	R:	Yeah.
22	R:	Yeah. I thought it was very good.
23	M:	What were you expecting originally?
24	R:	I wasn't too sure what to expect. I thought it was going to be this general work out, eat healthy, exercise and all will be okay but it was nice to see that there was a lot more to that and it was more focussed on not just about you but on how you
25	R:	Yeah it was very research-based and active as well rather than just sitting down and listening for two hours or whatever. It really got us engaged. There was a lot of science behind it as well which was good to see as well.
26	R:	I thought it was really good. I found it entertaining, first of all, when we went there. It wasn't boring. We weren't kind of just sitting waiting. Sometimes that happens in the course. I found it interactive which was great. It was fast so we were goi
27		
28	R:	Yeah.

Step 2: Phases of thematic analysis were built into the excel sheets

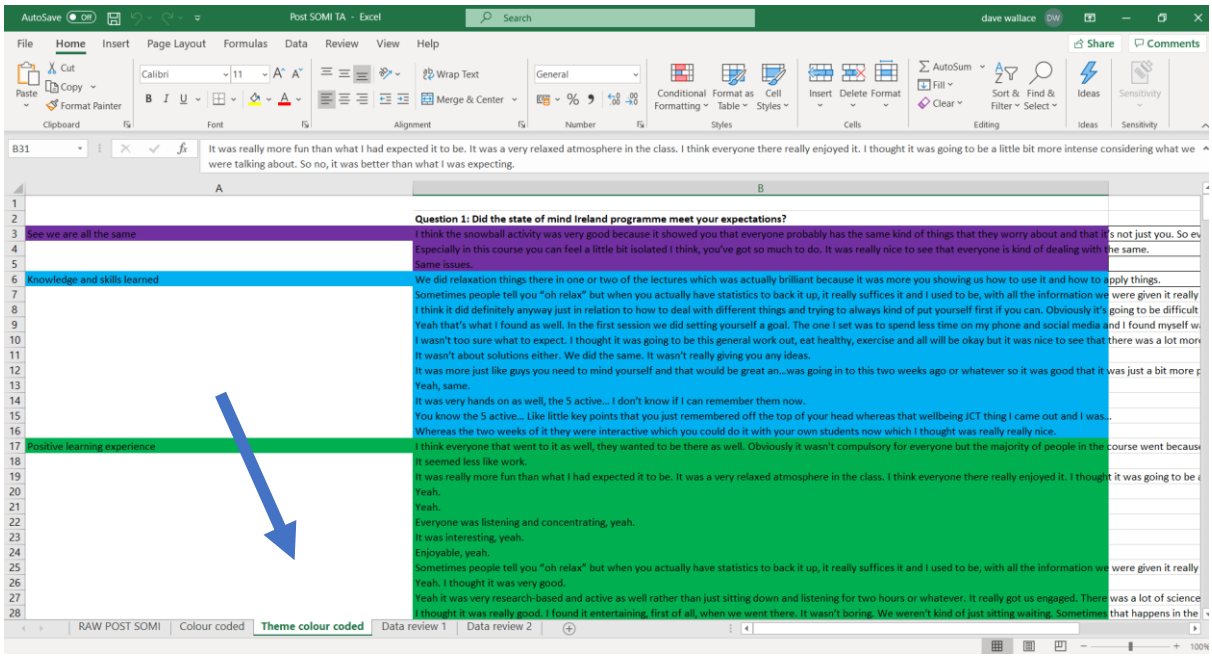


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27		
28	R:	Yeah.

Step 3: The data is then colour coded based on themes. A theme is identified, named and colour coded.

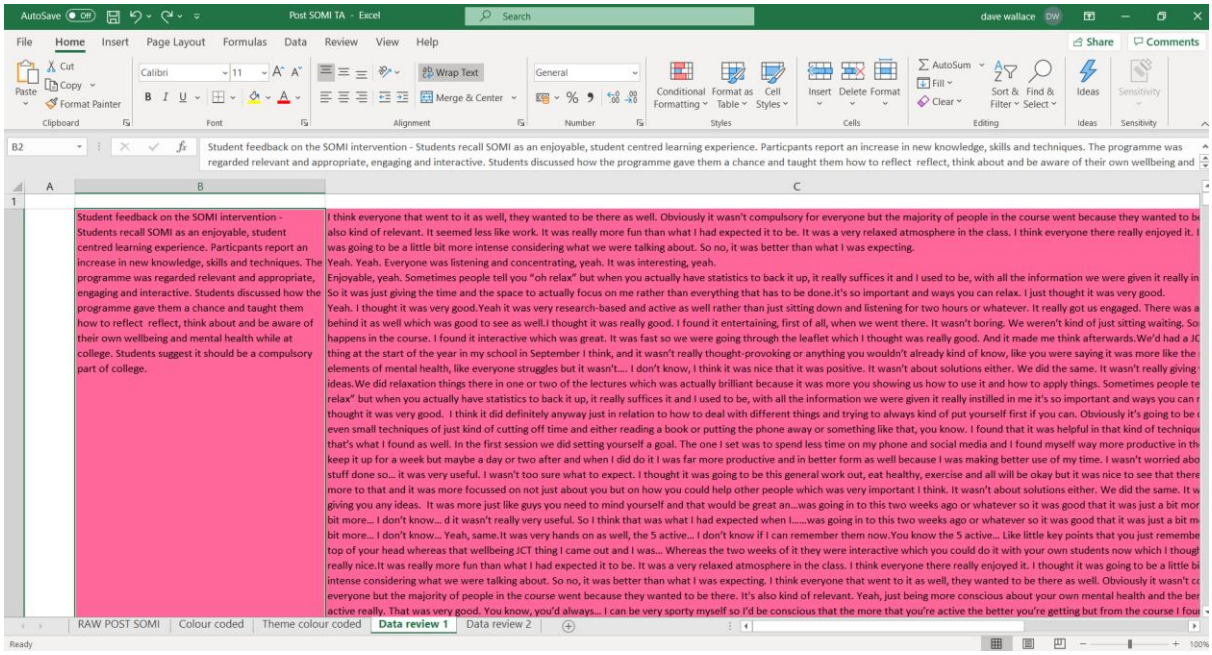


Step 4: The data is then sorted by theme by using the data review filter in excel

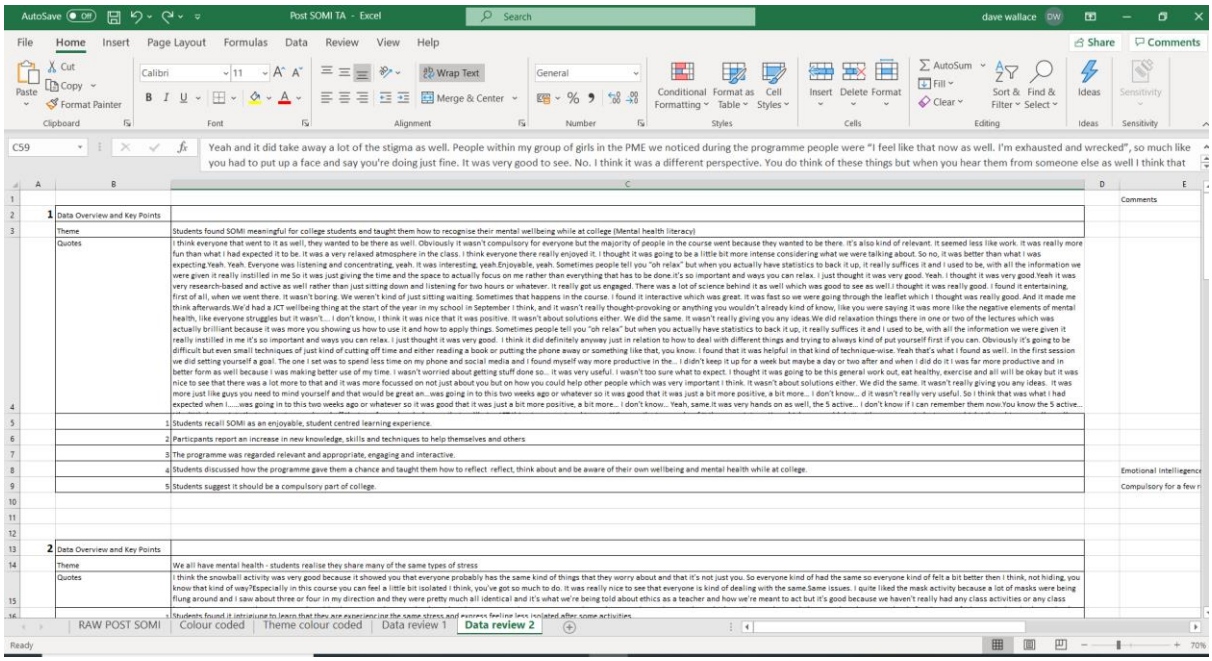


Step 5: In the first data review each theme is captured and brought to a new work sheet in excel. This allows you to go back to the previous data.

This themed data is further reduced, and duplicates are removed. Themes are extended and described in the left-hand column. Comments reflecting the themes are in the right-hand column. The data is condensed.

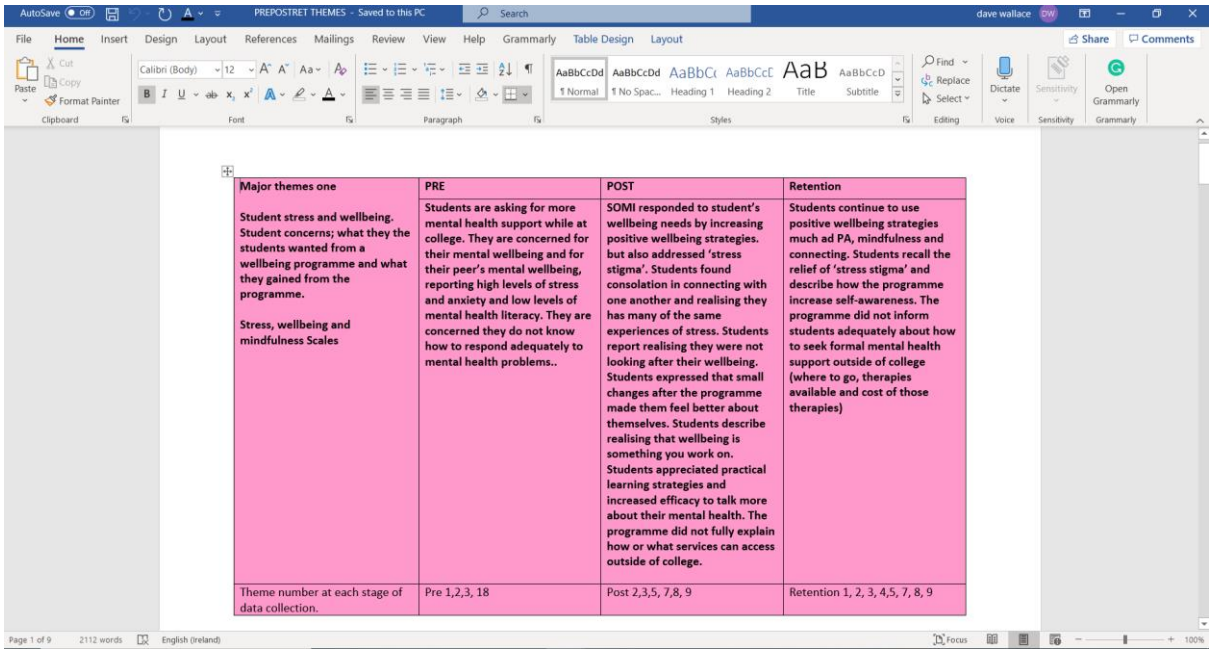


Step six: In the second data review, key points are extracted from each theme and verified. Each theme is every stage of data collection is provided with a number.



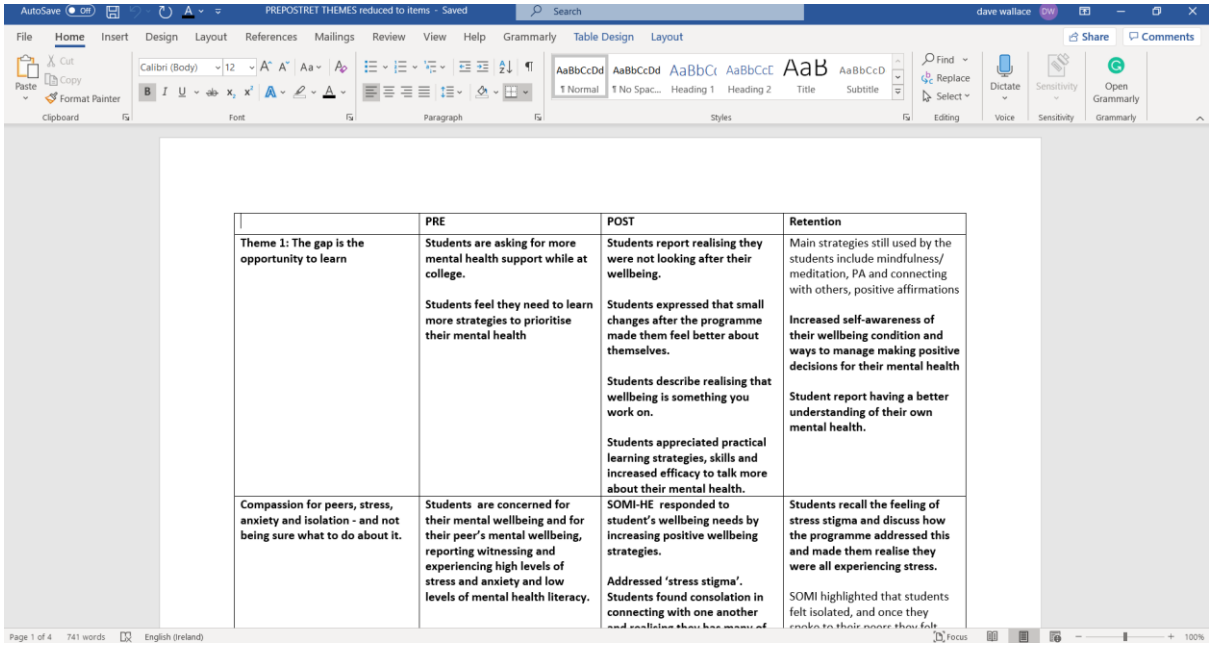
Having completed Bree and Gallagher's steps, the researcher extracted the themes from pre, post and retention stages and triangulated across them three-time points. Commonalities, differences and changes across each of the focus group discussions informed the outcomes of the programme. Themes were further collapsed into five key themes sub-themes until a chronologically coherent description of the participant's experience of the programme was achieved.

The five key themes were further reduced. Each theme number at each stage of data collection was rechecked by the researcher by returning to the excel review 2 (step six) and rechecking the assigned numbers to the researcher's final interpretation of the results.



Major themes one	PRE	POST	Retention
Student stress and wellbeing. Student concerns; what they the students wanted from a wellbeing programme and what they gained from the programme. Stress, wellbeing and mindfulness Scales	Students are asking for more mental health support while at college. They are concerned for their mental wellbeing and for their peer's mental wellbeing, reporting high levels of stress and anxiety and low levels of mental health literacy. They are concerned they do not know how to respond adequately to mental health problems..	SOMI responded to student's wellbeing needs by increasing positive wellbeing strategies. but also addressed 'stress stigma'. Students found consolation in connecting with one another and realising they has many of the same experiences of stress. Students report realising they were not looking after their wellbeing. Students expressed that small changes after the programme made them feel better about themselves. Students describe realising that wellbeing is something you work on. Students appreciated practical learning strategies and increased efficacy to talk more about their mental health. The programme did not fully explain how or what services can access outside of college.	Students continue to use positive wellbeing strategies much ad PA, mindfulness and connecting. Students recall the relief of 'stress stigma' and describe how the programme increase self-awareness. The programme did not inform students adequately about how to seek formal mental health support outside of college (where to go, therapies available and cost of those therapies)
Theme number at each stage of data collection.	Pre 1,2,3, 18	Post 2,3,5, 7,8, 9	Retention 1, 2, 3, 4,5, 7, 8, 9

Themes were summarised



	PRE	POST	Retention
Theme 1: The gap is the opportunity to learn	Students are asking for more mental health support while at college. Students feel they need to learn more strategies to prioritise their mental health	Students report realising they were not looking after their wellbeing. Students expressed that small changes after the programme made them feel better about themselves. Students describe realising that wellbeing is something you work on. Students appreciated practical learning strategies, skills and increased efficacy to talk more about their mental health.	Main strategies still used by the students include mindfulness/ meditation, PA and connecting with others, positive affirmations Increased self-awareness of their wellbeing condition and ways to manage making positive decisions for their mental health Student report having a better understanding of their own mental health.
Compassion for peers, stress, anxiety and isolation - and not being sure what to do about it.	Students are concerned for their mental wellbeing and for their peer's mental wellbeing, reporting witnessing and experiencing high levels of stress and anxiety and low levels of mental health literacy.	SOMI-HE responded to student's wellbeing needs by increasing positive wellbeing strategies. Addressed 'stress stigma'. Students found consolation in connecting with one another	Students recall the feeling of stress stigma and discuss how the programme addressed this and made them realise they were all experiencing stress. SOMI highlighted that students felt isolated, and once they

Appendix K: Intervention Mapping – SOMI-HE programme blueprint

STATE OF MIND IRELAND INTERVENTION MAP (BARTHOLOMEW ET AL., 2016)

Intervention planning models explained

Planning models in health promotion are systematic, adaptable to a variety of situations and ensure effective decision making in the intervention design process (Naidoo & Wills, 2016). The overall goal of planning models is assisting health promotion programme designers in identifying goals and effectively achieving them through an effective decision-making process (Green & Tones, 2010; Naidoo & Wills, 2016). One of the most popular planning frameworks used in health education intervention design is the PRECEDE-PROCEED model from Green and Kreuter, 2005; Green, 1978.) (See figure 1). Another popular model, the Ewles & Simnett (2003) model, is frequently used as a generic framework for intervention planning. However, the PRECEDE-PROCEED model is most availed of for its logical structure and contextual inclusion of theory (Crosby & Noar, 2011).

PRECEDE stands for Predisposing Reinforcing and Enabling Causes in Education Intervention, while PROCEED stands for Policy, Regulatory and Organisational Constructs in Education and the Environmental Development (Green and Kreuter, 2005). The primary purpose of the PRECEDE-PROCEED Model is to provide a needs assessment and structure for applying theories and concepts for planning and evaluating health programs in a systematic way (Glanz et al., 2008). The PRECEDE model starts with an analysis of health concerns relating to the quality of life, health or social problems, behaviour and environmental factors, and predisposing, reinforcing and enabling determinants (correlates) of behaviour and environmental factors. The PROCEED model is more concerned with how the program is developed, implemented and evaluated. Naidoo & Wills (2009) list several criticisms of the model, maintaining, it is directed toward a medical approach that is dominated by experts, and behavioural psychology, therefore overlooking educational perspectives. It is also said to be labour intensive (Crosby & Noar, 2011).

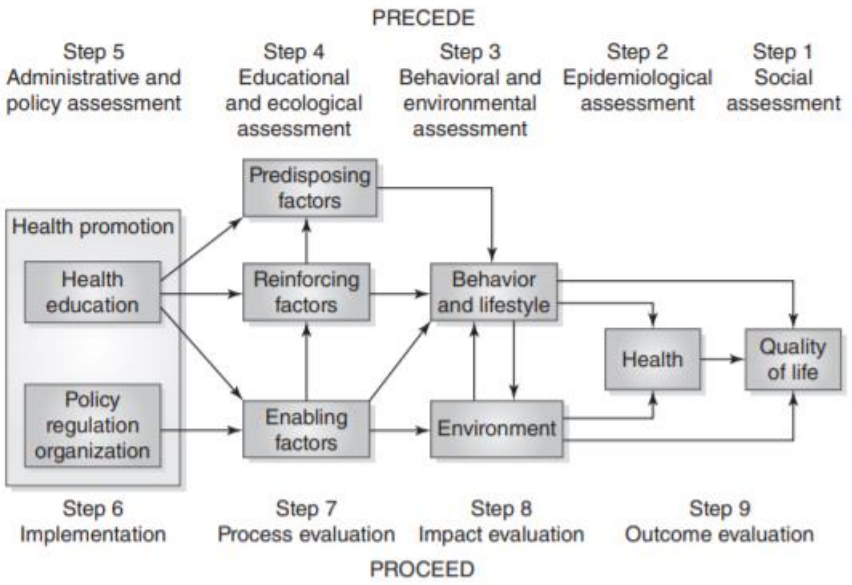


Figure 1 PRECEDE-PROCEED Planning model from Green and Kreuter 2005. Taken from (Glanz et al., 2008).

Intervention Mapping (IM)

In 1998 and 2001, a protocol for designing theory and evidence-based intervention programmes known as Intervention Mapping (IM) was published (Bartholomew, Parcel, Kok, & Gottlieb, 2001). IM was born out of the frustration with the processes of teaching their students how to develop theory and evidence-based health promotion (Kok et al., 2004). After twenty years of refinement, IM is regarded a comprehensive framework that mainly focuses on the importance of identifying the determinants of behaviour, considering the theoretical parameters while applying practical behaviour change methods (Kok et al., 2017).

IM is an approach to planning health promotion programs comprising several tasks and processes that make up a planning framework to design and deliver health promotion and education frameworks. The planning approach ensures effective decision making, appropriate theory selection and practical application of methods at each stage of intervention design (Bartholomew Eldridge et al., 2016). It incorporates a vast array of literature relevant to the field of intervention planning and systematically guides the designer using existing literature, appropriate theories and additional research data (Bartholomew Eldridge et al., 2016). For example, IM step one starts with a need's assessment using a modified PRECEDE model to help guide the assessment of the health problem.

There are six steps throughout the planning system of IM (See figure 2). Each step provides a structure to subsequent steps, creating a layered blueprint of theoretically supported components addressing determinants of health and the corresponding practical mechanisms to health behaviour change (Bartholomew & Mullen, 2011). IM has been tendered as a suitable systematic tool for developing innovative health promotion programmes for complex health problems (Ammendolia et al., 2016; Koekkoek et al., 2010; Lawless et al., 2016; Mceachan et al., 2008; Van Stralen et al., 2008). IM may be well suited for designing university-based interventions, as it is a multi-faceted practical approach tailored to the needs of a specific population and used in similar contexts previously (Ammendolia et al., 2016; Boucher et al., 2015). IM has been heavily criticised for its time-consuming procedures, yet recognised for its robust structure, creating stakeholder collaborations and creating effective intervention design (Ammendolia et al., 2016; Boucher et al., 2015; Mceachan et al., 2008; Van Stralen et al., 2008).

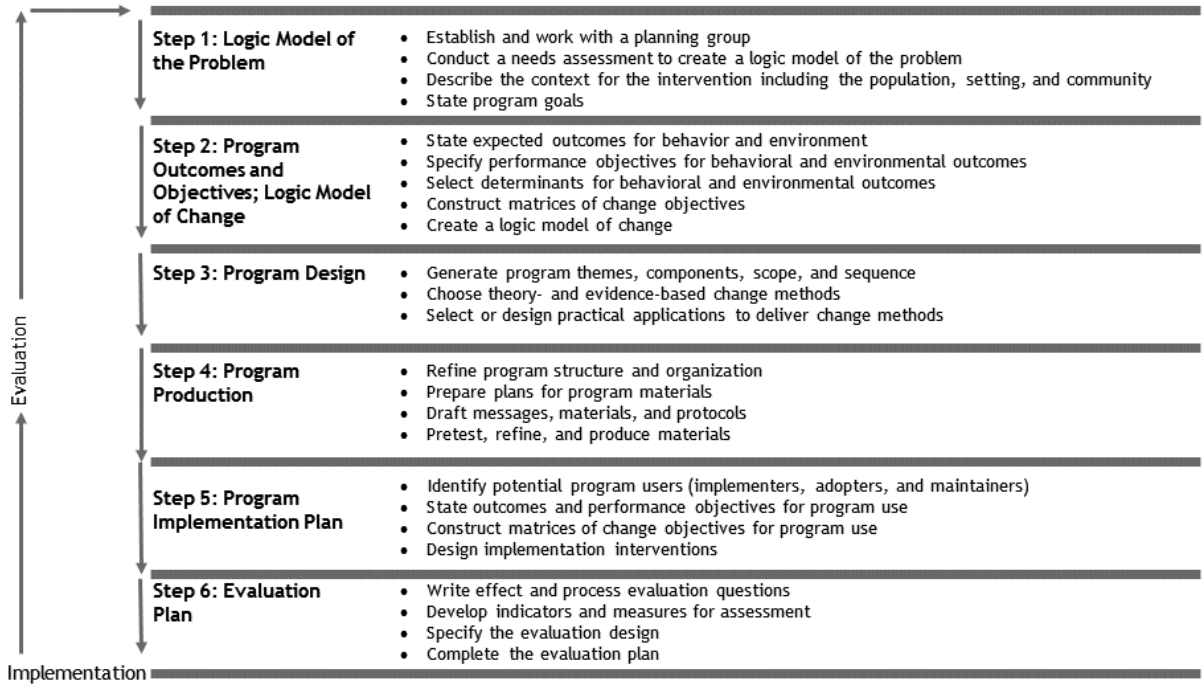


Figure 2 Intervention Mapping Steps (Bartholomew, 2016, p. 13)

Purpose:

The SOMI-HE programme aims to signpost mental health problems among emerging adults and to increase the use of wellbeing and ‘mental fitness’ strategies.

Wellbeing can be defined as a dynamic process which incorporates both subjective (thinking/ feeling) and objective (having/doing) domains (S. C. White, 2008). It is used synonymously with mental health (WHO, 2017). Mental fitness, in the SOMI perspective, is an individual's flexibility and emotional agility to respond and recover from life's challenges with positive mental health strategies.

IM is a systematic approach to planning health promotion programs, providing a framework which ensures effective decision making, appropriate theory selection and practical application of methods. Through using IM, the SOMI research has been grounded with evidence-based problem-solving techniques which incorporate existing literature, research data and the planning team's contributions and perspectives of the needs of the cohort targeted (emerging adults or 18 to 29-year-olds). The intervention map template is linear, yet it is as adapted to the problem and set being analysed. Each step of the intervention map contains several tasks which create scaffolds for the subsequent steps. Through completing the steps, the SOMI-HE program has been provided with a theoretical, empirical and practical blueprint supporting its design, implementation and evaluation. The six steps of the IM process include:

1. Develop a logic model of the problem based on a needs assessment.
2. State program outcomes and objectives – a logic model for change.
3. Develop the program plan, including scope, sequence, change methods and practical applications.
4. Produce the intervention, including program materials and messages.
5. Plan program use, including adoption, implementation and maintenance.
6. Develop an evaluation plan.

OBJECTIVES:

- To develop knowledge and application of positive mental health strategies to increase well-being, resilience and reduce mental health stigma among young adults (18 to 29-year-olds).
- To increase student levels of PA according to the international guidelines (150 minutes of moderate to intense physical activity per week) to increase overall mental health and well-being.
-

CONTEXT OF THE INTERVENTION:

The context of the intervention takes place within the higher education setting, aimed to address the mental health needs of emerging adults (18 to 29-year-olds). The programme will be delivered in 2 x 90-minute sessions with groups up to a maximum of 100 students. The programme is divided into 2 x 90-minute blocks to prevent too many concepts being introduced at once and to ensure that each concept is developed and given valuable application for effective learning and reflection through dialogue.

The programme will be introduced to as many as 100 students per session as it is the most practical in terms of reaching the cohort and avoiding too much-unexpected impact on their academic timetable. The time allocated to the delivery of the programme and collection of research data has been provided to the SOMI team generously by various departments on campus in UCC. A segment of four hours was incorporated into the academic timetables of the student lectures mid-year in order to access students who are willing to participate in the programme while also gaining a large sample size gather for the research. The programme sessions include ‘Positive mental health’ and ‘Mental health first’. The sessions are equally as important for full completion of the SOMI programme.

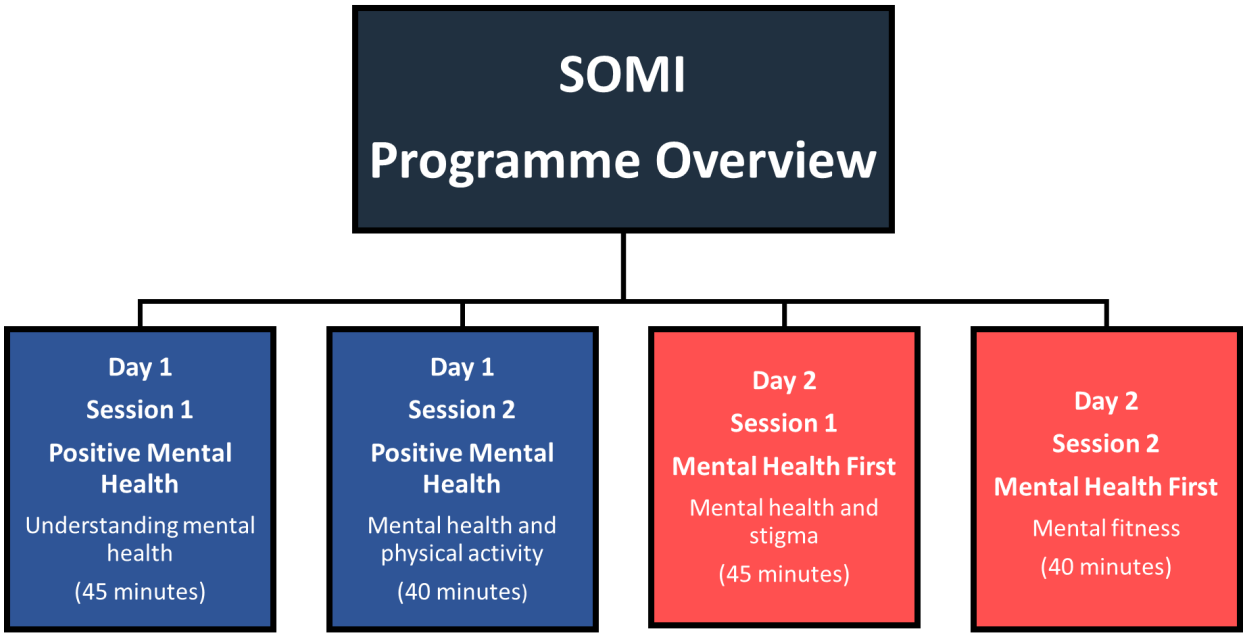


Figure 2. Programme overview

STAGE 1

LOGIC MODEL OF THE PROBLEM – MENTAL HEALTH AND EMERGING ADULTS

The logic model of the problem is a planner and an analysis of the health problem we are signposting. The plan describes the behavioural and environmental causes of the problem, and the determinants of behavioural and environmental causes. To complete the logic model of the problem, a Delphi exercise and focus group interviews informed data collection.

These questions are to the far left of the health problem and are known as the determinants. On the immediate left to the health problem, lies the behavioural and environmental causes of the determinants. To the right of the health problem, the planner addresses how low wellbeing and physical activity may affect on the quality of life.

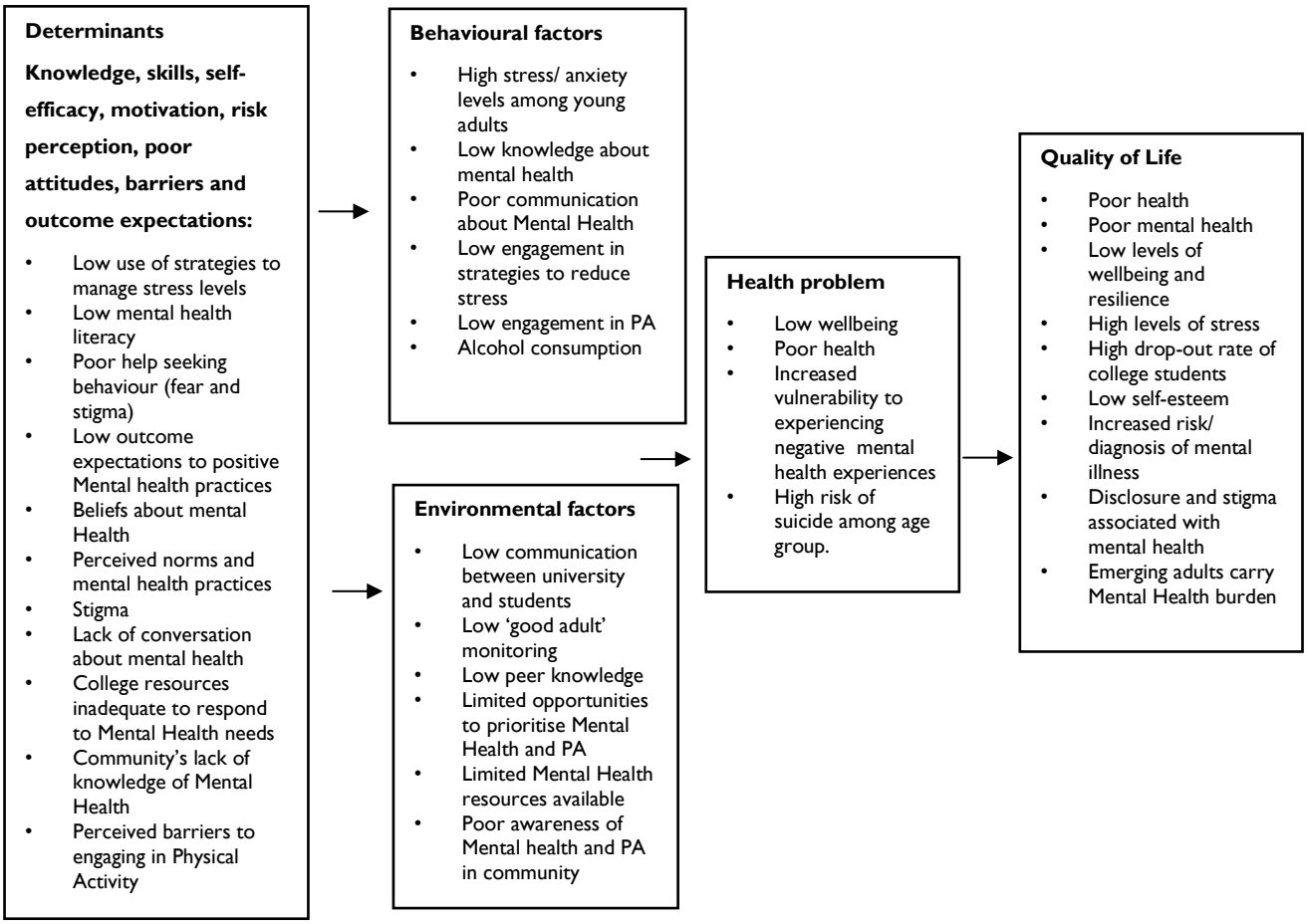


Figure 3. SOMI-HE Logic model of the problem mapped from the data collected in step one of IM (Bartholomew Eldridge et al., 2016)

CHARACTERISTICS OF EMERGING ADULTS:

- The developmental stage of 'emerging adulthood' (Arnett, 2000) covers an age range of 18 to 29 years but is particularly focused on 18 to 25 years.
- It has been proposed as a new developmental stage between adolescence and adulthood, as young people in industrialised, developed societies are experiencing more personal and social pressure at a much younger age and taking on roles of adulthood (such as parenthood, marriage) at a much later age (Arnett, 2007; 2012)
- It is the transition from childhood to adulthood, and a time for identity exploration where young people often feel in between.
- It is a subjective, ambiguous time when a young person does not see themselves as an adolescent, yet neither see themselves as having reached adulthood.
- Young adults struggle with uncertainty, even as they enjoy the freedom of growing up. It may be an enjoyable time for most; many still experience serious problems and developmental challenges.
-

NEEDS ASSESSMENT OF EMERGING ADULTS:

- Emerging adults have been flagged as a high-risk demographic for developing and experiencing ill-mental health. Young people carry the global burden for mental ill-health experiences, but 75% of adults with mental illnessmental illness will have an onset of the illness by the time they are 25 years old (Kessler et al., 2007; Gore et al., 2011).
- In Ireland, we have the fourth-highest rate of suicide per 100, 000 capita in the European Union (NOSP, 2014).
- Suicide is also the leading cause of death among 15 to 24-year-olds in our country and significantly more likely among men than women (NOSP, 2014).
- Emerging adults have higher levels of distress than adolescents, with approximately 40% of them experiencing elevated levels of depression and anxiety (MWS, 2012).
- Just under a fifth of young adults reporting severe levels of depression do not seek help. Emerging adults show low support seeking behaviour and present high levels of avoidant coping (Dooley and Fitzgerald, 2016).
- Poor knowledge of mental health services and information available to students, along with the need for information on how to respond to a mental illness (Karwig et al., 2015)
- Two-thirds of Irish people do not meet the recommended PA guidelines of 150 minutes per week (Department of Health, 2016b)
- There is a lack of knowledge about services and supports within colleges (Dooley and Fitzgerald, 2016 (Karwig et al., 2015)).
- Absence of one good adult while attending college (Dooley and Fitzgerald, 2016)
- Poor help-seeking behaviours; young people with elevated levels of distress avoid talking (Karwig et al., 2015)

PROGRAMME GOALS:

- To signpost maintaining positive mental health as an integral part of everyday life through engaging concepts and activities.
- Provide knowledge and awareness of the impact of negative behaviours, stress and social isolation on mental health.
- Increase perceived wellbeing and resilience with the use of positive mental health strategies.
- To reduce stigma through providing knowledge and increased awareness of positive attitudes and behaviours toward mental health.
- Increase mental health literacy to develop recognition of mental illness or distress and thus enable appropriate help-seeking behaviours through a culture which understands that everyone has mental health.

- Provide information on how to respond to personal experiences of mental health distress.
- Provide information on how to respond to peers experiencing mental health distress.

- Increase overall student motivation and participation in physical activity to improve mental health.
- Increase student levels of physical activity to the recommended weekly guidelines of 150 minutes per week

STAGE 2
LOGIC MODEL OF CHANGE

WORKSHOP A: POSITIVE MENTAL HEALTH

BEHAVIOURAL OUTCOMES:

1. To gain knowledge and practical application of positive mental health strategies and increase student awareness of their mental health needs

2. To increase students' level of physical activity according to the international guidelines (150 minutes of moderate-intensity or 75 minutes vigorous-intensity physical activity per week) and raise student and awareness of the benefits of PA to increase overall mental health and well-being.

BEHAVIOUR OUTCOME 1:TO GAIN KNOWLEDGE AND PRACTICAL APPLICATION OF POSITIVE MENTAL HEALTH STRATEGIES AND INCREASE STUDENT AWARENESS OF THEIR MENTAL HEALTH NEEDS

Outcome one performance objectives for behaviours (the components used to perform behavioural outcomes)

The student will:

- Have increased knowledge of positive mental health, stress and resilience
- Gain an increased awareness of mental health challenges among age group and recognise the role of 'one good adult.'

- Understand the concept of neuroplasticity and develop skills to develop positive neuroplasticity
- Understand mindfulness as a psychological state of awareness and how to use it in everyday life

OUTCOME 1: MODIFIABLE SOCIAL, PERSONAL AND ENVIRONMENTAL DETERMINANTS

According to the literature, SOMI research (focus group interviews) and SOMI planning group Killarney (DELPHI)

Knowledge

- Information about mental health
- Understanding of age group vulnerabilities (self-esteem, identity, stage of in-between, social pressures, social media, the transition to college)
- Recognition of the need for 'one good adult' and peer support
- knowledge of mental illnessmental illness
- Stigma can be tackled through talking
- Effects of too much alcohol consumption
- The stress vulnerability model
- The five ways to well-being
- Social media and self-esteem
- Mental health care and self-compassion

Skills

- Resilience building skills
- Ability to practice mindfulness
- Using positive affirmations as part of daily life
- Using a variety of diverse strategies to maintain wellbeing
- Planning to engage in physical activity
- Self-observation
- Self-regulation
- Goal setting
- Monitoring alcohol consumption and self-care

Self-efficacy belief

- Need for belief in the ability to use strategies to use positive mental health skills of resilience
- Need for the belief that students already cope well using self-regulating strategies to manage stress
- Need for the belief that stress is not a sign of inefficacy (emotions can be separate to performance)
- Need for the perception of self-efficacy to control thought processes
- Need to believe that too much alcohol consumption has negative effects.

Outcome expectations

- Foster belief that the engagement in positive mental health strategies will contribute to improved wellbeing

OUTCOME 2: INCREASE STUDENTS' LEVEL OF PHYSICAL ACTIVITY ACCORDING TO THE INTERNATIONAL GUIDELINES (150 MINUTES OF MODERATE INTENSITY OR 75 MINUTES VIGOROUS INTENSITY PHYSICAL ACTIVITY PER WEEK), AND RAISE STUDENT AND AWARENESS OF THE BENEFITS OF PA TO INCREASE OVERALL MENTAL HEALTH AND WELL-BEING

Outcome two: performance objectives for behaviours (the components used to perform behavioural outcomes)

The students will:

- Students will know how to use and apply positive well-being practices through the 5 ways to wellbeing
- Gain knowledge of the benefits of engaging in PA, and the negative effects of sedentary behaviour
- Monitor and assess PA through increased knowledge of types of PA activities, the recommended guidelines and the transtheoretical model
- Identify solutions to overcome barriers to being physically active
- Identify plans to become more physically active (short term)

OUTCOME 2: MODIFIABLE SOCIAL, PERSONAL AND ENVIRONMENTAL DETERMINANTS

(According to the literature (Condello et al., 2017), SOMI research (focus group interviews) and SOMI planning group Killarney)

Knowledge

- Information on the benefits of physical activity
- Information on the guidelines of physical activity
- How to start engaging in physical activity
- Limited experience of physical activity impacts engagement
- How physical activity contributes to positive mental health
- Identify where each individual is on the transtheoretical model
- Where to access sports facilities and clubs around campus
- Goal realisation

Self-efficacy

- Students need self-belief that they can engage in physical activity
- Self-belief required to follow an action plan
- Need for self-belief that students can set goals and achieve them
- Need for belief that students can overcome attitudes and barriers and participate in physical activity

Attitudes and barriers

- Time
- Work overload (working part-time and studying)
- Lack of routine
- Screen use (TV, laptops, phones)
- Smoking
- Alcohol consumption
- transition to college
- gender discrepancy
- Social surroundings/ environment influences
- Confidence and self-esteem

Skills

- Goal setting
- Self-monitoring
- Identify appropriate opportunities to be active
- Planning
- Building social support
- Barrier identification

Outcome expectations/ motivation

- Physical activity is good for your overall wellbeing
- Increased levels of self-esteem
- Improved sleep
- Reduced risk of non-communicable diseases
- Reduced risk of anxiety and depression
- Improved cognitive functioning
- Relaxation
- Sense of achievement/ satisfaction
- Rewards

WORKSHOP B: MENTAL HEALTH FIRST

Behaviour Outcomes:

3. Increase student interest and communication about maintaining and improving mental health care and awareness through developing self-efficacy and mental health literacy (Social cognitive theory, destigmatising theory)

4. To sustain or increase students' level of physical activity (according to the international guidelines as above) and use of positive wellbeing strategies.

Outcome three: Performance objectives

The students will:

- Have an increased proficiency in mental health literacy (MHL) and conversations around mental health (MHL is the knowledge and understanding of the causes of and signs of mental health problems, how,

where and when to get mental health information and support (Chambers & Murphy, 2011.

Components of mental health literacy) include:

a) Knowledge and understanding of the cause of mental problems
b) recognition of the signs if a mental health problem
c) How to respond to a mental health problem in yourself/ someone else
d) Where to get information and support
e) When to seek help and support

- Students will apply the concept of the stress-vulnerability model to themselves and will use skills to increase resilience and reduce vulnerability (linked to performance objective a) knowledge and understanding of the cause of the mental

- Students will become aware of the effect of too much alcohol consumption and increase the strategies to reduce the negative impact of consuming too much alcohol

OUTCOME 3: MODIFIABLE SOCIAL, PERSONAL AND ENVIRONMENTAL DETERMINANTS

(according to the literature (Murphy, 2016) SOMI research (focus group interviews) and SOMI planning group Killarney)

Knowledge

- Mental health literacy and knowledge
- How to create and find opportunities to talk
- The role of one good adult
- The impact of help-seeking behaviours/ social anxiety (approaching help)
- How to recognise avoidant coping (ignoring)
- Access to information and support within college
- knowledge of how to help others
- The role of social support/ Peer relations/ connectedness
- Gender behaviour and mental health: females are more likely to seek help, and males have higher rates of suicide
- Minority sexual orientations more likely to have mental illness or negative mental health experiences
- The concept of neuroplasticity

Decision-making skills:

- Alternatives to avoidant coping- using positive mental health strategies

- Young people with elevated levels of distress are less likely to talk; deciding when to, who to and how to talk
- Skills to respond to personal or a peer's mental illness or negtive mental health experience
- Skills to use self-help strategies

Attitudes

- the stigma associated with mental health
- Mental health discussions and openness
- The ability to provide help

Self- efficacy belief

- Need for the belief in the ability to use effective self-help strategies
- Need for belief in capability to help others and self
- Efficacy to use positive mental health skills
- Need for belief in self-worth
- Belief in the ability to drink alcohol with an awareness of your health

Outcome four: performance objective

The students will:

- Reflect on their goals set for PA engagement in the workshop A. and sustain students' level of physical activity according to the international guidelines (150 minutes of moderate to intense physical activity per week) and decrease sedentary time to increase overall mental health and well-being
  - They will assess the progress of their goals
  - Discuss barriers and influences to progressing to increase PA
  - Problem-solve a way to overcome barriers/ set rewards for meeting challenges
  - Review plan and set new goals
- Reflect on the concepts discussed throughout the workshop using the Mental fitness toolkit, and explore the ideas the students felt engaged them to consider improved wellbeing

(According to the literature (Condello et al., 2017), SOMI research (focus group interviews) and SOMI planning group Killarney)

Knowledge

- Information on the benefits of physical activity
- How to start engaging in physical activity
- How physical activity contributes to positive mental health
- Identify where each individual is on the transtheoretical model
- Knowledge of barriers experienced by others
- Goal realisation
- Information about PA opportunities in the locality

Self-efficacy

- Students need self-belief that they can engage in physical activity
- Self-belief required to follow an action plan
- Need for self-belief that students can set new goals and achieve them even if they did not succeed the first time
- Need for the belief that students can overcome attitudes and barriers and participate in physical activity

Attitudes and barriers

- Time
- Work overload (working part-time and studying)
- Lack of routine
- Screen use (tv, laptops, phones)
- Smoking
- Alcohol consumption
- transition to college
- gender discrepancy
- Social surroundings/ environment influences
- Confidence and self-esteem

Skills

- Goal setting
- Self-monitoring
- Identify appropriate opportunities to be active
- Planning
- Building social support

- Barrier identification

Outcome expectations/ motivation

- Physical activity is good for your overall wellbeing
- Increased levels of self-esteem
- Improved sleep
- Reduced risk of non-communicable diseases
- Reduced risk of anxiety and depression
- Improved cognitive functioning
- Relaxation
- Sense of achievement/ satisfaction
- Rewards

Workshop A – positive mental health

Matrix for behaviour change

Outcome 1: To gain knowledge and practical application of positive mental health strategies and increase student awareness of their mental health needs

Performance/ behaviour objectives	Determinant 1 Knowledge/ Awareness	Determinant 2 Attitudes and barriers	Determinant 3 Skills	Determinant 4 Self- efficacy	Determinant 5 Outcome expectations/ motivation
Have increased knowledge of positive mental health, stress and resilience	• Express on the concept of positive mental health and wellbeing	• Understand that stress is a normal part of life	• Recognise that students already maintain some positive mental health strategies, and highlight the need to use other varied methods	• Belief in the ability to monitor and manage stress with mindfulness	• Expect that discussing mental health is important to normalise and destigmatise mental health conversations
Gain an increased awareness of mental health challenges	• State the challenges of emerging adulthood stage of	• Realise all people need help and support strategies	• Reflection/ self-observation to recognise and list		• Identify one good adult or resource individual students

among age group and recognise the role of 'one good adult'	development and recognise the need for peer and describe the need for 'one good adult' support	during challenging times	the skills students (emerging adults) already use to manage stress and workload		turn to or avail of in stressful times
Understand the concept of neuroplasticity and develop skills to develop positive neuroplasticity	• Interpret and describe the concept of neuroplasticity - the idea that our brain is changeable will enable students to have a broader understanding of mental health	• Recognise the importance and impact of selecting positive thoughts and activities • Understand mindfulness and its link to neuroplasticity	• List strategies to develop positive neuroplasticity	• Belief in the ability to using and listing positive affirmations/ positive self -talk to develop positive neuroplasticity	• Understanding the power of positive thinking and the brain's ability to form new neural connections
Understand mindfulness as a psychological state of awareness and how to use it in everyday life	• Describe mindfulness and its link to neuroplasticity		• Practice mindfulness for 1 minute	• Express confidence in positive mental health strategies such as mindfulness	

Workshop A Positive Mental health

Matrix for behaviour change – Outcome 2: To increase students' level of physical activity according to the international guidelines (150 minutes of moderate-intensity or 75 minutes vigorous-intensity physical activity per week) and raise student and awareness of the benefits of PA to increase overall mental health and well-being

	Determinant 1 Knowledge/awareness	Determinant Attitudes and barriers	Determinant 4 Skills	Determinant 2 Self-efficacy	Determinant 5 Perceived environment
The student will know how to use and apply positive well-being practices through the 5 ways to wellbeing	• Knowledge and awareness of stress, resilience and t**he Five Ways to Wellbeing** as evidence-based ways to help you improve and develop our strengths and resources to increase resilience	• feel they can implement all the five ways to wellbeing	• demonstrate the ability to collect strategies to increase wellbeing through the 'five ways to wellbeing'	• Express confidence in the ability to carry out new activities to improve wellbeing	
Gain knowledge of the benefits of engaging in PA, and the negative effects of sedentary behaviour	• Discuss/ describe how mind and body are connected (Recall neuroplasticity)	• Recognise and express the importance and benefits of PA on health and mental health		• Belief in the ability to increase or sustain PA levels	• Knowledge various types of physical activity and what facilities are available in UCC

		• Highlight levels of activity/ sedentary behaviour			
Monitor and assess PA through increased knowledge of types of PA activities and the recommended guidelines and transtheoretical model	• Assess the level of PA and decide to increase PA		• Compare their PA levels with the guidelines	• Express confidence in the ability to monitor current and ongoing PA levels	
Identify solutions to overcome barriers to being physically active	• How to incorporate PA into their life through solutions that prevent barriers	• List barriers and new methods to increase PA	• Problem-solving to overcome barriers identified	• Feel confident in ability to take away and prevent barriers	• Plan and feel confident in how to overcome barriers in day-to-day life
Identify plans to become more physically active (short term)	• How to integrate PA with/ without social connecting		• Decision-making skills and goal setting	• Express confidence in the ability to make the decision to engage, increase and sustain PA as part of life's routine	

Workshop B:

Matrix for behaviour change

Outcome 3: Increase student interest and communication about maintaining and improving mental health care and awareness through developing self-efficacy and mental health literacy

Performance objective	Determinant 1 Knowledge	Determinant 2 Attitudes	Determinant 3 Skills	Determinant 4 Self-efficacy	Determinant 5 Outcome expectations
Decreased mental health stigma that reduces mental health conversation	• Recall and describe what the term 'everyone has mental health' means	• Raised awareness of stigma around mental health - perceived barriers to normalising mental health		• Express confidence in ability to show empathy to those who are experiencing mental illness	
Knowledge and understanding of the causes of ill mental	• Describe how stress, vulnerability and resilience levels can contribute to our mental health				• Express how social, biological factors can increase susceptibility to mental illness

Raise awareness of alcohol and its effects on mental health - Use strategies to reduce too much alcohol consumption	• Raise awareness of the negative impact of continuous consumption of alcohol on mental health			• Explain strategies to reduce the impact of too much alcohol consumption	• Select one environmental or behavioural health promoting strategy to reduce health consumption
Apply the concept of the stress-vulnerability model to themselves and will use skills to increase resilience and reduce vulnerability	• Describe and analyse the stress-vulnerability	• Express the idea that resilience can be generated and increased	• Identify level of vulnerability, identify strategies of resilience through listing their coping skills (strengths-based activity)	• Feel confident to generate ideas to increase their resilience	• Expect to feel equipped to manage levels of stress and build resilience through positive mental health practices
Gain knowledge of how to respond to a mental health problem with yourself/ in others, where and when to seek help and support	• Provide general information: how to seek help, where to seek help, types and outcomes of professional help			• Belief in knowledge and ability to respond to poor mental health signals	• Expect to know services available on and off campus

Workshop B:

Matrix for behaviour change

Outcome 4: To sustain or increase students' level of physical activity (according to the international guidelines as above) and use of positive wellbeing strategies (mental fitness routine)

	Determinant 1 **Knowledge/awareness**	**Determinant** **Attitudes and barriers**	**Determinant 4** **Skills**	**Determinant 2** **Self-efficacy**	**Determinant 5** **Perceived environment**	**Determinant 6** **Outcome expectations**
Recognition of the signs of a mental health problem	• knowledge about mental health- the difference between mental distress, mental problem, mental disorder/illness		• Demonstrate the ability to differentiate between a between mental health problem and mental illness	• Self-belief in problem-solving ability to recognise mental health problems in self and/or others • Self-belief in the ability to respond to poor mental health signals	• Expect to recognise the signals of mental distress and disorders	

Gain knowledge of how to respond to a mental health problem with yourself/ in others, where and when to seek help and support	• Provide general information: how to seek help, where to seek help, types and outcomes of professional help		• Demonstrate the ability to help a friend/ problem solving	• Belief in knowledge and ability to respond to poor mental health signals	• Expect to know services available on and off campus
Sustain or increase students' level of physical activity (according to the international guidelines as above)	• Recall: - -Guidelines -Benefits of health and mental health -negative effects of sedentary behaviour	• express the importance and benefits of PA on health and mental health			
Assess PA progress and set their long-term plan for PA	• Students identify and acknowledge where they are on the transtheoretical model after one week	• List barriers which prevented goals being achieved/ • List influences which lead to	• Problem-solving skills planning and reflecting on progress	• Express confidence in continuing to pursue a goal or set a new one	• State new goal and outcome of a new goal

		goals being achieved				
Reflect on the concept of mental fitness and the practices for mental fitness explored throughout SOMI	• Knowledge and understanding of mental fitness • Engage in reflective discussion to express ideas that resonated with students throughout the workshop	• Identify and express positive mental health strategies and skills which have helped them acknowledge their mental health more often	• Provide students with a Mental fitness toolkit- reflecting all the actions for mental fitness explored throughout the programme	• Self-belief in the ability to cope with life's challenges through positive mental health awareness	• Provide list mental health facilities available to students attending UCC	• Actively engage in promoting positive mental health attitudes to reduce stigma

STAGE THREE

PROGRAMME DESIGN

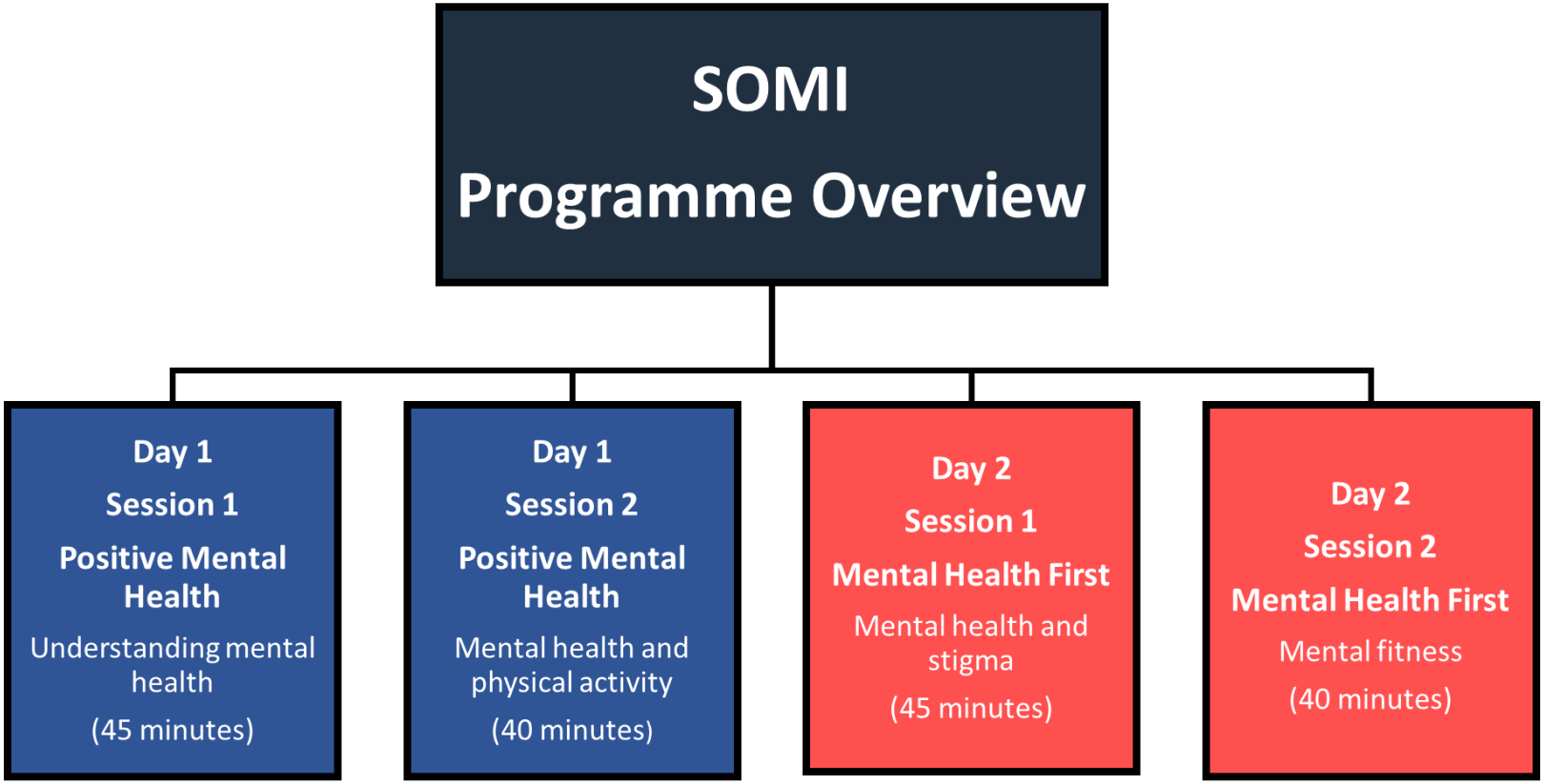
PROGRAM THEMES

COMPONENTS AND SEQUENCE

SCOPE

Workshop A- Positive mental health	**Workshop B: Mental health first**
Part 1 Understanding positive mental health - Everyone has mental health Mental fitness: stress, resilience and vulnerability Mental health, emerging adults and 'one good adult' Neuroplasticity – mindfulness and positive affirmations	**Part 1** Everyone has mental health- let's talk stigma Mental health literacy and responding to mental health issues Mental fitness 'the stress bucket' Alcohol consumption and mental health
Part 2 Exercise has been known to cause health and happiness The five ways to well-being The transtheoretical model of change SMART- don't find the time, make time	**Part 2** Maintaining wellbeing strategies – mindfulness Mental health literacy SMART - Resetting physical activity goals The Mental Fitness toolkit

Workshop design: 2 x 90 minutes (2 x 5-minute break)



THEORIES SELECTED TO REFLECT THE CHANGE METHODS AND DETERMINANTS USED IN SOMI

An eclectic selection of theories are used to reflect the needs of emerging adults and enhance practice (Bartholomew Eldridge et al., 2016). Each theory has been reviewed and linked with a pedagogical approach which reflects the change methods necessary to influence and identify the determinants of behaviour. This research focuses on a multi-theory approach as the ecological approach (influencing the environment) requires a decision-making agent who would allow us to adjust or adequately influence the environment of the students (Kok, 2014). To deliver the SOMI programme, the research team has been generously provided with 4 hours from the timetable of UCC students, SOMI is in its early stages and has limited access to influencing the student environment. Theoretical variables can work on multiple levels and the target of our intervention is to understand and change human process through signposting. Therefore our theories and model used throughout SOMI are either learning theories or theories of behaviour change which reflect the multi-theory approach outlined by (Bartholomew Eldridge et al., 2016)

THEORIES USED TO INFORM THE METHODS

As the SOMI-HE intervention aims to address a variety of health behaviours, including physical activity, multiple theories are useful to apply to behaviour change methods and identify the determinants of behaviour (Bartholomew Eldridge et al., 2016). Psychological theories have been developed to predict, explain and change health behaviour (Sutton et al., 2004). These theories provide intervention designers with a roadmap and a step-by-step summary of what factors to consider when creating, implementing, and evaluating a health promotion intervention (Raingruber, 2014). The use of theory ensures an evidence-informed approach to understanding and responding to health problems (Bartholomew Eldridge et al., 2016) . For example, self-efficacy theory is used to explain how ‘expectations of personal efficacy determine whether coping behaviour will be initiated’ (Bandura, 1977). While stage theories, such as the Transtheoretical Model (Prochaska & Velicer, 1997) inform researchers and practitioners on the best-suggested approaches the problem solutions.

Behaviour orientated theories such as the Health Belief Model (Becker, 1974), and self-efficacy (Bandura, 1977a) allow us to understand and change human behaviour by assuming that the effects of distal factors can be amended by the provision of a suitable response (Sutton et al., 2004). Behaviour models generally have overlapping determinants which primarily include core factors such as knowledge of health, risks and benefits of health practices, perceived self-efficacy, outcome expectations, goals and perceived facilitators and impediments to change (Bandura, 2004). Behaviour

theories that contribute to problem analysis and intervention development include learning theories, theories of information processing, theories of health behaviour, theories of reasoned action, theories of goal-directed behaviour, theories of change, stage theories, theories of automatic, impulsive and habitual behaviour, attribution theory and relapse prevention, theories of persuasive communication, theories of self-regulation, social cognitive theory, theories of stigma and diffusion of innovations theory (Bartholomew Eldridge et al., 2016). These models focus on determinants that are common across different health behaviours (Fishbein & Ajzen, 2010). In the SOMI-HE intervention, psychological theories are used to explain how phenomena relate to each other and thus, how to improve understanding of behaviour and maintaining positive behaviour change (Kwasnicka et al., 2016). The following theories support the design of the study research intervention described in more detail in chapter 5.

Theories:

Social Learning Theory or Social Cognitive Theory (Bandura, 1977b)

Social learning or social cognitive theory addresses how people learn through social interaction and observation of others (Bandura, 1977b). It holds that behaviour can be determined by three factors: goals, outcome expectations, and self- efficacy (Bandura, 1982). Bandura maintains most human behaviour is learned from observation and modelling. Behaviour is a multifaceted structure in which self-efficacy beliefs work with cognitive processes in order to address socio-structural determinants of health as well as personal determinants (Bandura, 1977). Self–efficacy theory (and most other psychological health theories) is born out of social cognitive theory. Self- efficacy is an individual's judgement of his or her capability to accomplish or perform an action and therefore examines the individual's self-belief to change behaviour (Bandura, 1986). Bandura firmly believed there is a strong interrelationship between outcome expectation and self-efficacy, stating that self-efficacy and behavioural capability may be improved through 1.) Enactive mastery of experiences (enabling a person to succeed through increasingly challenging performances of a behaviour. 2.) Vicarious experiences (showing a person that others like themselves can behave in a certain way) 3.) Verbal persuasion (providing encouragement to behaviour change) 4.) Emotional arousal (improving physical and emotional states). Some conceptual confusion exists in Bandura's social cognitive theory. Authors maintain the theory has an unresolved contradiction, asserting that although Bandura claims an individual's self-efficacy behaviour causally influences expected outcomes of behaviour, research shows that expected outcomes causally influence self-efficacy judgments (Williams, 2010).

Nonetheless, the researcher later establishes that self-efficacy theory is a viable theory that is best diversified with other health-related theories (Williams & Rhodes, 2016).

The Health Belief Model (Becker, 1974)

Self-efficacy (Bandura, 1977a) has much in common with the Health Belief Model. The health belief model is known to be one of the most popular and influential models in health promotion (Raingrubber, 2013). Becker (1974) highlighted the role of personal beliefs that influence decision making or behaviour change. The model holds the following four constructs influence why individuals decide to engage in a health: (1) perceived susceptibility to a risk (2) perceived severity of risk/illness (3) perceived barriers to taking a health action (4) perceived cost of not adhering to the intervention or particular health action (Becker, 1974). Becker, (1974) maintained that individual decisions are influenced by their personal experience, the ability to control their situation and a general feeling of discomfort that comes with the health risk. However, Naidoo & Wills (2009) points out that many people often have unrealistic optimism that it won't happen to them. Bartholomew Eldridge et al. (2016) indicate that the model does not have factors in its original design, such as how behaviour is determined by social influences. For this reason, constructs such as self-efficacy were later included to the model and seen as an essential and central component of the approach (Glanz, Rimer, & Viswanath, 2008; (Rosenstock et al., 1988).

Operant conditioning (Skinner, 1950)

Operant Conditioning stemmed from the concept of 'classical conditioning. The theory maintains people can learn through a conditioned response paired with associations of experiences of a conditioned stimulus and reinforcement through reward (Skinner, 1950). Skinner's theory has evolved into the classroom. Although its origin stemmed from a 'hungry rat experiment' (Skinner, 1968), Skinner maintains 'reward and punishment' are essential processes in human behaviour. Operant Conditioning is a simple approach to learning; however, it is the organisation of contingencies of reinforcement that contributes to the appearance of a change in behaviour (Kwasnicka et al., 2016). Without the application of operant conditioning, the alternatives are slow and gradual behaviour change or no change occurring at all (Skinner, 1968).

Elaboration Likelihood Model (Petty & Cacioppo, 1986a; 1986b)

The elaboration likelihood model (Petty & Cacioppo, 1986) has significantly advanced knowledge in the effects of persuasion and processing of information as it considers the various motivations and

abilities to process thoughts and messages. The idea of the Elaboration Likelihood Model is based on two ways of processing information; central and peripheral (Petty et al., 2009). Central processing happens when a learner carefully considers a message and compares it to previous beliefs. Peripheral processing occurs when a person processes a message, but without careful consideration or comparison (Petty et al., 2009). This theory can be used to promote thoughtful information processing to promote attitude and behaviour change (Bartholomew Eldridge et al., 2016). The model suggests three ways to stimulate motivation to think about the message; make the message personally relevant, unexpected and repeated.

Reasoned Action Approach (Fishbein & Ajzen, 2010)

Reasoned Action Approach (RAA) is a theory which has been developed and remodelled numerous times in the past four decades (Bartholomew Eldridge et al. 2016). Once known as Theory of Reasoned Action (TRA) (Martin Fishbein & Ajzen, 1975), the Theory of Planned Behaviour (TPB) (Ajzen, 1991) and The Integrated Behaviour Model (IBM) (Montaño & Kasprzyk, 2015), the RAA theory is the new version of the original TPB. All these theories focus on the determinants of behaviour and help health promoters understand the constructs that need to be observed and changed. The original TPB focuses on the importance of improved perception and self-belief for behaviour change. The new RAA (Fishbein & Ajzen, 2010) takes the comparable elements of all the above theories. The determinants of behaviour change under this model are intention, skills and environment. However, the RAA observes that behaviour is mainly determined by intention when people have actual control over their behaviour (increased skills and decreased environmental constraints) (Fishbein & Ajzen, 2010). The RAA determinants of intention are salient beliefs, instrumental attitudes, experiential attitudes, perceived social expectations, descriptive norms, perceived behavioural control and self-efficacy. The RAA theory does not suggest methods to change behaviours but refers to methods from other theories such as planning coping responses (Bartholomew Eldridge et al., 2016).

Self Determination Theory (Deci & Ryan, 1985)

Self Determination Theory (SDT) (Deci & Ryan, 1985) examines the level of motivation or self-determination an individual possesses for behaviour change. SDT is a theory of self-regulation that explores how individuals process self-observation, making judgments based on observations, setting a goal, use planned to cope strategies and reviewing progress (Clark & Zimmerman, 2014). This SDT outlines two types of motivation: acting from personal commitment (autonomous) and acting from fear

from external pressure (controlled) which lie on a continuum (Ryan & Deci, 2000). The intrinsic motivations include interest and enjoyment, while, extrinsic motivations are based on other people's wants and needs, rather than the individuals. SDT presents three needs are necessary for development and growth. These include autonomy, competence and relatedness. Autonomy determines whether decisions and beliefs are internalised. Competence is central to self-esteem, which can be seen as similar to self-efficacy. Relatedness refers to an individual's connection to others. According to the research when these three needs are met, they increase motivation and wellbeing, contributing to increased efficacy to care for one's health (Milyavskaya, Nadolny, & Koestner, 2014). 2.6.3.7

Goal Setting Theory (Locke & Latham, 1990; 2002)

Goal Setting Theory is a theory of change which leads to better performance as people with goals exert themselves to a challenge, persevere, concentrate and develop strategies to perform a behaviour (Locke & Latham, 1990; 2002). As mentioned above, autonomous goal setting is necessary for intrinsic motivation, and so again, self-efficacy is a determinant of goal-setting behaviour (Locke & Latham, 2006). Additionally, skills in goal setting and goal commitment are also two other determinants of a goal-setting theory which close the gap between the intention and the behaviour (Sheeran, 2002). Methods can include planning coping responses, mastery experiences and feedback (Bartholomew Eldridge et al., 2016).

The Trans Theoretical model (Prochaska et al., 2008; 1997)

The Trans Theoretical model proposes that health behaviour change involves progression through six stages of change: pre-contemplation, contemplation, preparation, action, maintenance, and termination (termination is not included for positive behaviours such as exercise). The stages of change aim to integrate both the processes and principles of change from different theories of intervention. Processes of change are the activities that people use to progress through the stages. These processes of change can provide essential guides for intervention programs, as the processes are like the independent variables required to move from stage to stage. Ten processes are outlined by Prochaska & Velicer (1997): (a) Consciousness Raising (Get the Facts) (b) Dramatic Relief (Pay Attention to Feelings) (c) Environmental Re-evaluation (Notice Your Effect on Others) (d) Self-Re-evaluation (Create a New Self-Image) (e). Social Liberation (Notice Public Support) (f) Self-Liberation (Make a Commitment) (g) Counter Conditioning (Use Substitutes) (h) Helping Relationships (Get Support) (i) Reinforcement Management (Use Rewards) (j) Stimulus Control (Manage Your Environment).

Stigmatising Theory (Goffman, 1963)

The stigmatising theory refers to an attribute that is deeply discrediting (Seeman & Goffman, 1964). It describes a situation where stigma has disqualified an individual from full social acceptance (Goffman, 1963). The phenomenon results in social rejection as a result of the attribute, by which the reaction of others spoils normal identity (Seeman & Goffman, 1964). The initial reaction stigma appears to be avoidance. Three emotion responses include 1.) fear, which leads to more stigma. 2.) Pity, leading to less stigmatisation and 3.) anger, which contributes to increased stigmatisation (Bos et al., 2008). In their research in mental health disclosure patterns, relationships among disclosure, perceived stigmatization, perceived social support, and self-esteem suggested that selective disclosure improves social support and limits stigmatisation. The research showed that those who are relatively open about their mental illness perceived stigmatisation as detrimental to self-esteem (Bos et al., 2009). Methods such as empathy training, shifting perspective, and cooperative learning can be used to reduce stigma (Bartholomew Eldridge, Markham, Ruiter, Gerjo, & Parcel, 2016).

TAXONOMY OF BEHAVIOUR CHANGE TECHNIQUES[7]

Taxonomy of behaviour change techniques (methods)	**Theories**
Chunking – using stimulus patterns to represent smaller pieces of information that have strong associations with one another to create one meaningful unit of information.	Social Learning Theory Operant Conditioning
Using imagery – selecting images to represent concepts which can be stored long term and short term.	Social Learning Theory Operant conditioning
Discussion – Encouraging consideration of a topic in an open, informal debate. **And**	Social Learning Theory Operant conditioning

[7] (Hagger et al., 2014); (C. Abraham & Michie, 2008); (Bartholomew Eldridge et al., 2016)

Co-operative learning- engineering discussions in a way that students must learn from one another	Theories of stigma and discrimination
Elaboration - Stimulating the learner to add meaning to the information processed. Methods used to elaborate are effectively encouraged through discussion. Discussion allows for thought processing of information and may help contribute to long term recall (Smith, 2008 in Bartholomew Eldridge et al., 2016)	Social Learning Theory Operant conditioning Elaboration Likelihood Model
Conscious raising- providing information, feedback, or confrontation about the causes, consequences and alternatives for a problem or a behaviour problem	Health Belief Model Reasoned Action Approach
Guided Practice- Prompt individuals to rehearse and repeat the behaviour various times, discuss the experience, and provide feedback	Social Cognitive Theory
Verbal persuasion- Using messages that suggest that the participant possesses certain capabilities	Social Cognitive Theory
Affect: Improving physical and emotional states - prompting interpretation of enhancement or reduction of physiological and affective states, to judge one's own capabilities. **Dramatic relief- encouraging emotional experiences, followed by reduced effect or anticipated relief if appropriate action is taken**	Social Cognitive Theory Trans-Theoretical Model
Self-monitoring of behaviour- prompting the person to keep a record of specified behaviours. **and** **Self-revaluation- encouraging combining both cognitive and affective assessments of one's self-image with and without unhealthy or healthy behaviour.**	Self Determination Theory Trans-Theoretical Model

Goal setting- Prompting planning what the person will do, including a definition of goal-directed behaviours that result in the target behaviour.	Self Determination Theory Goal-setting Theory
Planning coping responses- Promoting participants to list potential barriers and ways to overcome barriers in goal setting.	Reasoned Action Approach Goal-setting Theory
Direct experience- Encouraging a process whereby knowledge is created through the interpretation of experience	Operant Conditioning
Stereotypes-inconsistent information- providing positive examples from the stigmatise group	Theories of stigma and discrimination
Empathy training- stimulating people to empathise with another person	Theories of stigma and discrimination
Modelling- providing an appropriate model being reinforced for the desired action	Social Cognitive Theory

METHODS AND APPLICATION FOR WORKSHOP A PART 1

Behavioural outcome	Determinants and change objectives	Method	Application	Slide	Workbook
Have increased knowledge of positive mental health, stress, resilience and positive mental health strategies	Knowledge on the concept of positive mental health and its impact in wellbeing	Elaboration	The word tree (group brainstorm – what is mental health). Highlight perspective can be negative. What is wellbeing? teacher elaborates the concept of positive mental health and wellbeing on a continuum Explore stress, resilience and vulnerability to negative mental health experiences You can't stop the waves, but you can learn how to surf – you can't stop stressors, but you can learn how to manage stress	Slide 4 Slide 5 Slide 6 Slide 6 Slide 7	WB p.3
	Clarify language and perceived barriers to normalising mental health conversations and reduce stigma	Discussion/ Elaboration	Look around. Everyone has mental health. We can all feel vulnerable.	Slide 8	

	Outcome expectations that discussing mental health is important to normalize and destigmatize mental health and that mental illness can be managed	Verbal persuasion Conscious raising Empathy Training Stereotypes	We all wear masks activity – lower your mask to help others lower theirs too.	Slide 9	WB p. 4/5
	Skills to recognize that students are already aware of stress and can perform positive mental health strategies to build resilience	Discussion Brainstorm	The facilitator asks students to describe the perfect day. In groups, students discuss the perfect day. The teacher reminds students 'You can't stop the waves from coming but you can learn how to surf.' Students list the challenges they had to overcome to get to college. Groups discuss stress and how they respond to stress. Brainstorm the effects of stress on the body, feelings and thoughts	Slide 10 Slide 11	WB p. 6 WB p. 7

	Understand that stress is a normal part of life, but it can be managed with increased resilience through decreasing your vulnerability	Elaboration	What is stress? Stress for survival- 'fight or flight.' The effects of too much stress Resilience- the idea of mental fitness Mental fitness means decreasing your vulnerability to experiencing chronic stress through increasing resilience	Slide 12 Slide 13 Slide 14 Slide 15	
Gain an increased awareness of mental health challenges among age group and recognize the role of 'one good adult.'	Knowledge to state the challenges of emerging adulthood and recognize the need for peer support and 'one good adult' support to increase resilience	Conscious raising	Model/ images of mental health of emerging adults attending college	Slide 16	
	Attitude to realise the role of one good adult Instil self-belief to continue to be resilient and increase resilience through one good adult Expect to identify 'one good adult' or resource students can turn to or avail of in stressful times	Direct experience/ self-efficacy	Identify potential 'one good adult' students have. Discuss and write how does 'one good adult' increase resilience	Slide 17 Slide 18	WB p. 10

Understand the concept of neuroplasticity.	Interpret and describe the concept of neuroplasticity - the idea that our brain is changeable will enable students to have a broader understanding of mental health	Advanced organisers	Predict what neuroplasticity is, then watch video on neuroplasticity Define negative and positive neuroplasticity	Slide 19	
			The 'Non-dominant Hand Challenge' - to try and do a task with the non-dominant side. Repeatedly write a sentence with the hand you don't write with.	Slide 20	WB p. 11
	Create an attitude towards the importance and impact of selecting positive thoughts and activities – mindset	Self-reevaluation	What you practice grows stronger London Taxi drivers. The Harvard Piano players.	Slide 21 Slide 22	
Develop skills to develop positive neuroplasticity (mindfulness practice and positive affirmations)	Describe mindfulness and its link to neuroplasticity	Discussion Elaboration Discussion	What is mindfulness? What has neuroplasticity got to do with your thoughts/ everyday activities?	Slide 23	

	Understand mindfulness as a psychological state of awareness that helps us to be resilient against stressors Increase knowledge of what mindfulness is and link its practice to the concept of neuroplasticity				
	Increase skills to list strategies to develop positive neuroplasticity Practice mindfulness for one minute Express confidence in the ability to use mindfulness	Skills training and goal setting Guided practice	Breathing based mindfulness- Notice, breathe accept	Slide 24	
	Self- belief in the ability to manage negative thoughts that trigger stress with mindful positive affirmations. Self-belief in the ability to using and listing positive affirmations/ positive self -talk to develop positive neuroplasticity Expect to understand the power of positive thinking and the brain's ability to form new neural connections	Affect: Improving physical and emotional states	Being mindful of your thoughts. Spilt Milk -Catastrophising and anxiety. 'You don't have to believe everything you think.' The whole group of students individually brainstorm the types of mindless worries or negative thoughts they have each day, they	Slide 25 Slide 26 Slide 27	WB p. 16

			then create positive self-talk phrases and record them in student's booklet		

METHODS AND APPLICATION FOR WORKSHOP A PART 2

Behavioural outcome	Determinants and change objectives	Method	Application	Slide	Workbook
Students will know how to use and apply positive well-being practices through the 5 ways to wellbeing	Knowledge and awareness of evidence-based actions to improve personal wellbeing: The Five Ways to Wellbeing.	Conscious raising Discussion	Provide evidence-based ways to help improve and develop strengths and resources to increase resilience	Slide 30	

	Knowledge to list and describe various activities for each ‘way’ in the 5 ways to wellbeing	Chunking Elaboration	Self-assess in the booklet and reflect how well students carry out each ‘way’ to wellbeing per week as we progress through the presentation on 5 ways to wellbeing	Slides 31-35	WB p. 17
	An attitude that students feel they can easily implement all the five ways to wellbeing	Verbal persuasion	Provide an additional list of activities for each ‘way’ in student booklet- Create word board in the booklet of five ways activities they already do and what they would like to do more of daily (Complete in two minutes)	Slide 36	WB p. 23
	Skills demonstration of the ability to collect strategies to increase wellbeing through the ‘five ways to wellbeing.’ Express confidence in the ability to carry out new activities to improve wellbeing	Goal setting public commitment	Students identify a ‘way’ they will commit to doing more of. In one minute, the students will write, stand up, hold up and share their ‘ways’ with one another. Direct students to look around them and read each other.		WB p. 24

Gain knowledge of the benefits of engaging in PA, and the negative effects of sedentary behaviour	Express the importance and benefits of PA on health and mental health	Conscious raising Image Chunking	Infographics on the benefits of PA on mental health	Slide 37-39	
	Highlight guidelines of PA levels	Conscious raising	Recommended guidelines for levels of physical activity per week Question: What are the recommended guidelines? Unveil answer	Slide 40	
	Highlight levels of sedentary behaviour	Conscious raising	Explain types of PA . Activity: Switch sides with the person beside you and stand up. Switch sides if you have these in common- you like chocolate, you ran 5 km this week, you have a brother etc.	Slide 41 Slide 42 Slide 43	WB p. 27
		Conscious raising	Smart art on sedentary behaviour: Brainstorming		

	Highlight when we are most sedentary – screen time, driving, studying.				
Monitor and assess PA through increased knowledge of types of PA activities, the recommended guidelines and the transtheoretical model	Assess the level of PA on TTM Express confidence in the ability to monitor current and ongoing PA levels ongoing PA levels Compare PA levels with the recommended guidelines	Goal setting/ chunking	Complete TTM in the workbook on p.28 and read the description in p. 29. (If students are already active, perhaps they can think of another behaviour they want to change)	Slide 44	WB. p. 28/29
Identify solutions to overcome barriers to being physically active	List barriers and new methods to increase PA Problem-solving to overcome barriers identified	Discussion Verbal persuasion Discussion	In groups, students have 30 seconds to list as many barriers to not doing PA. Facilitator lists top determinants of PA	Slide 45 Slide 46	WB p. 30

	Gain knowledge of how to incorporate PA into daily life through solutions that prevent barriers Plan and feel confident in how to overcome environmental barriers in day-to-day life Feel and confident in the ability to take away and prevent barriers		In groups, student has one minute to create solutions to some identified barriers- then discuss		WB p. 30
Identify plans to become more physically active (short term)	Decision-making skills and goal setting Express confidence in the ability to make the decision to engage, increase and sustain PA as part of life's routine	Goal setting/ public commitment	Follow the SMART procedure (Workbook) to set the goal. Find something you like doing. Intensity is important to consider. Time can be made, not found. Explore the importance of monitoring progress- use app, diaries, grids. Talk students through workbook journaling section, request them to	Slide 47	WB P. 32 WB p.33

	bring some thoughts/ reflections on their PA to the next workshop. Give facilitator tips to increase PA	Slide 48	WB p. 34
	Set a goal either individually as part of a group, take a picture and tweet it to StateofMindIre or email for us to post	Slide 49	

METHODS AND APPLICATION FOR WORKSHOP B PART 1

Behavioural outcome	Determinants and change objectives	Method	Application	Slide	Workbook
Decrease stigma that prevents mental health conversation	Practice mindfulness for two minutes Express confidence in the ability to use mindfulness	Skills training Direct experience Guided practice	Metaphor: If you think of the pond as your mind, a pool of awareness, and the fish as thoughts, feelings, bodily sensations that come into your mind. 2-minute mindfulness – breathing	Slide 4	
	Raised awareness of stigma around mental health - perceived barriers to normalising mental health Recall knowledge and describe what the term 'everyone has mental health' means	Discussion/ Elaboration Improving physical and emotional states Elaboration	Myth-busting activity- students vote on true or false statements Explain mental health stigma and its effects How open would you be an activity? Everyone has mental health	Slide 5 – 10 Slide 11 Slide 12 Slide 13	
Knowledge and understanding of the cause of mental health	Describe how stress, vulnerability and resilience	Imagery	Describe the Biopsychosocial model in relation to mental health	Slide 14 Slide 15	

problems – Stress vulnerability	levels can contribute to our mental health Express how social, biological factors can increase susceptibility to mental illness	Elaboration	The stress bucket analogy - Demonstration/ explanation of the stress vulnerability and resilience – get students to suggest what stressors there can be at a biological, environmental and social aspects	Slide 16	
Raise awareness of alcohol and its effects on mental health - Use strategies to reduce too much alcohol consumption	Raise awareness of the negative impact of continuous consumption of alcohol on mental health	Elaboration	Alcohol and mental health explanation	Slide 17	
		Raised consciousness	Ask students how much they have consumed in the last 7 days	Slide 18	
			Show student recommended guidelines	Slide 19	
			Demonstrate methods to reduce alcohol consumption	Slide 20	
Apply the concept of the stress-vulnerability model to themselves and will use skills to increase	Identify the level of stress, vulnerability and resilience- identify coping skills (strengths-based activity)	Discussion/ Conscious raising	Provide students with their own stress bucket in a booklet to complete alone - a strengths-based activity where	Slide 21	WB p. 8

resilience and reduce vulnerability	Express the idea that resilience can be generated and increased Feel confident in generating ideas to increase resilience Expect to feel equipped to manage levels of stress and build resilience through positive mental health practices	Affect Conscious raising/Self – evaluation	student identify the resilience resources they already use

METHODS AND APPLICATION FOR WORKSHOP B PART 2

Behavioural outcome	Determinants and change objectives	Method	Application	Slide	Workbook
Recognition of the signs of a mental health problem	Increased knowledge about mental health- the difference between mental distress, mental problem, mental disorder	Image Elaboration Discussion	Levels of mental health concerns using smart art graph Teacher elaborates and asks students to sort mental health problems listed accordingly – where would schizophrenia go? Panic disorder? Demoralised? Disenfranchised? Unhappy? disgruntled? depressed?	Slide 24 Slide 24	
Gain knowledge of how to respond to a mental health problem with yourself/ in others, where and when to seek help and support	Provide general information: how to seek help, where to seek help, and types of help	Discussion /Conscious raising	Images of signs of a mental health problem in self or someone else Discuss ways to respond to signs such as social isolation in self and others Respond to your concern today	Slide 25 Slide 26/27 Slide 28	
	When to act, what type of action to take, how to talk to someone who doesn't seem like themselves Expect to know services available on and off-campus	Image Chucking	Lecturer and students list other simple and realistic ways to help themselves and reach out to others	Slide 29/30 Slide 31	WB p. 11-14

	Demonstrate the skills and self-belief in their problem-solving ability to recognise mental health problems in self and/or others Self-belief in knowledge and ability to recognize and respond to poor mental health signals Expect to recognise the signals of mental distress and disorders in self and others	Discussion Conscious raising	Information on the booklet with local and national resources available to young adults Vignette activity – group work Group discussion on one of three vignettes per group. Group read and respond to questions asking them to 1) categorizes the level of mental health problem 2) what makes you think there is something wrong? 3)how would you respond	Slide 32-34	WB p. 15- 17
Sustain or increase students' level of physical activity (according to the international guidelines as above)	Knowledge recall: Guidelines, Benefits on health and mental health, negative effects of sedentary behaviour Express the importance and benefits of PA on health and mental health	Image Chunking Conscious raising Self-monitoring of behaviour	Group assessment – show of hands 'who were more conscious of their PA levels in the last week.' Ask students to recall as much as they can as a whole group about PA and mental health (recalling previous workshop discussion: 'exercise has	Slide 35 Slide 36	

			been known to cause health and happiness')		
Assess PA progress and set their long-term plan for PA	Students identify and acknowledge where they are on the transtheoretical model after one week	Image	Ask students to identify where they are on the transtheoretical model – image to self-assess change	Slide 37	
	List barriers which prevented goals being achieved since the last session	Discussion	Ask students to discuss their goals and identify their barriers to achieving the goal they set or influences helped them to achieve their goals	Slide 38	WB p. 18
	List influences which lead to goals being achieved	Discussion			
	Use problem-solving skills to plan and reflect on progress	Image	Set a new goal in the booklet and its outcomes	Slide 39	WB p. 19
	Express confidence in continuing to pursue a goal or set a new one		Continue to monitor progress		WB p. 20
	State new goal and outcome of a new goal				

Reflect on the concepts discussed throughout the workshop and explore the ideas the students feel will improve their wellbeing	Engage in reflective discussion to express knowledge that resonated with students throughout the workshop	Discussion/ Elaboration	Recall the concept of mental fitness Reiterate components of mental fitness Students group in 5-6 to discuss the ideas/ concepts explored throughout workshops that resonated with them the most- (post-activity discussion with 2-3 random groups)	Slide 40 Slide 41-46	WB p. 23
	Self-belief ability to cope with life's challenges through positive mental health awareness Identify and express positive mental health strategies and skills which have helped them acknowledge their mental health more often Provide list mental health facilities available to students attending UCC	Discussion Chunking Public commitment	Students individually list in order the five most likely positive mental health strategies they are likely to use Remind students of information provided in the booklet Call to action- take a group photo with 'reduce the stigma pledge' – share online	Slide 47 Slide 49	WB p. 23

	Engage in an activity to promote positive mental health attitudes in order to reduce stigma

Appendix L: SOMI-HE day 1 PowerPoint presentation

STATE OF MIND IRELAND

Positive Mental Health for UCC College students

Part A: positive mental health

Session 1: Understanding mental health



Dr. Wesley O'Brien



Niamh O' Brien



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State of Mind Ireland and University College Cork

SESSION 1

Positive mental health

Understanding mental health

State of Mind Ireland and University College Cork

OBJECTIVES

Increase knowledge of positive mental health, stress, resilience vulnerability.

Develop awareness of mental health challenges.

Understand the concept of neuroplasticity and the skill to develop positive neuroplasticity.

Understand mindfulness as a psychological state of awareness and its use in everyday life.

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In 2's and 3's generate a list of words you associate with 'mental health'

P. 3

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WHAT IS WELL BEING?

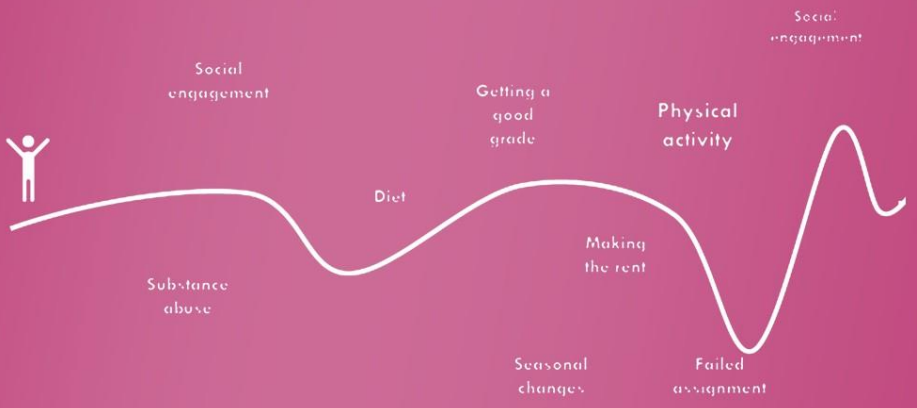
Wellbeing is made up of two elements



Positive mental health is 'a state of well-being in which the individual **realises his or her own abilities**, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community' (WHO, 2014).

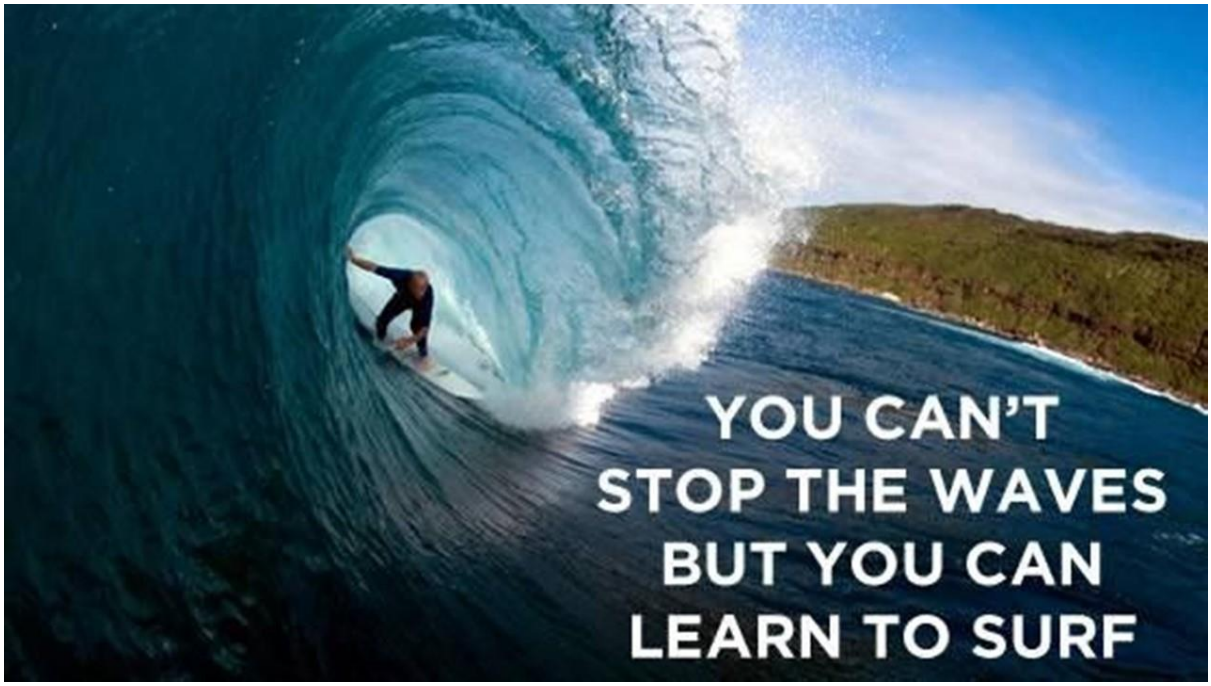
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WHAT IS POSITIVE MENTAL HEALTH?



Doing what is good for you

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MENTAL HEALTH AND STIGMA

We all wear masks..



Look at the person to your left. Look at the person on the right. Look at who is in front, and look at who is behind you…

EVERYONE HAS MENTAL HEALTH

WE CAN ALL FEEL VULNERABLE

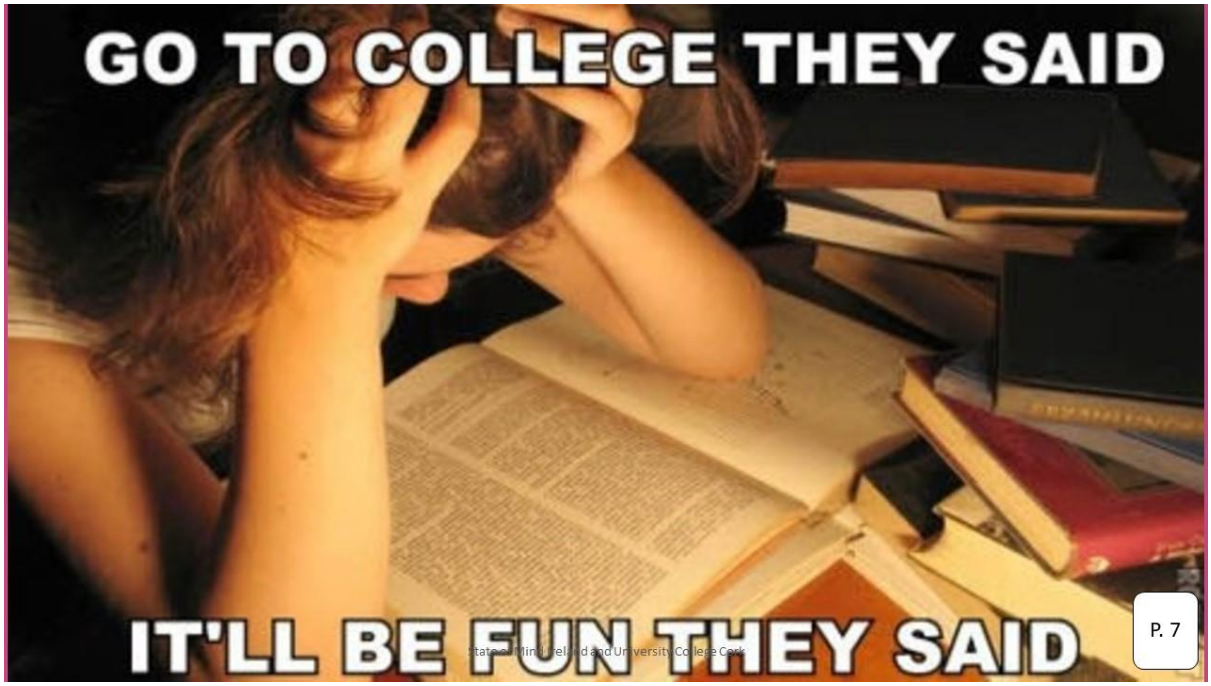
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WHAT IS A PERFECT DAY?



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P. 6



WHAT IS STRESS?



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An evolutionary trait
"fight or flight"



Stress can affect brain size, structure, gene expression and functioning



Chronic stress can affect us physically and emotionally.

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RESILIENCE

'The ability to bounce back from negative emotional experiences and adapt to adversity'



'Mental fitness'.

Mental fitness helps to protect and recover from adversity. It is having the emotional agility to respond adequately to life's challenges through finding strengths and using resilience resources.

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RESILIENCE

Can it be increased?



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EMERGING ADULTS



14% are experiencing severe to very severe depression or anxiety.



One-quarter are experiencing mild to moderate depression or anxiety





Just over half report suicidal ideation



One-fifth report engaging in deliberate self-harm

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ONE GOOD ADULT



P. 10

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Simply someone who is there…

Someone who is willing to ***listen***





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WHAT IS NEUROPLASTICITY?



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NON DOMINANT HAND CHALLENGE

P. 11

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LONDON CAB DRIVER EXPERIMENT

Consolidation of new memories

Emotions (Lymbic System)



Learning

Spatial Orientation

State of M

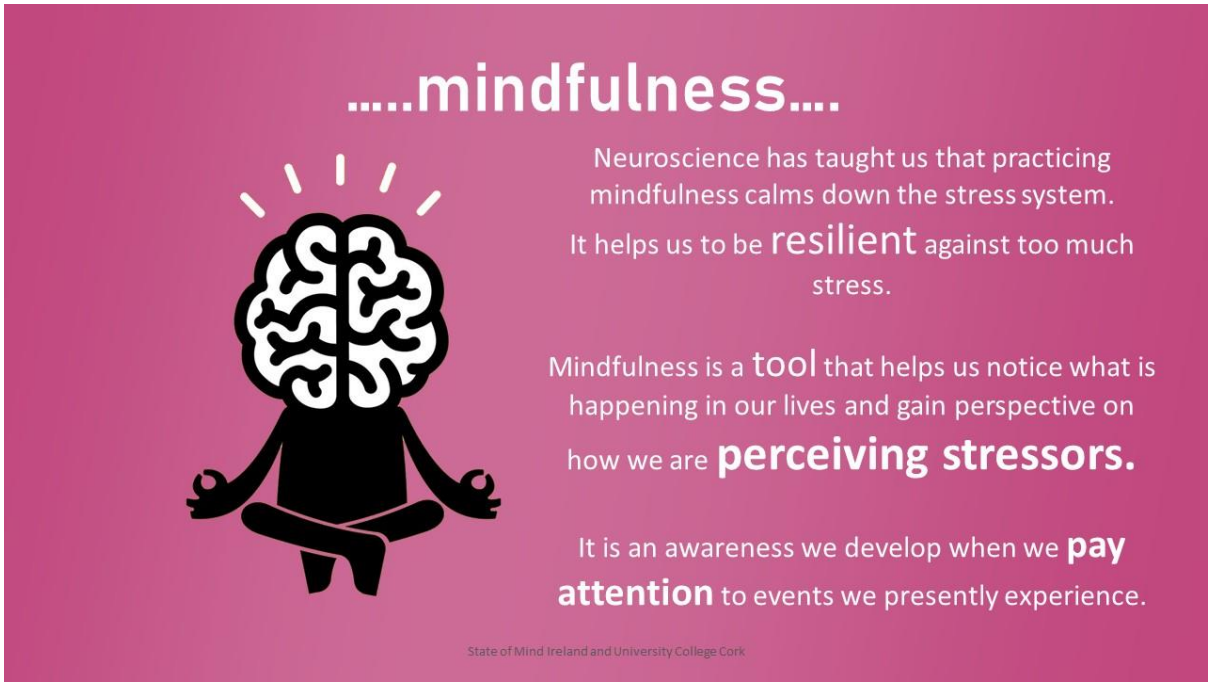


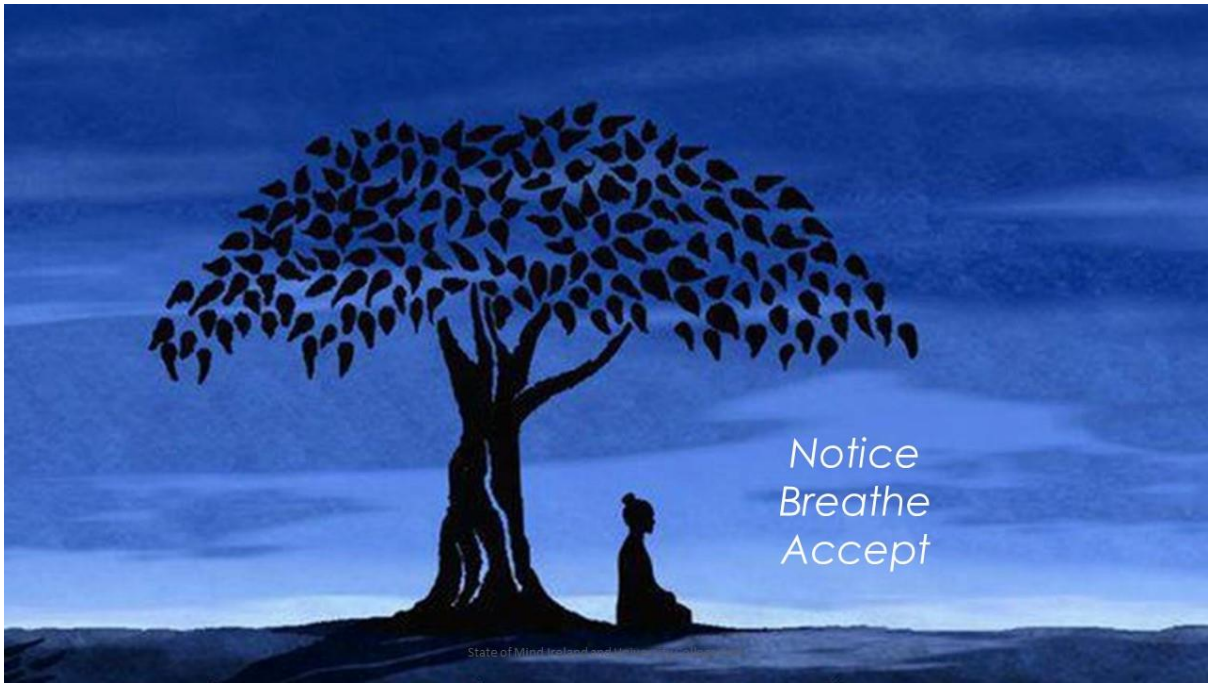
NEUROPLASTICITY HARVARD PIANO STUDY

- For 2 hours a day, group 1 imagined practising (mental), group 2 actually practiced (motor), group 3 did nothing
- After 3 days: accuracy was the same in group 1 and 2.
- After 5 days the motor group (2) were more improved, but the mental group (1) caught up when they practiced physically



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.....mindfulness....
Neuroscience has taught us that practicing mindfulness calms down the stress system.
It helps us to be resilient against too much stress.
Mindfulness is a tool that helps us notice what is happening in our lives and gain perspective on how we are perceiving stressors.
It is an awareness we develop when we pay attention to events we presently experience.
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Notice
Breathe
Accept

Spilt milk…



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YOU DON'T HAVE TO BELIEVE EVERYTHING YOU THINK!

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P. 16

IRRATIONAL THOUGHTS SOUND LIKE….



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SESSION 2

Positive Mental Health

Mental health and physical activity

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OBJECTIVES



Know and implement the five ways to wellbeing



Develop an understanding of why engaging with physical activity increases wellbeing



Know the recommended weekly guidelines for PA

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THE 5 WAYS TO WELLBEING



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5 WAYS TO WELL BEING

- BE ACTIVE
- CONNECT
- GIVE
- KEEP LEARNING
- TAKE NOTICE

Go for a walk, or run, or cycle. Play a game or sport. Gardening and dancing are good exercise too.

Find something that you enjoy and suits your level of mobility and fitness.

You don't have to try to run a marathon or go to the gym every day. Just 10 or 15 minutes of physical activity a day can make a difference to your mental wellbeing.

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5 WAYS TO WELL BEING

BE ACTIVE

CONNECT

GIVE

KEEP LEARNING

TAKE NOTICE

Connect with people around you – family, friends, colleagues, neighbours – at home, work, school, your local community.

If you've become a bit isolated, you may find it difficult to connect with people.

You don't have to throw a big party. Try to build a better relationship with just a few people to start with.

It is worth spending some time and effort to build up your connections.

5 WAYS TO WELL BEING

BE ACTIVE

CONNECT

GIVE

KEEP LEARNING

TAKE NOTICE

Do something nice for someone – a friend or a stranger.

Just thanking someone or giving them a smile can make you and them feel good.

Give yourself some time and treats as well. Some people find giving easy, but don't find it so easy to receive – whether gifts or compliments.

5 WAYS TO WELL BEING

BE ACTIVE

CONNECT

GIVE

KEEP LEARNING

TAKE NOTICE

Try something new or pick up an old interest.

Do a formal course to learn new information or a skill, to learn to play a musical instrument, or to draw and paint.
Learn how to fix a bicycle.

You can learn from reading, listening to the radio or watching television. What's going on locally that may be interesting to visit or take part in?

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5 WAYS TO WELL BEING

BE ACTIVE

CONNECT

GIVE

KEEP LEARNING

TAKE NOTICE

Be curious - notice the changing seasons – trees and plants.

Be aware of your feelings and reflect on your experiences.

To take notice is to be in the present, in the 'here and now', and to be aware and mindful of your surroundings, to be alert to what is happening around you.

Pause, even for a brief period, to spend some time in silence and reflect on your experiences.

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5 WAYS TO WELL BEING

Task 1- 2 minutes

- Open page 23
- Think of how to rated throughout the previous 5 slides
- Complete it less than two minutes
- How did you do?



Task 2 - 1 minute

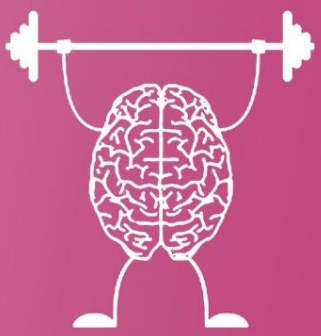
- Open page 24
- Turn it landscape
- Take one 'way' for you to focus on in the future
- Draw it
- Make sure it's clear for all to see… be creative!
- Stand and share

P. 23 P. 24

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Exercise has a greater impact on the brain than any other part of the body.



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PHYSICAL ACTIVIY AND MENTAL HEALTH



Improves memory and learning. Reduces risk of cognitive decline -BDNF protein



Prevents non-communicable diseases or the 'physical inactivity pandemic'



Increases positive emotions by boosting endorphins, serotonin and dopamine

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PHYSICAL ACTIVIY AND MENTAL HEALTH



Reduces stress and effects of stress on the immune system



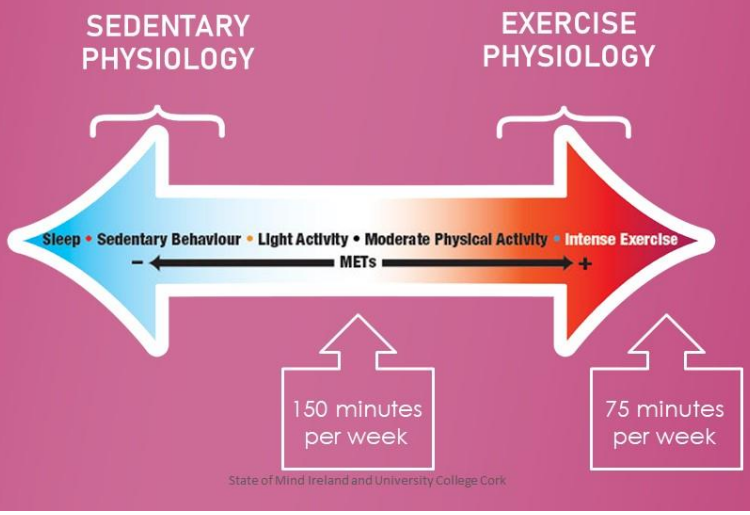
Improves sleep



Reduces risk of depression and anxiety

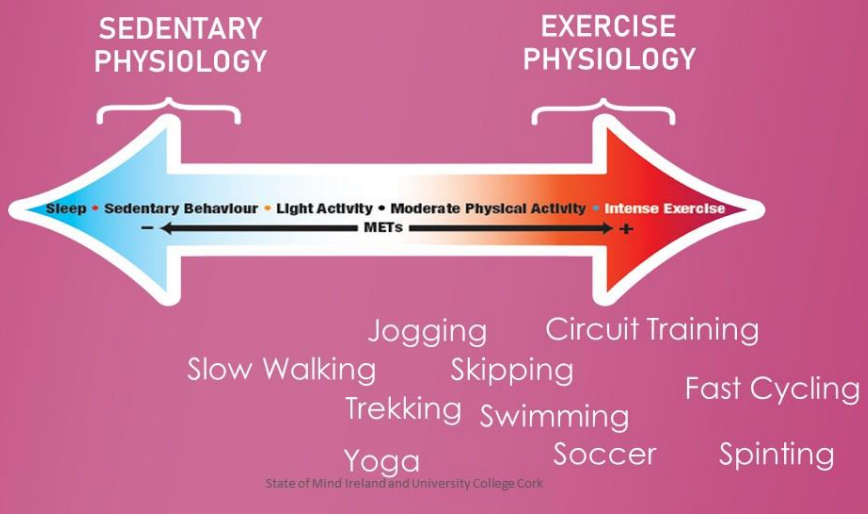
State of Mind Ireland and University College Cork

RECOMMENDED GUIDELINES FOR LEVELS PHYSICAL ACTIVIY PER WEEK



State of Mind Ireland and University College Cork

TYPES OF PHYSICAL ACTIVITY

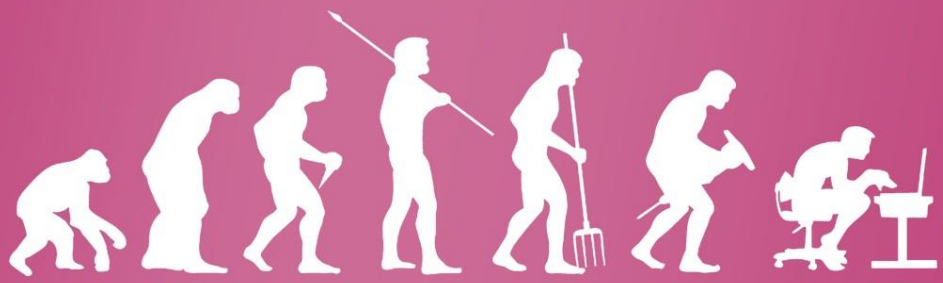


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STAND UP AND SWITCH

State of Mind Ireland and University College Cork

SEDENTARISM

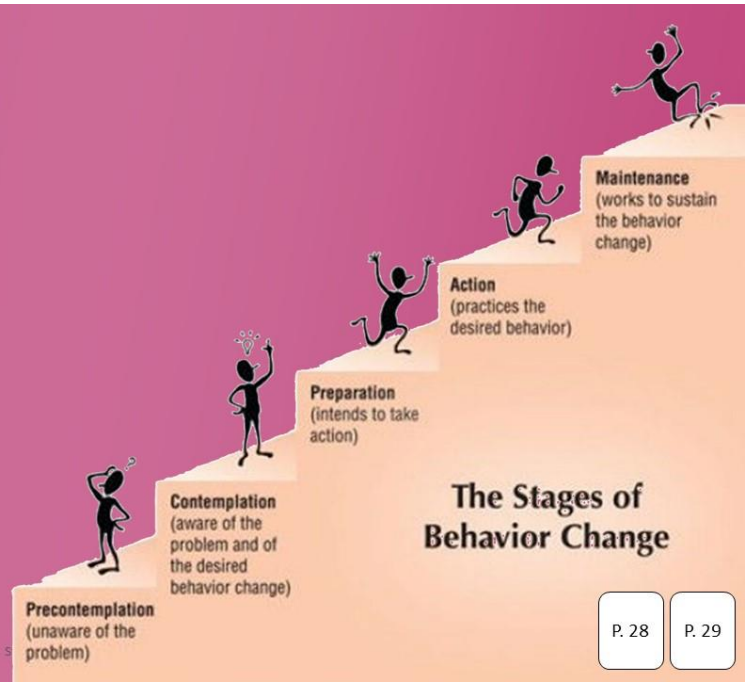


Many adults spend 70% or more of their waking hours sitting!

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State of Mind Ireland and University College Cork

Assess yourself on the trans theoretical model



P. 28 P. 29

THE BARRIERS TO PHYSICAL ACTIVITIES

- See how many barriers you can list that prevent us from maintaining physical activity in our lives
- Who got more than 5?
- More than 7?
- Take a minute to discuss these barriers and see if there are solutions to some identified barriers.



P. 30

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THE DETERMINANTS TO PHYSICAL ACTIVITY

Knowledge

Work overload

smoking

Self-efficacy

Alcohol

Without goals

Self-esteem

Environment

Planning

Change

Time

Rewards

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Your BOOKLET AND monitoring SMART GOALS



P. 32

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FACILITATOR TIPS

- If I can do it, so can you!
- Find other motivated people - friends
- It doesn't have to be hard- Enjoy it!
- Start slowly, build up your time
- You believe what you perceive!
- Talk nicely to yourself during exercise



PS. Read through the list of resources at the back of the booklet.

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@StateofMindIre

nobrien00@yahoo.ie

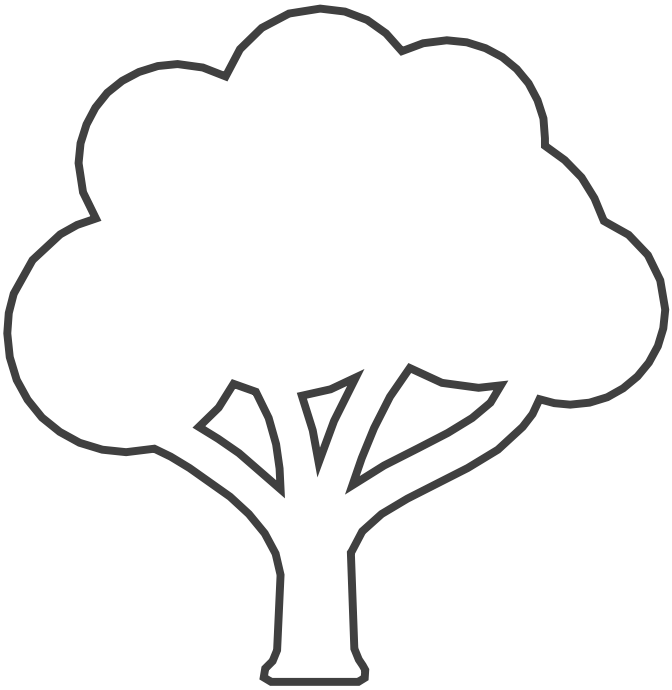
Appendix M: SOMI-HE day one student activity book

State of Mind Ireland Student Handbook

Positive mental health

Exploring the idea of positive mental health or wellbeing, this booklet focuses on stress, resilience, awareness of the mental health of college students, neuroplasticity and mindfulness. This booklet also provides you with information, reflective questions and interactive sections in which you complete either independently or throughout the programme. As you progress through the book, we ask that you try your best not to read on. Instead, move with the pace of the workshop and reflect in action as part of the learning process.

List all the words you associate with 'mental health.'



What is wellbeing or mental health?

The World Health Organisation recognises them as the same thing. Our mental health is central to well-being, and an essential component of effective functioning at both an individual and a community level. Similar to physical health and fitness (although mental health and physical health co-exist), there are multiple factors which determine mental health and mental illnesses. These can include social, psychological and biological vulnerabilities associated with social disadvantage, social change, and violation of human rights, substance abuse, poor physical health, stressful work conditions, unhealthy lifestyle choices, high levels of unemployment and low income and education.



There are two schools of thought when it comes to positive wellbeing. Today we view wellbeing as a dynamic process which incorporates both subjective (thinking/ feeling) and objective (having/doing) domains.

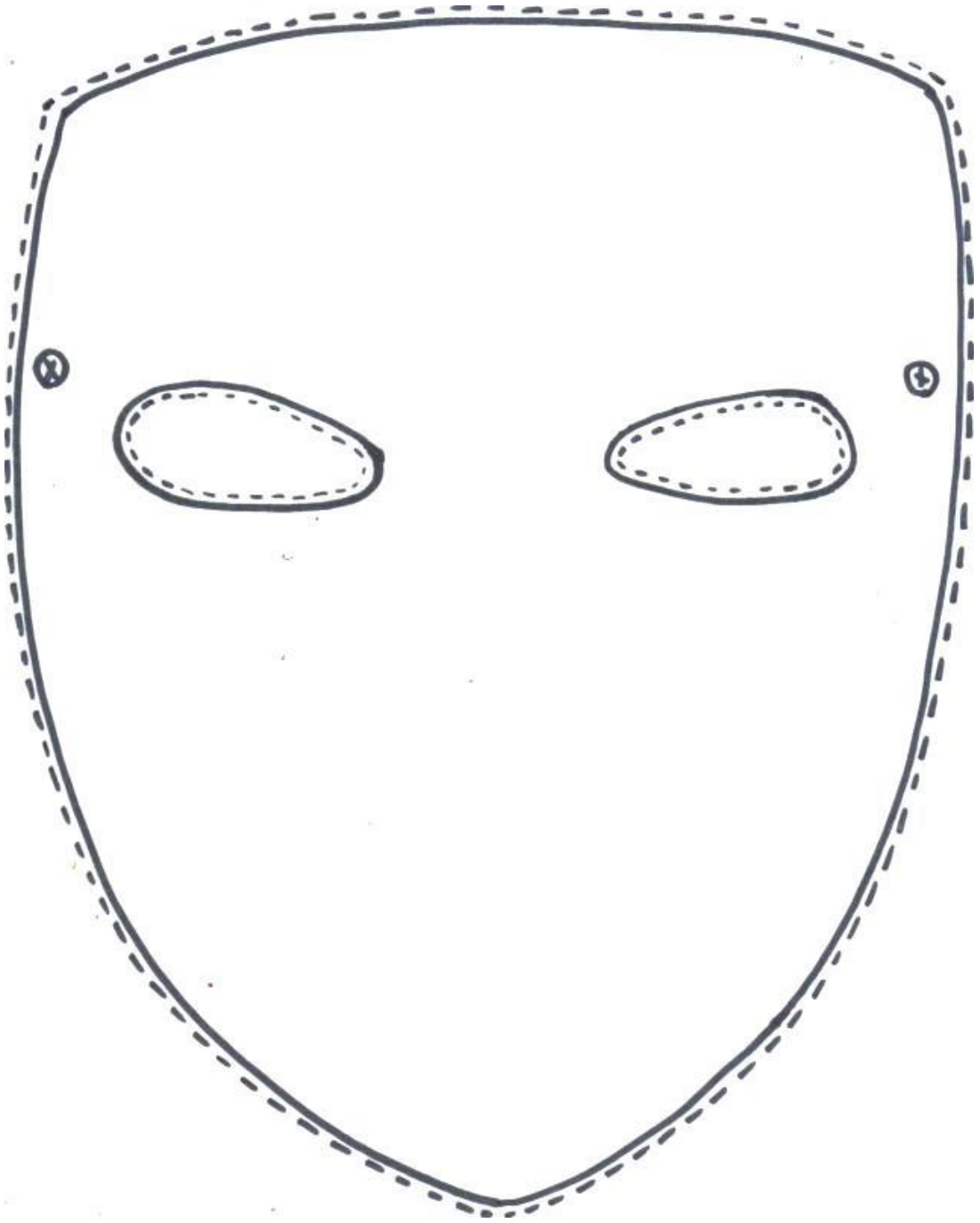
What is certain about mental health is the following:

- Everyone has mental health
- Mental health is more than the absence of mental illness
- It is an integral part of health, and there is no health without mental health
- Mental health is determined by a range of socioeconomic, biological and environmental factors
- Mental health can be viewed as a continuum which can range and change at various stages in our lives.

‘Everyone has mental health’

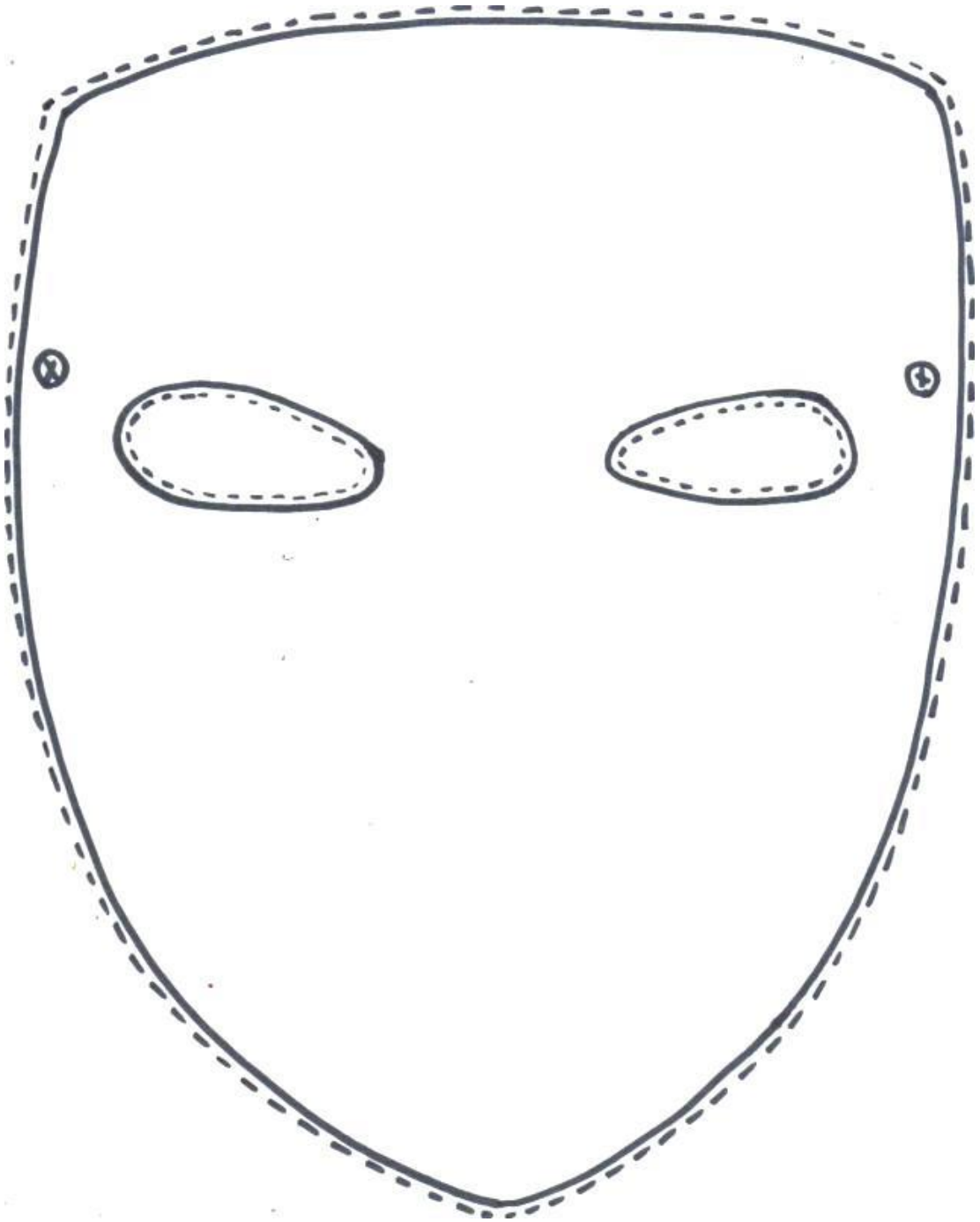
We all wear a mask! Lower your mask to help others lower theirs

Write in your mask the way <u>you like to be seen</u> at college or at work.

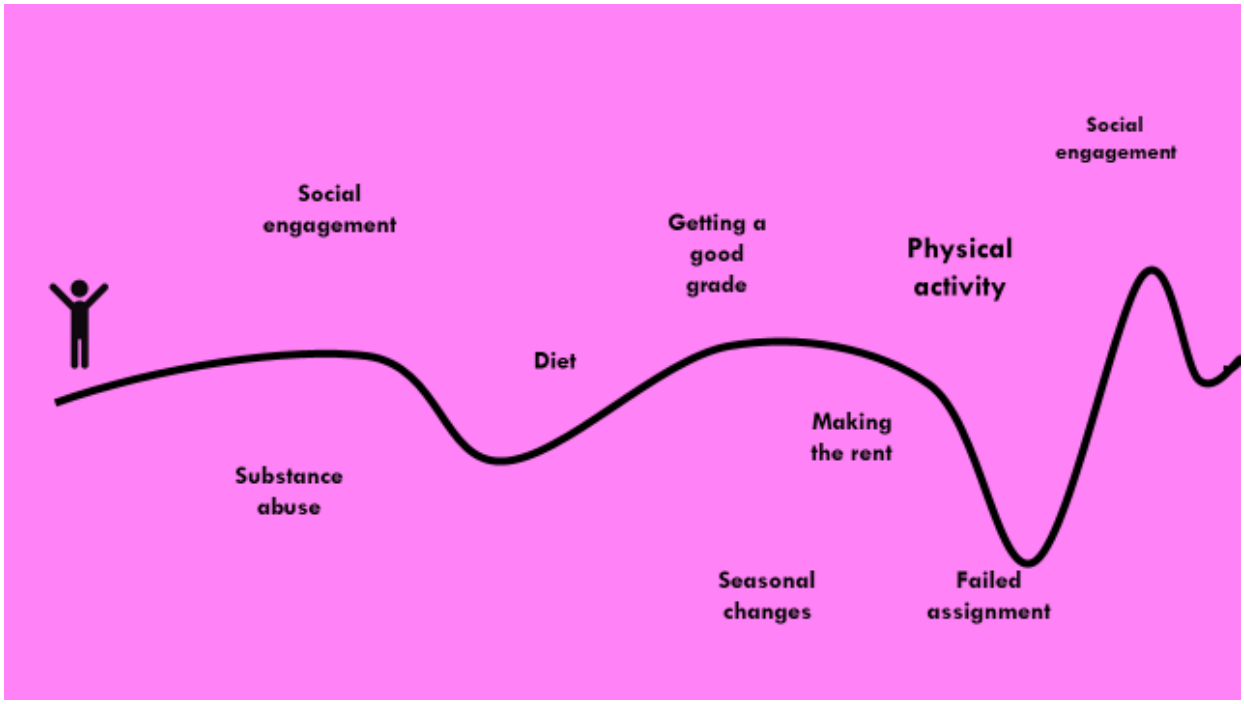


We all wear a mask! Lower your mask to help others lower theirs

Now write in your mask the way <u>you really feel sometimes</u> at college or at work.



Mental health on a spectrum



It is important to note that our mental health can change as we are heavily influenced by our social, biological and psychological experiences. With this in mind, it's easy to understand how someone's mental health can change over their lifetime. It can improve and worsen depending on the level of stressors we experience and how resilient we are to respond. Therefore, our mental health is on a spectrum, and there are strategies we can use to return to the positive end of the spectrum and adjust appropriately and timely to life's setbacks.

Is there any such thing as the perfect day or the perfect life?

Let's think about stress for a second. How normal is it?

List the challenges you have overcome to attend college. (keep your evaluation positive)

Brainstorm the ways you manage your stress.

How does stress affect your body, feelings and thoughts?

Is Stress Normal?

Stress is normal. Stress is an evolutionary trait developed through the natural selection of adapted survival or protective defence mechanisms

(when we feel fear). Providing a survival advantage, stress enables us to activate the 'fight or flight' response to an anticipated threat, so it is quite useful and not always a negative consequence.



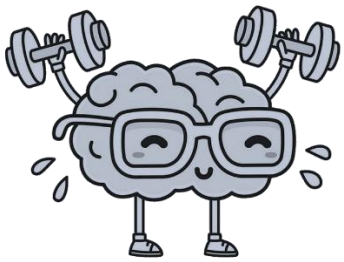
When we experience, stress our amygdala (part of the limbic system in the brain, responsible for decision making, processing of memories and emotional reaction) swings into action and releases adrenaline when we prepare to run (flight) or noradrenaline when we prepare to fight (get mad). This 'acute stress' is useful, especially for our ancestors if the stressor has a physical demand, but when our stress response is to something that is more emotional than physical adrenaline won't help. In the twenty-first century, our stressful challenges have changed. They are ambiguous, so often we can have more prolonged experiences of stress ('chronic stress'). We experience more worry which causes the amygdala to call the chronic stress hormone, glucocorticoid. Stress can be useful, but chronic stress can affect all individuals, physically and emotionally. At a cellular level, too much stress can affect our brain size, its structure, gene expression and how it functions. It can contribute directly to illnesses such as heath disease, cancer and depression, among many others.

When we are facing demands that are stressing us out on an ongoing basis, we start to develop signs and symptoms that are often associated with mental health problems, such as anxiety or depression. If this goes on for a prolonged time, we may start to show changes in our mood, behaviour, energy, personality and habits.

Resilience

'The ability to bounce back from adversity'

Resilience is how we respond to stress; it about emotional agility. Stressors or adversities can be either life-threatening or traumatic experience such as losing a loved one or a surviving a natural disaster. They can also be ongoing, such as enduring poverty or bullying. The term, resilience, is an explanation of our individual vulnerability to and coping with stress. It explains how we all respond so differently to life's experiences.



Resilience also highlights the complexities of our social, psychological, environmental and biological makeup when responding to stress and therefore, our levels of resilience to certain stressors can vary at different times in our life. There is no "resilience gene" that determines the life course of you or I, regardless of the experiences that shape genetic expression. The capacity to adapt and thrive despite adversity develops through the interaction of supportive relationships, gene expression, and adaptive biological systems. Resilience, therefore, can be increased through positive lifestyle practices. These practices are expressed in more detail throughout the workshop. Some include positive thinking, mindfulness, the 5 ways to well-being (connect, be active, give, learn, take notice) and self-care such as having 'one good adult'.

Can resilience be increased?

Yes ☐

No ☐

Emerging adults

Most students attending third-level college are emerging adults. This is an age ranging from 18 to 29 years old and can be recognised as a developmental stage. Although it may look like all young adults out there are having a great time, in reality, many are contending with a lot of dilemmas, serious problems and challenges. To add to this, research highlights young people are not seeking help.

Life has its ups and downs no matter what age you are, but this period is a particularly subjective, ambiguous time, when a young person may not see themselves as an adolescent, yet neither see themselves as having reached adulthood. Modern developed societies are experiencing more personal and social pressure at a much younger age and taking on roles of adulthood (such as parenthood, marriage) at a much later age. Research proves young people carry the global burden for mental ill-health experiences with one in four experiencing anxiety and depression, and over half reporting to have thought about suicide. However, research also shows in Ireland, young people who report lower perceived levels of anxiety and depression had 'one good adult' in their lives. With one good adult young people are more connected and better able to cope with difficulties than those young people who reported that they did not have the support of OGA. It is important to communicate when you are not feeling yourself or dealing with stressful events. It is essential to reach out to the positive influence of others who can offer comfort and give a listening ear. One good adult is an essential support that aids the protection of wellbeing through increasing resilience.

Who is the one good adult in your life? (Your age is irrelevant, everybody needs somebody to talk to)

How does one good adult increase resilience?

Neuroplasticity

The lifelong ability of the brain to reorganize itself as a result of experience.

Neuroplasticity is the lasting changes and rewiring of the brain’s neural connections which occur throughout life. It is the brain's ability to change and adapt to your thoughts, actions, environment and behaviour. Our neuroplasticity can positively or negatively change by the activities we do such as exercising, learning something new or mindfulness.



Neuroplasticity has a bright side and a dark side. The brain is always learning, there’s no doubt about that, but it does not distinguish between good and bad patterns of thoughts, actions or behaviours. Neuroplasticity can be used to build resilience and to even overcomemental illness when you train it to by practising positive mental health strategies. On the other hand, neuroplasticity can also entrench negative patterns of thoughts, actions and behaviour.

The non-dominant hand challenge!

Remember the London Cab drivers?

The London Taxi Cab Study provides a compelling example of the brain's neuroplasticity, or ability to reorganize and transform itself as it is exposed to learning and new experiences. University College London carried out an experiment between London Cab drivers and London Bus drivers. The cab drivers have to constantly learn new routes in the city, while the bus drivers have established routes they follow day in and day out. The researchers at London University wanted to investigate through MRI if the hippocampus part of the brain, which plays a role in facilitating spatial memory, emotions, spatial orientation and learning (most helpful for navigation) is larger in taxi drivers than the bus drivers. The MRI revealed that the posterior hippocampi of the taxi drivers were much larger than that of the bus drivers. Even more exciting, the size of the hippocampus directly correlated with the length of time that someone was a taxi driver–the longer someone drove a taxi, the larger their hippocampus.

The London Taxi Cab Study provides a compelling example of the brain's neuroplasticity, or ability to reorganize and transform itself as it is exposed to learning and new experiences. Having to constantly learn new routes in the city forced the taxi cab drivers' brains to create new neural pathways. These pathways permanently changed the structure and size of the cab drivers' brain. This study is an amazing example of the living brain at work. Our neuroplasticity can positively change by the activities we do, such as exercising or learning something.



The Harvard Piano Study

When you did the non-dominant hand challenge, you probably took a second to think about how to write your name with the other hand before you actually wrote it. Research shows that this alone can promote the brain to adapt, relearn and change. Thinking about doing something can activate different parts of the brain. For example, the motor part of the brain used to learn how to play the piano.



Harvard medical school split three groups, od people who could not play the piano and took brain scan images of everyone within the groups before the experiment. Over a period of five days, each group spent 2 hours in three identical rooms with a piano. Group one actually practised the piano intensively. Group two thought about practising (or creatively visualised playing the piano), while the third group were simply placed in a room with a piano as the décor.

Then brain scans at the end of the experiment showed that those who simply sat in the room with the décor piano had no change at all, unsurprisingly. Those who practised the piano intensively each day showed structural changes in the motor area of the brain. But most astonishingly, those who creatively visualised playing the piano had changes in the brain almost as significant as those who practised.

After 3 days, the accuracy of piano playing was the same between group 1 and group 2. After 5 days, the motor group (group 2) were more improved, but the mental group (group1) caught up when they practised physically. The finding was that thinking about practising skills can make changes too.

Mindfulness

Mindfulness is the way we pay attention to the things we experience. It is non-judgmental awareness of the present moment, where we accept whatever is going on with our lives. Modern science supports the idea that the focus of our awareness shapes and determines which brain networks are strengthened or weakened. Yes, that means the more you worry, the better you become at worrying, and the more you practice being calm, the calmer you become.



WHAT YOU PRACTICE GROWS STRONGER

Mindfulness, at its simplest, is being aware of how you are thinking, behaving and getting through the day. We are constantly distracted by beeping, schedules, demands and thoughts… loads and loads of thoughts, constantly pulling our focus away from the task at hand. Mindfulness can help us to notice our thoughts and patterns of thoughts and helps us to realise that thoughts are just thoughts.

'You don't have to believe everything you think'

Thirty years of research has gone into mindfulness and it is a proven technique that helps us manage our awareness of stress and negative thoughts. We are less likely to be swept up by emotions if we are aware of them and if we choose how to react to them. Mindfulness is the opposite of mindlessness. It is about stopping a cycle of irritability and worry in our thoughts. Remember, the brain strengthens in the networks it is trained to.

However, emotions like anger and irritability are inevitable, and even with mindfulness we experience feelings of anger or irritability, but with the use of mindfulness, we can manage situations more skilfully and increase our capacity to recover more quickly.

One-minute mindfulness

If you wish to practice more one-minute mindfulness, and to step out of the mode of doing stuff, allow time to just be, without question, reason or judgment, just follow these three steps:

1. **Notice**
   Move into a comfortable way to sit with a good posture and two feet steadily placed on the ground. Close your eyes and allow your body to be supported by the chair. Notice the sensation of your body's contact with the chair and your feet contacting the ground.

2. **Breathe**
   Acknowledge the physical sensation of breathing and become aware of your breath. Tune into the sensation of your abdomen rising and falling with each breath. Breathe normally, just feel the air fill and empty your lungs. This helps us to centre ourselves.

3. **Accept**
   You'll notice your mind will wander, that's ok. It's what the mind does. When your mind wanders just acknowledge it, and gently return your attention to your breath. Focus on your whole body, including your posture, facial expression and sensations. Accept and observe with kindness.

Mindfulness is a practice you can do anytime, when you are on the bus, standing in a queue, waiting for class to start or at the computer. Just sit with a good posture and take a few mindful breathe.

Positive affirmations

Catch your thoughts is activity to help you identify and turn around your negative thoughts by using positive affirmations that are relative to you,

your life and your worries. As a group, we explored some of the most common ones such as 'I can't cope…' Here's an opportunity to catch your negative thoughts. Record a negative thought in the box below and if one doesn't occur to you now, be aware of it during mindfulness practice. Catching your thoughts becomes easier when you slow down. **Remember unhelpful thoughts trigger emotions.**

Be mindful of your thoughts and catch them!

Catch a thought by thinking of a situation or a circumstance you have at the moment. **My main unhelpful ways of thinking are:**

Now look for the evidence. How true is this thought?

Revise your thought and rephrase it.

Exercise has been known to cause health and happiness

In part 2 of the programme, we explore some practical strategies that will enhance your wellbeing and resilience. We pay particular attention to the role of physical activity or exercise in order to raise your awareness and understanding of how exactly participating in any physical activity can improve your mental health. The approaches are positive and encouraging and aim to get you considering how you may increase your physical activity levels and meet the recommended guidelines. If you are already pretty active or if you cannot be active, fear not, there is still plenty to learn from this part of the programme.

The five ways to wellbeing

The five ways to wellbeing are actions that improve our sense of wellbeing. These five actions are evidence-based activities developed by the NEF (new economics foundation), an independent think-tank that inspires and demonstrate real economic wellbeing. Using evidence from across a wide range of disciplines, the NEF reduced a long list of actions for enhancing wellbeing to a shortlist which reflected their key findings. The NEF found that there were five key messages to enhance wellbeing which incorporated social relationships, physical activity, and awareness, learning and giving.

In your average week, how well do you:	Shade in the level per day as we progress through each 'way.'	Which 'way' could you concentrate on the most?
Are active		
Connect		
Give		
Keep learning		
Take notice		

Be active

Go for a walk, or run, or cycle. Play a game or sport. Gardening and dancing are good exercise too. Find something that you enjoy and suits your level of mobility and fitness. It doesn't mean you have to try to run a marathon or go to the gym every day. Just 10 or 15 minutes of

Evidence suggests physical activity is associated with an increased sense of wellbeing and decreased rates of depression and anxiety across all age groups. The impact of physical activity will be explained in greater detail later in the booklet. However, for now, it can be understood that any physical activity can contribute to mental wellbeing through integrative benefits which can include an increased sense of self-efficacy, coping skills, socialising and decreased sedentary behaviour.

Other ways to be active may include:

- Get off the bus one stop earlier and walk the final part of your journey.
- Play your favourite song and dance to it.
- Go for a walk at lunchtime.
- Go to your local park.
- Walk to college (or park further away).
- Take the stairs.
- Stretch and move your limbs in the morning, midday and evening.
- Join a new sports club or team.
- Walk the dog.
- Do some gardening.
- Try out a new exercise class like yoga or Zumba
- Learn how to swim or ride a bike.
- Create a five a side football team.
- Walk to see friends instead of going in the car.
- Learn to be a lifeguard.
- Coach a kid's football team.

Connect

Connect with people around you – family, friends, colleagues, neighbours – at home, work, school, your local community. If you've become a bit isolated, you may find it difficult to connect with people. You don't have to throw a big party. Try to build a better relationship with just a few people to start with. It is worth spending some time and effort to build up your connections.

Evidence indicates that social relationships are critical and central to promoting your wellbeing. Even without the support of science, it is obvious we are social beings and long to spend time with people important to us. Feeling close to and valued by others is a basic human need. Social networks can act as a buffer against mental illness, and research suggests that happy people have stronger social relationships than less happy people. The idea of connecting, belonging and socialising with others is key to any action within the 5 ways to wellbeing.

Other ways to connect may include:

- Call your parents or loved ones, share your day and ask about theirs.
- At college- speak to someone new. Smile and speak to someone as you pass them in the lecture room.
- Make contact with someone you used to hang out with.
- Say hello to people- elderly people can often feel alone, simply acknowledge them.
- Find an old photo of friends or family and share it with them.
- Don't use your phone for a day (or at least for a few hours!).
- Take your headphones off when in a shop.
- Ask your parents or carer about their childhood.
- Don't use the self-checkout in a shop and talk to the shop assistant.
- Ask a friend about their weekend and pay attention and listen when they tell you.
- Talk to someone in person or on the phone instead of messaging or social media.
- Share a random or inspirational photo with your friends.
- Set up a social network group with a new group of friends.

Give

Do something nice for someone – a friend or a stranger. Just thanking someone or giving them a smile can make you and they feel good. Volunteer your time for an organisation or local group. Give yourself some time and treats as well. Some people find giving easy, but don't find it so easy to receive – whether gifts or compliments. If you know it makes you feel good to give, then when you accept something you know it's good for the person who's giving to you too.

The majority of our behaviour is motivated by either obtaining rewards or avoiding punishments. Neuroscience has proven mutual cooperation and is associated with enhanced neuronal responses in the reward area of the brain. This shows that social cooperation is intrinsically rewarding. Mental wellbeing is enhanced when you gain a sense of purpose in society and are able to contribute to the community. Which must mean sharing, helping and giving can increase a sense of self-worth and positive feelings. Research into promoting happiness has shown that committing an act of kindness once a week over a six week period is associated with an increase in wellbeing.

Other ways to give may include:

- Smile, give time to people- a conversation won't cost you the world.
- Offer to help your parents or people you live with round the house.
- Nominate someone for an award- give them recognition.
- Give some food or tea to someone on the street.
- Give someone a hug (make sure it's someone you know!).
- Check up on an old friend or a neighbour.
- Say thank you to someone who has helped you. Send a text, or message or write them a letter to show how much it meant to you.
- Give unwanted clothes and books to a local charity shop.
- Do something for someone else; help out a neighbour or give a friend at college hard some free tutoring.
- Be a mentor for someone- be a 'one good adult' to someone else.
- Give yourself some time to relax.
- Volunteer for an extra responsibility at school or college

Keep learning

Try something new or pick up an old interest. Do a formal course to learn new information or a skill, learn to play a musical instrument, or to draw and paint. Learning can be hard if it's something you have to do and it feels like a chore. You may have had a poor experience of formal learning, at school or college. So think about more informal ways of learning. You could ask someone to show you how to cook their favourite food or how to fix a bicycle. You can learn from reading, listening to the radio or watching television. What's going on locally that may be interesting to visit or take part in?

Learning throughout life can enhance your self-esteem, encourage social interaction and a more active life. Participation in life-long learning positively impacts our resilience and wellbeing as we gain increased self-esteem, self-efficacy and a sense of purpose and hope. Through the practice of setting goals, we gain feelings of satisfaction and competency which can increase our wellbeing as our decisions to engage in learning is concordant with intrinsic motivations and values.

Other ways to keep learning can include:

- Google something you've always wondered about.
- Read or watch the news or a new book.
- Use a conversation as a way to learn new things, be curious and ask questions.
- Learn how to drive.
- Think about how others are feeling, put yourself in their shoes.
- Use a dictionary for words you don't know- learn a new word and use it.
- Learn an inspirational quote.
- Learn how to change a wheel on a car or repair a flat tire on a bike.
- Learn a new hobby or a new language.
- Learn some guitar chords or the words to a new song.
- Find out more about something your friends or family are interested in.
- Learn more about your family history.
- If you hear something you don't understand, google it straight away
- Try to fix something minor at home- Not the gas boiler!

Take notice

Be curious about what's around you and about people. Notice the changing seasons – trees and plants. Think about how you can be creative. Be aware of your feelings and reflect on your experiences. To take notice is to be in the present, in the 'here and now', and to be aware and mindful of your surroundings, to be alert to what is happening around you. It can mean pausing, even for a brief period, to spend some time in silence and reflect on your experiences.

Research has shown that being trained to be aware of sensations, thoughts and feelings over for 8 to 12 weeks can enhance our wellbeing for several years. As mentioned earlier, in the workshop, mindfulness (the state of being mindful to pay attention to the present moment) has also been shown to influence and predict positive mental states. Awareness is particularly valuable for choosing behaviours that are consistent with our needs, values and interests. This self-regulation is important for wellbeing.

Other ways to take notice can include:

- Reflect on the positives, what can you be grateful for – there is always something.
- Consider your strengths and how you make the most of them.
- Think about who inspires you and why.
- Take a different, more beautiful route to or from college.
- Stop and really take in your surroundings, acknowledge the seasons and nature.
- Watch animals and birds outside.
- Take notice of what you are thinking. Not to judge or be hard on yourself, but just to be more aware of how you are thinking.
- Notice the good people around you.
- Think about what your parents do for you.
- Pretend you are someone else and reflect on what they would think about you.
- Do some people watching in the middle of town or in the park.
- Slow down and do the things you enjoy.

Five ways to wellbeing

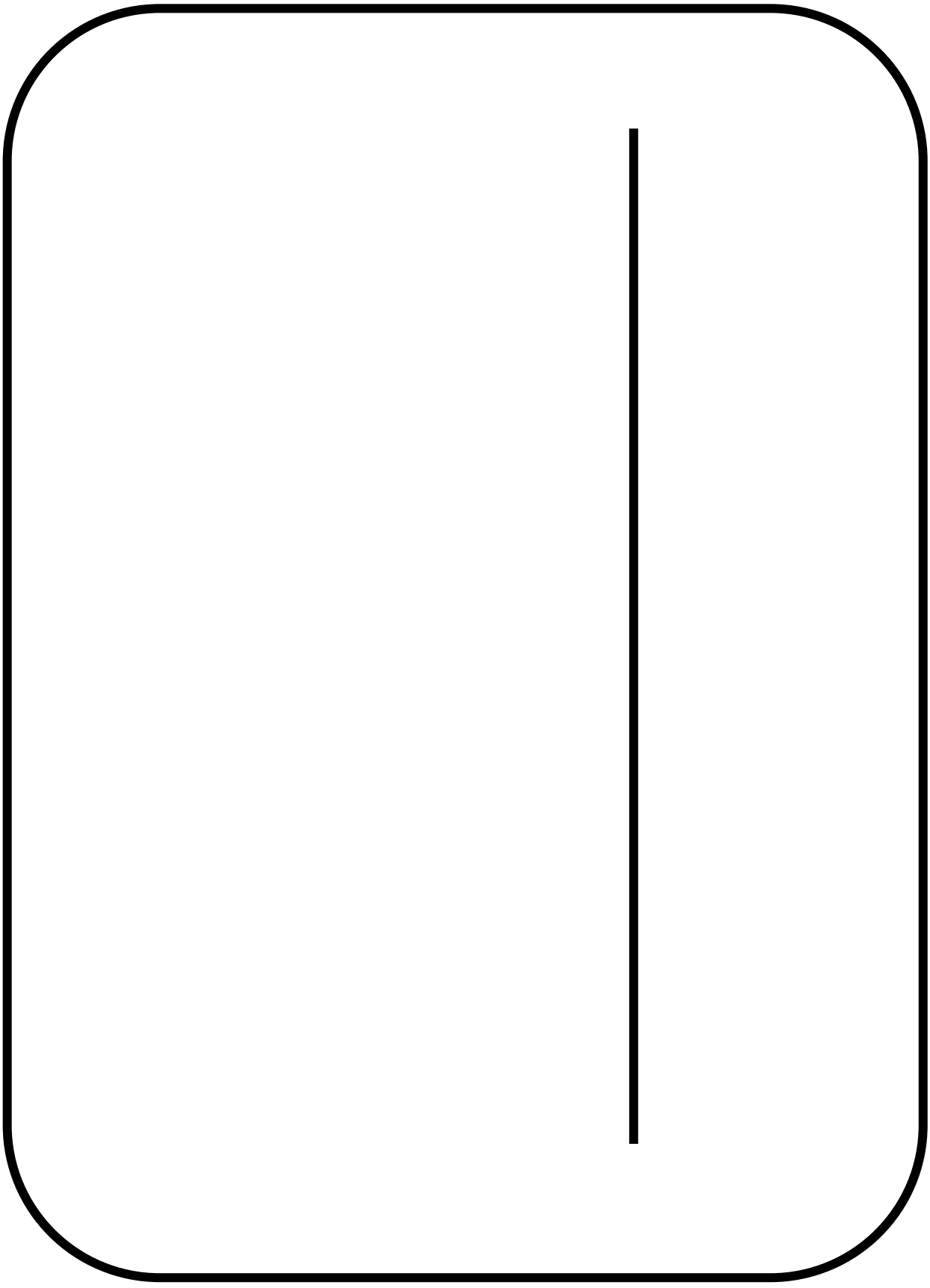
Connect, be active, give, keep learning and take notice.

Take two minutes to be reflective and creative. Draw, print, sketch and write about five things you already do and five things you would like to do more of. Repetition can remove the potency of activities. It is suggested that strategies need to be varied, so they stay 'fresh'. This way, they are also not approached as a sense of duty. Remember, small changes make a big difference!

Things I already do (try think of 5) …

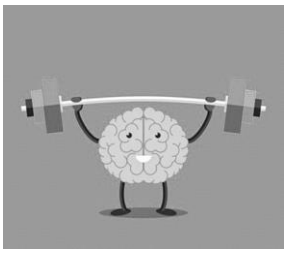
Things I would like to do more of (try think of 5) …

Pick one ‘way’ to idea share- write it big for us all to see!



How does physical activity effect your mental health?

The brain is not a fixed machine, it is the most complex structure known to mankind. Physical activity has a greater impact on the brain, than it has on any other part of the body.



BDNF (brain derived neotrophic factor) is a protein that is released when our blood in pumping while exercoising. This protein is known to **increase cognitive functioning and alleviate depression and anxiety**



Physical activity reduces stress. Stress impacts the immune system, and so if we can reduce our stress response through exercise, we can **keep a health immune system**.



Through moderating the brains response to stress, we can **gain better control of our emotions**. The response is moderated by the increased levels of a chemical (or neurotransmitter) called norepinephrine which reduces stress over load during



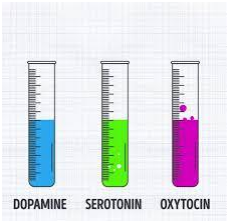
Improved your sleep, giving you daytime alertness and night time sleepiness

Physical activity can enhance your **quality of life,** as it reduces the risk of poor mental health, chronic diseases or non-communicable diseases (NCD's). NCD's (non-communicable diseases) include coronary heart disease, cancer, chronic obstructive pulmonary disease (COPD), and



Physical actvity enhances the hippocampus neurons, **improving your learning and memory**

Serotonin has a direct effect on the brain, which **effects your mood and helps keep brain activity under control**. Your **motivation** is in increased through boosting your dopamine levels. Through exercise we releases endorphins, which **create feelings of happiness and**



Physical activity guidelines

Physical activity **is** for everyone. Some physical activity is better than none, but the amount you of exercise you do will have an increasing amount of health benefits. Even those physical disabilities should be as active as your ability allows, perhaps discussing appropriate activities with your doctor will inform you of what exercise are suitable to you.

Nobody says it must be hard, pick things you enjoy doing as you are more likely to stick with them if it is fun and suitable to you. Shorter bursts of activity count toward meeting the guidelines, these short blasts should last for at least 10 minutes. To meet the recommended guidelines, you can do either moderate or vigorous activities or a combination of both. It does, however, take less time to get the same benefits from vigorous activity compared to moderate activity.

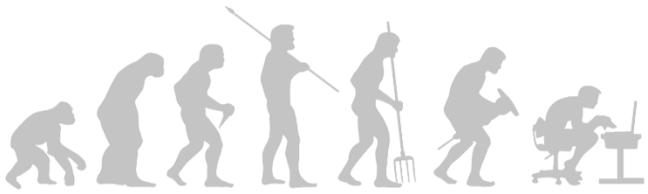
Recommended guidelines for adults (age 18 to 64)

Moderate activity	**Vigorous activity**
150 minutes per week	**75 minutes per week**
Increased breathing and heart rate, but you will still be able to converse at ease. You may feel warm and break a light sweat moving at a comfortable pace.	Breathing will become heavy, and you will not have an interest in holding a conversation. Your heart rate will spike high. You will sweat heavily.
Activities may include:	**Activities may include:**
Brisk walking	Jogging or running
Medium paced swimming	Active sports, e.g. soccer or aerobics
Water aerobics	Circuit training
Cycling (slower than 16km an hour)	Swimming lengths
Ballroom dancing	Skipping
Gardening	Cycling (fast)

Adding muscle-strengthening activities will impact your ability to perform moderate and vigorous-intensity activities more efficiently. You could do these muscles strengthening activities one to two days a week. Examples of muscle-strengthening activities can include:

- Resistance exercises
- Using exercise bands
- Step aerobics
- Sit-ups, push-ups and pull-ups
- Yoga or Tai Chi
- Pilates
- Carry heavy goods, like groceries
- Stretching
-

Sedentary behaviour



Being sedentary means your lifestyle is not very active. Unfortunately, the majority of us sit too much every day due to new technology and activities which require sitting, such as computer work, studying and driving. You can balance your sitting time by being more active but it is important to note that one can meet the guidelines for physical activity, and yet spend too many hours of the day participating in sedentary behaviour. Research shows that too much sedentary behaviour has a negative impact on health, increasing one's risk of type 2 diabetes, obesity, cardiovascular diseases, depression and cancer.

Take a moment to think of times throughout the day or week when you are most sedentary:



The Transtheoretical model

The Transtheoretical model describes the behaviour change process. It is a way to understand how behaviour can be changed from one behaviour to a more beneficial one. The model helps us to understand how we can modify behaviours such as smoking and exercising. When addressing behaviour, the Transtheoretical model describes five stages of change. They include:

1. Pre-contemplative
2. Contemplative
3. Preparation
4. Action
5. Maintenance

Complete the questionnaire to discover where you are on the Transtheoretical model.

For an activity to be *regular*, it must add up to a total of 30 minutes or more per day for at least five days per week. For example, you could take one-30 minute walk or take three 10- minute walks for a total of 30 minutes.

For each of the following questions, please answer Yes or No.

1. I am currently physically active (at least 30 minutes per week). ☐ Yes ☐ No

2. I intend to become more physically active in the next 6 months. ☐ Yes ☐ No

3. I currently engage in regular physical activity. ☐ Yes ☐ No

4. I have been regularly physically active for the past 6 months. ☐ Yes ☐ No

Stages of Change - Scoring Key

If you answered No to 1, 2, 3, and 4 = Pre-contemplation stage

If you answered No to 1, 3, and 4, Yes to 2 = Contemplation stage

If you answered Yes to 1 and 2, No to 3 and 4 = Preparation stage

If you answered Yes to 1 and 3, Yes or No to 2, No to 4 = Action stage

If you answered Yes to 1, 3, and 4, Yes or No to 2 = Maintenance stage

Transtheoretical Model Stages of change actions

Stage	**Potential actions for change**
Stage 1 Pre-contemplation- in this stage, you are likely to care less about changing behaviour and don't see your behaviour as a problem. People here can be defensive or lacking in confidence.	Usually, those in this stage ignore advice, but rather than telling you to be active.; we are asking you to tell yourself you are capable of being active and of believing in yourself; that someday if you want to be, you can be physically active. If you feel exercise is not for you, let that not be forever, maybe just for now. Bottom line, if you want to do it, you can!
Stage 2 Contemplative- individuals are aware of the problem, but are still on the fence. They may think about behaviour more. This stage can take time to process, but you are receptive to help advice and information.	Those of you in this stage are likely to be saying statements like' I should…' Goal setting at this stage is extremely useful and listing the benefits of exercising for yourself can be a great motivator. Believe in yourself, start slowly and record your progress with a diary or apps such as mapmyride or endomondo

Stage 3 Preparation- you are no longer in a state of denial and ready to commit to taking steps necessary to change. It is a stage of determination.	This is the planning stage when you decide how you will meet your goals. You may begin to use statements like "I could… At this stage, rely on an active friend's guidance or motivation to keep your plans realistic and attainable. As you progress from this stage, expect to feel a sense of mental readiness to pursue and achieve your goals.
Step 4 Action- this stage can take some time to get to, but it is about commitment and taking more steps to maintain healthy behaviour.	Action may be the hardest part of the five stages for many people, but the time has come to start working out regularly. This stage is when relapse into a prior stage is most likely, so stay motivated with friends, trainers and clubs.
Step 5: Maintenance Here it is important to overcome challenges through sustaining self-belief and self-efficacy. It is about reinforcing self-management and stimulus control (like reminders) to encourage healthy behaviour.	The maintenance stage is when you have accomplished your goal, and you are able to sustain regular exercise. You may begin to feel the true benefits of exercise. Maintenance is a long-term commitment, but you may need to change your workout to stay motivated to continue exercising. Well done, now you can influence others too.

Barriers to Physical activity

Understanding common barriers to physical activity and creating strategies to overcome them may help you make physical activity part of your daily life.

In pairs or groups list as many **barriers** as possible in the box below to identify physiological, behavioural, and psychological factors that may affect our plans to become more physically active.

Overcoming these barriers depends on your personal choices and decisions to make time and strategies to make exercise part of your life.

In groups list some ways to overcome these barriers

Some suggestions may include:

- Making physical activity as part of your daily routine- walk to college or part further away from your destination.
- Involve your friends and family in your goals, motivate your best friend to join you and exercise with you.
- Develop friendships with other active people- feed off their motivation.
- Plan ahead and prioritise physical activity in your schedule- DON'T FIND THE TIME, MAKE THE TIME!

Setting SMART goals

Make your goal SPECIFIC and write it down

Write a sentence which encapsulates your goal in very specific terms. Having a 'vague' goal like 'I want to exercise more is not going to be effective. A way to make your goal specific is to think about the 'who', the 'what', the 'where' and the 'when' of your goal. Your goal sentence should contain the relevant number of these. For example, I (and hopefully, my friend, Jane) will run in the 5km city fun run in 3 months from now.

Define your MEASURES

In order for a goal to be stated specifically, you must determine what the tangible measures for your goal will be. In other words, what will you see, hear or feel when you have achieved your goal? Your answers to this question are the way you will recognise you have achieved your goal. Without measures, how will you know that you been successful? The goal sentence above is specified as a result of determining the following visible measures. For example, I will see the 5km finish line and I will get a medal/ t-shirt. I will hear my friends say well done and I feel very proud, fit and probably sore.

Make sure your goal is ACHIEVABLE

It must be *possible* for you to achieve your goal. Setting unachievable, unattainable goals is futile. You will be doomed from the outset. You yourself need to be capable of implementing your goal. Ask yourself, is it POSSIBLE for me to achieve this goal? And am I in CONTROL of achieving this goal? If it isn't and you are not, then you need to revise how you are stating your goal. For example, I have 12 weeks to train following the C25K running training plan app.

Ensure your goal is RELEVANT

Your goal must be relevant to you, and your experience likes and dislikes. Your goal should also be STRETCHING and MOTIVATING, but not so big or complex that you will lose the motivation to achieve it.

Define your TIMING

A goal must have a deadline. This will provide you with the necessary focus and sense of urgency to make it happen. When you finalise your specific goal sentence and write it down, it must include your deadline. To set a deadline, you simply need to ask yourself: By when do I want to have achieved my goal? And then incorporate that date into your goal statement.

Setting your SMART goal

Remember:

1. The smart goal setting process is not a rigid 5 step process. Rather, it is a checklist to ensure that the sentence you have written summarising your goal meets ALL of the above five criteria.
2. You can run through the five steps in any order. Many people feel the best order is really M.A T.R.S.

3. The most important part of the process is to define your measures. In other words, you need to know how you will recognise that your goal has been achieved. And if your goal involves other people, then they will need to know this too.
4. Put your goal somewhere you can see and read it and share your goal with friends and family to help ensure success.

Write your personal and meaningful SMART goal below. Writing it makes it more than an intention; it makes it real and accessible to read at times you feel you need to be reminded.



Monitoring your goal

Monitoring your goals is an important part of the rewarding process. Keep track of how you are doing in a diary or with an app. You can also fill in the diary below to see what you're doing and how much of it counts towards a 150 minute per week target.

Day of the week	Type of activity	Intensity: Moderate or Vigorous	Time (in minutes) spent doing each activity	Total time (in minutes) spent being active each day
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				
Saturday				
Sunday				

Physical activity resources UCC:

All registered students in UCC have free access to the Mardyke Arena:

- Unlimited use of the Fitness Gyms
- Unlimited use of the Pool, Sauna and Steam Room
- Free Exercise and Fitness classes
- Free access to Indoor Climbing Wall Hall

UCC offers a variety of clubs for students to get involved in and take up a new or old sport.

Look up: https://sport.ucc.ie/clubs/ for a full list of A-Z clubs you could try out.

Getting physically active online resources in Ireland:

www.getirelandactive.ie

www.nutritionandhealth.ie

www.sportswomen.ie

www.walkireland.ie

www.cclsp.com

Getting physically active online sources and applications:

Videos:

YouTube videos: Pilates, yoga, HIIT, resistance training, how to swim, how to surf… (The options are limitless)

Pinterest: for information, training plans and ideas

Apps:

C265K – couch to 5 km training app

MyAsics- creates running training plans

Endomondo- fitness monitor (running)

Mapmyride- fitness monitor (cycling, running, walking)

Strava- tracks your activities

Fitstar- makes custom workouts for your fitness level

Loseit- logs workouts

Some use mental health apps:

What's up? – methods to help with anxiety, depression and stress

Headspace - meditation exercises on happiness, stress, sleep and more

Calm- meditate, sleep, relax app

Moodspace – short daily mood workout

Meditation game – an interactive app that helps you relax and meditate

Some space for your notes, thoughts and reflections later.

Appendix N: SOMI-HE day 2 PowerPoint presentation

STATE OF MIND IRELAND

Positive Mental Health for UCC College students

Part B: Mental Health First



Dr. Wesley O' Brien



Niamh O' Brien



Dr. Martin Lawlor (R.I.P)

School of Education, B.Ed Sports Studies and Physical Education, 2 Lucan Place, Western Road, University College Cork

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SESSION 3

Mental Health First

Mental health and stigma

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OBJECTIVES



Increased Mental Health literacy

- Mental health stigma
- Knowledge and understanding of the cause of mental health problems - Assessing your stress bucket
- Recognition of the signs of a mental health problem
- How to respond to a mental health problem in your self
- How to respond to a mental health problem in someone else
- Where to get information and support
- When to seek help and support

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SLOW DOWN THE JUMPING FISH

MENTAL HEALTH MYTH BUSTING

Only certain people experience mental health problems



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MENTAL HEALTH MYTH BUSTING

People with mental health needs, even those who are managing their mental illness, cannot tolerate the stress of holding down a job



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MENTAL HEALTH MYTH BUSTING

People can recover completely from a mental illness.



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MENTAL HEALTH MYTH BUSTING

Men are around five times more likely to take their own lives in Ireland than women.



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MENTAL HEALTH MYTH BUSTING

A mental health problem is all in your head – there are no physical symptoms…



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MENTAL HEALTH MYTH BUSTING

Depression is more than sadness, it is many emotions…



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MENTAL HEALTH STIGMA

'… a cluster of negative attitudes and beliefs that motivate the general public to fear, reject, avoid and discriminate against people with mental ill health. Stigma leads others to avoid living, socialising, or working with, renting to, or employing people with mental disorders…'

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MENTAL HEALTH STIGMA



HOW OPEN WOULD YOU BE?

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EVERYONE HAS MENTAL HEALTH

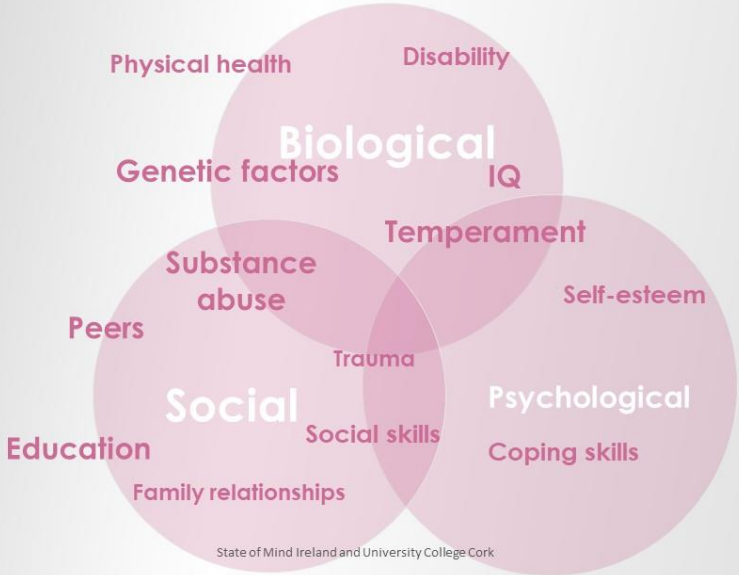
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STRESS BUCKET ANALOGY

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WHAT CAUSES MENTAL HEALTH PROBLEMS?



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TOO MUCH ALCOHOL AND YOUR STRESS BUCKET

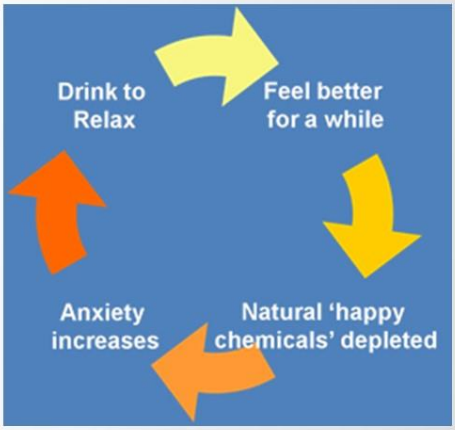


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HOW DOES ALCOHOL EFFECT METNAL HEALTH?

Alcohol is thought to use up neurotransmitters in the brain.

The brain needs a certain level of neurotransmitters needs to ward off anxiety and depression.



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IN LAST SEVEN DAYS, HOW MANY....

?



?

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In last seven days, how many....

?

HSE LOW-RISK GUIDELINES

UP TO **17** STANDARD DRINKS SPREAD OUT OVER ONE WEEK

UP TO **11** STANDARD DRINKS SPREAD OUT OVER ONE WEEK

?

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WAYS TO REDUCE ALCOHOL CONSUMPTION



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YOUR STRESS BUCKET

In your booklets take 2 minutes to consider your own stress bucket.

When you consider your **vulnerability** think of how full or empty your bucket already is.

Then think of your current **stress** levels and how that might fill your bucket. Imagine **resilience** releasing stress from the bucket, think of your strengths!

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SESSION 4

Mental Health First
Mental health and Stigma

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MENTAL DISTRESS, MENTAL PROBLEMS & MENTAL DISORDERS



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RECOGNISING SIGNS ON YOURSELF AND OTHERS



LOW SELF ESTEEM
LONELINESS
TEARFULNESS
VARIATION IN MOOD
ANXIETY
DISTURBED SLEEP
SHORT - TEMPERDNESS
NEGATIVE FEELINGS ABOUT THE FUTURE
CHANGE IN WEIGHT / APPEARANCE
CHANGES IN PERSONAL CIRCUMSTANCES
(e.g. bereavement, questioning their sexual orientation, relationship break up etc)

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HOW TO RESPOND TO YOURSELF

1 See



2 Say



3 Signpost



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HOW TO RESPOND TO SOMEONE ELSE

1 See



2 Say



3 Signpost



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WHEN DO I RESPOND IF I'M CONCERNED ABOUT MYSELF OR SOMEONE ELSE?



TODAY

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HOW COULD YOU RESPOND TO YOURSELF?
I would talk to my mam- she's my 'one good adult' no matter what age I am...
I could talk to my G.P.
I will set a goal to run a 5km event in the spring with my friend
Mindfulness will help me to reduce my stress
I think I'll just start by reading a bit about it on the internet...
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HOW COULD YOU RESPOND TO SOMEONE ELSE?
So, how've you been? I noticed you're not yourself lately? Anything I can help with?
Listen in!
How serious is the problem?
Approach but give space
Be non-judgemental
Encourage them to seek help
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SUPPORTS AVAILABLE FOR YOU

IF YOU ARE IN NEED OF SUPPORT

Consider making an appointment to see a counsellor in UCC or with your G.P – Potential therapies could include CBT, DBT etc.

Call ReachOut, the Samaritans, Jigsaw

Read, read, read… or watch videos

IF YOU ARE IN A CRISIS

Seek immediate help. Contact your GP., or the hospital emergency services.

Call a 24 hour line like the Samaritans: 116 123

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Paul's story



Paul is 22 years of age and from Cork. He returned to college to complete his final year last September but has stopped coming to class. Paul's housemates have rarely seen him in the past three weeks. They say he is hiding in his room and has not eaten or showered in a while. Paul is angry when he hears his housemates return to the houses and talks loudly to himself in his bedroom about the undercover guards. He doesn't seem to call any friends or family.

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Caroline's story



Caroline is 19 years old. She took a year out between school and college as her mam passed away after her leaving certificate. Caroline is very bright but she can't focus on her work and she feels too tired to go to lectures, so she sleeps most of the day and has lost her appetite. Caroline doesn't sleep at night either and feels hopeless and broken. She does not feel like socialising, eating or doing any of the things she used to love.

Ben's story



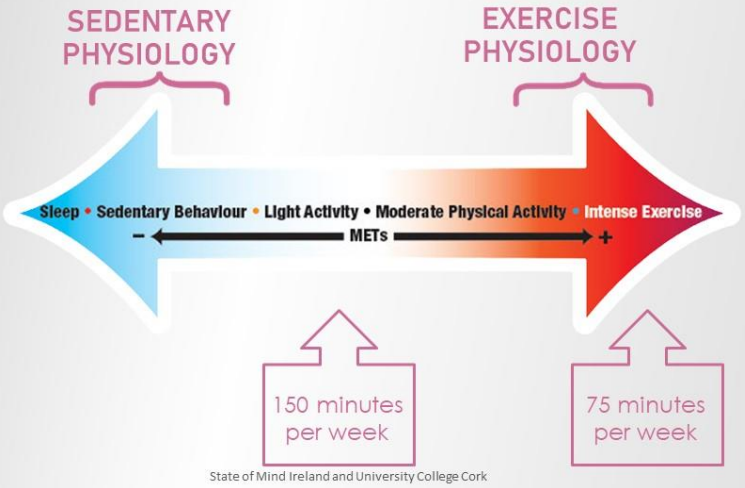
Ben is a 24 year old bar tender and lives in a shared house in Dublin with his friends. For the past few weeks Ben's friends have been concerned. He has been very quiet and spending a lot of time alone. He works until late every night but he stays up until dawn after work and has a few beers while watching TV. Ben and his partner broke up last week and his hours have been cut in the pub. He hasn't been home to see his parents in Mayo and hasn't told them his relationship has ended.

MONITORING YOUR GOALS

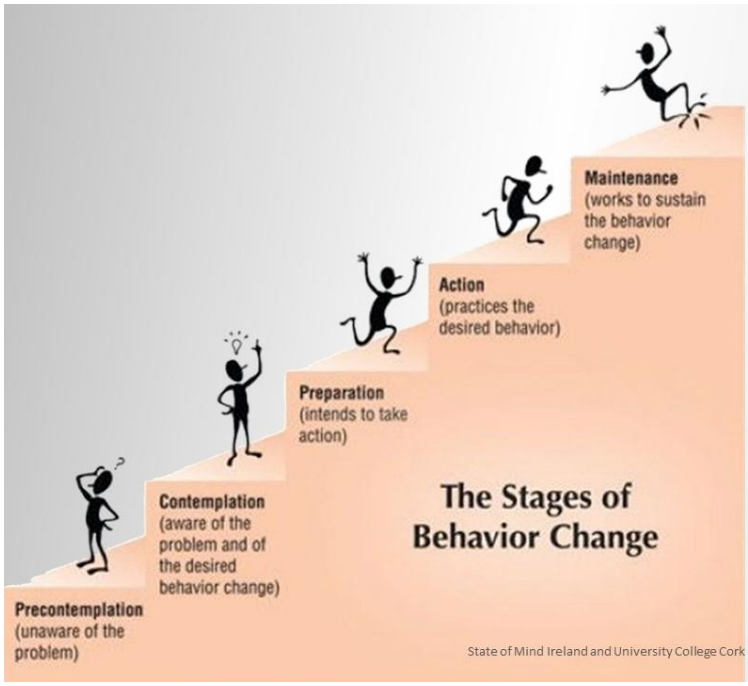


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RECOMMENDED GUIDELINES FOR PHYSICAL ACTIVITY PER WEEK



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Where can you see yourself now on the Trans theoretical model?

Discuss your goals from last week



Identify the barriers to achieving the goal you set or the influences which helped you to achieve their goals

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S M A R T

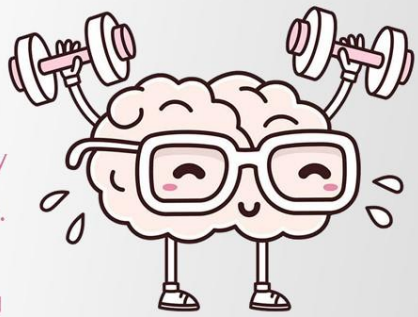
SPECIFIC MEASURABLE ACHIEVABLE REALISTIC TIMELY

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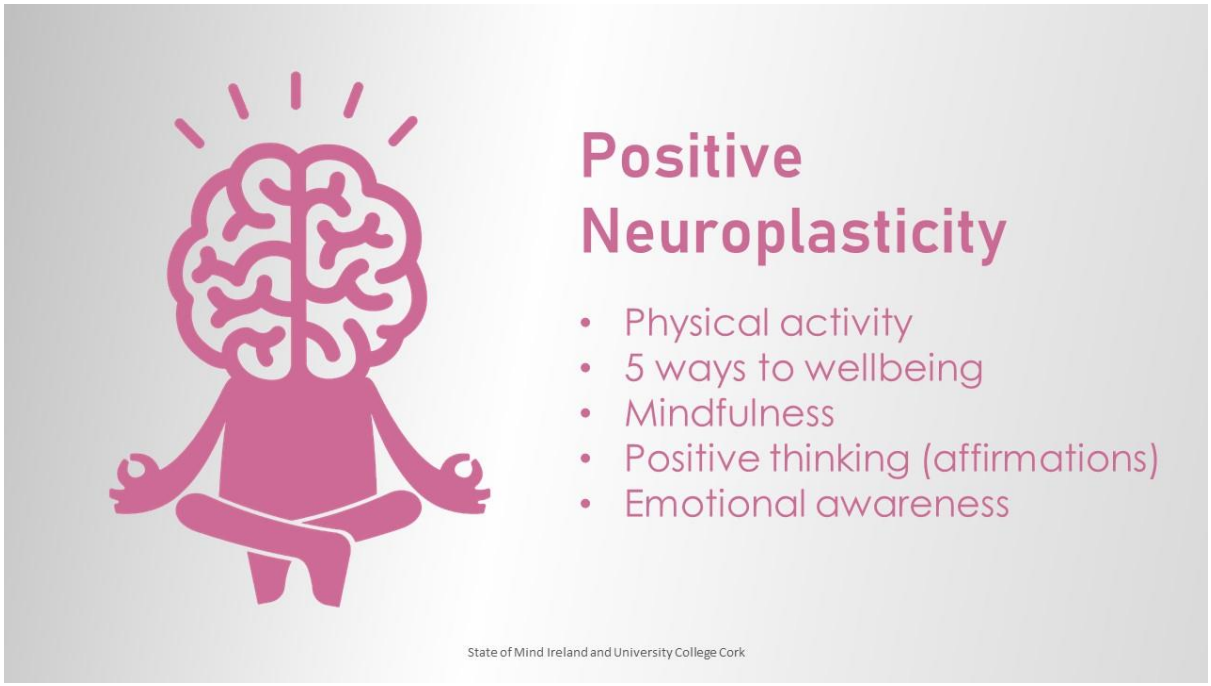
According to State of Mind Ireland Mental fitness is:

The active boosting of your individual ability to protect and recover from adversity. It is the emotional agility to respond adequately to life's challenges through finding your strengths and building resilience.



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MENTAL FITNESS TOOLKIT
The are 5 components to mental fitness in SOMI:
Building Positive Neuroplasticity
Increasing Physical activity
Making and maintaining Connections
Self-efficacy that you can overcome
Mental health Literacy
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Positive Neuroplasticity
• Physical activity
• 5 ways to wellbeing
• Mindfulness
• Positive thinking (affirmations)
• Emotional awareness
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Physical activity

- Improves memory (BDNF)
- Increases positive emotions
- Reduces stress
- Reduces risk of depression/anxiety

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Connections

- One good adult
- Social groups
- Lower your mask

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Self-efficacy

- The belief you can overcome set backs
- The belief you can be active
- The belief you can achieve your goals

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Mental health literacy

- Knowledge about mental health
- The signs of poor mental health
- How to respond to mental health concern
- Knowledge of self-help skills

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Group discussion:

1. List in order the five most likely positive mental health strategies you most are likely to use

2. Individually list the five most likely strategies you think you will use to increase mental fitness



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PLEASE FILL STATE OF MIND IRELAND EVALUATION FORM



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UCC PLEDGE TO
STOP MENTAL
HEALTH STIGMA
STATE OF MIND IRELAND
State of Mind Ireland and University College Cork

Appendix O: SOMI-HE day two student activity book

State of Mind Ireland Student Handbook

Mental Health First

Mental health first explores some knowledge and understanding of mental health knowledge. Throughout, we discuss ways to bring about positive change to the attachment of stigma to mental health. We can challenge mental health stigma by simply talking about it and taking off the negative labels that often come with mental health problems. Many people in society still hold onto negative attitudes towards mental health because they hold onto to misconceptions and myths around mental health issues.



Stigma can be described as 'A cluster of negative attitudes and beliefs that motivate the general public to fear, reject, avoid and discriminate against people with mental ill-health. Stigma leads others to avoid living, socialising, or working with, renting to, or employing people with mental disorders -especially severe disorders, such as schizophrenia. It leads to

low self-esteem, isolation, and hopelessness' (SAMHSA, 2004). Stigma deters society from responding to others with mental health problems, as it comes with embarrassment and shame that often leads to those we know to conceal symptoms and avoid treatment or support.

Stigma can be hurtful and isolating, but we believe in one phrase that can break down the walls of stigma and help us to realise the real facts of mental health problems. Remember:

'Everyone has mental health'

Myth or Fact:

1. **Only certain people experience mental health problems.**
   Myth ☐ **Fact** ☐

2. **People with mental health needs, even those who are managing their mental illness, cannot tolerate the stress of holding down a job.**
   Myth ☐ **Fact** ☐

3. **People can recover completely from a mental illness.**
   Myth ☐ **Fact** ☐

4. **Suicide is the second leading cause of death among 18 to 29-year olds.**
   Myth ☐ **Fact** ☐

5. **A mental health problem is all in your head – there are no physical symptoms.**
   Myth ☐ **Fact** ☐

6. **Depression is more than sadness, and it is many emotions…**

   Myth ☐ **Fact** ☐

Some facts about mental health:

1. **Only certain people experience mental health problems. (Myth)**
   Fact: Anyone can experience a mental health problem during their lifetime. Mental health problems affect one in four people in any one year. Even if you don't have a mental health problem, it's likely a friend, a family member or work colleague will be affected.

2. **People with mental health needs, even those who are managing their mental illness, cannot tolerate the stress of holding down a job. (Myth)**
   Fact: With one in four people affected by mental health problems, you probably work with someone with a mental health problem.

3. **People can recover completely from a mental illness. (Fact)**
   Fact: Many people can and do recover completely from mental health problems. Along with professional help, the support of friends, family, and getting back to work are all important in helping people recover.

4. **Men are five times more likely to take their life in Ireland (Fact)**
   Fact: Men remain around five times more likely to take their own lives than women in the Republic of Ireland, but we must pay attention to the risks in both genders.

5. **A mental health problem is all in your head – there are no physical symptoms. (Myth)**
   Fact: Mental health problems have both psychological and physical symptoms.

6. **Depression is more than sadness; it is many emotions (Fact)**
   Fact: Depression is described sometimes as a feeling of emptiness or hopelessness. It is not just sadness. It is hard to detect depression sometimes as it has a whole range of symptoms.

What causes mental health problems?

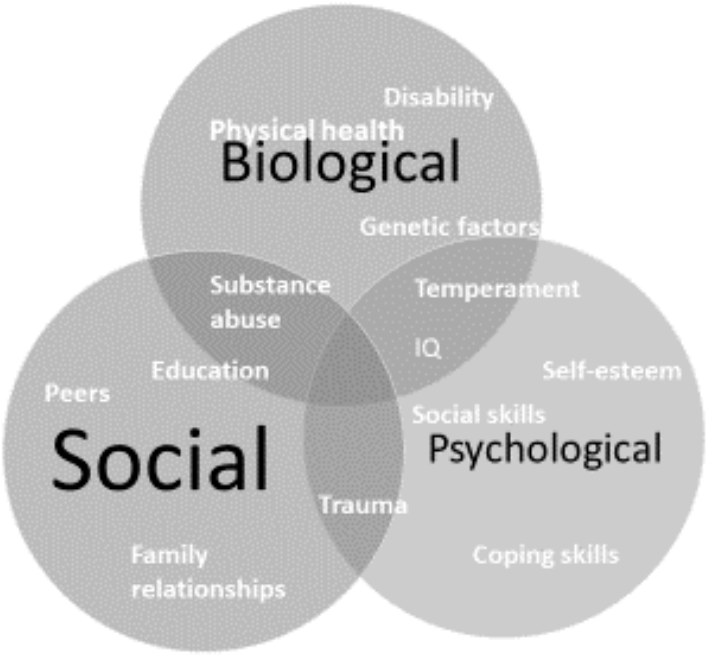
There are many factors that can cause a mental health problem, and there are many levels of mental health problems. There is some genetic link to certain mental illness. However, our life experiences and environments play a huge role in our mental health. Some factors may include:

- childhood abuse, trauma, or neglect
- social isolation or loneliness
- experiencing discrimination and stigma
- social disadvantage, poverty or debt
- bereavement (losing someone close to you)
- severe or long-term stress
- having a long-term physical health condition
- unemployment or losing your job
- homelessness or poor housing
- drug and alcohol misuse
- domestic violence, bullying or other abuse as an adult
- significant trauma



The Biopsychosocial model

The factors of negative mental health experiences are explained through the Biopsychosocial model. These factors are complex and interlinked. They each contribute to your present wellbeing. As we go through life our environment changes and mixed with our genetic predispositions, they interact with a profound effect on our mental health.



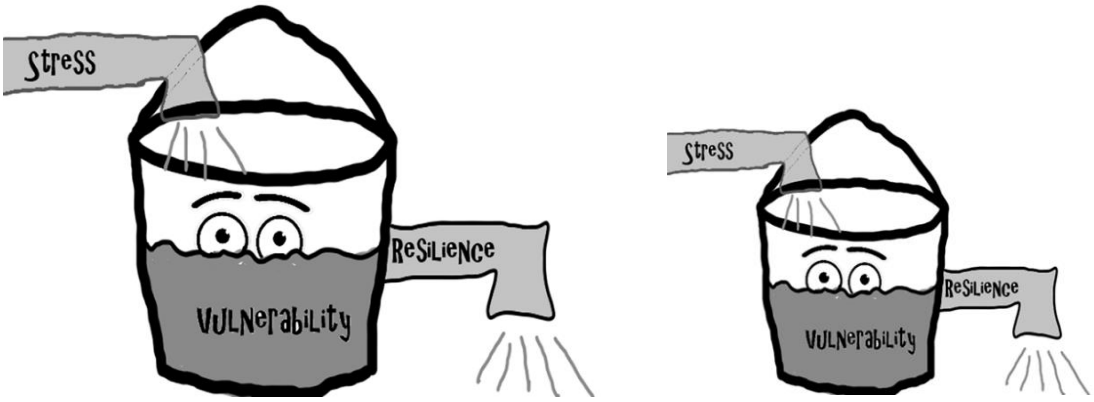
Lifestyle factors including work, diet, drugs and lack of sleep can all affect your mental health, yet if you experience a mental health problem, there is likely a combination of other factors as well. For example, while drinking excessively every weekend might not appear to have a negative impact on you, it might on your friend who has suffered a psychological trauma earlier in their life.

Life changes, as does your wellbeing. Your experiences, both positive and negative, will come and go like waves, and we will react to our waves in

different ways. It is important for us to acknowledge this, and to practice mindful awareness to protect our mental health and wellbeing through acknowledging the tough times and using our strengths to look after ourselves.

The stress-vulnerability bucket

The stress-vulnerability bucket is a way to analyse the capacity we each have to manage stress in our lives. We each have different size buckets. Some of us have bigger buckets than others. We all have different levels of vulnerability or capacities to cope with stress.



The demands placed on us from day to day life represents the rising water level of our individual bucket. A big bucket can hold more water or stress, while a smaller bucket can overflow quicker. You might not be able to change the size of your bucket, but you can add taps or outlets to increase your resilience by releasing the amount of stress (or water) filling and overflowing your bucket.

Alcohol - We must highlight this issue here!

Alcohol can have a negative effect on your mental health, but mental health problems not only result from drinking too much alcohol. They can also cause people to drink too much.

Between one and three units daily have been found to help protect against heart disease, dementia and Alzheimer's disease, and a small

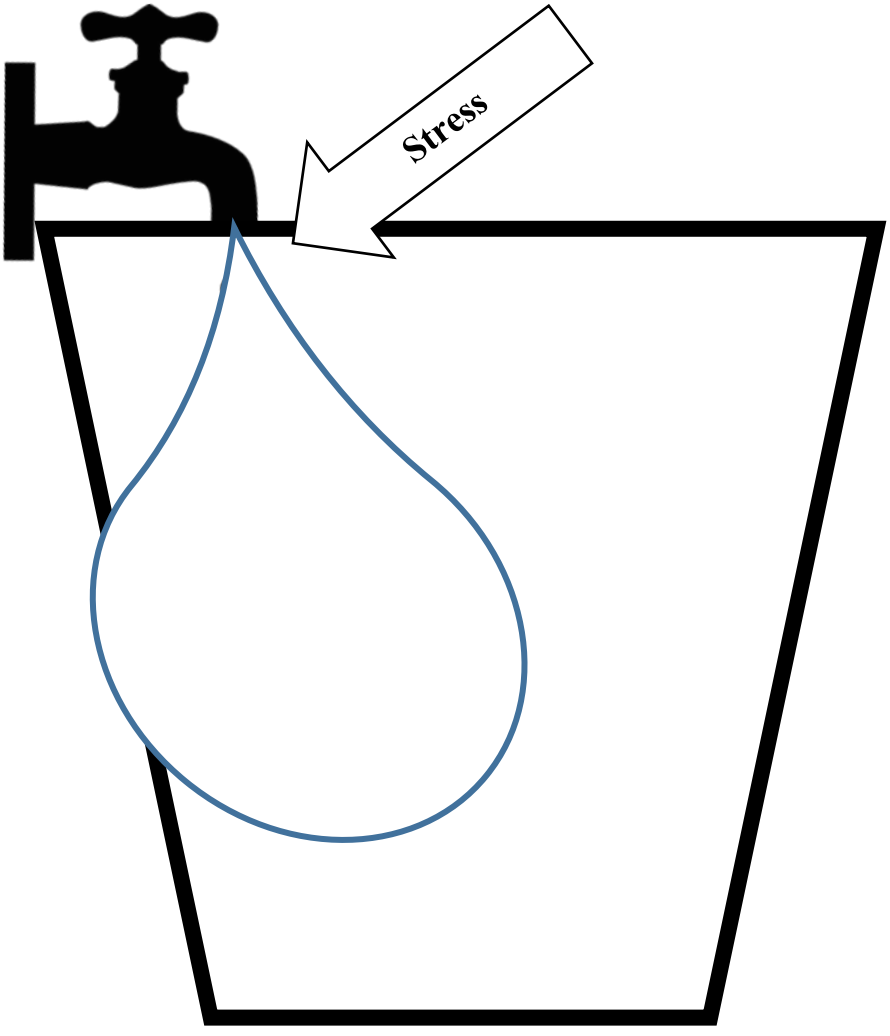
glass of red wine daily may reduce risk of stroke in women. However, alcohol is thought to use up neurotransmitters in the brain. The brain needs a certain level of neurotransmitters needs to ward off anxiety and depression. This can lead some people to drink more to ward off these difficult feelings, and a dangerous cycle of dependence can develop.

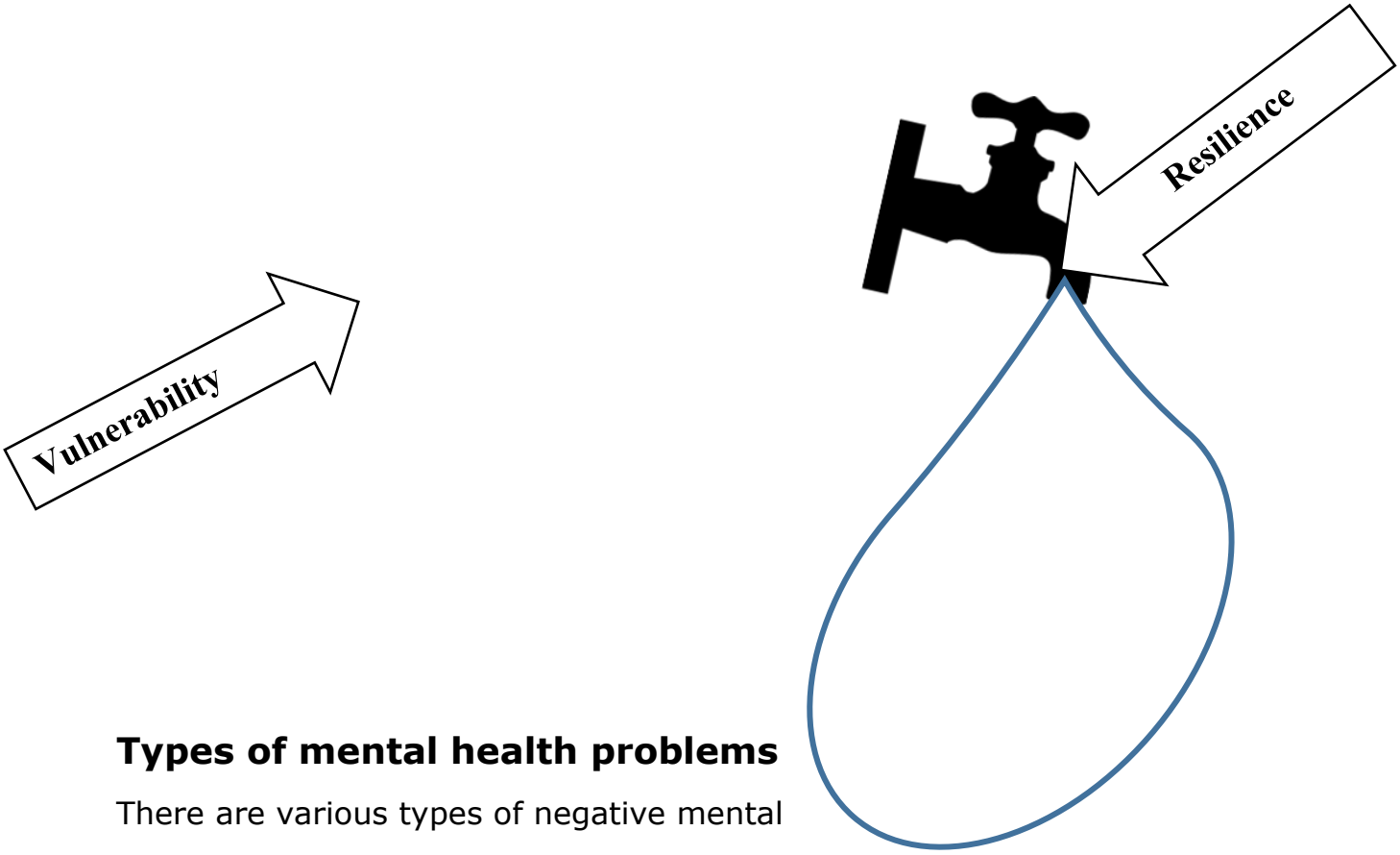
In last seven days, how many beers + glasses of wine + spirit (pub measure) did you have? (Remember 1 pint is 2 units)

Your Stress Bucket

Think of all the **biological, social, psychological** and **environmental** factors that contribute to the level of water in your bucket.

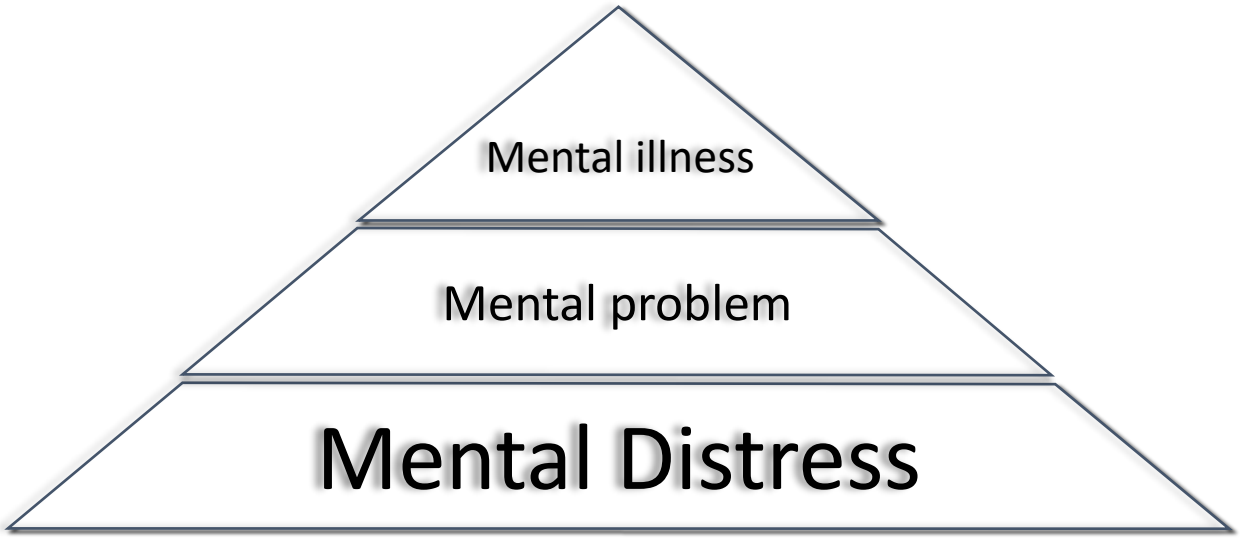
1. Think about, write and shade in your vulnerability level
2. Evaluate the stresses in your life; write and shade in how much they increase your water level in the bucket.
3. Reflect on and write your resilience or coping skills to prevent your bucket from overflowing. Think about your strengths.





Types of mental health problems

There are various types of negative mental health experiences which can occur once and pass on, such as a panic attack. But some health problems can linger and become disorders, and this all depends on biopsychosocial factors mentioned earlier. Our mental health experiences can vary. We can experience mental distress, a mental health problem or a mental disorder. Each of which can be managed and helped with dozens of approaches.



Each of these experiences has various signals and symptoms, which can be hard to detect in oneself and in others. Only a trained professional can diagnose someone with a mental illness. However, there are times in our lives in which we could be more mindful to acknowledge that our wellbeing may change due to the uncontrollable redirections in life. The changes can cause us to experience mental distress and can be triggered by personal circumstances such as bereavement, questioning your sexual orientation, relationship break ups or moving away from home. Everyone is different and not everyone will show typical signs and symptoms of a mental health problem or disorder.

Some signs of change in mental health may include:

- Low self-esteem
- Loneliness
- Tearfulness
- Variation in mood
- Feelings of anxiety
- Disturbed sleep
- Change in weight/ appearance
- Short-temperedness
- Negative feelings about the future



See

When it comes to recognising the signs in yourself, it can be hard to tell others. One of the first and most prevalent signals for a change in your mental health is isolation and avoidance in talking about a problem. This makes it hard for friends and family to know when to reach out. Be mindful of your thoughts and behaviours.

Say

Simply talking over a cup of coffee and sharing your thoughts will make a big a difference to how you feel. Be active about your mental health, practice positive mental health strategies such as mindfulness, exercise and positive affirmations, but most importantly, connect with others.

Signpost

Visit your G.P and discuss your options for further help if you need some support to manage how you are feeling; he/she will recommend an option that is suitable for you.



See

Noticing the signs of a mental health issue in others can be difficult. Identify the signs you can see or recognise a reason why someone might be at risk of a mental health problem or suicide.

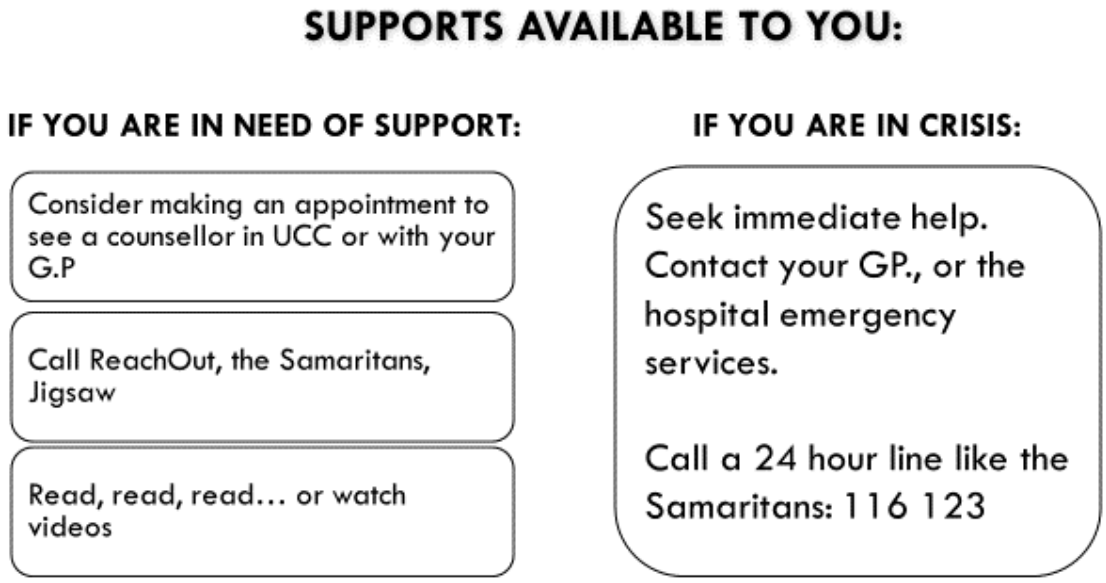
Say

Approach and ask them how they are and say respectfully why you are concerned. Do not force them to speak but let them know you care and that you are there to listen when they are ready. Encourage them to speak to someone they feel comfortable with if they are not comfortable talking to you. Listening non-judgmentally is most important. Simply being there might be helping. It doesn't help to come up with answers. Sometimes just listening is enough.

If you have reason to be worried about suicide, don't be afraid to use the word suicide. This will not put the idea in their head; instead, asking someone if they are thinking about suicide is a direct way to approach your concern. Your concern will make a difference.

Signpost

Assess their need for support and encourage them to seek advice from their G.P or other services listed below sooner rather than later.



Mental health services in UCC, Cork and Nationwide

University College Cork:

Student Counselling and Development
Student Counselling & Development is a professional, confidential and free service available to UCC students.
Location: Ardpatrick, College Road
Phone: (021) 4903565
Email: counselling@ucc.ie Website: www.ucc.ie/studentcounselling
Hours: 9.15am-1pm; 2.15pm-5pm, Mon-Fri

Student Health Department
The Student Health Department provides a wide range of Primary Care Health Services with a particular emphasis on the health problems that present in the University setting, including mental health.

Location: Ardpatrick, College Road
Phone: (021) 4902311
Website: www.ucc.ie/services/health
Hours: 9.15am-12:15pm; 2.15pm-4:15pm, Mon-Friday

Nite-Line
Niteline is a confidential telephone listening service run by students for students.
Number: 1800 32 32 42
Hours: Tuesday, Wednesday and Thursday during the term, from 9pm to 1am

International Education Office
Location: "Roseleigh" Western Road
Phone: (021) 490 4725
Website: www.ucc.ie/international
Hours: 9:15-1pm; 2:10-5pm Mon-Fri

Students' Union Welfare Officer UCC
The Student's Union Welfare Officer can be contacted between the hours of 9.30am-5pm by phone/email/text/letter to schedule an appointment, or by calling in person to the office below.
Location: 54 College Rd (Next to the Common Room)
Phone: (021) 490 2181 Fax: (021) 490 3219
Mobile: 086 383 6794
Email: suwelfare@ucc.ie Website: www.ucc.ie/en/SIN/welfare/

First-Year Experience Coordinator
Contact: Nóirín Deady
Email: n.deady@ucc.ie
Phone: (021) 490 2780
Hours: Monday – Friday 9:15 – 1.00; 2:10 – 5:00 Location: Admissions Office, West Wing, Main Quad.

Disability Support Services
The DSS supports the needs of students who experience mental health difficulties by offering a range of supports depending on the impact of the disability/condition on the student's ability to pursue their studies effectively.
Location: South Lodge College Road Cork Phone: (021) 490 2985 Email: dssinfo@ucc.ie Website: www.ucc.ie/dss/ Hours: See Website for details

Mental Health Services in Cork:
Samaritans - Cork
Location: Coach Street, Cork
Telephone: 021 4271323
Email: jo@samaritans.org

Website: www.samaritans.org

Shine Counselling - Cork
Location: Cork
Telephone: 021 4949948
Email: counsellingcork@shine.ie
Website: www.shine.ie

Pieta House - Cork
Location: Highfield Lawn, Model Farm Road, Cork
Telephone: 021 4341400
Email: mary@pieta.ie
Website: www.pieta.ie

Barnardos - Regional Office - Cork
Location: Blackmore House, Meade Street, Cork
Telephone: 021 4310591
Email: info@cork.barnardos.ie
Website: www.barnardos.ie

MyMind
Location: 9 Dyke Parade, Cork
Telephone: 083 3525240 / 076 6801060
Email: hq@mymind.org
Website: www.mymind.org

Cork Gay Community Development co. Ltd
Location: 8 South Main Street, 8 South Main Street, Cork
Telephone: 021 4278470
Email: info@gayprojectcork.com
Website: www.gayprojectcork.com

Cork Mental Health Foundation & Housing Association
Location: Nore House, Bessboro Road, Blackrock, Cork
Telephone: 021 4511100
Email: admin@corkmentalhealth.com
Website: www.corkmentalhealth.com

Suicide Bereavement Counselling Centres, Pieta House - Cork
Free counselling, therapy and support to individuals, couples, families and children (4-18 years) who have been bereaved by suicide. Pieta House 24/7 Helpline – 1800247247
Location: Highfield Lawn, Model Farm Road, Bishopstown
Phone Number: 021 4341400
Email: info@pieta.ie

Living Links - Cork East

Location: Cork
Telephone: 087 1370792
Email: corkeast@livinglinks.ie
Website: www.livinglinks.ie

Youth Health Service General health support service for under 25s
Offering information and clinics on topics such as crisis pregnancy, parenting, adoption, abortion and STDs.
Tel: (021) 422 0490/1

Mental Health Services Nationwide:

ReachOut.com
Location: Nationwide
Telephone: 01 7645666
Website: www.reachout.com
National Youth Council Of Ireland
Location: 3 Montague Street, Dublin 2
Phone Number: 01 478 4122
Email: info@nyci.ie
Website: http://www.youth.ie

Aware
Location: 72 Lower Leeson Street, Dublin 2
Telephone: 1800 80 48 48
Email: supportmail@aware.ie
Website: www.aware.ie

LGBT Helpline
Location: Nationwide
Telephone: 1890 929539
Email: info@lgbt.ie
Website: www.lgbt.ie

Transgender Equality Network Ireland (TENI)
Website: teni.ie
Phone: (01) 873 3575
Email: office@teni.ie

Walk-In My Shoes
Helpline number - 01 249 3555
Email: help@walkinmyshoes.ie

Headspace Toolkit Online
Location: Nationwide
Telephone: 01 6362400
Email: info@mhcirl.ie

Website: headspaceireland.ie/

M.A.B.S. – Money Advice and Budgeting Service
Location: Nationwide, Nationwide
Telephone: 1890 283 438
Email: info@mabs.ie
Website: www.mabs.ie

HSE Information Services
HSE Drugs Information www.drugs.ie
HSE Alcohol Information Alcohol information Hotline 1850 241850
HSE Suicide Bereavement Support Service (Cork & Kerry) 087 7986944

Paul’s story

See **What signs did you see that made you feel concern?**
Say **What could you do or say to start the conversation?**

Signpost **What help action would you take or recommend?**

Caroline's story

See **What signs did you see that made you feel concern?**
Say **What could you do or say to start the conversation?**

Signpost **What help action would you take or recommend?**

Ben’s story

See **What signs did you see that made you feel concern?**
Say **What could you do or say to start the conversation?**

Signpost **What help action would you take or recommend?**

Physical activity and goal setting

Did you reach your goal from last week?

Yes ☐
No ☐

What barriers prevented you from achieving your goal?

What influences helped you achieve your goal?

Setting your new long-term goal

Make your goal SPECIFIC and write it down
Define your MEASURES
Make sure your goal is ACHIEVABLE
Ensure your goal is RELEVANT
Define your TIMING

New Goal setting:

5. The smart goal setting process is not a rigid 5 step process. Rather, it is a checklist to ensure that the sentence you have written summarising your goal meets ALL of the above five criteria.
6. Review your last goal and write your new personal and meaningful SMART goal below if you need to make a new one.

Monitoring your goal

Monitoring your goals is essential to increasing your success. Fill in the diary below to see what you're doing and how much of it counts towards your 150 minutes a week target.

Day of the week	Type of activity	Intensity: Moderate or Vigorous	Time (in minutes) spent doing each activity	Total time (in minutes) spent being active each day
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				
Saturday				
Sunday				

Don't forget to monitor your physical activity. You could also use the apps suggested in the student handbook A. Such apps may include; mapmyrun, strava and pedometers.

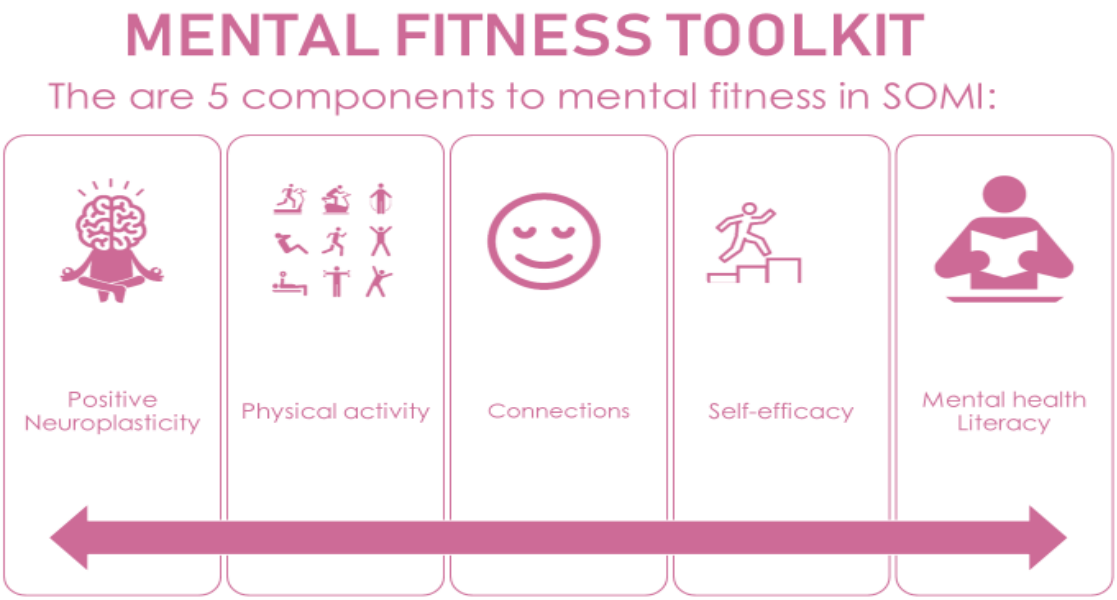
Some final tips that may be helpful:

- Decide on your goal and stick to a regular routine that you planned out beforehand.
- The guidelines recommend 150 minutes per week, but when starting out even 10 minutes is a good start.
- Exercise during a time of day you are most energetic
- If you are already involved in a sport, up the ante, run faster, learn how to swim or do more core work.
- Remember the trans theoretical model, some stages may take longer to get to, but preserver, believe in what you can achieve

Mental Fitness

What is mental fitness?

In our view, mental fitness is the active boosting of your individual ability to protect and recover from adversity through wellbeing practices. It is the emotional agility to respond adequately to life's challenges through finding your strengths and building resilience against stress. Mental fitness has five components that are integrated throughout the State of Mind Ireland programme.



From these five components, we learn that we can adapt to stress and increase our resilience to handle stress by exercising skills to enhance our mental fitness. We cannot eliminate or avoid stress, but we can learn skills to prevent it and minimise its impact when it occurs.

In the programme, we have identified 6 skills essential to gaining mental fitness. They each play a role in increasing self-esteem and emotional awareness through accessing positive emotions and decreasing negative thinking. These skills include:

There is no one way to be mentally fit, and it is a combination of small changes and factors which contribute to helping us deal with the problems and challenges in our lives. Being mentally fit and using mental fitness strategies is a positive strength, fuelled by positive emotions and relationships. Feeling positive emotions is what encourages us to reach out, challenge ourselves and problem solve. Through engagement with the skills explored throughout SOMI, we have the capacity to increase our sense of wellbeing and empower others to do so too. Positive emotions are contagious and we can influence the emotions of others positively through simply being well ourselves. Working with your strengths, the mental fitness skills taught throughout SOMI aim to provide a lasting lift in your wellbeing.

Physical activity and mental health:

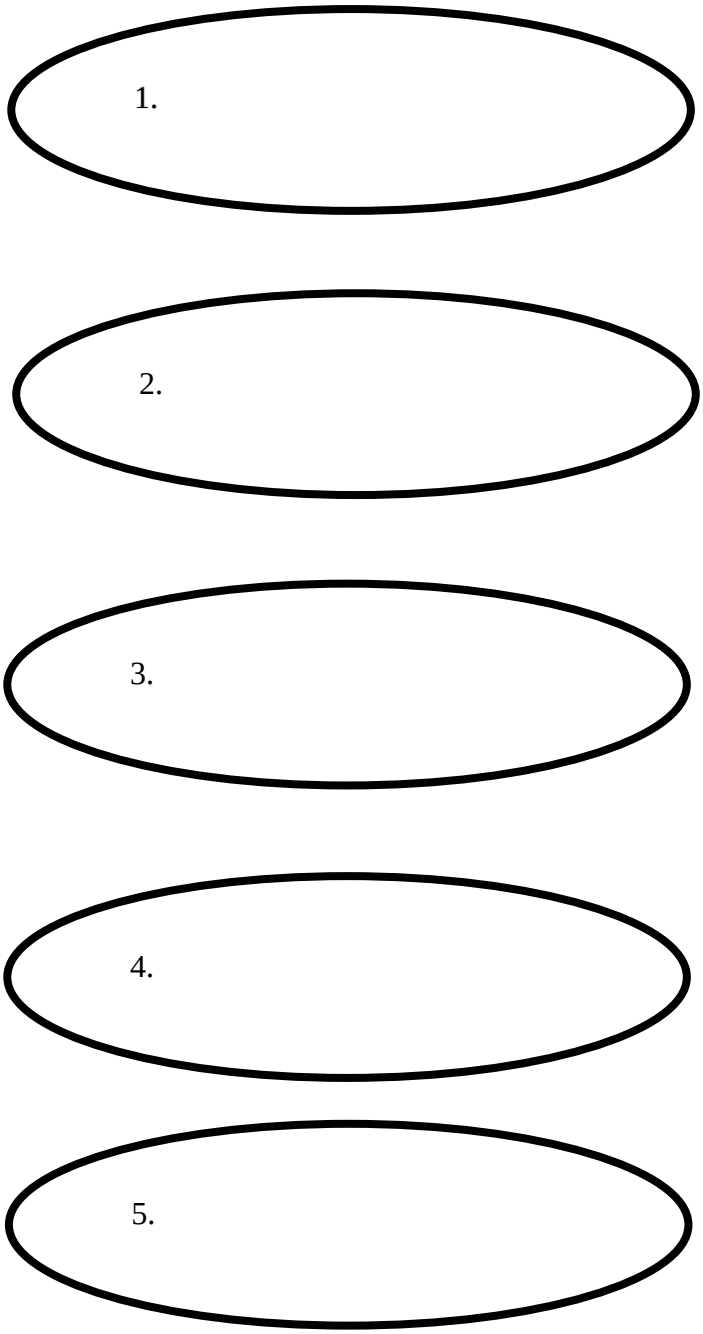
Physical Activity has been an important factor throughout the SOMI programme, as it's been proven to reduce anxiety and depression. Aerobic activity causes an increase in blood circulation to the brain, which has a physiologic influence on the brain. These effects play an important role in mood, motivation and cognitive functioning.

In recent years, research has proven engagement in physical activity has been associated with positive mental health as it reduces anxiety, negative moods and depression through improved self-esteem and cognitive function. In relation to resilience, specific research, physical activity has shown positive correlations with resilience potentially due to the protective outcome in engaging with exercise. A study investigating regular exercise associations with emotional resilience to acute stress levels in healthy adults showed a physically active individual's response to stress was significantly lower than those who were sedentary. This reinforced the idea that physical activity can acts as a protective factor in reducing the negative effects of stress on our health.

Physical activity interconnects many ways to practice positive mental health as it has benefits on many different levels. It improves self-esteem, acts as a positive distraction from stressful days, enables you to connect with others and build relationships that will combat the risk of loneliness or social isolation. Remember choose an exercise or activity that is suitable for you. Be realistic about the goal you set and follow the SMART goal setting guidelines.

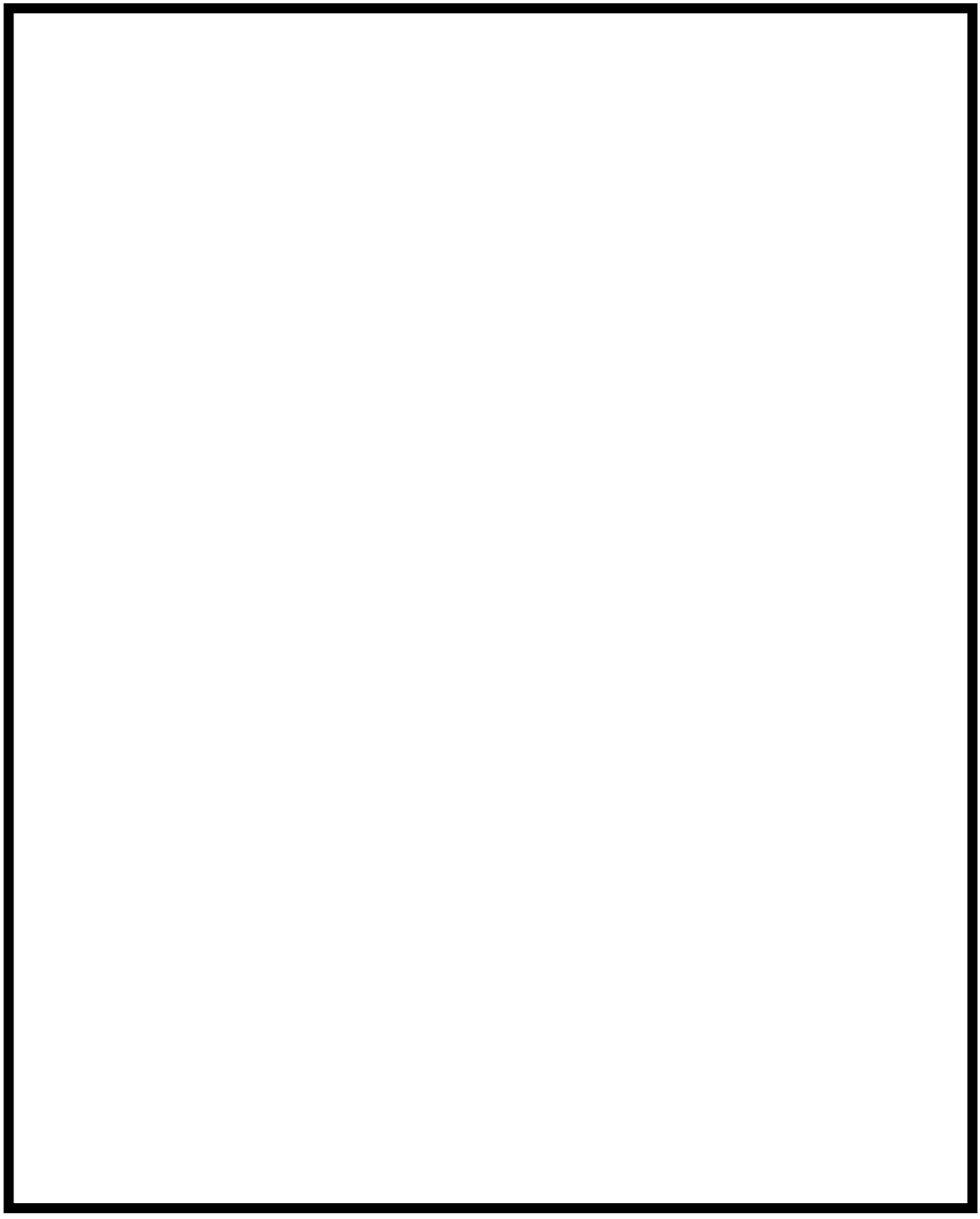
Reflection on the State of Mind Programme

Recall and discuss the strategies explored throughout the programme. Put in order the positive mental health strategies you feel you are most likely to use.



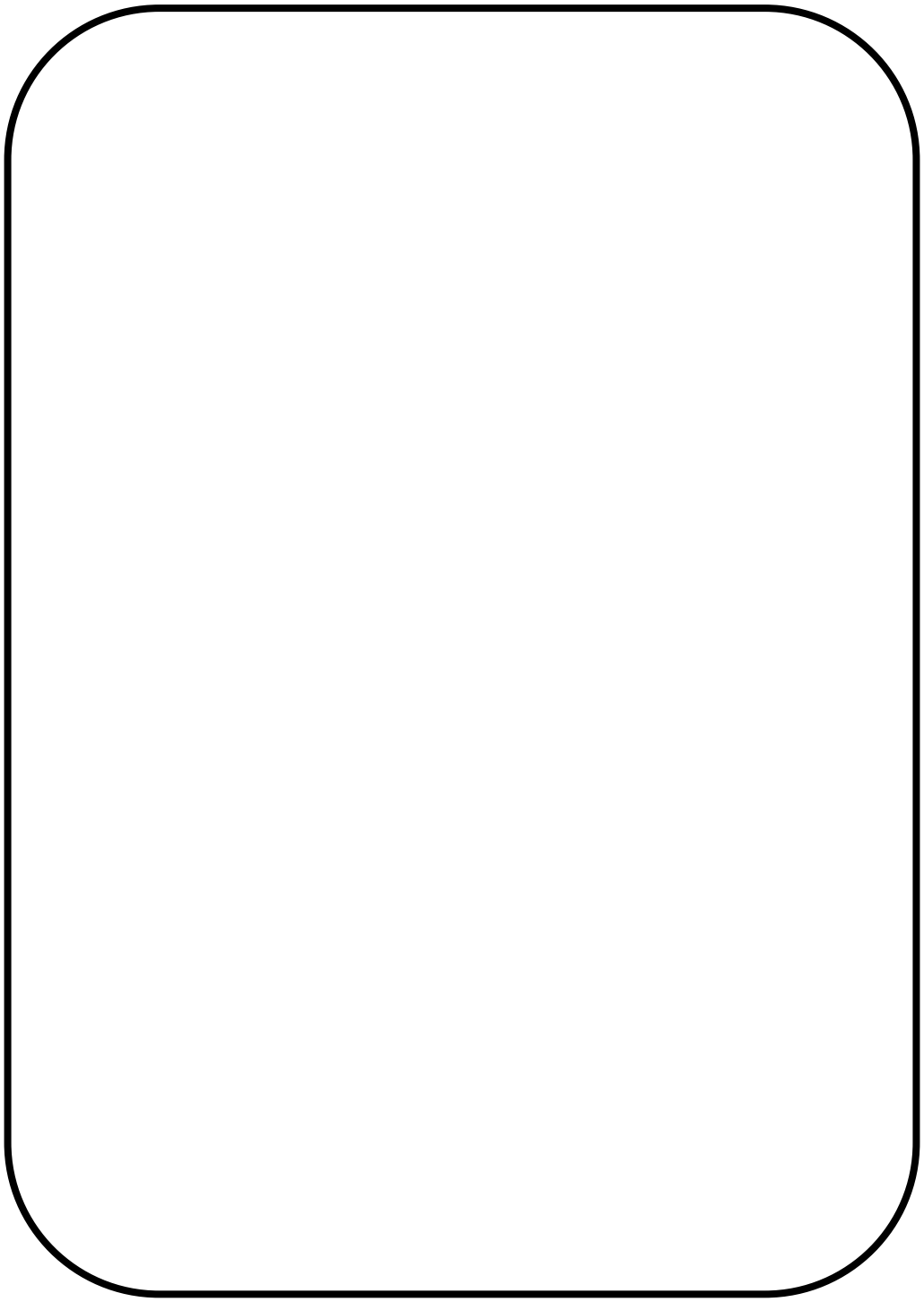
Mind mapping

Mind mapping is simply a diagram used to visually represent or outline information. It is a powerful graphic technique you can use to translate what's in your mind into a visual picture. Since mind mapping works like the brain does, it allows you to organise and



understand information faster and better. Draw a mind map to match your thoughts with your reflection on the State of Mind Ireland programme.

Some space for your notes, thoughts and reflections…



Appendix P: SOMI-HE Evaluation (for future programme development)



Evaluation State of Mind Ireland 2018- 2019

1. What is your overall assessment of the State of Mind Ireland programme? (1 = insufficient - 5 = excellent)

◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5

2. Did the programme achieve its objectives (to signpost mental health, mental health problems and wellbeing practices)

◯ Yes ◯ No ◯ Somewhat

3. Did the knowledge and information gained from participation in this programme met your expectations?

◯ Yes ◯ No ◯ Somewhat

4. How knowledgeable do you do consider yourself to be about mental health and mental health problems over-all?

◯ Very knowledgeable
◯ Knowledgeable
◯ Somewhat knowledgeable
◯ Not very knowledgeable
◯ Not at all knowledgeable

5. How knowledgeable are of you of ways to protect and maintain wellbeing and your mental health?

◯ Very knowledgeable
◯ Knowledgeable
◯ Somewhat knowledgeable
◯ Not very knowledgeable
◯ Not at all knowledgeable

6. Please rate the each of the following:

	Excellent	Very Good	Good	Fair	Needs improvement
Duration	○	○	○	○	○
Location	○	○	○	○	○
Times	○	○	○	○	○
Activities	○	○	○	○	○
Presenters	○	○	○	○	○
Training aid (presentation)	○	○	○	○	○
Content	○	○	○	○	○
Take home resources	○	○	○	○	○

(a) Comments:

(b) If your response to any of the above is 'Fair' or 'Needs Improvement' please make suggestions for improvement.

7. Please select your level of agreement with the following statements

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
The programme has increased my awareness of mental health and wellbeing practices.	○	○	○	○	○
I am more confident to engage in positive wellbeing strategies.	○	○	○	○	○
Programmes like State of Mind Ireland can normalise mental health discussions.	○	○	○	○	○
I have increased confidence to discuss mental health with others.	○	○	○	○	○
I have increased knowledge in the benefits of physical activity for mental health.	○	○	○	○	○
I have intentions to become more physically active.	○	○	○	○	○

8. If applicable, please share two main take-home messages that you learned through your participation in the State of Mind Ireland programme.

9. One action (next step) I will take after attending the State of Mind Ireland programme is:

10. What aspects of the State of Mind programme were least helpful?

11. What aspects of the State of Mind programme were most helpful?

12. How can we improve the State of Mind Ireland programme?