A MIXED METHOD INVESTIGATION TO DEVELOP A SPECIALISED OCCUPATIONAL THERAPY THEORY BASED INTERVENTION MANUAL FOR USE WITH YOUNG PEOPLE WITH EMERGING MENTAL HEALTH ISSUES.

Jackie Diane Parsonage

The thesis is submitted in partial fulfilment of the requirements of the award of

Doctor of Philosophy.

Awarded by Oxford Brookes University

A MIXED METHOD INVESTIGATION TO DEVELOP A SPECIALISED OCCUPATIONAL THERAPY THEORY BASED INTERVENTION MANUAL FOR USE WITH YOUNG PEOPLE WITH EMERGING MENTAL HEALTH ISSUES.

Jackie Diane Parsonage

MResCP, BScHonsOT, MRCOT

The thesis, is submitted in partial fulfilment of the requirements of the award of

Doctor of Philosophy.

Awarded by Oxford Brookes University

Student no: 17002703

Word count: 79'730

Director of Studies: Prof Helen Dawes

Second Supervisor: Prof Mona Eklund

ACKNOWLEDGEMENTS

Special thanks to:

The Elizabeth Casson Trust for funding this PhD for three years.

My supervisors, Professor Helen Dawes, and Professor Mona Eklund, for the guidance and support throughout this PhD. I would also like to thank them for the effort and energy put in to the multiple reviews of the various chapters of this thesis.

Dr Kristine Lund for her support whilst developing competence with grounded theory.

The young people who completed questionnaires and time use diaries. To those who provided feedback from an adolescent perspective.

Although they were not involved in the PhD directly, I would also like to thank the following:

Professor Wendy Bryant for giving me the opportunity to discover that I enjoy research.

My parents for giving me a positive start in life, and providing opportunities to engage in occupation, enabling my own occupational development.

My wonderful husband, Robert William for his practical support, his belief in my capabilities and ongoing encouragement.

And finally:

Thanks you to those who take the time to read this PhD, and consider the value of occupation, occupational science and occupational therapy.

TABLE OF CONTENTS

LIST OF FIGURES AND TABLES

GLOSSARY OF TERMS

At Risk Mental State (ARMS): refers to the prodromal period in which sub-threshold mental health symptoms emerge of insufficient severity and clarity to justify a diagnosis. The term originally evolved in relation to the transition to psychosis but is now widely considered to be applicable to other mental health diagnoses (Bowman et al., 2020). Also referred to as clinical high risk, and ultra high risk in the literature.

Biographical disruption: is a concept originally described by Bury (1982) in relation to chronic arthritis, and refers to where illness disrupts multiple aspects of an individual personal biography often necessitating changes in behaviour and the meaning ascribed to a variety of aspects of life. Disruption can be experienced in multiple areas of an individual's life, such as social relationships, work, leisure and ability to mobilise material resources.

Complex interventions: incorporate and target several interacting components such as; behaviour change of recipient or person administering the intervention, target multiple groups or organisational levels, address a variety of outcomes, and the degree of flexibility and tailoring (Craig et al., 2006).

Determinants: an interpersonal, organisational, community or societal factor that affects the nature of the health problem. This may include both risk factors and protective factors (Bartholomew-Eldredge et al., 2016, Taff et al., 2017).

Emerging mental health issues: describes the emergence of potential symptoms of mental illness that may or may not indicate or lead to developing an 'At-risk Mental state' or a 'prodromal' phase of illness. See 'At risk Mental state'.

Function/Functioning: The dynamic interaction of physical and psychological systems and process of the body, in the context of her or his health conditions, environmental factors, and personal factors (WHO, 2002).

Mental health: "a state of wellbeing in which the individual realises his or her own abilities, can cope with normal stress of life, can work productively and fruitfully, and is able to make a contribution to his or her community" (WHO, 2018b).

Prodrome: an early prepsychotic stage (At risk mental state) which is applied retrospectively, if the definitive psychotic stage develops (McGorry et al., 2013).

Psychosis: a variable syndrome, defined by the presence of positive psychotic symptoms, especially delusions and hallucinations, and typically features one or many comorbidities, including negative symptoms, mood syndromes, personality disorders, substance use disorders, medical diseases and PTSD (McGorry et al., 2013).

Occupation and Activity: "in occupational therapy, occupations refer to the everyday activities that people do as individuals, in families and with communities to occupy time and bring meaning and purpose to life. Occupations include things people need to, want to and are expected to do" (WFOT, 2012). In this thesis, activity and occupation are inter-changeable reflecting source literature.

Occupational balance: is a central and emerging concept with in occupational science rooted in the profession of occupational therapy. Subjective in nature, four theoretical perspectives of occupational balance have emerged including: the quantity of involvement in occupation (e.g. time use), congruence of occupation with values, fulfilment of the occupational demands within an individual's personal environmental context, and compatibility with occupational participation or arrangement of occupations (Wagman et al., 2015, Eklund et al., 2017a).

Occupation-based interventions: are where engaging in occupation is used as the therapeutic agent of change (Fisher, 2014).

Occupation-centred: an "occupation-centred perspective as the source and origin of professional reasoning" in Occupational science and occupational therapy and must be either 'occupation-based' or 'occupation-focused' (Fisher, 2014).

Occupational determinant: an interpersonal, organisational, community or societal determinant (*See Determinant definition*) specifically related to engaging or participating in occupation.

Occupational disruption: occurs when participation in necessary or meaningful cccupations disrupted by illness or other circumstances (Christiansen and Townsend, 2010).

Occupational engagement: "the occupying of place and time in a rich tapestry of experience, purpose and attached meaning" (Christiansen and Townsend, 2010).

Occupational-focused: this is where the focus is intentionally on occupation for example, evaluating occupation performance using specifically occupation related measures rather that alternative measures focused on other factors such as bodily or psychological focused measures (Fisher, 2014).

Occupational performance: "the ability to perceive, desire, recall, plan and carry out roles, routines, tasks and sub-tasks for the purpose of self-maintenance, productivity, leisure and rest in response to demands of the internal and/or external environment" (Ranka and Chapparo, 1997).

Occupational science: "occupational science is the systematic study of the things that people do (their occupations)" (Hocking, 2013).

Occupational therapy: "occupational therapy is the art and science of enabling engagement in everyday living, through occupation; of enabling people to perform the occupations that foster health and well-being; and of enabling a just and inclusive society so that all people may participate to their potential in the daily occupations of life" (Townsend et al., 2007).

Occupational scaffold: is a relatively new term introduced by Primeau and encapsulates the idea of a graded support structure, usually provided by parents and teachers, in which levels of support decrease as the individual develops the requisite skills and competencies to engage in the occupation at the level needed to perform adult roles independently. The term is poorly defined within the literature and the definition presented here is a composite of Primeau (1998), Wiseman et al. (2005) and Parsonage et al. (2020).

Participation: "participation as involvement in a life situation" (WHO, 2001).

Wellbeing: "is a positive construct that incorporates…subjective satisfaction with life and positive affect or mood, and meaningful functioning and human development" (Patel et al., 2018).

ABBREVIATIONS & ACRONYMS

ACS-AYA: Activity Card Sort - Adolescent, Children and Young Adult

ARMS: At risk Mental state

EI: Early Intervention

IM: Intervention Mapping

OS: Occupational science

OT: Occupational therapy

SDQ: Strengths and Difficulties Questionnaire

TUD: Time use diaries

MOHO: Model of Human Occupation

ABSTRACT

Background: Mental ill health is a significant problem among young people, negatively affecting their quality of life with long-term consequences. A need exists for a broader range of interventions to address the determinants that affect mental health, early, when problems are emerging. Research suggests that the balance and nature of daily occupational choices can influence mental health in adults, but its influence on adolescent mental health has yet to be fully explored. Adolescence is a key period in developing occupational choice and learning how to balance daily occupations. To date there is a limited understanding of how adolescents choose and balance occupations, the relationship of occupational choices to mental health, and whether an intervention developed with young people can support individuals in their occupational choices to affect their mental health.

Aim: This study aims to understand how young people use their time, their perception of this process in relation to their situational context and mental health, and to inform the co-development of an occupational therapy theory-based intervention for young people aged 16 to 17 years experiencing emerging mental health difficulties.

Methodology: Informed by the Intervention Mapping framework, a pragmatic five-study, sequential, mixed method project was completed. Study one used a systematic scoping review method, to describe the academic literature reporting occupation-based interventions designed to improve the mental health of adolescents. Study two surveyed a cohort sample of typical 16- to 17-year-olds from two mainstream UK co-educational secondary schools, using time-use diaries and the SDQ questionnaires. Providing a sampling frame for a third study using a constructivist grounded theory method. The findings from the first three studies informed a structured consultation with occupational therapists and researchers using a consensus Delphi study, designed to prioritise emerging occupational determinants. Study five used the prioritised determinants to inform the content development of a manualised intervention, which underwent initial acceptability testing with young people.

Results: The scoping review found three occupational therapy-based interventions targeting adolescent mental health, and a diverse range of thirty-six other occupation-based studies, using a wide breadth of approaches and outcome measures across a variety of settings. A school cohort sample of 134 students completed two surveys, providing an insight into the feasibility issues, recruitment rate, measure completion and potential for patterns and relationships. Drawing on the sample, six focus groups were conducted with twenty-seven young people, informing a theoretical model of occupational choice. The Delphi identified and prioritised eighty-nine determinants leading to the prioritisation of eighteen, informing the aims, objectives, and content of the intervention. The studies informed the construction of the eight-week 'Activity-Time Use' intervention manual including exploration and development of the occupational repertoire, balancing occupation, volitional aspects,

the situational context, occupational choice, and the occupational self. The intervention review against six acceptability criteria suggested that the intervention required minor amendments but appeared acceptable to the target population.

Conclusion: New knowledge of occupational determinants and their influence on occupational choices, in conjunction with occupational therapy and behaviour change theories, informed a manualised intervention, co-developed with young people and experts, which, following initial acceptability testing with young people, shows potential for further development and feasibility testing.

1 CHAPTER 1, AN INTRODUCTION TO THE PROBLEM

1.1 DEFINING THE PROBLEM: MENTAL HEALTH IMPACT AND ADOLESCENCE

Mental ill health is one of the main contributors to overall global disease burden (Vos et al., 2013, Trautmann et al., 2016, Patel et al., 2018), recognised as a global public health crisis (Patel et al., 2018), and an escalating cause for concern both in the UK and internationally (World Health Organisation, 2018a). Investment, research, and health care provision for the treatment of mental illness is routinely worse than that provided for physical illness (Patel et al., 2018) and in many countries, those suffering mental illness also experience human rights violations (Patel et al., 2018). Despite some advances in the treatment and management of mental illness, application of knowledge has been poor (Patel et al., 2018). Mental health care in all countries is considered inadequate (Patel et al., 2018) and there is a need for committed action to improve the quality of health care provided to those with mental health difficulties (World Health Organisation., 2013, Patel et al., 2018).

One analysis of global disease burden, places mental illness as the highest 'years lived with a disability (YLD's)' (32.4%), and level with cardiovascular disease in disability-adjusted life years (DALY'S) (13%) (Vigo et al., 2016). More conservative estimates of global disease burden place mental health in the top five (GBD 2013 DALY's and Hale Collaborators, 2015). Global prevalence of mental health illness is difficult to estimate due to poor and often contradictory reporting (Baxter et al., 2013), but prevalence rates are thought to be increasing (Trautmann et al., 2016). The global economic cost of mental illness is estimated to rise from $8.5 trillion in 2010 to $16.1 by 2030, placing it above costs associated with cancer and level with that of cardio vascular disease (Trautmann et al., 2016).

In the UK, a 2014 survey of mental health and wellbeing, revealed that 17% of adults aged 16 to 64 years met the diagnostic criteria for a common mental health problem, young women (19.2%) emerged as a high-risk group being twice as likely as men (8.4%) to experience difficulties and prevalence rates have steadily increased since 2000 (McManus et al., 2016). Prevalence of psychotic illness is thought to be under one in a hundred or 0.5% of the population (Bebbington et al., 2016). A UK survey of children aged 5 to 19 years conducted in 2017 suggests that rates of child mental illness is increasing, estimating that 1 in 8 children were thought to have a mental disorder, while 1 in 12 (8.1%) had an emotional disorder such as anxiety and depression (Sadler et al., 2018). The same

survey identified that rates of emotional disorders increase significantly in adolescence, with highest rates observed in those aged 17 to 19 years, and girls were twice as likely to have a disorder (Sadler et al., 2018).

Rising prevalence of mental health illness among adolescents is a particular concern with 50% of all mental health conditions thought to begin before the age of 14 years, and 75% before the age of 24 years (Kessler et al., 2005, Kessler, et al., 2007). This generation faces unprecedented health shaping environmental challenges, which can also influence the development of skills, capabilities, and health related behaviours, shaping brain development with long lasting consequences for the individual and society (Sawyer et al., 2012, Patton et al., 2016, Larsen and Luna, 2018). Research indicates that adolescence is a critical period for neurological, biological, psychosocial, and occupational development associated with transitioning into adult roles (Patton and Viner, 2007, Patton and Temmerman, 2016, Patel et al., 2018, Bowman et al., 2020). The emergence of mental health difficulties or the onset of acute clinical symptoms during this period can affect multiple aspects of development (Bowman et al., 2020) causing significant biographical disruption to the structures of everyday life (Bury, 1982), behaviours, daily occupations and activities (Bowman et al., 2020) with potential long term consequences for their future health (Sawyer et al., 2012).

Appropriate intervention is therefore required to mitigate the effects of biographical disruption caused by mental illness, which impacts the individual, their family and wider society in both the short and long term. The onset of mental illness can be distressing and traumatic for some adolescents, affecting self-esteem, confidence, perception of self (Gould et al., 2005) and lead to self-stigmatisation further affecting their mental wellbeing (Corrigan and Watson, 2002). Mental health problems are also associated with increased risk of physical health problems such as weight gain, and metabolic issues, linked to prescribed medications, sedentary and unhealthy lifestyle behaviours and the risk of suicide increases (Melle et al., 2006). Relationships can be disrupted, as can longer-term relationship trajectories, such as finding a partner and having children, (Bassett et al., 2001, Mackrell and Lavender, 2004). Onset of mental health difficulties during adolescence and early adulthood disrupts education and future careers (Nagle et al., 2002). Long term loss of earning potential can occur (Lund et al., 2010, Patel et al., 2018), exacerbated by societal stigma (Bassett et al., 2001). The combined impact of experiencing mental health difficulties, increases the likelihood of experiencing poverty, deprivation, reliance on sickness benefit and living in poorer quality housing (Bowman et al., 2020).

Those choosing to care for family members with mental illness can adversely find their own mental health affected, including a loss of sleep and financial difficulties (Bland and Foster, 2012). At a service level, care is limited, under-funded, and under pressure (Patel et al., 2018). If young people do not receive the care and support they need, then over the life-course the economic cost increases and is associated with considerable disease burden (Bowman et al., 2020). Given the rising prevalence rates, increased demand for services and onset during a vital developmental period, a critical need exists to reduce the significant multi-dimensional impact of mental illness. To address this, appropriate, timely, accessible and evidenced-based, cost effective service provision and interventions are required (Purcell et al., 2011, Mei et al., 2020), ideally provided in non-designated health settings (Patton et al., 2016).

1.2 INTERVENTIONS FOR ADOLESCENT MENTAL HEALTH

Over the last 20 years, through the collective efforts of mental health charities, user groups, health organisations, celebrities, new research, and MPs, the profile of mental health in the UK has been raised (The Mental Health Taskforce, 2016). There is recognition of the stigmatisation associated with mental health, which contributed to a history of woefully inadequate mental health service provision that is consistently severely underfunded, and still requires significant improvement to improve health outcome, especially for young people (The Mental Health Taskforce, 2016). From the 1990s, government policies oversaw the introduction of joint health and local authority plans for multi-disciplinary community based Children and Adolescent Mental Health Services (CAMHS) (Cottrell and Kraam, 2005), and the requirement for early intervention services for those experiencing first episode psychosis (Department of Health, 2000).

In the intervening years several policies have been published steering and shaping the mental health provision and impacting care provision for young people, such as No health without mental health (Department of Health, 2011), Closing the gap between: priorities for essential change in mental health (Department of Health, 2014), Future in mind (Department of Health., 2012) and the Five Year forward view for mental health (The Mental Health Taskforce, 2016). All reflect a commitment to improve timely access to appropriate services, reduce stigma, and promote recovery from mental illness, combined with a desire to achieve parity between physical and mental health care. Progress in improving mental health and mental health care in England has been mixed and inadequacies persist,

new efforts to make improvements emphasise service user involvement, a focus on prevention and quality care, tackling inequality, and the need for innovation and research to help drive change (The Mental Health Taskforce, 2016). Preventing mental illness in children and adolescents is now a central focus, with the green paper on 'Children and young people's mental health', articulating a role for schools; to partner with mental health services as initial responders, to educate about mental health and to promote healthy lifestyles (Department of Health and Department of Education., 2017).

Prevention and early intervention

The importance of early intervention and prevention of mental illness in young people is increasingly recognised. Originating in Australia, the 'Early Intervention' (EI) movement focused attention on the value and importance of early detection and treatment for psychosis, resulting in the introduction of specialist services for 14-35 year olds experiencing a first episode of psychosis in the UK and around the world (Mei et al., 2020). The early intensive intervention approach was found to be relatively clinically effective (Marshall and Rathbone, 2011), cost effective and contributed to a broadening of scope to include other non-psychotic mental health conditions (Mei et al., 2020).

Early intervention was found to improve symptom recovery, but by comparison, the ability to function in everyday life remained poor (Robinson et al., 2004, Conus et al., 2006, Wunderink et al., 2009, McGorry et al., 2013, Fervaha et al., 2014). Furthermore, the length of time an individual experienced sub-clinical level symptoms before developing clinical level symptomology was strongly associated with levels of illness severity, poorer longer-term symptom recovery, and poorer functional recovery outcomes (Johannessen et al., 2005, Larsen et al., 2006, Melle et al., 2006).

This led some experts to advocate that this early period of vulnerability, prior to the onset of clinical level need, should be regarded as a specific syndrome (McGorry and Van Os, 2013, Bowman et al., 2020) known as an 'At risk mental state' (ARMS) (Mei et al., 2019). The ARMS state is conceptualised in the Clinical staging model as part of a mental health continuum from asymptomatic to severe, enduring and persistent illness, linking severity of illness with levels of functional decline (McGorry et al., 2006, Cross et al., 2014, Patel et al., 2018, Mei et al., 2020). The Clinical staging model consists of 5 stages, numbered from 0 to 4, with the first three stages referring to asymptomatic, ARMS, prodromal and early onset stages of illness (Bowman et al., 2020). Although not all assessed as 'ARMS' go on to develop a diagnosed mental health condition (Addington, 2003), an argument exists for intervening early, before acute clinical symptoms manifest, thereby decreasing the length of time

that mental illness goes untreated, and improving symptom recovery by reducing the biographical disruption to the normal process of developing daily occupational functioning.

The intention to predict or indicate 'At risk mental states' (ARMS) (Bowman et al., 2020), in order to lessen the impact of the illness on the individual through timely and appropriate interventions (Johannessen et al., 2005, Larsen et al., 2006), is challenged by the difficulty of accurate early detection of mental illness (Mei et al., 2020), despite research focused on identification and detection of early warning signs of emerging illness. The high-risk period for the onset of mental health problems that occurs in adolescence, coincides with lower likelihood of seeking help and support (Purcell et al., 2011, Patton et al., 2016, Reardon et al., 2017, Mei et al., 2020, Radez et al., 2020). In the UK it is thought 70% of young people experiencing symptoms do not receive appropriate timely intervention (Mental Health Foundation, 2018). Those that do seek support are faced with inadequate and underfunded mental health services, with poor access to age-appropriate interventions (Kieling et al., 2011, Patel et al., 2018). Furthermore, research gaps have been identified in the evidence base underpinning care provision (Mei et al., 2020). Targeted specialist services and interventions designed with and for young people have been widely advocated (Bertolote and McGorry, 2005, Lassi et al., 2015).

Traditionally, however, approaches to mental health care in England and elsewhere in the world are organised according to a tiered system of service provision geared towards diagnosis and funding arrangements (Cottrell and Kraam, 2005), rather than to the idea that mental health is a continuum with a least five fluid stages between health and severe ill health. The implication of this is most pronounced for the early stages of mental illness where early appropriate intervention and support may alter an individual's mental health trajectory even for those who have not developed identified symptoms of mental illness. Consequently, a traditional tiered model including ideas of health promotion and levels of intervention may be unhelpful, and approaches that include and focus on an understanding of the continuum of symptoms, alongside the parallel continuum of development, may be more appropriate. Such an approach would mean that appropriately targeted education can also be a treatment, and interventions targeted according to a more fluid idea of the level of need and supportive of developmental processes, possibly even helping to compensate for disrupted developmental experiences. At present, the research literature relevant to the early stages of the clinical staging model is divided into health promotion, school interventions, and clinical based interventions and typically does not specifically refer to the clinical staging model. Few interventions

target the idea of emerging mental illness such as ARMS states in the context of a mainstream population such as a school cohort (See Chapter 3 for details of scoping review which informs this statement).

Given the importance of prevention, and engaging young people in the early stages of the mental health continuum, the school environment has been identified as an ideal location for adolescent focused research and intervention in children and adolescents (Department of Health and Department of Education., 2017). In the UK children are required to attend school from the age of 5 to 18 years of age. In mainstream, government provided education, children are assessed throughout their schooling but typically sit their first formal exams for their General Certificate of School Education (GCSE) while in secondary school at the age of 16 years. Adolescents then have a choice of a number of education options such as Alevels, BTEC or apprenticeship, taken at school or college. Discussion with teachers in the early stages of this project, suggested that the period from GCSE to further education can be a potentially difficult transition point for some young people who are typically aged 16 to 17 years (Powell, 2017), which also coincides with a greater likelihood of developing symptoms of mental health illness (Kessler et al., 2007) and is consequently an ideal time to target emerging mental health difficulties.

A comprehensive narrative literature review of education-based literature found that that teachers can identify key characteristics of these early stages of the 'Clinical staging model', including a deterioration in 'everyday' functioning, and recognise the impact of mental health problems on the individual's ability to engage, participate and succeed academically and socially in the school setting (Bowman et al., 2020). Adolescent engagement in physical activity amongst those with ARMS may also decline prior to clinical presentation (Carney et al., 2017). Declining occupation engagement is potentially an early warning sign and marker for at risk mental states. Readily identifiable, with minimal stigmatisation and cost within the school environment, an improved understanding of occupational engagement has the potential to lead to earlier intervention (Patel et al., 2018, Bowman et al., 2020). Improved understanding of the relationship between occupation and mental health in the context of adolescence, whether causal or circular, could enhance the identification of ARMS, and be useful in developing effective interventions.

The range of interventional approaches designed to prevent and treat adolescent mental health difficulties is limited, and unlikely to be sufficient to match the range and complexity of the determinants that contribute to illness onset (Hayes and Kyriakopoulos, 2018, Philipp et al., 2018, Mei

et al., 2020). Current treatments offered to young people are primarily pharmacological, cognitive behavioural (Rajapakse et al., 2011), family, and supported employment or education interventions (Read et al., 2018).

1.3 INTERVENTION DEVELOPMENT FOR YOUNG PEOPLE

The development of interventions for this population is challenging for multiple reasons including the difficulty identifying those 'at risk' (McGorry et al., 2014) and the vast number of inter-related social and environmental determinants affecting mental health and illness (McGorry et al., 2014, Patel et al., 2018, Mei et al., 2020). Other challenges include the rapidly changing nature of adolescence (Sawyer et al., 2012) and the importance of designing interventions that meet developmental needs (Purcell et al., 2011, Hense et al., 2015) such as promoting decision making processes by encouraging reflection on risks and consequences (Patton et al., 2016). Intervention development requires knowledge creation (Patton and Temmerman, 2016, Fowler et al., 2017a, Hayes and Kyriakopoulos, 2018, Philipp et al., 2018, Mei et al., 2020), including that drawn from different disciplines (Patel et al., 2018) to prevent and minimise the impact of mental illness.

The development of complex interventions is an inexact science (O'Cathain et al., 2019b), that has evolved rapidly in recent years in response to research waste. Guidance, provided by the MRC identified four key stages in the development and implementation of complex interventions (Craig et al., 2006) including development, feasibility, evaluation and implementation. The guidance stated that the development stage should identify or develop an appropriate evidence-based theory, relevant processes and outcomes (Craig et al., 2006), but provided limited guidance on how this could be achieved. Bridging this gap, multiple frameworks have emerged to support and structure the development of interventions, many providing detailed guidance on the various components considered necessary to produce an effective intervention (O'Cathain et al., 2019b). Intervention Mapping (IM) is one such framework that is both highly regarded within the literature and also represents one of the most comprehensive frameworks for intervention development (Bartholomew-Eldredge et al., 2016, O'Cathain et al., 2019b).

The starting point of IM focuses on answering a number of questions, starting with identifying the problem and its effect on quality of life, who is affected by it, and what are the determinants that affect the problem (Bartholomew-Eldredge et al., 2016). Thereby the evidence to enable construction

of a theoretical model is identified, called a logic model, explaining how determinants affect the problem (Bartholomew-Eldredge et al., 2016). The determinant-based logic model then forms the basis for developing the logic model of change, where specific determinants are identified and then deliberately targeted by the intervention, thereby resulting in a reduction in the problem that affects a quality of life domain (Bartholomew-Eldredge et al., 2016). Determinants are grouped according to personal, interpersonal, community and societal factors (Bartholomew-Eldredge et al., 2016).

The determinants affecting mental health and illness are many and various (Kieling et al., 2011, Patton et al., 2016, Patel et al., 2018), and range from those related to the individual, their interpersonal world, their community (including their physical environment), and wider society (Patton and Viner, 2007). Personal and interpersonal factors that affect mental health and illness include developmental history, early childhood experiences, perinatal and postnatal factors, normal developmental milestone acquisition (Gronski et al., 2013, World Health Organisation., 2013, Patel et al., 2018), the experience of unexpected events or trauma (Gronski et al., 2013, McCrory and Viding, 2015), or even a pandemic (Scottish Government., 2021). The physiological and biological factors are important and include genetic characteristics; the brain's development, injury and exposure to harmful substances such as smoking, drugs and alcohol during critical developmental periods (Patton and Viner, 2007, Patton et al., 2016). The psychological determinants affecting mental health and illness include thinking patterns, self-esteem, confidence, pressure to conform, perceived levels of stress (Navarro et al., 2017), norms, and expectations (Halliday Hardie, 2014). Similarly, community and societal factors are many and various including family characteristics (Patton et al., 2016), the nature of family relationships (Navarro et al., 2017), perspectives on gender and sexuality (Fox and Choukas-Bradley, 2020), ethnicity (Sashidharan and Gul, 2020), economic and social disadvantage (Fitzsimons et al., 2017, Patel et al., 2018, Orben et al., 2020), lifestyle factors, occupational functioning (Ferrar et al., 2013, Grgic et al., 2018), peer relationships, education, and community social supports (Patton et al., 2016).

Research into the determinants affecting mental health and illness, as with mental health care, is underfunded and limited by comparison to physical health (Mei et al., 2020). This is attributed to the stigma and moral judgements historically associated with mental health issues (Corrigan and Watson, 2002). Knowledge of the determinants and causal mechanisms affecting the mental health of children and adolescents have received scant attention. Hense et al. (2015) and Purcell et al. (2011) agree a need exists to consider mental health recovery in relation to development, including a focus on

recovering ordinary life. A better understanding can help to improve prevention, intervention and health promotion for adolescents (Mei et al., 2020).

1.4 OCCUPATION, HEALTH AND INTERVENTIONS

Occupation has long been identified as a determinant affecting health (Meyer, 1922/1977, Christiansen, 2007, Creek, 2014, Hansen et al., 2015), and has formed the basis for interventions designed to improve health, known as occupational therapy. Occupational therapy is a complex interventional approach that is alternative, holistic and client-centred, drawing on a rich history of exploring and harnessing the personal and interpersonal characteristics of the individual in the context of their environment as they engage in daily occupations or activities, in order to shape experiences of health and wellbeing (Kielhofner, 2009, Creek, 2014). The approach intentionally employs the art and science of enabling engagement in everyday living through occupation, to foster health and well-being (Townsend et al., 2007).

A review of the history of the occupational therapy profession and supporting theory-base highlights how the natural development of the profession has been shaped by the dominance of the positivist paradigm alongside the medical model used in mental health (Kielhofner, 2009). The dominance of these ideas within health care inevitably excluded alternative ideologies, impacting the nature of research, and ultimately the types of interventions introduced and considered to be evidence-based (Purcell et al., 2011, Deacon, 2013, Hense et al., 2015). The rise of the mental health recovery movement and early intervention ideology have highlighted the individualised nature of experience, the importance of participation, as well as the psychological, social and cultural aspects that affect mental health and illness (Hense et al., 2015), leading to increased interest in how combinations of lifestyle factors affect health (Firth et al., 2019). This, in turn, supports the need to move beyond a disease or medical focused model (Kieling et al., 2011) and rejects an out of date conceptualisation of mental health and illness (McGorry and Van Os, 2013). The author proposes that occupational therapy theory, underpinned by occupational science, based in the study of occupational determinants, is a previously overlooked, potential alternative approach to improve prevention and intervention for those in the early and emerging stages of mental illness.

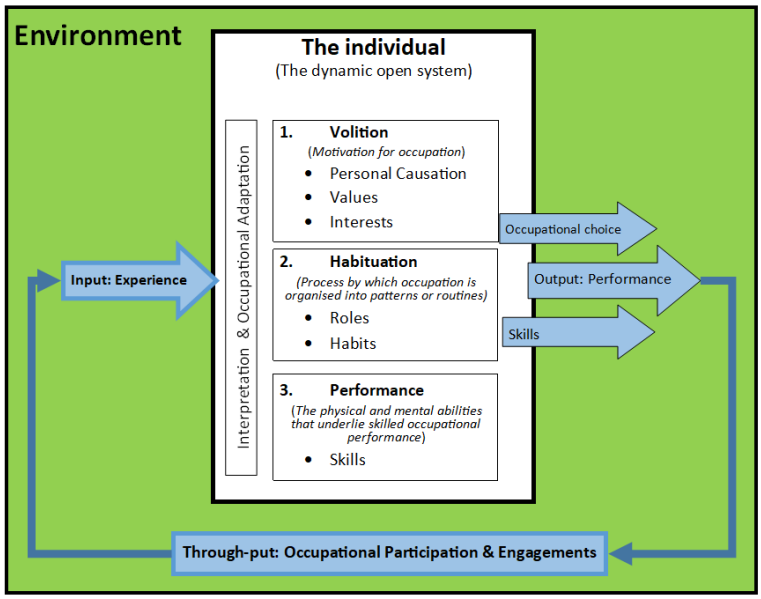
Despite the growing body of knowledge related to the importance of occupation to health, day to day occupation is often taken for granted and only recognised when normal patterns are disrupted or

withheld in some way, such as a global pandemic (Hammell, 2020), through illness (Fervaha et al., 2014), or as a result of trauma (Scalzo et al., 2016). The reality is that a complex, interrelated relationship exists between the individual, occupation, and the environment which is explored further later. The research of Wilcock (1998) into the history of occupation, identified and described the relationship between the person, the occupation, the environment, and its influence to health as 'doing', 'being', and 'becoming', and later 'belonging' was added by Rebeiro (2001). Known as the pan occupational paradigm, the concepts of doing, being, becoming and belonging are widely acknowledged within occupational therapy, and have been proposed as an overarching paradigm in which occupational therapy models can be situated (Hitch et al., 2014, 2017); for example the Model of Human occupation originally proposed by Gary Kielhofner (Taylor, 2017).

The Model of Human Occupation (MOHO) identifies the individual as consisting of three interacting components: Volition, Habituation, and Performance, which affect and are affected by the individual's choices to engage and participate in the context of their environment (Taylor, 2017). The model is used to guide occupational therapy assessments and interventions across all age groups (Taylor, 2017). Designed to be used alongside other models and concepts external to occupational therapy (Harrison and Forsyth, 2005, Taylor, 2017), the model originally incorporated an 'open-systems' approach complementing an understanding of impairment with knowledge of motivation, lifestyle, and environment in order to fill a gap in occupational therapy knowledge and literature (Taylor, 2017) (Illustrated in Figure 1.1).

The use of the Model of Human Occupation (MOHO) with children and adolescents in mental health settings has been advocated (Harrison and Forsyth, 2005), it is widely used by occupational therapists working in clinical settings (Brooks et al., 2018, Bugajska and Brooks, 2020), is associated with a number of assessments some of which have undergone validation (Kramer et al., 2010, MacIver et al., 2016), and is used in occupational therapy research (Taylor, 2017). The author also has experience of using this model within the clinical setting and alongside other concepts and theories. Therefore, the Model of Human Occupation provides an occupational therapy theory that can underpin and be used alongside Intervention Mapping to inform intervention development.

Figure 1.1: An Illustration of the Model of Human Occupation



An illustration of the Model of Human Occupation. Adapted from Taylor (2017).

1.4.1 The individual, and occupational development during adolescence

The 'individual' is first of three core aspects of all occupational therapy theory and common to all occupational therapy interventions. The individual forms part of the occupational therapist's complex triad which collectively affects health. In the context of this thesis, the use of the term 'individual' means all aspects related to a person, such as their physical nature, the meaning they ascribe to their world and how that influences what they choose to do. An individual's pathway through life from a 'life course' perspective consists of distinct phases or stages from childhood, adolescence, early adulthood, adulthood, and on through to late adulthood (Wright and Sugarman, 2009). Ongoing scientific study has improved our understanding of the processes that occur in the adolecence phase, and continue into the early stages of adulthood, focusing attention on the importance of this critical period for an individual's development, with implications for their immediate and future health (Sawyer et al., 2012, Patton et al., 2016, Larsen and Luna, 2018, Sawyer et al., 2018, Mei et al., 2020). Reflecting this, a new expanded view of the adolescence phase has been advocated, beginning at the age of 10 and continuing through to the age of 24 years of age, replacing the many and various age-

related definitions used in accademic literature (Sawyer et al., 2018). For the purpose of this thesis, the phase of development associated with the transition from childhood to adulthood is described as adolescence, and understood as occuring between 10 and 24 years of age. However, the PhD study focuses specifically on individuals aged 16 to 17 years old, which falls into the period often described as late adolescence (15 to 19 years) (Sawyer et al., 2018). Adopting a specific focus on 16 to 17 year olds, rather than a macro view of adolescence as a whole, contributes to a more specific and detailed picture of age related changes that occur during the rapidly changing phase of adolescence.

During the transition from child to adult, significant changes occur neurologically which are necessary for the individual to develop adult competencies. Specifically, the adolescent brain is understood to enter into a critical period of plasticity during which the prefrontal cortex, posterior parietal cortex, and super temporal cortex (all of which are associated with higher cognitive functions such as executive functioning), undergo structural and functional maturation (Larsen and Luna, 2018). The purpose of which appears to be the optimisation of the individual's response to the requirements of their environment (Spear, 2010, Larsen and Luna, 2018, Pozuelo and Kilford, 2021). The experience of the individual's interaction with their environment, combined with other biological changes, is thought to be essential to the mechanisms of change during the adolescent period, potentially initiating and terminating the period of enhanced plasticity, during which the brain may be more vulnerable to mental illness (Larsen and Luna, 2018).

The nature of an individual's development during adolescence is shaped by the time spent in different occupations (Larson and Verma, 1999, Ben-Arieh and Ofir, 2002, Wright et al., 2009) which they selectively choose, and which requires a renegotiation of relationships with caregivers in response to increased capabilities and the influence of peers (Arnett, 1995, Crockett and Beal, 2012). Yet, based on neurobiological research, a suggestion exists that adolescent decision making may be different to that of adults, and that the process may itself be an important part of the development process incuding the development of 'self' and identity (Pfeifier and Berkman, 2018). This has led some to suggest that interventions targetting adoelscent choice and value based decision making could be used to scafold the development of these higher level cognitive skills (Davidow et al., 2018, Pfeifier and Berkman, 2018). The active role adolescents play in this process can have significant implications for health choices linked to wellbeing, lifestyle and health behaviours (Moilanen et al., 2018) with long term health implications (Sawyer et al., 2012).

Young people define their identity as an individual within the context of a society that espouses individualistic values (Arnett and Jensen, 2002), whilst also dealing with the contradiction of finding a sense of 'belonging' within the context of the community in which they are a part (Rebeiro, 2001). Adolescent occupational development is shaped by the context of biological development (Patton and Viner, 2007) and neurological brain changes (Patton and Viner, 2007, Spear, 2010, Sawyer et al., 2018), occurring within a complex social environment. Whilst also navigating an array of potential occupational choices and adapting to a gradual increase in freedom, autonomy and opportunity for self-determination (Holmbeck, 2002). Adolescents appear to be juggling and learning to manage this complexity at the same time as developing the executive functioning skills required for the task such as self-regulation, and at a time when they are vulnerable to peer pressure (Keles et al., 2019). A better understanding of the impact of this complexity may be particularly useful to promoting positive mental health (Patton and Viner, 2007).

The implication of this research is that a time limited period exists in which the environment, culture and what adolescents choose to do, shapes the development of their future adult brain structure, with long term health implications, making it not only a critical period for development, but also for intervention. Adolescent experiences may increase their vulnerability to mental health problems but may also provide an opportunity for intervention to decrease the risk of developing mental illness (Larsen and Luna, 2018, Modabbernia et al., 2020). Targeting health-influencing occupational determinants and occupational choice may be a valid intervention focus; however, the exploration of adolescent rights, duties and responsibilities in relation to health choices is methodologically fragmented despite its potential to empower adolescents' health choices and decisions (Moilanen et al., 2018).

Attempts to change adolescent health behaviours typically focus on specific behaviours, rather than supporting adolescents to manage the complexity of occupational choice. Understanding the current complexity of interaction between the adolescent's natural, innate desires to engage and develop occupational competence, master their environmental context, and the nature of their occupational engagement, is knowledge that can inform intervention development that 'scaffolds' occupational development into later adolescence (Patton et al., 2016). The term 'scaffold' introduced by Primeau (1998) encapsulates the idea of a graded support structure, usually provided by parents and teachers, in which levels of support decrease as the individual develops the requisite skills and competencies to engage in the occupation at the level needed to perform adult roles independently (Wiseman et al.,

2005). Further research would be of value in understanding the complex interaction between occupation, environment, and individual as adolescents develop adult patterns of occupational engagement, participation, and role aquisition (Davis and Polatajko, 2006).

1.4.2 The environment and its influence on adolescents

The second aspect of the triad is the environment in which an adolescent is part, which is essential to an adolescent's engagement in occupation, and, consequently, their health (Christiansen, 2007, Patton, et al., 2016). Adolescence has consistently been identified as a gradual tansitionary stage from childhood to adulthood in which the individual develops the skills and capabilities required to perform that role within their own culture (Arnett, 2001, Crockett and Beal, 2012, Patton et al., 2016). The environmental landscape in which adolescents make occupational choices that shape their occupational development is evolving, and transforms the experience of adolescence in significant and far-reaching ways, impacting health in ways not yet fully understood (Agger, 2011, Purcell et al., 2011, Kennedy and Lynch, 2016, Sawyer et al., 2018, Orben et al., 2019). For example, technological advances such as the internet and smartphones (Agger, 2011, Orben et al., 2019), changes in nature of the job market (Christiansen, 2007, Agger, 2011), changes to social participation, and how individuals interact (Kennedy and Lynch, 2016, Kelly et al., 2018), changes in how time is used (Agger, 2011), the growth of the global community (Coleman, 2010), and conflict and war leading to mass displacement of people across the world (Patel et al., 2018), all of which can potentially affect the health of the adolescent. Consequently, supporting adolescents to navigate the complex array of occupational choices that are likely to influence their health may be beneficial.

Dynamic systems theory (Kantartzis, 2019) and other ecological systems theories (Bartholomew-Eldredge et al., 2016) informing this PhD project, highlight the importance and interactive nature of the individual and their environment and provide an understanding for how environmental changes have altered the nature and experience of adolescents' occupational development, and consequently impacted their health. The onset of the pubertal menarche, for example, is associated with the beginning of adolescence, but is now starting earlier, potentially due to improved nutrition and physical health (Sawyer et al., 2018). Meanwhile, traditional adolescent end markers such as marriage and financial independence are occurring later (Patton et al., 2016, Sawyer et al., 2018), and the developmental phase is elongated as a result of longer periods in education, increased financial affluence and contraception (Patton and Viner, 2007, Purcell et al., 2011). Perceptions of traditional

markers of acheiveing adulthood, such as marriage, or getting a job, have changed towards qualities of character, such as accepting responsibility for one's self, making independent decisions, gaining financial independence, establishing an equal relationship with parents, and compliance with social norms (Arnett, 2001). Understanding the contemporary experience of occupational choices, and its impact on the experience of occupational development, can help to better understand and support adolescents to navigate an altered environmental landscape.

1.4.3 Occupation and health in the context of adolescence

The third part of the triad for occupational therapists is the occupation itself, and how it affects health.

1.4.3.1 **Occupation types**

The research literature exploring the impact of specific, or combinations of occupational areas is gradually growing, and too voluminous to be detailed here. Consequently, an overview is provided of research illustrating the relationship between occupation and health in a number of different occupation types referred to in the literature. The research presented is primarily cross-sectional in nature, and looks for associations and therefore cannot be interpreted as causal (Carskadon, 2011, Farb and Matjasko, 2012, Keles et al., 2019, Orben et al., 2019, Vancampfort et al., 2019).

The evidence base supporting the positive effect of exercise on the mental health of adults is growing, particularly for depression and anxiety (Rebar et al., 2015). Studies in adolescent populations show promising results, with exercise being linked to the identification of internalising problems (Wheatley et al., 2020), and possible association with prevention of mental illness (Hoegh Poulsen et al., 2016). Reviews of exercise-based interventions identifying positive effects on depression, anxiety and other aspects of mental wellbeing (Pascoe et al., 2020, Wegner et al., 2020), even go on to say that it represents a possible alternative treatment to pharamacological or psychological interventions (Wegner et al., 2020). Another area with a strong evidence-base is sleep, which is in itself a multidimensional construct that interacts with other components of 24-hour time-use (Matricciani et al., 2018). Adolescents are recommended to get nine hours' sleep a night, but studies suggest this is rarely achieved (Roberts et al., 2008), the consequences of which is that multiple areas of functioning are affected, impacting on mental health (Roberts et al., 2009). The rise in sleep deprivation in adolescents has been attributed to lifestyle changes arising as a consequence

of changes in their daily time-use, arising as a result of the developmental transition to adulthood, for example staying up later and increased school work pressures (Tarokh et al., 2006, Roberts et al., 2009, Carskadon, 2011).

Leisure, defined as activities conducted during one's own time, is the predominant occupation in adolescence (Desha and Ziviani, 2007, Kennedy and Lynch, 2016) and is developmentally important (Shikako-Thomas et al., 2015). Leisure can be structured or unstructured, can consist of a wide variety of occuaptions, and is thought to affect mental health and wellbeing (Desha and Ziviani, 2007). The diversity of leisure types is considerable, making establishing links between leisure and health challenging. In an exploration of the meaning of occupation for those with physical disabilities, leisure was linked to escape, exploration, exchange and expression (Powrie et al., 2019). Vancampfort et al. (2019) found an association between sedentary activity, leisure and suicide attemps. A literature review by Farb and Matjasko (2012) suggests that participation in school-based extra-curricular activities is positively associated with adolescent functioning, but also found insufficient evidence to support the over-scheduling hypothesis, where over-engagement in activity is thought to be no longer beneficial to adolescent outcomes. Participation in performing art-based activities has been linked to multiple positive effects (Daykin et al., 2008).

A highly topical occupation associated with adolescent leisure is the use of social media and internet-based activities. The use of social media has been identified as broadening social experiences, and important for building relationships and making connections, for experimenting with identity and its construction, as well as having online social norms and a culture of its own (Kennedy and Lynch, 2016). Technology use is a necessity of social institutions in which adolescents belong, such as school and work (Christensen and Rommes, 2019). While over-engagement in social media is considered undesirable by adolescents (Kennedy and Lynch, 2016, Christensen and Rommes, 2019) and professionals alike (Kelly et al., 2018), a review of the literature suggests the effects of technology on mental health difficulties can be both positive and negative (Keles et al., 2019), particularly for young females (Kelly et al., 2018). Other studies highlight that effects of social media may vary depending on underlying mental health diagnoses (Rosen et al., 2013). Indeed the effects of social media on adolescents may relate to the underlying mechanisms or pathways of mental health illness and development (Kelly et al., 2018, Keles et al., 2019). The relatively new field of research that explores the relationships between social media, the internet, and its effects on mental health and illness, presents a complex multi-faceted picture (Keles et al., 2019). For example, higher social media use

has been linked with online harassment, poor sleep, low self-esteem and poor body image, linking to an increased risk of depression (Kelly et al., 2018). Factors such as feeling watched and 'fear of missing out' may influence choices to engage with social media, affecting mental health (Rosen et al., 2013, Kennedy and Lynch, 2016). Mental health may be affected by factors related to social media and multitasking (Rosen et al., 2013, Keles et al., 2019), or the time spent online, the nature of the online activity, and the level of investement, amongst others (Keles et al., 2019). What this literature highlights is that adolescents' choices related to how and why they engage in social media can affect mental health. Criticism exists regarding the associational rather than causal nature of the underlying research, suggesting the need for cautious interpretation (Keles et al., 2019, Orben et al., 2019). Overall, the literature highlights a complex relationship between social media and the effect on psychosocial development and mental health (Rosen et al., 2013, Kennedy and Lynch, 2016, Keles et al., 2019).

1.4.3.2 **Time-use and occupational balance**

The research presented this far has focused on single occupations in relation to health. However, this ignores the health implications of the balance and relationship between different occupations within the limits of the 24-hour context (Hunt et al., 2015, Bauman et al., 2019, Firth et al., 2019). Adopting time-use methodologies enables exploration of associations between adolescent occupational engagement and health (Ferrar et al., 2013). Studies using time-use methodologies can consider the impact of clusters or combinations of occupations such as sleep, physical activity and sedentary behaviours on health and wellbeing (Ferrar et al., 2013, Hunt et al., 2015, Hayward et al., 2016, Wu et al., 2017, Sampasa-Kanyinga et al., 2020). For example, a time-use study by Zuzanek and Zuzanek (2015) using data from 15 to 18 year olds suggested moderate amounts of free time, TV watching and spending time with friends had a positive impact on subjective wellbeing. Conversely, the Fervaha et al (2014) time-use study, found that those with first episode psychosis experienced impaired daily functioning despite symptom remission, had lower functional status, and engaged in less effortful activities compared to healthy controls. While the Oyanadel and Buela-Casal (2014) study, explored perceptions of time and found significant differences in perceptions of time and quality of life in those with a mental health diagnosis compared to healthy controls.

The complexity of the multi-dimensional concept of time, and its relationship with occupation and health, is evident across different professional disciplines. Hägerstrand (2009), a human geographer, studied the complexity of 24-hour time-use and the geography of human behaviours leading to the development of the discipline of time-geography. Time-geography positions itself philosophically by stating that time is a finite resource that exists, is liner, continuous, equally distributed, and measurable (Ottaviani, 2018, Ellegård, 2019). The approach describes events as anchored in time and space; consequently, time is an objectively measurable tool for studying constraints, process and change (Ellegård, 2019), providing a way of examining current and future patterns of occupational engagement and participation in relation to health (Farnworth, 2003, Hägerstrand, 2009, Ferrar et al., 2013, Ellegård, 2019).

Increasingly, measurement of daily occupations in relation to time, in conjunction with health-related measures, is used to identify associations between patterns of time-use and health (Sonnenberg et al., 2012, Hunt et al., 2015, Wong et al., 2018). Time-use is both measurable, and represents a modifiable factor, meaning that individuals can choose to alter the occupations in which they engage during any given time period, leading some to consider using the measurement of time-use as an outcome measure (Ottaviani, 2018). For example, the work of Fowler et al. (2017a) and Fowler et al. (2017b), time spent in structured activity was measured as an outcome measure for a CBT-based intervention, targeting social disability in young people accessing an early intervention service.

24 hour time-use diaries, the gold standard of time-use research, have previously been used to understand adolescent occupations and their development (Ben-Arieh and Ofir, 2002, Sonnenberg et al., 2012, Hunt et al., 2015, Ellegård, 2019, Gershuny et al., 2019). How adolescents use and choose to use their time potentially affects development and has health implications as discussed earlier in this chapter. Typically, time spent in occupation and the patterns established during adolescence continued into adulthood with longer-term health implications (Larson and Verma., 1999, Sawyer et al., 2012, Hayward et al., 2016), thus raising the question of optimal occupational participation and engagement for mental health. Multiple conceptualisations exist to describe the subjective phenomenon of balancing different occupations, known as 'Occupational Balance' (OB). One conceptualisation describes three aspects; the 'Harmonic mix', referring to the unique and individualised balance or variation between different types of occupations, the 'congruence with values and meaning' relating to values, which generate satisfaction and meaning in relation to

occupation, and finally, 'ability and resources', referring to the match between the demand and the resources required to participate and engage in an occupation (Eklund et al., 2017a).

Occupational balance can be influenced by multiple factors such as a person's 'capacity', who they are coupled with, such as partners or children, and the 'authority' or power to determine one's actions (Hägerstrand, 2009, Hellgren, 2014, Ellegård, 2019). An individual's gender, environment, culture, economic factors, country, and parents' occupations are among other factors that can affect occupational balance (Larson. and Verma., 1999, Krueger et al., 2009, Williams et al., 2016, Gracia et al., 2019) and levels of opportunity to engage in occupation (Haller et al., 2013). Similarly, the individual's personal causation, values or interests are thought to influence the types of activity they choose to engage in (Taylor, 2017). For example one research study found that personality traits, temperament, and time preferences influenced free time activity choices (Przepiorka and Blachnio, 2017). Alongside the concept of occupational balance, some research has suggested that an 'activity saturation' point exists, where the occupational over-stimulation can be detrimental, and any benefit derived from participating and engaging in an occupation declines and becomes marginal (Zuzanek, 2009a, Gershuny, 2011, Zuzanek and Zuzanek, 2015). This could be understood as the consequence of occupational imbalance, and may even be detrimental.

A scoping review of time-use research identified time-use studies, mostly clinically based, out of which only ten focused on examining the link between time-use and health (Hunt and McKay, 2015a). Interventions utilising occupational science theory, and based on the idea of encouraging a healthy participation in occupations, has achieved some success in adult populations (Jackson et al., 1998, Clark et al., 2012, Clark et al., 2017, Eklund et al., 2017b). Furthermore, a small but growing number of published intervention studies targeting time-use or occupational balance in adults, report a positive impact on mental health and show promise as an intervention approach (Snippe et al., 2016, Kirsh et al., 2019).

1.5 OCCUPATIONAL COMPLEXITY: CHALLENGES AND OPPORTUNITIES FOR INTERVENTION DEVELOPMENT

Occupation and its relationship with health has been described as a complex adaptive system in which an individual both adapts and learns in response to experience (Hitch and Pepin, 2020). The

relationship between occupation and health is unlikely to be a linear cause and effect model. Occupation as described in the occupational therapy and occupational science literature is complex and has multiple facets such as occupational engagement, occupational choice, occupational balance, and occupational disruption. Occupational choice reflects the individual's commitments to engage in occupation (Taylor, 2017), and at its simplest occupational balance is a subjective concept that refers to experiencing the right amount of occupation (Wagman et al., 2015). Both of these concepts are of relevance when considering health in relationship to adolescent time-use, and are consequently important concepts with in this thesis. These ideas have primarily evolved either theoretically or in relation to research conducted in non-adolescent populations.

Occupation-focused perspectives, knowledge and insights from occupational therapy and occupational science can helpfully inform interventions that target adolescent populations. Occupational disruption caused by the occurrence of mental health difficulties during the critical period of adolescence can potentially lead to long-term disability (Purcell et al., 2011, Caruana et al., 2017, Caruana et al., 2018, Hayes and Kyriakopoulos, 2018, Bowman et al., 2020) even if the original symptoms resolve (Fervaha et al., 2014, Patton et al., 2018). The typical development of skills, competence and occupational repertoire through engaging and participating typically in occupation is disrupted (Bowman et al., 2020), affecting social, educational, and vocational functioning (Purcell et al., 2011, Hayes and Kyriakopoulos, 2018). For example, completing school education becomes more difficult for those experiencing mental health symptoms, increasing the risks of social exclusion, fragile identity development, functional disability and vocational derailment (Jaycox et al., 2009, Goulding et al., 2010, Bowman et al., 2020).

Adolescents spend a considerable amount of time in school which can provide a scaffold for transition into adulthood roles, making school an ideal location for early interventions, (Arnett, 2010, Bowman et al., 2020). School-based interventional research has already begun to bring positive outcomes (Patton and Temmerman, 2016). There are few rigorously developed and empirically tested school-based intervention studies, based on occupational therapy theory and designed for adolescents aged 16 to 17 years. At that age, they transition from lower school to upper secondary school, a known high-risk period for transition to psychosis and exacerbation of other mental health difficulties. This PhD project aims to develop an occupation-based intervention systematically, informed by occupational therapy theory and occupational science, for adolescents with emerging mental health difficulties.

1.6 AIMS

Overall aim: This PhD project aims to develop an occupational therapy theory-based, manualised intervention for young people aged 16 to 17 years experiencing emerging mental health difficulties.

Study 1 aim: To identify and describe current levels of occupational engagement, and strengths and difficulties of an adolescent school cohort.

Study 2 aim: To explore how adolescents aged 16 to 17 years old make choices about their daily occupations.

Study 3 aim: Using a systematic scoping review methodology, this study aims to identify intervention studies reported in the peer reviewed academic literature, that are occupation-based, and targets mental health difficulties, or aims to improve mental health or mental wellbeing in adolescent populations.

Secondly, the study aims to describe the key characteristics of the identified studies and to draw out content relevant to intervention development.

Study 4 aim: To establish an expert consensus view of which occupational determinants should be prioritised within the development of an occupational therapy-based intervention for adolescents with emerging mental health difficulties.

Study 5 aim: To construct a manualised occupational therapy theory based time-use intervention program for 16 and 17 year olds with emerging mental health issues in mainstream school, and secondly to conduct a preliminary review of acceptability with the target population.

1.7 CHAPTER SUMMARY

This introduction illuminates the growing disease burden attributed to mental illness which is particularly affecting young people, highlighting the very real impact of mental illness on an individual, their family and the wider community. The chapter has provided a rationale for the importance of specifically designed interventions that target the critical developmental period of

adolescence, both to treat and to potentially prevent emerging mental illness. The literature presented demonstrates a growing body of evidence exploring the link between mental health, adolescent development, and combinations of occupational engagement and the environment, which suggests interventions adopting an occupation therapy focused approach may be beneficial to 16 to 17 year olds. Furthermore, a rationale has been present for intervening early within the school environment. Research focused on adolescent occupational engagement and development within the context of their environment, during the transition towards adult role competency, can help to inform occupational science, occupational therapy theory and contribute to the development of occupation-based interventions. This kind of intervention can supplement existing support and empower adolescents to adopt healthier, holistic patterns of everyday time-use during the critical stage of developing occupation-related skills required for adult life.

2 CHAPTER 2, METHODOLOGICAL OVERVIEW: DEVELOPING A COMPLEX INTERVENTION.

2.1 INTRODUCTION

The design of this PhD research project is intended to lead to the development of an effective and evidenced-based intervention for adolescents with emerging mental health issues, utilising an occupational therapy theory informed approach. This chapter provides, an overview of the design used and the rationale for this five-study, convergent, sequential, mixed-method intervention development project (Teddlie and Tashakkori, 2009). This includes an explanation of how each study intends to stand alone, incorporating practical clinical utility, whilst also being combined using the Intervention Mapping framework to develop a complex occupation-based intervention informed by occupational therapy and occupational science. Drawing on the strengths of both qualitative and quantitative research paradigms, this project utilises a pragmatist and ecological paradigm. This chapter will provide the reader with the unifying structure, expanded at an individual study level in the subsequent thesis chapters.

2.2 DEVELOPING A COMPLEX INTERVENTION

"Intervention Development is where creativity, science and art meet and the balance is delicate"

(Hoddinott, 2015)

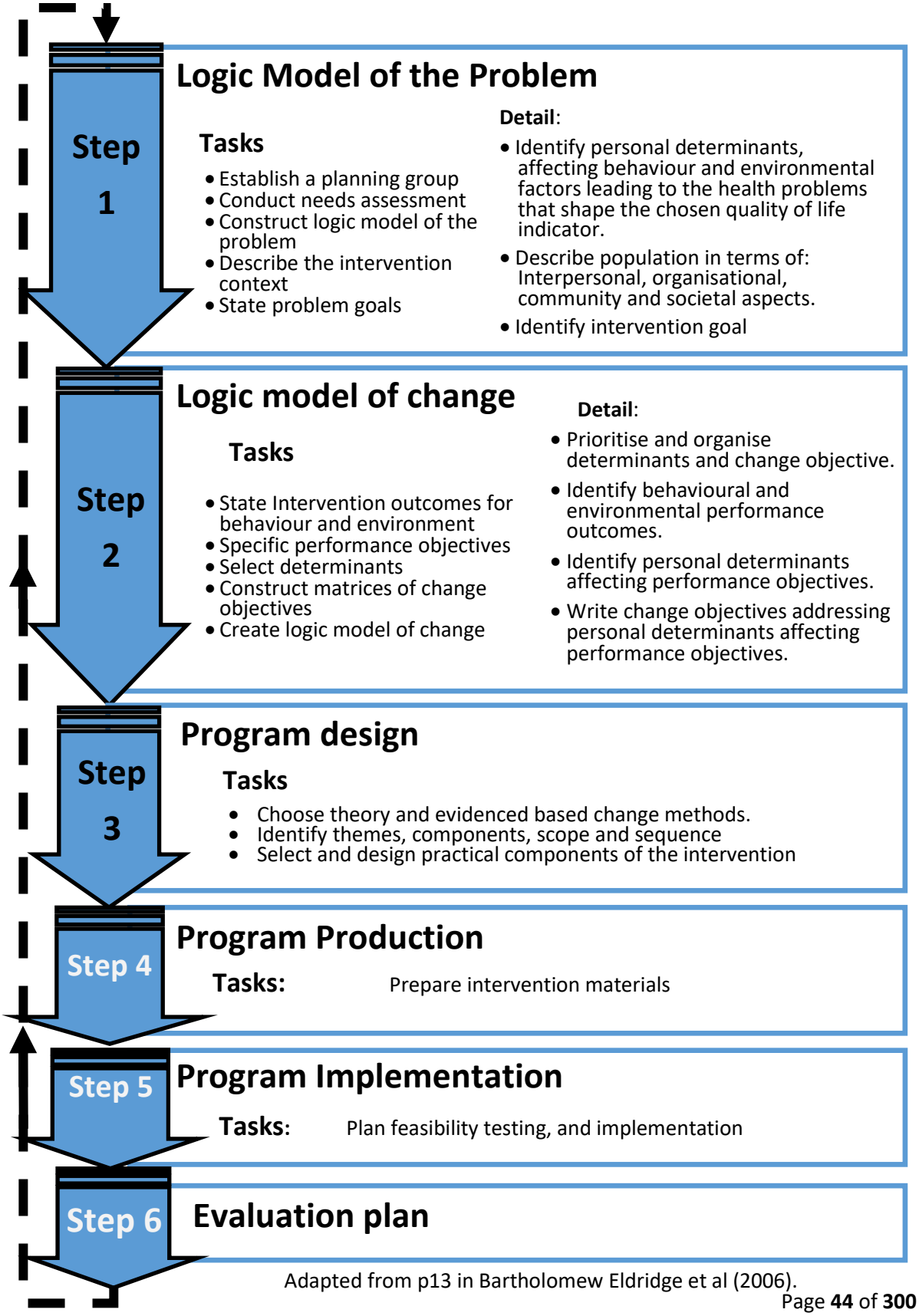
Human beings are complex, influencing, and themselves influenced by, the complex and often-changing world in which they exist (Kantartzis, 2019). This complexity is inherent in the development of health-related interventions, which necessarily engage with the multi-directional relationships between health and the other domains of functional ability, activity, participation, environment and personal factors (World Health Organization., 2001). For an intervention to become successful, It is important to consider these factors during the early stages of its development (Craig et al., 2006, Hoddinott, 2015, Bartholomew-Eldredge et al., 2016). Indeed, the costly waste of unsuccessful trials often originates from early stages in intervention development (Wight et al., 2015, Bleijenberg et al., 2018), highlighting the need to utilise 'best practice guidance' when developing interventions.

Previously, intervention-related guidance focused on how to report and evaluate research, rather than effective design (Hoddinott, 2015, Wight et al., 2015). Benefiting from the collective shared wisdom of past research experience and scientific enquiry, a number of new approaches now exist to help improve the likelihood of effective and good quality studies (Wight et al., 2015) . Medical Research Council (2006) guidance is widely cited but criticised for being too vague and lacking detail about early stages of intervention development (Craig et al., 2006, & Medical Research Council, 2006, Hoddinott, 2015), and is now superseded by newer detailed guidance and specific approaches, as demonstrated in a systematic review (O'Cathain et al., 2019b). That review found 21 different approaches in the peer-reviewed literature and identified 18 action points representing eight categories in a taxonomy of intervention development. Key principles of intervention development include; dynamic, iterative, creative, 'open' to change, and evaluation (O'Cathain et al., 2019a). Of these emerging approaches targeting intervention development, the Intervention Mapping approach is one of the most comprehensive of these approaches (O'Cathain et al., 2019a).

The Intervention Mapping approach (here after written as IM) provides a systematic framework for intervention development that originates from a social ecological paradigm (Wight et al., 2015). This paradigm focuses on the inter-relationships between individuals, their psychology, and the behavioural-environmental factors that occur on multiple levels (Bartholomew-Eldredge et al., 2016) and, as such, philosophically aligns well with occupational therapy and occupational science. Although occupational science adopts a specific occupational perspective, it has emerged from and remains interdependent with the occupational therapy profession. Kielhofner (2009) described and summarised the evolution of the conceptual foundations and core constructs of occupational therapy, illuminating principles of an individual's occupational nature, the bi-directional relationship between occupation and health, including occupational dysfunction, the centrality of a client-centred and holistic approach, and an understanding of the importance of the individual as they interact with their environment. Recently, debate has encouraged evolution of the occupational therapy philosophy to incorporate ideas from a dynamic system theory perspective (Kantartzis, 2019). A synergy exists between the philosophical position of the occupational therapy perspective and that of IM. Furthermore, originally targeting behaviour change at a population health level (Ruiter et al., 2018), IM is readily adapted to develop complex health interventions for more specific populations and health conditions (Bartholomew-Eldredge et al., 2016). One example is, changing occupational behaviour to promote positive mental health in young people experiencing the early stages of mental health illness.

Bartholomew-Eldredge et al. (2016) developed the IM framework based on Green's PRECEDE-PROCEDE model (Green and Kreuter, 1991). The framework guides the researcher's early decision-making processes, from conceptual idea to intervention manual development, implementation and evaluation. Constructed of six steps typically presented in a linear fashion (See Figure 2.1 for outline summary), IM is iterative in nature and guided by pragmatic considerations (Bartholomew-Eldredge et al., 2016). The first two steps: 'Step 1, logic model of the problem', and 'Step 2, the program outcomes and objectives', concern identifying the determinants that affect the 'nature of the problem', and what change are need at an individual, interpersonal, organisational, community and societal level in order to improve health outcomes. Evidence of determinants is located through relevant stakeholders, literature and research (Bartholomew-Eldredge et al., 2016). Step 3 of the IM framework involves prioritising which determinants to address in the intervention, and selects from various behaviour change theory methods to deliver the desired change. Step four is the practical development of the intervention and related materials. The final steps concern implementing and evaluating the effectiveness of the intervention

Figure 2.1: Outline of Intervention Mapping steps



Adapted from p13 in Bartholomew Eldridge et al (2006).

2.3 A MIXED METHOD STUDY USING THE INTERVENTION MAPPING FRAMEWORK

This PhD project is theoretically and philosophically positioned under the overarching umbrella of a pragmatist paradigm (Teddlie and Tashakkori, 2009), which aligns with the IM approach as stated above. Pragmatism sidesteps the concepts of truth and reality that preoccupy many other paradigms, focusing instead on solving problems in the real world (Feilzer, 2010). Teddlie and Tashakkori (2009) further describe pragmatism as constructed and based in the reality of the experienced world, focusing on finding workable solutions, judged by predictability and applicability. Taking a process-orientated, environmental transactional approach, and concerned with practical application, pragmatism is inclusive of all research designs and data collection strategies, in addition to accommodating a diverse range of viewpoints. Consequently, pragmatism in conjunction with carefully considered design can enable the strengths of both quantitative and qualitative methods to be used to find solutions to complex practical challenges (Feilzer, 2010) and is widely used in complex healthcare research (Medical Research Council, 2006) .

Under the umbrella of a pragmatist paradigm, studies opting for mixed methods can be analysed in at least three ways: 'convergent', 'explanatory sequential' and 'exploratory sequential' (Teddlie and Tashakkori, 2009). In this project the five studies are conducted as individual sequential units and analysed individually using appropriate methodologies in line with identified theoretical positions, before being interpreted using the IM framework to inform the development of the intervention. The design of each of the PhD studies, as far as it is possible without compromising the intervention development, intends to be of use to occupational therapists working in clinical practice. In the following chapters each study is reported in a similar structure to that of a journal and this chapter intends to explain how the studies connect together to inform the intervention development.

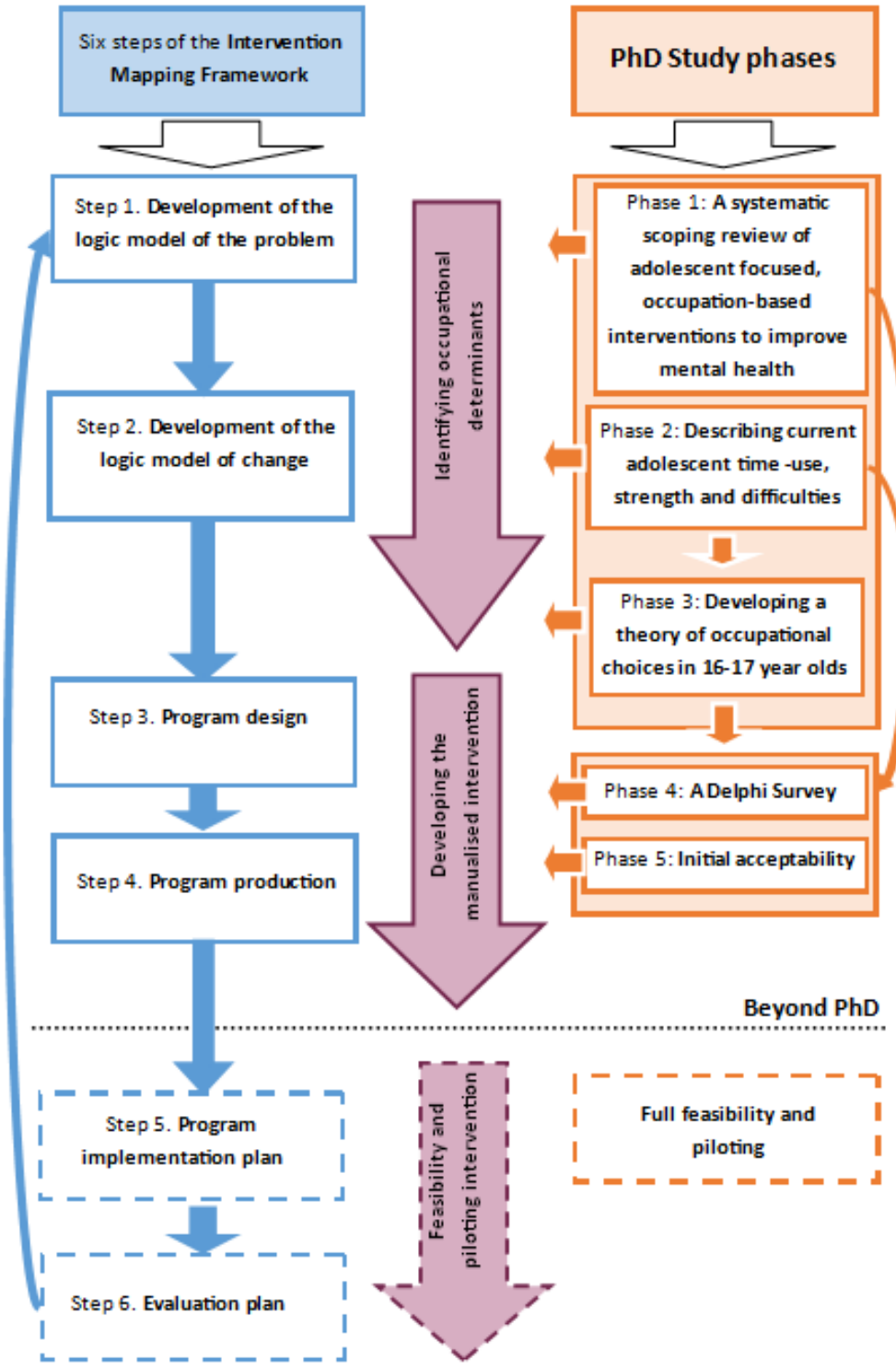
2.4 DESCRIPTION OF HOW PROJECT PARTS MAP TO THE INTERVENTION MAPPING FRAMEWORK

Essential to any decision to use mixed methods research is the belief that the identified problem is best answered through the combination of both quantitative (Quant) and qualitative (Qual) methodologies rather than a single approach (Tilling et al., 2005). Reducing problems arising later in the research process, resulting from poorly developed logic models or a failure to consider the

efficacy of an intervention (Bleijenberg et al., 2018), requires a broad range of evidence and information, potentially from a range of sources (Bartholomew-Eldredge et al., 2016). IM encourages engaging with key stakeholders from the beginning of the research process as a key source of information necessary for an appropriately targeted and acceptable intervention. Stakeholders are those who will use, or be affected by, the intervention, such as students, teachers, parents, health providers or educational providers in the case of this project (Bartholomew-Eldredge et al., 2016). During the project, research supervisors provided project oversight, and stakeholders provided consultation at various points throughout the process.

Each step of the IM process may involve gathering additional information and, in some cases, necessitates further research to generate answers to specific questions. The use of various methods reflects the questions that arose during the process of this PhD, shaping the quantitative or the qualitative nature of the studies. Provided in Figure 2.2., is an introduction to each study and a diagram explaining how the studies align with the IM process

Figure 2.2: Illustrates how the PhD study phases aligns with Intervention Mapping



A study protocol was written and published electronically in the BMC ISRTN Registry (Ref. ISRCTN10573786).

Phase one, presented in chapter 3, sought to systematically identify and describe occupation-based interventions designed to improve the mental health and wellbeing of adolescents, based on findings reported in the peer reviewed academic literature. A systematic scoping review protocol, developed iteratively, informed the database searches, collection and review of identified articles. To date, no systematic scoping reviews of the academic literature have been found that comprehensively identify and review occupation-based interventional studies aimed at improving mental health illness such as anxiety, depression and psychosis, excluding autism and ADHD in late adolescents, even when extending the timeframe from an upper limit of 18 to 25 years of age. The study also uniquely describes existing interventions and related practicalities of intervention design, with the intention of providing direct clinically relevant information to occupational therapists working with adolescents and emerging mental health issues. The knowledge generated informed the determinants included in the Delphi study (Study 4, reported in chapter 4) and informed the development of the intervention and corresponding manual.

Phase two, is presented as study two and is reported in Chapter 4. The study involved the collection of a 24-hour, retrospective time-use diary, adapted from the Harmonised European Time Use study (HECTUS) (Daley et al., 2013, Eurostat, 2019) and the Strengths and Difficulties Questionnaire (SDQ) (Goodman et al., 1998). Piloting of procedures and measures with a small Patient and Public Involvement (PPI) group consisted of 17 year olds independent of the research site and a second group of 17 years old students attending one of the research sites. 'Lower sixth-form' students aged 16 and 17 years, from two schools, completed the SDQ and Time-use diaries. The intention was to describe contemporary 'self-reported time-use characteristics' and mental health as measured by the strengths and difficulties questionnaire (SDQ) in a heterogeneous school-based adolescent cohort of new-starter, lower sixth pupils aged 16- 17 years. The author of this thesis has not identified any studies that specifically explore contemporary 24-hour time-use in relation to mental health in English adolescents aged between 16 to 17 years in a mainstream secondary school cohort – a period known to be critical for development, increased autonomy of occupational choice, and a key transition point from GCSE to A level. Despite the widespread use of the strengths and difficulties questionnaires with children and adolescents in clinical settings and its potential as a screening tool for identifying mental health problems, no studies were found combining both 24-hour time-use and the SDQ within the

school setting. The study had two specific outcomes: firstly, the provision of a stratified, purposive sample for the second phase, study 3 (reported in chapter 5) and secondly, informing the 'needs assessment', a part of the IM process.

In third phase, reported as study three in chapter 5, students aged 16 to 17 years, selected from the sample identified in study one, participated in focus groups. The focus groups were also piloted prior to data collection with an independent PPI group. The intention was to explore how adolescents make choices about their daily occupations, and to develop a theoretical model of adolescent choice from an occupational science perspective using constructivist grounded theory, thus illuminating specific aspects and adding new knowledge to our understanding of occupational development across the life course. To date, the researcher found few studies that considered how 16 to 17 year olds choose activities and behaviours from a specifically occupational perspective. With respect to the IM framework, the knowledge from this study informs the needs assessment, the logic model of change and the development of the intervention program.

Informed by the earlier studies and further reading on the topic, the fourth study utilised a Delphi approach to establish an expert consensus view of which occupational determinants to prioritise in the development of an occupation-based intervention for adolescents with emerging mental health difficulties. To date no previous Delphi studies have been identified by the researcher that identify an expert consensus view of the occupational priorities for mental health interventions aimed at current adolescent populations. The study sought the views of occupational therapists and researchers with relevant knowledge or clinical experiences of working with adolescents who have mental health difficulties, to inform the prioritisation of occupational determinants to be used in the construction of the occupational-based intervention manual.

The final study utilises the IM mapping guidance to develop the intervention. This includes developing the logic model of the problem, the logic model of change, identifying and writing change objectives, leading to the choice and application of occupational therapy and behaviour change theories to form the outline of an intervention manual. The researcher held a discussion with the independent PPI group to establish if the proposed outline was theoretically acceptable, using prospective components of the acceptability framework suggested by Sekhon et al. (2017). This is of particular importance due to challenges associated with delivering mental health interventions, such as stigma (Radez et al., 2020). The outcome of this study is an outline of the developed intervention that builds on four earlier studies. The PPI group evaluated the prospective acceptability of the newly designed,

manualised intervention with the target population, prior to the post PhD aim of conducting concurrent and retrospective acceptability assessments to prepare the intervention for piloting. So far as the researcher is aware, the developed intervention is the only one designed using an IM framework, and informed by occupational therapy theory, that specifically targets adolescents aged 16 to 17 with emerging mental health issues in the UK.

Ethics: Approval was sought and gained for phase 2 and 3 from the University Research Ethics Committee in May 2018. (UREC no. 181192), and amendments approved 12th September 2019. Phase four, received full approval on 30th October 2019 (UREC. No. 191347).

2.5 CHAPTER SUMMARY

This chapter provided a brief overview to the rationale and overarching methodological considerations that pragmatically shaped the five methodologies adopted in this PhD, which collectively inform the development of the complex intervention presented in this thesis. For each of the studies in turn, the following chapters provide in-depth information about the background, methodological rationale, results, and discussion of the findings in relation to the literature. Where applicable an explanation of how the study contributes to the systematic development of the intended intervention is given.

3 CHAPTER 3, STUDY 1. THE USE OF OCCUPATIONS TO IMPROVE MENTAL WELL BEING IN ADOLESCENT POPULATIONS: A SCOPING REVIEW.

3.1 INTRODUCTION

The early stages of the IM process highlight the importance of gathering and collecting information from various sources to inform the logic model of the problem, before going on to identify how the problem can be addressed, and developing the intervention to achieve this. This first study systematically identifies and describes the interventions that already exist that use occupation to improve the mental health of adolescents, based on findings reported in the peer reviewed academic literature. A scoping review methodology provides the systematic structure to identify, and describe, relevant previously reported literature, from which to draw knowledge that can inform the intervention development. The current review also examines a narrow perspective compared with many other reviews, specifically, focusing on interventions for adolescent mental health, and excluding other neurological issues commonly grouped together. At the same time, the scope is broad, looking at interventions not specifically informed by occupational therapy, or occupational science. This chapter presents the key findings, and discusses their implications for those interested in occupation-based interventions for adolescents.

3.2 INTRODUCTION AND BACKGROUND

Global increases in mental health disorders, disease burden, and continued inadequate investment in mental health care has lead experts to declare it a global health crisis (Patel et al., 2018). A review showed that 75% of those with mental disorders experienced symptoms before 24 years of age, disrupting a critical life course developmental period (Kessler et al., 2007). The human and socio-economic consequences are significant and far reaching (Trautmann et al., 2016, Patel et al., 2018), necessitating the need for timely and appropriate interventions that take a life-course perspective that promotes, prevents and treat emerging mental health problems (World Health Organisation., 2013).

The life-course stage of adolescence is associated with rapid, significant psychological and physiological change towards adulthood (Spear, 2010, Arango et al., 2018). Concurrently, the

adolescent transitions from childhood roles and responsibilities to those of an adult, requiring the development of multiple skills and competencies (Mei et al., 2020), gained through interaction and engagement in occupations located in their socio-cultural environs (Taylor, 2017). During this period, the accumulation of earlier life experiences, exposure to specific determinants and a lack of protective factors – be they biological, psychological, environmental or social – can lead to increased risk of mental illness (Arango et al., 2018). Adolescence is, thus regarded as a sensitive or critical period for personal development and the onset of mental health problems (Kessler et al., 2007, Kessler et al., 2007, Arango et al., 2018, Patel et al., 2018, Mei et al., 2020). Efforts to reduce the long-term consequences of mental illness have inspired attempts to identify mental illness before the emergence of acute symptomology and develop effective and appropriately targeted early interventions (Bertolote and McGorry, 2005). A clinical-staging model was developed identifying four stages: starting with no symptoms, mild symptoms, acute first episode and, lastly, chronic or enduring mental illness (McGorry et al., 2006, Hetrick et al., 2008, Cross et al., 2014). Internationally, a case exists for creating targeted 'stage' appropriate interventions that consider the developmental needs of adolescents (Mei et al., 2020).

A growing body of studies, aiming to prevent acute mental illness by intervening early, exists with some positive effect, but largely focuses on psychological and physiological determinants of mental health (Enns et al., 2016). The literature suggests that while numerous reported intervention studies exist, there is a need for further research in this area of study. For example, Das et al. (2016) conducted a large-scale review of thirty-eight systematic reviews of adolescent (10-23 years of age) mental health interventions, grouping the studies into four types: school (n=12), community (n=6), digital (n=8), and individual or family based (n=12). School-based CBT interventions appear effective in reducing depression and anxiety symptoms, while creative community-based occupations have some positive effect on self-esteem, confidence, levels of knowledge, and physical activity (Das et al., 2016). A meta-analysis was not possible as considerable variation exists in terms of statistics, populations, interventions and outcomes. Moreover, a review of adolescent interventions, based on health-literacy approaches, concluded that health-literacy affects health behaviours. Health-literacy interventions commonly fail to incorporate a developmental perspective (Fleary et al., 2018). Another review suggests interaction-based interventions in school and community locations are effective in improving disruptive behaviour, affective symptoms, personal wellbeing, social skills and academic performance. The review was broad, not targeting adolescents specifically but including children from 6 to 18 years of age (García-Carrión et al., 2019). A scoping review of evaluated interventions,

addressing developmental transition in those aged 12 to 25 with mental health disorders, identified nine studies primarily focused on vocational needs and a lack of focus on personal and interpersonal domains (Di Rezze et al., 2015). Overall, these findings suggest that the range and quality of evaluated interventions is limited and, conversely, that there is considerable variation in targeted dimensions of mental health and, consequently, the outcome measures used. This adds support for the argument that there is a need for a wider range of interventions (Sawyer et al., 2012, McGorry et al., 2013). Furthermore, it is appears from these studies that there are few interventions targeting occupation-related domains.

In contrast, four out of five literature reviews identified from the occupational therapy literature suggest that there is evidence to support the use of occupational therapy interventions for children and adolescent populations (Bendixen and Kreider, 2011, Arbesman et al., 2013, Novak and Honan, 2019, Cahill et al., 2020). The fifth study suggested that the number of RCT studies was low and research quality identified was poor (Brooks and Bannigan, 2018). All five studies include a wide range of conditions, diagnoses, age ranges, outcomes and populations groups. Those that specifically focus on 'mental health' include diagnosis such as neuro-developmental disorders, (e.g. autism and ADHD), alongside mood and psychotic disorders, and identified significant differences in symptomology and effects on daily occupations. Small sample sizes and varied quality of studies has also been reported as an issue (Arbesman et al., 2013). Furthermore, four of these five papers do not draw a distinction between interventions targeting children and those targeting adolescents, despite the expected differences in development and occupation-related behaviour (Bendixen and Kreider, 2011, Arbesman et al., 2013, Novak and Honan, 2019, Cahill et al., 2020). The fifth, Brooks and Bannigan (2018), target their search at 0-16 years.

A need exists for a specific and focused look at occupation-based interventions targeting adolescence and specific mental health diagnoses and conditions. The field of adolescent mental health interventions using occupation is multifarious, crossing multiple professional disciplines and areas of practice. Occupational therapists, for example, may use terms such as occupation or activity interchangeably, while a psychologist may talk in terms of behavioural activation, activity or functioning. Alternatively, rather than using the term occupation or activity, a paper may name the specific occupation, e.g. yoga or dance. A further important consideration is the manner in which interventions use occupation. Fisher (2014) highlighted that a difference exists between occupation-centred, occupation-based and occupation-focused interventions (definitions provided in the glossary

of terms). Consequently, ambiguity in the use of terminology, both within the profession and across different disciplines, complicates the identification of relevant research.

Few scoping reviews exist that provide a focused overview of adolescent (11-24 years) mental health literature, using activity or an occupational perspective that can provide practical information to inform intervention development. This scoping review intends to provide a comprehensive overview of adolescent mental health intervention literature with the specific purpose of identifying: interventions using occupation, specific components of effective interventions and research gaps. The review will inform the development of an occupation-centred, occupational therapy theory based Intervention

3.3 SCOPING REVIEW AIMS

Using a systematic scoping review methodology, this study aims to identify intervention studies reported in the peer reviewed academic literature that are occupation-based and target mental health problems with the intention to improve mental health or mental wellbeing in adolescent populations.

Secondly, the study aims to describe the key characteristics of the identified studies, drawing out content relevant to intervention development.

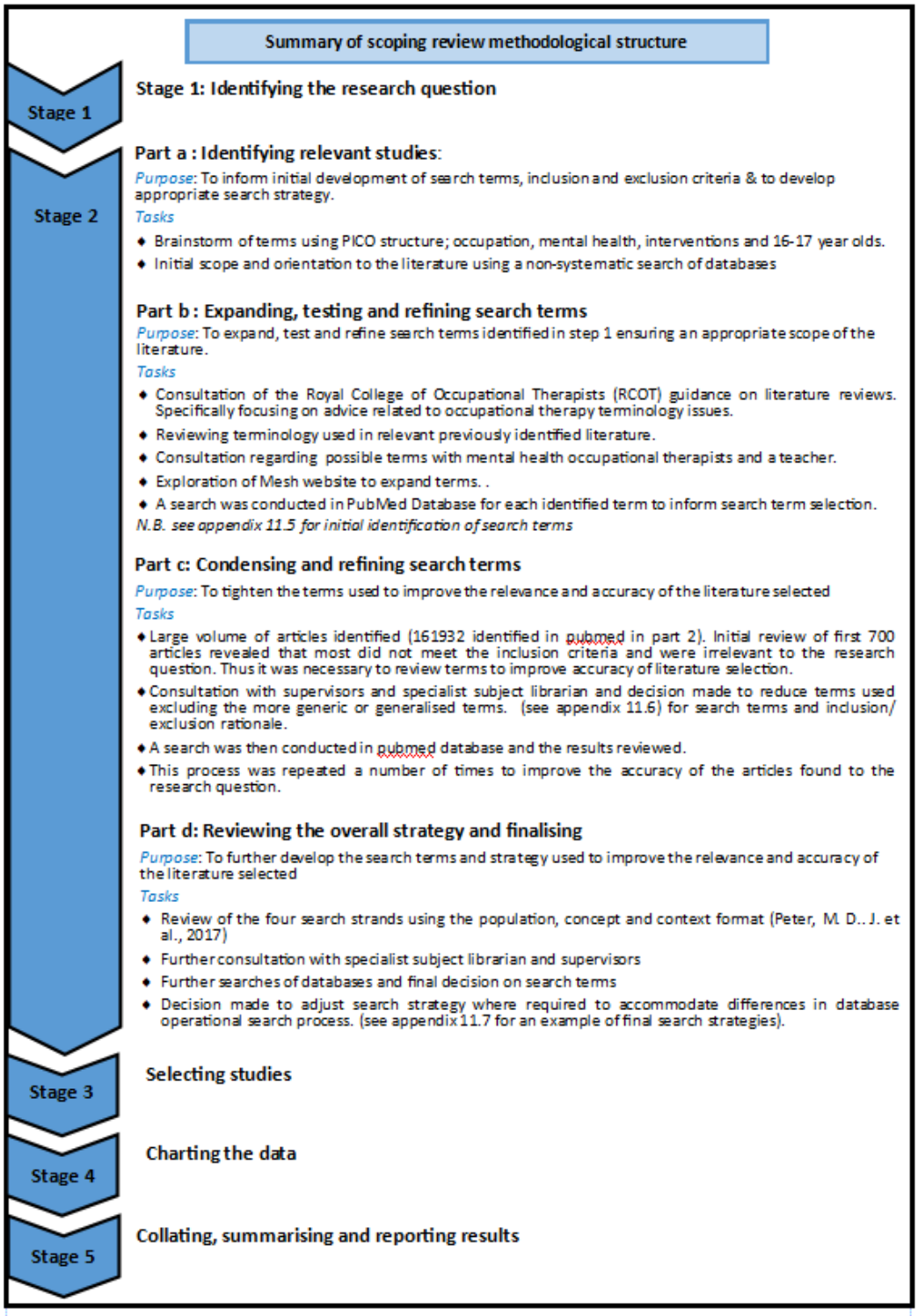
3.4 METHODOLOGY

As a foundational aspect of academic inquiry, choosing the most appropriate literature review method is essential (Xiao and Watson, 2017). The initial iterative investigation of relevant literature, including systematic reviews available at the beginning of the study, identified a gap in the literature, specifically a lack of reviews that focus on occupation-based interventions targeting mental health and illness in adolescent populations. Furthermore, to inform the wider PhD aim, the literature review was required to draw out key characteristics to inform intervention development. To the best of the author's knowledge, few studies extract detailed information of relevance to designing mental health-related interventions for adolescence. A scoping review method was chosen, which is described by Xiao and Watson (2017) as a descriptive type of review, which aims to extract as much relevant information from each piece of literature as possible, including methodology and findings,

providing a comprehensive overview of the field. This type of review is also useful for examining emerging evidence where the value of addressing more precise questions is unclear (Munn et al., 2018). The strength of a scoping review lies in the main purpose of identifying and mapping evidence (Arskey and O'Malley, 2005), which can then be used to identify the key characteristics, terms, types of methods and relevant research gaps, and provide a focus for future research (Munn et al., 2018). Thus, a scoping review is ideally suited to mapping and extracting practical information from the literature about occupation-based interventions.

The five step scoping review framework provided by Arskey and O'Malley (2005) was used in conjunction with information from Levac et al. (2010) and additional guidance from the Joanna Briggs scoping review guidance (Peter et al., 2017). The strategy used is outlined in Figure 3.1. The PRISMA extension for scoping reviews guidance informs the structure of this chapter (Tricco et al., 2018). In line with the guidance, a protocol was created, the content of which is incorporated into this chapter.

Figure 3.1: Summary of scoping review methodological structure



3.4.1 Identifying relevant studies – the search strategy

Arksey and O'Malley (2005) describe the initial stages of a scoping review as iterative in nature and, for this reason, it is often adopted as an early stage in the systematic review process (Pham et al., 2014). The process involves exploration and pre-review mapping to refine the question and how it will explored (Xiao and Watson, 2017). Reflecting this the search strategy for this study initially began with a cyclical iterative process to identify and select the key terms, leading to the finalised scoping review protocol. This stage is important because it provides direction, focus and clarity in later stages of the study (Levac et al., 2010). The acronym PICO, which stands for: Population, Intervention, Condition, and Outcome (Schardt et al., 2007), structured preliminary searches of key databases, the development of exclusion criteria and an exploration of effective search terms. Initial cycles aimed to identify and expand potential terms, as suggested by Arskey and O'Malley (2005). Keywords were extracted from key literature; an occupational therapist with a mental health background and a teacher working with adolescents were consulted; Mesh terms were explored; a specialist librarian and supervisors were also consulted. A search for each individual term in the PubMed database identified the number of articles related to each term, which guided the construction of the search strategy. This first search strategy identified 161’932 articles, but the first 700 reviewed were of low relevance. This led to a review of the strategy to improve article relevance, including refining, and reducing search terms (see Appendix 9.2 for example of early explorative searches). This cycle was repeated several times to improve the focus of the search strategy whilst also maintaining the breadth of the study, with limited success.

The final cycle involved a complete review of the search strategy, following identification of many articles with low relevance. A review of the methodological literature suggested the nature and overlap between search categories based on the PICO format may be problematic. The PICO format was replaced with the Population, Concept and Context (PCC) strategy suggested by the Joanna Briggs institute (Peter et al., 2017).

Table 3.2: Composition of scoping review literature search acronyms

Population, **I**ntervention, **C**omparison, **O**utcome Format	**P**opulation, **C**oncept, **C**ontext Format
Population: Adolescents	**Population:** Adolescent aged 11 to 24 years
Intervention: All therapeutic interventions targeting mental health using occupation/Activity	**Concept:** Occupation and Activity (Therapeutic use of)
Comparison: Comparing, contrasting and describing the different types of interventions identified.	**Context:** Interventions targeting mental health issues including 'At risk' or early stages of.
Outcome: Improvement in mental health or occupational/functional recovery	

The specific search terms were then refined, reduced and finalised, according to the subject librarian's advice (See Appendix 9.3). On advice from the specialist subject librarian, some search terms were modified to align with the terminology within each database and maximise the accuracy of the searches, given the generic nature of some of the terms used. This was achieved by identifying the most relevant MESH terms, or category headings, for each search term with each of the chosen databases. In the absence of a suitable MESH or category heading, the original chosen search term was used. The search was conducted in CINAHL, Psych Info, PubMed, Cochrane, Web of Science, and OT Seeker databases. In addition to the healthcare databases, the education focused collection of databases 'Onestop', including the British Education Index, Child Development & Adolescent Studies, Education Abstracts, Educational Administration Abstracts, and ERIC, was searched. Following discussion with the librarian, 'Onestop' was included because school-based education is a core part of the study population's occupational reality. Additional articles could also be identified from the reference lists from relevant articles.

3.4.2 Reviewing studies

3.4.2.1 **Inclusion Criteria**

The use of a broad range of terms increased the number of potential responses, necessitating tight and clear inclusion and exclusion criteria. Table 3.3 explains the criteria adopted and provides a rationale for each criterion.

Table 3.3: Inclusion Criteria and rationale

Inclusion Criteria	Rationale
Must include human subjects e.g. exclude animals such as rats	While non-human studies can provide valuable insights into developmental aspects, this study is concerned with occupation based interventions for human adolescents.
Must include adolescents and young adults (aged 11 to 25 years)	The target population for this study is adolescents defined as aged 11 to 18. The age range for this study was expanded beyond 18 for the following reason: 1) Neurological evidence suggests that brain development that begin in adolescence does not reach maturity until the age of 25 years (Spear, 2010). 2) The onset of mental illness typically occurs before the age of 25 years of age (Kessler et al., 2007). 3) Early intervention services & early intervention related research target those aged from 12 years of age up to the age of 35 years (Read et al., 2018). Consequently the age range chosen was 11 to 25 years as it will incorporate adolescents, those still in education, those at risk of developing mental health problems and increasing the number of studies of relevance to 'at risk populations' or 'emerging mental health issues'. **The following sub-criteria were developed in response to the literature found.** 1) Must include at least one year of target age range. E.g., the age range 8 to 11 years would be included as it includes 1 year of 11. 2) Where population age range exceeds 25 years the mean age must be below 25 years to be included.

Must target those with mental health problems, aim to improve mental health, or aim to improve mental wellbeing.	This study targets mental health and mental wellbeing. Consequently the decision was made to include studies that target one or more of the following: 1) Those with emerging mental health difficulties, and 'at risk mental states'. 2) Those with an existing mental health problem or diagnosis such as depression, anxiety, or psychosis, etc. 3) Improving mental health or mental wellbeing prior to contact with specialist services (e.g. health promotion level).
Must include an intervention using occupation or activity.	This study focuses on using occupation and activity as an intervention. All studies must incorporate an aspect of occupation or an activity within the intervention. This can be occupation-centered, occupation-focused or occupation-based (Fisher, 2014). **In response to the literature the following sub-criterion was developed.** Studies must seek to improve health rather than observe the relationship between occupation and health. Consequently, any studies identified by the search strategy that focused on correlation or exploring associations between occupation and health were excluded.
Must be published in the last 20 years	Studies 20 years or over were excluded, reflecting the considerable socio-cultural change, development in scientific knowledge, and a shift in approaches to the treatment of adolescents and mental health issues.
Exclusion Criteria	Rationale
Exclude all interventions that specifically target family or friends.	Studies focused on family or teachers are out of the remit of this study and consequently excluded.
Exclude papers targeting mental health issues in populations with physical health conditions or disabilities e.g. obesity, HIV, or cerebral palsy.	This study targets mental health rather than physical health.

Exclude papers relating to Asperger's syndrome, autism spectrum disorders, ADHD and intellectual/learning difficulties.	Based on the DSM-5 classification of mental disorders (American Psychiatric Association., 2013), neurodevelopmental disorders such as Asperger's syndrome, Autistic spectrum disorders, ADHD and learning difficulty were excluded. Delirium, dementia, amnesia, cognitive disorders and problems related to medical conditions were also excluded. Exclusion was based on the difference in etiology, and clinical presentation to the primary target population of mood, anxiety, schizophrenia and psychotic disorders.
Non-occupation based interventions should be excluded. E.g. intervention based on medications, CBT, counselling etc.	This study focuses on interventions using activity. Consequently, only studies that use occupational therapy theory, or involve and use occupation as a core component of the intervention should be included. **In response to the literature, the following sub-criteria were developed.** 1) The researcher will review inclusion of all articles reporting mixed approaches. Ideally, the article should be excluded if the activity component is less than 50% of the intervention delivered, e.g. activity and psychological approaches. 2) Studies with a predominantly CBT base are also excluded, unless they have a significant activity focus.
Systematic reviews	All articles reporting systematic reviews were excluded and reference lists were reviewed for relevant articles to add to the scoping review.

During the review, a hierarchy of exclusion was created, which started with meeting the age criteria and diagnostic criteria, then the occupation-based criteria designed to improve mental health, interventional in nature, and finally if the article was a systematic review. Further exclusions at later stages in the review process include conference papers, thesis and other non-peer reviewed article and articles not written in English.

3.4.2.2 **Selecting studies -Screening and Eligibility**

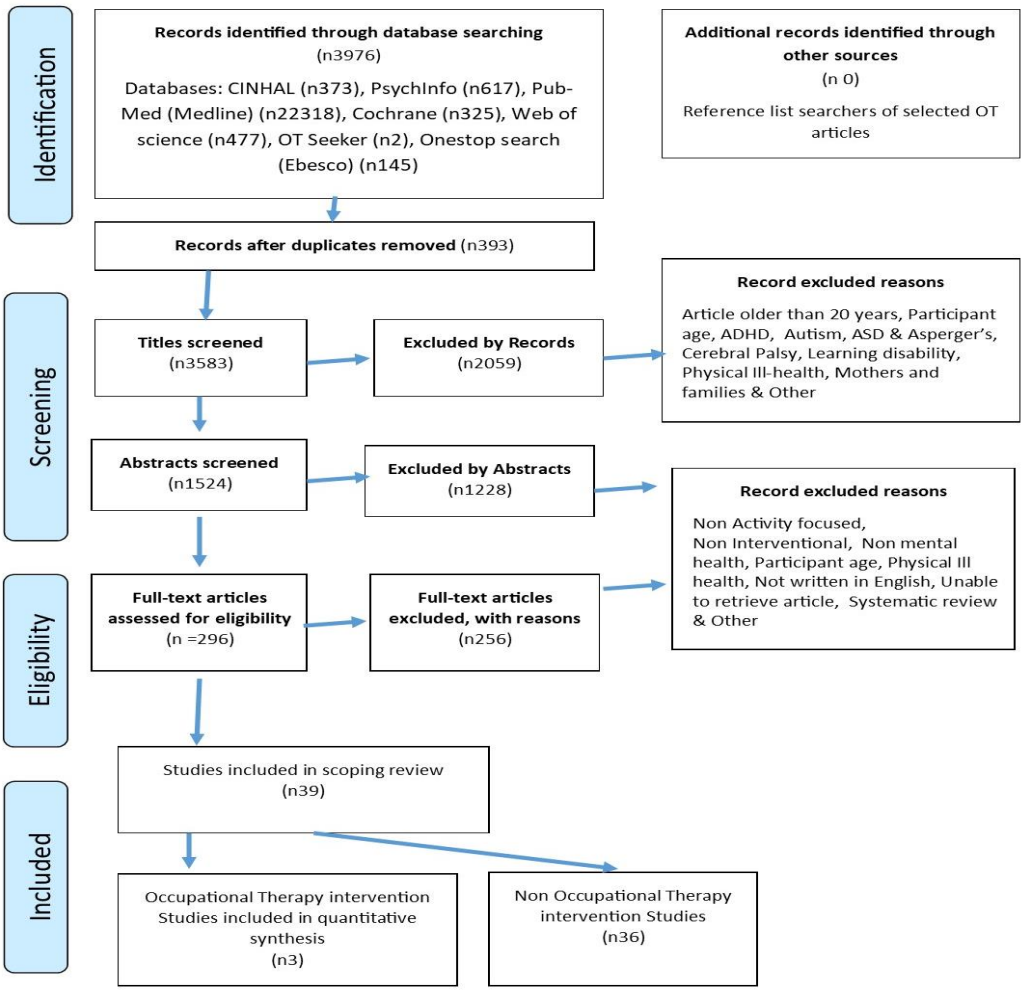
The initial search results identified by the author acting as first reviewer, consisted of 3976 articles, transferred and managed using the EndNote reference managing software. EndNote software was used to organise, to identify and remove 393 duplicates. A review of article titles identified further

2059 articles that did not meet the criteria, leading to their exclusion. Where any ambiguity or uncertainty was present, the article was included for review in more detail at later stages of the screening process. Next, a more detailed review of the abstract was completed by the first reviewer and a further 1228 articles were excluded for not meeting the criteria.

Due to the large number of papers and the burden of reviewing, and to ensure quality, three additional reviewers were engaged to review the remaining 296 full-text papers. The additional reviewers had a background in occupational therapy, two reviewers were qualified occupational therapists with experience of working in mental health, one of whom was also an active researcher. The third additional reviewer was a final year occupational therapy student with relevant mental health experience. Each additional reviewer received a copy of the study protocol, were briefed about the study practicalities, and had opportunity to ask questions and seek clarification before and during the review.

Each additional reviewer received a third of the 296 papers to screen independently against the study inclusion and exclusion criteria, while the first reviewer, reviewed all of the papers. A high level of agreement existed between additional reviewers and first reviewer regarding inclusion and exclusion of papers. Where disagreements emerged, the first reviewer and the additional reviewer would work towards agreement by reviewing the paper a second time and discussing points of disagreement. One additional reviewer's commitments and priorities inhibited their involvement, consequently the other two reviewers reviewed additional articles to ensure the timely completion of the study. Following full text review of the remaining 296 papers a further 257 were excluded. Figure (3.4) below details the stages, numbers and reasons for exclusions. Therefore, thirty-nine articles were included in the final full data abstraction process. To ensure accuracy of the data abstraction process, data was extracted twice from the final set of papers, once by the first reviewer and secondly by one of the two remaining additional reviewers. The data extracted was then compared for accuracy and found to be consistent.

Figure 3.4: Diagram of screening process Figure:



3.4.3 Charting the data

The data abstraction process of a scoping review is iterative, and shaped by the articles identified. A provisional abstraction form was developed by the first reviewer in discussion with supervisors, based on methodological guidance such as Joanna Briggs guidance for systematic reviews (Peter et al., 2017), and the TIDier guidance for intervention descriptions and replication (Hoffmann et al., 2014). In addition, items considered relevant to the research question and based on earlier iterative stages of the review process were included, such as year of publication, country of origin, population, targeted stage in the illness course, acceptability of intervention and any approaches or theories used to inform the intervention. The abstraction form used, employed by the first reviewer and two of the additional reviewers, is available in the appendix 9.4. Extraction, recording and analysing were added

to a Microsoft Excel (Microsoft Corporation, 2016) spreadsheet. As the study purpose was to identify relevant studies and then describe the key characteristics of the literature, with a particular focus on drawing out details relevant to intervention development. Consequently, detailed quality assessments of methodology including ethical considerations were not completed.

3.5 RESULTS

3.5.1 Collating, summarising and reporting the results

3.5.1.1 The demographic overview of the papers

Of the final 39 papers reviewed in full, 23% (n9) were published between 2000 and 2009 and the remaining 77% (n30) in the last ten years. These papers reflect 18 different countries with one multi-national study. Studies conducted in Australia (n10) were most common, followed by Canada (n6), USA (n3), UK (n3), New Zealand (n2) and Sweden (n2). In terms of age groups, twenty studies (51%) included participants who were older or younger than the typically recognised adolescent age bracket, specifically nine studies included participants under 11 years of age and eleven studies those aged over 18 years. The remaining nineteen (49%) of studies focused specifically on those aged 11 to 18 years, with only four of these targeting one specific age. Twenty-one (53%) of the thirty-nine studies included participants aged 16, while seventeen (43%) of the thirty-nine studies include 16 and 17 year olds, but none of the studies identified, specifically targeted and reported outcomes for those aged between their 16 and 17 years. (See Figure 3.5).

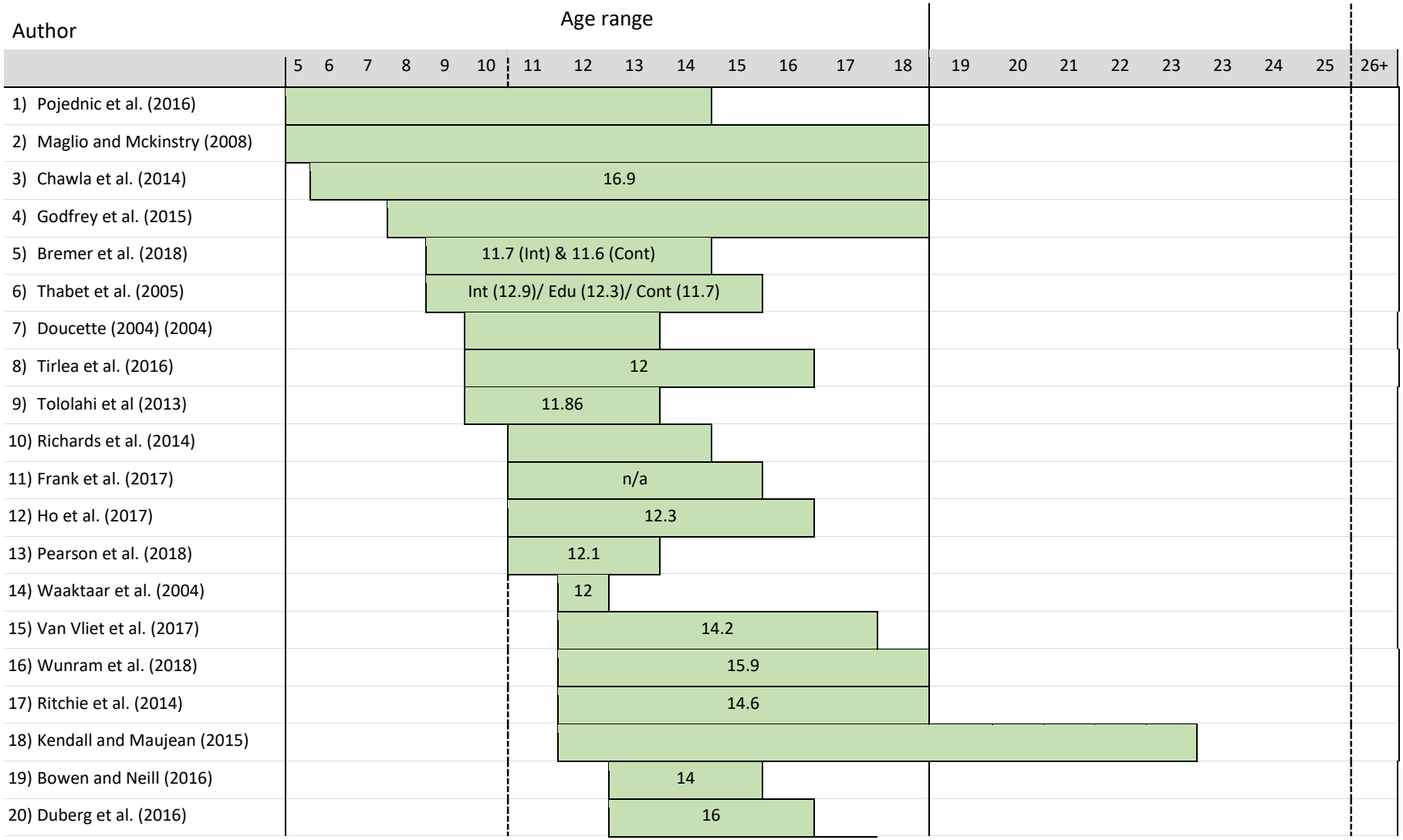
A core criterion of the scoping review was that interventions should target adolescent mental health or mental wellbeing. In practice, this resulted in three ways that studies could potentially meet the scoping review criteria: those studies that measured the mental health of its participants in some way (79%, n31); studies which aimed to improve an aspect of participants' mental health (87%, n34); or those that specify population groups in relation to mental health (97%, n38). The studies can be grouped into five specified combinations of population and intervention focus: firstly those with no reported mental health symptoms that aimed to promote good mental health (36%, n14); secondly, those with no mental health symptoms but considered to be at risk of developing mental health problems (21%, n8); thirdly, those with a mental health diagnosis but the specific diagnostic group

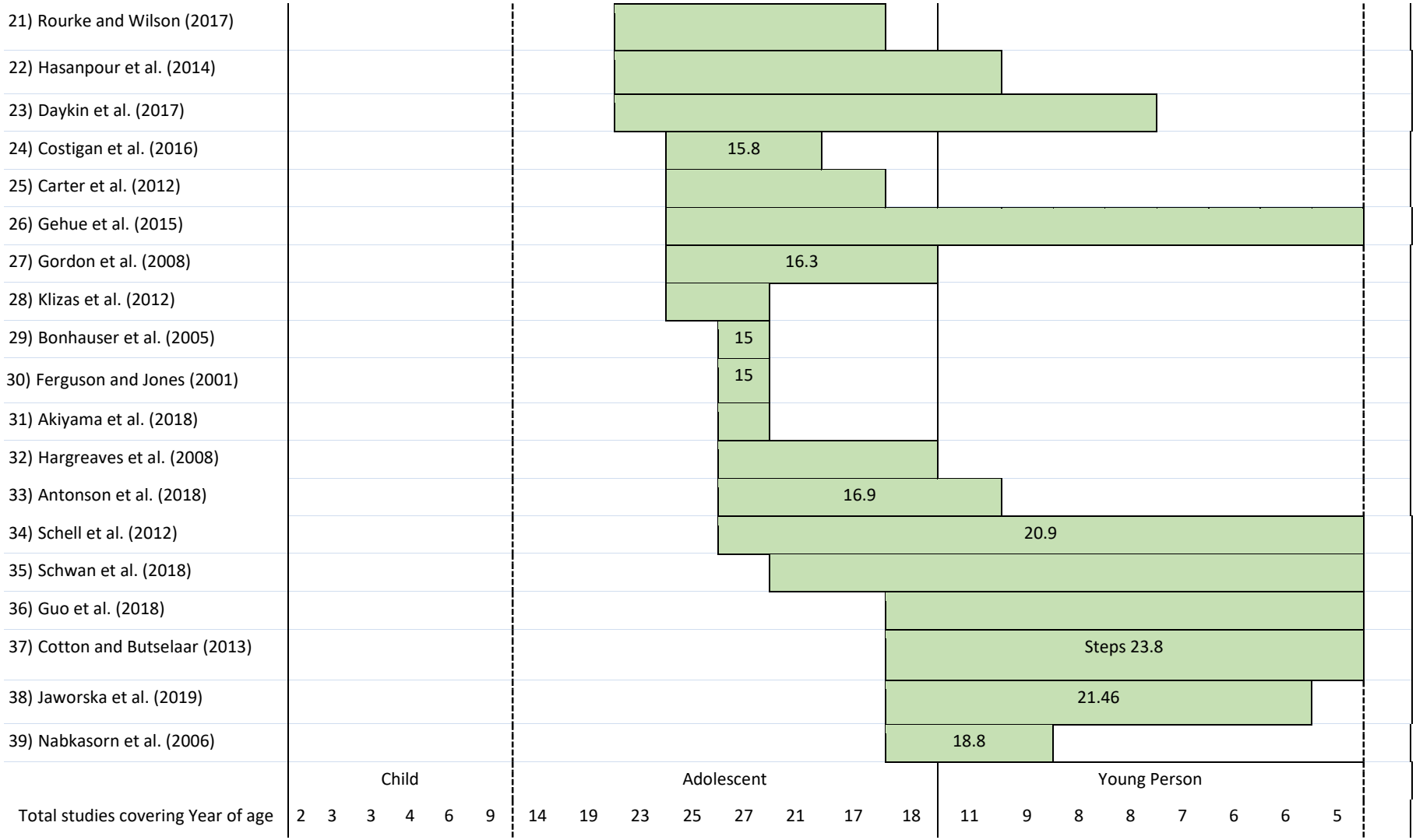
was not identified (21%, n8); fourthly, those with anxiety, depression or both (15%, n6); and finally, those with an specific diagnosis other than anxiety or depression such as PTSD (8%, n3).

Independent ethical approval was clearly stated in thirty-seven studies, in many cases this was from a university research ethics board and in many cases also included additional approval from health or education based research committees or authorities. Studies typically provided minimal information on ethical considerations but most highlight consent or age related assent from participants and guardians. None mention the management of safeguarding. Of the seven without a clear ethics statement, two were describing the intervention (Hargreaves, 2008 & Maglio, 2008), two studies included anonymised case studies (Ferguson, 2001 & Doucette, 2004). Another two are described as evaluations (Frank, 2017 & Godfrey, 2015) and the final study (Jaworska, 2019) conducted through a Canadian university does not appear to mention any approval.

Participant recruitment in fifty-nine percent (n23) of the studies was via schools or other educational establishment. The remaining forty-one percent (n16) recruited from mental health services (18%, n7), other support services (15%, n6) or other specialist sites (8%, n3) such as a homeless shelter, refugee camp or reservation. Interventions were delivered in a more diverse range of locations although school remained the most frequent location for delivering intervention to this age group (38%). Non-school based delivery or a mix of school and other locations accounted for sixty-two percent of the studies. Mental health related facilities accounted for five percent (n2), sports centres eight (n3), and thirteen percent (n5) interventions were delivered in multiple locations. In the second largest proportion of studies (36%, n14) interventions took place in specific specialist locations often tailored to the occupation such as a campsite, reservation, stable or ski slope. However, none of the papers included in this study discussed how the intervention related to or specifically targeted the stages of mental health difficulty outlined in the staging model. Referring only to terms such as prevention, health promotion, treatment, or diagnosis.

Figure 3.5: Age ranges included in the intervention studies





The table illustrates the age ranges covered by the studies included in this review. Consequently, the table provides an overview of how specifically the interventions were targeted to specific ages. Means are including where available.

3.5.2 Interventions

3.5.2.1 **Intervention content, theoretical base and scientific rationale**

A review of intervention content reported in the papers highlights that a wide range of theoretical bases exists, underpinning the use of occupation to improve mental health (See table 3.6). Typically, the theory presented in the papers focused on the rationale for a singular type of occupation rather than a broader perspective of occupations affecting health. In fact, only three studies adopted the boarder occupation-centred perspective of occupational therapy (Studies no. 2, 9, & 13 in table 3.6).

Frequently the detail of the structure and content of the reported intervention was limited, with the exception of some of the physical exercise-based studies, which provided detailed descriptions (Studies 5, 24, & 29 in table 3.6). Only one study included homework-type tasks. Few of the identified studies gave young people choice over which occupations to engage in; most did not, focusing instead on engaging adolescents in a specific task or occupation. None of the interventions specifically targeted, or aimed to empower, adolescents to make choices about what occupation they wanted to engage in or looked at how adolescents balanced different occupations. All interventions had some form of facilitated instruction or education, but only one study involved the use of online technology (Study 33 in table 3.6). Facilitators varied in terms of expertise, the role they took, the level of training they had and the approaches they adopted. In terms of tailoring interventions to the needs of the participants, sixty-four percent (n25) studies attempted to adjust or personalise the intervention in some way to the group or individuals in the group.

3.5.2.2 **Range of occupations**

Based on the similarity between occupation types, it is possible to identify seven different groups of interventions. Occupations related to physical activity were the most frequent type of occupation-based intervention observed, accounting for forty-three (n17) of studies. A more detailed look at the physical activities shows a variety of types of physical activities such as aerobic activities, team games, jogging, a comparison between cycling and a vibration based machine. The remaining fifty-seven percent (n22) of studies included relaxation activities such as mindfulness, yoga and Qigong (10.3%, n4), creative activities (10.3%, n4), music based (2.9%, n1), outdoor activities, e.g. camping, surfing, canoeing, horse riding and walking in nature (18%, n7), mixed or multiple activities (10.3% n4), and finally those interventions specifically based on occupational therapy theory which may or may not

include a specific occupation (5.2%, n2) (See table 3.6). None of the papers specifically incorporated internet-based occupation as the primary interventions, although one study used an online intervention as comparator. Similarly, none of the studies focused on activities to promote occupational balance.

3.5.2.3 **Dose**

Defining the dose is important especially when comparing and evaluating interventions. The dose refers to the participant total engagement in the intervention, which consists of the number of times a day, number of sessions a week, and duration of sessions. Most papers reported some aspect of the dose delivered but not all papers reported dose fully, and in some studies dose fluctuated. To aid comparison between papers, where dose fluctuated the PhD author calculated the average dose, where paper's reported a range the maximum was used, Furthermore, hours were converted into minutes in order to calculate dose. Few studies gave participants choice when and how long to engage with the activity. The typical number of intervention sessions a day was between one and two, with most studies opting for one session and seven papers did not report this information. Number of sessions a week ranged between one and seven times a week with the average being 2.7 times a week, with missing data for nine papers.

The average duration of intervention sessions was seventy minutes with a range from fifteen minutes to 180 minutes. Ten papers were missing this information. A total of seventeen (59%) studies fell below the average. Wide variation was evident in the number of sessions offered ranging from eight to 100 with an average of twenty-eight. A total of sixteen (57%) studies presented interventions with fewer than twenty-eight sessions and eleven studies did not report this information. The average total dose is 2240 minutes, or thirty-seven hours and thirty minutes. The range was between 213 minutes and 14,400 minutes. Regarding the total intervention duration, twenty-three (82%) studies fell below the average. Again, elven studies did not report any dose information. The presence of high total durations is likely to be attributable to the camping out, outward bound based interventions that usually involve a residential stay away.

3.5.2.4 **Types of measures used**

The reported outcome measures varied widely with no consensus observed, including: standardised and non-standardised mental health related measures; parts of measures; self-designed measures; and physical health measures. If excluding assessment measures completed by parents or teachers, there were still over a 100 different outcome measures or parts of measures used (See table 3.6). Only nine measures appear more than once. Measures covered a wide variety of overlapping aspects linked to mental health and mental wellbeing including self-esteem (n11 studies), quality of life and wellbeing (n11 Studies) as well as resilience, self-efficacy, diagnostic, affect, physical exercise, diet, substance misuse, behaviour, coping, grit, connectedness, stress and sleep. Only two occupational therapy-specific measures were identified, the Occupational Questionnaire (OQ) and the Canadian Occupational Performance Measure (COPM). This suggests that occupation-focused measures were not frequently used and that measurement of outcomes related to occupation-based studies targeting mental health needs was varied.

Table 3.6: Summary of included studies

Author	Occupation Type	Referral & Intervention Setting	Intervention brief description	Rational/ Theoretical base	Targeted Population	Outcome Measures
Antonson, et al (2018) *Sweden* *Ages:*15 to 19 (33)	**Mindfulness** vs Music therapy	*Referral*: School *Intervention Delivery:* School or Home	Internet-based, modular course - both content delivered via video and audio lasting 10 minutes.	Incorporates Mindfulness Based Stress Reduction (MBSR) & Mindfulness Based Cognitive Therapy (MCCT).	School Population - Health promotion	• Symptom Checklist 90 (SCL-90), • Perceived Stress Scale (PSS-14), • Pittsburgh Sleep Quality Index (PSQI)
Bonhauser, et al (2005) *Chile* *Ages:* 15 (29)	**Physical exercise**	*Referral*: School *Intervention Delivery:* School	Session structure: minimal activity or warm up, weight transfer activities incorporating dynamic large muscle movements, sports practice	Physical exercise improves health in adolescents	School Population - Health promotion	• Demographic questionnaire: age, gender, family income etc. • Physical: self-report physical activity Levels, Weight, BMI, blood pressure, VO2 Max, speed and jump performance, yo-yo intermittent recovery test. • Academic performance: school records. • Mental health: Hospital Anxiety Depression Scale (HADS) and the Tennessee Self-Concept Scale

Bremer, et al (2018) *Canada* *Ages:* 9 to 14 (5)	**Daily physical activity** *Referral*: School *Intervention Delivery:* School	Multiple fitness activities followed by students and pupils participating in 5km run/walk.	Physical exercise improves health.	School Population - Health promotion	92 item Student questionnaire developed from the following validated measures: • Pearlin Mastery Scale, • Self-regulation inventory, • Strengths and difficulties questionnaire (SDQ), • Rosenberg Self-Esteem Scale, • Short Grit Scale for Children, • Subjective happiness scale, • Commitment to school scale, • Sense of belonging scale, • Physical Activity Questionnaire for Older Children (PAQ-C), • 3 item task self-efficacy scale. 21 item Teacher questionnaire
Chawla, et al (2014) *USA* *Ages:* Study 1 (6-12), Study 2 (9-13), Study 3 (15-18) (3)	**Engaging with nature**: *Referral*: School *Intervention Delivery:* School	• Study 1: • Study 2: outdoor lessons • Study 3: structured gardening including caring and learning gardening skills. Session includes; education, relaxation, creative, sensory and physical elements	Nature can improve academic achievement and have health benefits.	School Population - Health promotion	• Videos • Observations • Field notes • Reflective interviews • Photography • Memory maps • Interviews

Costigan, et al (2016) *Australia* *Ages:* 14 to 16 (24)	**Physical exercises: HITT**	*Referral*: School *Intervention Delivery:* School	• 3 groups: HITT involving graduated high intensity exercises program, Resistance and Aerobic Program (RAP) & control Group Aerobic Exercise program (AEP) Session structure: AEP and RAP, include a short warm up (dynamic stretching) and a cool down. Control group did typical warm up and stretching	Physical exercise improves health.	School Population - Health promotion or early intervention	Mental health: • Trail making test (TMT), • Flourishing Scale, • Kessler psychological Distress Scale • The global physical self-concept • Perceived appearance subscales from the Physical Self-description Questionnaires. Process Evaluation: • One item feeling state questionnaire. • Heart rate motoring
Ferguson, et al (2001) *USA* *Ages:* 15 (30)	**Cross country skiing**	*Referral*: Residential Inpatient *Intervention Delivery:* Ski slopes	One to one intervention using a cross-country skiing graded observation, learning and experimentation activity.	Bandura	Adolescents in a specialist residential mental health unit	Case study report

Frank, et al (2017) *USA* *Ages:* 11 to 15 (11)	**Yoga**	*Referral*: School *Intervention Delivery:* School	Manualised program of applied yoga techniques linked to social emotional health. Action-Breathing-centering activities (ABC's). ***Session topics***: 1) The stress response, 2) physical and emotional awareness, 3) self-regulation, and 4) healthy relationships.	Poorly managed stress has negative physical and psychological effects. Yoga positively affects autonomic nervous system resulting in health benefits. Study investigates if positive effects observed in adolescent populations.	School Population - Health promotion	• School bonding scale • Student academic and behavioural record • Attitudes towards Violence scale • Positive and negative affect schedule for children (PANAS-C). • Response to Stress Questionnaires (RSQ). • Somatic Complaints Subscale of the Child Behaviour Checklist (CBCL) • Children's Intervention Rating Profile (CIRP)
Ho, et al (2017) *Hong Kong, China* *Ages:* 11 (12)	**Learning a new sport** through a Mentorship program	*Referral*: School *Intervention Delivery:* School	A collaborative mentorship program to learning a new sport in small groups. ***Session Structure and topics***: 1) introduction to sport and warm up, 2) identification of personal and group goals 3) developing sporting skills with mentor and peers, 4) mentors provide problem solving.	Uses Positive Youth Development framework (PYD) to create an environment in which to strengthen developmenta l assets and	School Population - Health promotion	• Short-Form of Health Survey Questionnaire (from HR QOL) *Chinese version* SF-12V2 • Physical Fitness tests, BMI, • Physical Activity Rating Questionnaire for Children and Youth (PARCY) • Chinese version of General Self-Efficacy Scale and Connor-Davidson Resilience Scale • Chinese version of Resnick School and Family Connectedness Scales

			foster resilience.		
Tirlea, et al (2016) *Australia* *Ages:* 10 to 16 (Study 1 13-16 & Study 2 10-13) (8)	Multiple activities e.g. Cooking, self-defence etc.	*Referral*: School *Intervention Delivery:* School	A 10 week facilitated targeted prevention intervention: to improve self-esteem, body image and confidence, encourage personal autonomy and self-control through various interactive and experiential learning approaches, activities, and discussions.	Adopts an empowerment model that involves interactive and experimental learning approaches.	School Population - health Promotion/ At Risk	• Rosenberg Self-Esteem Scale, • Clinical Impairment assessment, • Body self-esteem scale • Health Self-esteem measure for high school studer • Mental Health Self-efficacy, • Physical Health self-efficacy. • Dutch Eating Behaviour Questionnaire for Children
Tokolahi et al (2018) *New Zealand* *Ages:* 11 to 13 (9)	**Developmentally appropriate activities**	*Referral*: School *Intervention Delivery:* School	Manualised intervention to engage adolescents in developmentally appropriate activities to promote mental health and wellbeing. ***Sessions include***: Illuminating links between occupation, thoughts, feelings, identity, self-concept, health and wellbeing. Practices strategies and encourages healthy routines, behaviours and habits in order to support self-esteem and participation.	Occupation-based Theory Increasing participation in daily occupations prevents symptoms of mental illness (Occupational Therapy)	Early anxiety & depression symptoms.	• Multidimensional Anxiety Scale for children-Short form (MASC-10), • The Child Depression inventory 2nd ed. Self-report –Short form (CD12) • Rosenberg Self-Esteem Scales (RSES & SISES) • Student Life Satisfaction Scale (SLSS) • Canadian Occupational Performance Measure (COPM). Teachers: School Anxiety Scale (SAS), Parents: Revised Child Anxiety and Depression Scale- Parent report short version (RCADS)

Waaktaar, et al (2004) *Norway* *Ages:* 0-18 years (Mean 12yrs) (14)	**Creative activities** e.g. making video/ film, music, drama/ theatre, dancing, arts and crafts, painting, computers & communication skills	*Referral: Professional referral* *Intervention Delivery:* Occupation appropriate Setting	Group activities focused on a creative occupations and skills the young people has expressed an interest to learn. ***Sessions include***: Range of techniques, e.g. role-play, modelling, reframing, coping skills training.	Explores how group work aimed at enhancing prosocial behaviour, creativity, self-efficacy and sense of coherence could be utilised with in a clinical context to build resilience.	Mixed At risk school students and those accessing MH services	• Strength and Difficulties Questionnaire (SDQ). • Children's depression inventory • Prosocial subscale. • Berne Questionnaires of subjective well-being (youth form) • Coping Across Situations Questionnaire
Carter, et al (2012) *UK* *Ages:* 14-17 (25)	**Aerobic exercises** group.	*Referral*: Primary care & voluntary sector *Intervention Delivery:* Varied and agreed with participant	Tailored aerobic exercises session, with psychosocial and motivational support. Includes motivational coaching. ***Sessions include***: goal setting, self-monitoring , social support, enhancing self-efficacy and shaping	Physical exercises improves health. Motivational coaching.	Depression	• Children's Depression Inventory 2 (CDI-2,) • European Quality of Life-5 Dimensions (EQ-5D) • Client Receipt of Service Inventory (CRSI) • Borg RPE scale • Heart rate, incidents of self-harm, treatment received and compliance

Duberg, et al (2016) *Sweden* *Ages:* 13-18 (20)	**Dance** *Referral*: School *Intervention Delivery:* Sports Centre	Non-performance choreographed dance experience in which improvisation and spontaneity where supported. Aims enhance body awareness, enjoyment and socialisation with peers. ***Session structure***: 15 min warm up, 40 min dance practice, 15 minutes relaxation including a light massage and 5 min for reflection.	1) Merleau-ponty's ideas of the lived body presented. 2) Dance can strengthen bodily connections increasing psychological wellbeing. 3) Self-determination Theory.	Somatic symptoms	Qualitative Interview methods
Gehue, et al (2015) *Australia* *Ages:* 14-25 (26)	**Mixed activities** e.g. artwork, internet programs, apps, interactive games and exercises *Referral*: Mental health Services *Intervention Delivery:* Mixed Activity Appropriate settings	Fixed structured intervention with variable content. ***Session structure***: Topic introduction, group activity, talk and handout, an activity, a skills component, summary, feedback, and warm down activity. ***Session topics***: focus on executive skills, cognitive emotional regulation, reducing risk behaviours, and enhancing health promoting behaviours.	1) Aims to optimise social, vocational and physical functioning in those with mental health problems. Developmentally appropriate approach. 3) Addressing social and occupational decline.	Clinical diagnosis of anxiety, unipolar, bipolar, or psychotic disorder as defined by DSM-IV	Used 10 self-report measures and o observation rating scale. • Social and Occupational Functioning assessment Scale (SOFAS), • Functional Assessment Short Test (FAST), • Somatic and Psychological Health Report (SPHERE12), • Brief Disability Questionnaire (BDQ) • Rosenberg Self Esteem Questionnaire (RSEQ). • Kessler Psychological Distress Scale (K-10), • World Health Organisation quality of life scale (WHOQOL), • Pittsburgh Sleep Quality Index • International Physical Activity Questionnaire (IPAQ), • Alcohol smoking and substance involvement screen test (Assist),

					• BMI
Guo, et al (2018) *China* *Ages:* 18-25 (36)	**Qigong** (a Chinese mind-body exercise)	*Referral*: College *Intervention Delivery:* College	A supervised training program in mind-body exercise (Qigong) for stress management followed by independent training and follow up. ***Session includes***: sitting, closing eyes, taking deep breaths, recalling, and reforming images, artistic conception, operation and mind-body fuse in benign state of psychological harmony.	Based on the traditional Chinese medicine Qigong from the IWQ and the Chinese medicine Qigong Training Guide.	Targets Depression	• Demographic information • Bio-electrical activity of cortical neurons, • Self-rating Anxiety Scale (SAS) • Self-rating Depression Scale (SDS) • Eysenck Personality Questionnaire-revised Short form for Chinese (EPQ-RSC) • Pittsburgh Sleep Quality Index (PSQI) • Self-made Qigong training Self-evaluation Scale (SQTSS)
Hargreaves et al (2008) *Australia* *Ages:* 15-18 (32)	**Mixed activities & delivery**, e.g. life skills, games, social activities, and guest speakers	*Referral*: Referral *Intervention Delivery:* n/s	A peer support group which combines support, group work, youth participation, a wide range of ongoing activities, opportunities to develop useful life skills and have fun.	Providing with appropriate support can reduce negative impact arising from having a parents with a mental illness Principles include normalisation, acceptance, decreased isolation, Youth participation,	Depression	Aims to increase connectedness, enhance wellbeing and empower adolescents. But no objective outcome measures stated.

			acknowledging lived-experience	
Pojednic, et al (2016) *US & International* *Ages:* 5-14 (1)	**Physical activity program** *Referral*: School *Intervention Delivery:* School	School-based manualised physical activity program to address behavioural, mental and cognitive outcomes ***Sessions structure***: fun warm up game, a transition into running, a relay race or obstacle course & includes a skill of the week.	Physical exercise improves health, cognitive and behavioural outcomes School Population - Health Promotion	• Demographic data: e.g. age, gender, weight etc., • Physical fitness: Aerobic fitness measured. • Nutrition questions – from Food behaviour checklist and daily activity questions, • Pediatric Emotion and Relationship scales from the NIH PROMIS program (6 scales included: Anger, Anxiety, Depressive symptoms, Fatigue Symptoms, Peer Relationships. Paediatric Life Satisfaction program (SF-4)) • Health Pathways Child Report Scales (Bullying Victimisation, Vitality/Energy, & Student engagement) • NIH Toolbox Self-efficacy for children. • Academic performance child, • Resilience scale for kids - Child report Also Parental and Teachers report Questionnaires.

Richards, et al (2014) *Uganda* *Ages:* 11-14 (10)	**Football league**	*Referral*: Schools *Intervention Delivery:* Recreation grounds	Participants self-register to join a football league and then allocated to a team. ***Sessions structure***: football skills training and peace building games with a team followed by a 40-minute match against another team.	Aims to encourage participation and equal game play	School Population - Health promotion / Prevention and Wellbeing	• Cardiorespiratory fitness, • Multi-stage fitness test (MFT) • Muscle power & strength, • Standing Board jump • Height, BMI, • Acholi Psychological Assessment Instrument (APAI)
Ritchie, et al (2014) *Canada* *Ages:* 12-18 (17)	**Wilderness canoe expedition**	*Referral*: Reserve *Intervention Delivery:* Wilderness	A 10-day intensive wilderness canoe expedition through traditional territory Wikwemikong. ***Sessions include:*** navigating natural challenges (e.g. rapids, portages, and open water crossings), assigned leadership responsibilities, a solo component, group discussions and talking circles.	1) Utilises principles of outdoor education (Based on outward-bound process model) 2) Adventure therapy to improve resilience and wellbeing. 3) Uses 4 dimensions of the Medicine Wheel 4) To Improve resilience and wellbeing	Minority Ethnic groups - Considered At risk group.	• 14-item Resilience Scale (RS-14) • Mental component Score (MCS) • Physical Component Score (PCS) • Scale of Positive and Negative Emotion –Balance (SPANE) • Flourishing Scale (FS) • Self-Esteem Scale (SES) • Satisfaction with Life Scale (SWL)

Rourke, et al (2017) *Australia* *Ages:* 13 – 18 (21)	**A fitness course** *Referral*: Schools *Intervention Delivery:* Stadium	A fitness course aimed to build character and leadership. Instructors encouraged creating a positive social environment. ***Session structure***: three components sports, non-contact boxing drills and games.	Physical fitness can build character and leadership skills	School Population - Health promotion Prevention & Wellbeing	• Warwick Edinburgh Mental Wellbeing Scale (WEMWBS)
Schwan, et al (2018) *Canada* *Ages:* 16-24 (25)	**Arts and creative activities** **e.g.** Theatre, woodworking, sewing, painting, photography, music, ceramics, mosaics, collage, jewelry, cooking and sculpture. *Referral*: Homeless *Intervention Delivery:* Homeless Shelter	Program delivered as drop in offered several times a week or as an art-based life skills program, runs daily.	Arts-based programs can promote mental wellness and recovery, social inclusion and life skill.	13 have a mental health diagnosis. (40% of sample) Mixed Group of Homeless including LD, LGBT+ & Ethnic minorities	Qualitative Interview methods

Maglio et al (2008) *Australia* *Ages:* <18 (2)	**Circus in schools program** *Referral*: School *Intervention Delivery:* School or circus	A collaborative interventional approach between education, circus and occupational therapy which involves participation and learning how to perform circus activities ***Session structure***: warm up games, acrobatics, acrobalance, manipulation, balance based activities and performance. E.g. games, circus discipline, physical and coordination components.	Occupational therapy theory and a Victorian Essential Learning Standards (VELS).	School Population -Education Health promotion / prevention and wellbeing	• Self-developed tool based on VELS. • Observation • Journal entries

Tokolahi et al (2013) *New Zealand* *Ages:* 10-14 (9)	**Mixed psycho-education topics & group activities** *Referral*: CAMHS *Intervention Delivery:* CAMHS	Group based psycho-education session ***Sessions include***: warm up activity related to session topic, review of skills practice form previous week, use of activity to learn a new skill, relaxation, practice of new skill, planning skills practice for the coming week and a closing round. ***Session topics include***: psycho-education, emotions and occupation, CBT five part model of physical responses to occupational participation, activity scheduling and graded occupational engagement, anticipatory occupations and anxiety, adventure activity experiential learning, review own level of participation and impact on mental health, managing anxiety in communication and social situations, review and celebration	occupational Therapy Theory based Mixed Mental health - Not psychotic	• Beck Youth Inventories (BYI) • Occupational Questionnaire (OQ) – Time use diary • Child Behaviour Checklist (CBCL) • Health of the Nation Outcomes Scales for Children and Adolescents (HoNOSCA). • Children's Global assessment scale (CGAS) • Diagnostic interviews completed through CAMHS entry.	

Akiyama, et al (2018) *Philippines* *Ages:* 15 (31)	**Coached volleyball** *Referral*: Schools *Intervention Delivery:* School	School-based volleyball activity using Mastery Approach Coaching (MAC) compared to usual teaching methods. ***Sessions include***: training sessions followed by a tournament. One school received MAC training the other did not.	The Mastery Approach to coaching. (MAC) thought to improve social and personal development. Derived from Goal orientated theory.	School Population - promotion /preventio n	• Rosenberg's Self-esteem Scale
Bowen, et al (2016) *Australia* *Ages:* 13 – 16 (19)	**Adventure therapy** *Referral*: School *Intervention Delivery:* outdoors	Adventure therapy. ***Sessions structure***: Sessions structure varies but typically includes small groups in contact with nature. The aim of which is to move individual and family towards greater health and wellbeing.	Draw on multiple theory bases such as narrative therapy, nature therapy. Combines adventure activities with eclectic therapeutic processes to create opportunities to change.	School Population -Health promotion /preventio n or at risk	• Youth at Risk Program Evaluation Tool (YARPET), • General Wellbeing (GWB) • Adolescent Behavioural Conduct- Self report (ABC-SR) • Semi-Structured Interviews.

Cotton, et al (2013) *Australia* *Ages:* Steps 18-25 / Horizon 26-70 (37)	**Camping** *Referral*: Mental health Services *Intervention Delivery:* YMCA & YMCA campsites	4 day camping experience designed to promote positive identity, social competencies and provide support ***Session structure***: Pre-camp sessions held 2 months, one month and 2 weeks prior to camp. (meeting other participants & leadership team. Learn skills for camping trip). **Camp**: Day 1 - intro, footprints, open campfire. Day 2 mountain bike, fuzzy bags, initiative games, low ropes course, story of hope. Day 3: raft building, nutrition session and making lunch, giant swing, fire of friendship. Day 4 physical activity games, high ropes. Every day: keeping a journal and my time.	Adventure Therapy Mixed - mental health	• Rosenberg Self-Esteem Scale (RSES), • Pearlin Mastery scale (PMS), • Social Connectedness Scale Revised (SCS-R) • Social Anxiety and Distress scale (SADS) • World Health Organizational Quality of Life Scale (WHOQoL-Brief) • A camp evaluation questionnaire
Daykin, et al (2017) *UK* *Ages:* 13-21 (23)	**Music** *Referral*: Mixed: SCH's, YOI's YOT, *Intervention Delivery:* Mixed: SCH's, YOI's YOT,	Groups of professional musicians use activity-learning techniques used to introduce young people to assorted instruments including string, percussion, keyboards and electronics.	Musical affordances may have a positive effect on an individual. Activity learning techniques Mixed	• Observation • Focus Groups • Interviews • GHQ12 • Warwick Edinburgh mental Wellbeing Scale

Doucette, (2004) *Canada* *Ages:* 9 – 13 (7)	**Walking and talking** *Referral*: School *Intervention Delivery:* Outdoors	A walking intervention involving unconditional positive regard to encourage self-understanding. ***Session includes:*** establishing therapeutic alliance, aerobic exercise – walking activity, connection with the outdoors, identifying strategies for dealing with stress, identifying stressors, and behaviour change.	Based on Orinoco program and underpinned by attachment theory. Draws on Rogerian technique of unconditional positive regard.	Behaviourally troubled youth to choose pro-social behaviour. In need of special education. Specifically conduct disorders. Anger management issues.	Phenomenological qualitative research approach
Gordon, et al (2008) *Kosovar* *Ages:* 14 to 18 (27)	**Mixed mind-body skills** - Including didactic/ experiential teaching, self-expression using drawing, and writing. *Referral*: School *Intervention Delivery:* School	6-week mixed activity intervention. **Session structure**: 1) meditation, 2) sharing experiences of applying techniques from previous sessions 3) teaching or demonstration of a technique, 4) experience of practicing the technique. 5) students share experience of exercise. 6) slow, deep breathing exercise. **Sessions includes**: an introductory session, drawings, guided body scan, use of safe place imagery. Discussion of biofeedback and autogenic training, inner guided	Mind-body techniques may have a positive effect on PTSD.	PTSD	16-item HTQ used to determine PTSD criteria,

		imagery, fast deep breathing, forgiveness medication, use of genograms to explore place in the family, continuum of sharing, repeat of the drawing exercise, conclusion of group. ***Taught subjects include***: guided imagery, relaxation techniques, autogenic training, biofeedback and drawing. Written and activities (dance, shaking, deep breathing) techniques to express feelings and thoughts		
Godfrey, et al (2015) *UK* *Ages:* 8 to 18 (4)	**Surfing** *Referral*: Schools *Intervention Delivery:* Seaside	Group of 10 participate in surfing courses led by a paid surf instructor and volunteers providing one to one support. **Sessions focus** on positive experience, and bring participants out of their comfort zones. Focused on forgetting about problems. Ethic is to have fun, experience friendship and positive challenge with implicit objectives around developing the core life skills of confidence, self-reliance, self-management and social skills.	Exposure to the natural world positively affects health and wellbeing. Surfing intervention promotes confidence through surfing and has a positive effect on wellbeing.	At risk: mental illness/ Exclusion/ achieving	• Stirling Children's Wellbeing Scale (SCWBS) – Positive outlook and positive affect and social desirability subscales. • Warwick Edinburgh Mental Wellbeing Scale - Rosenberg Self-Esteem Scale • Children's Wellbeing Scale • National Obesity Observatory Standard Evaluation • Qualitative data

Hasanpour, et al (2014) *Iran* *Ages:* 13-19 (22)	**Aerobic exercise**	*Referral*: Care System *Intervention Delivery: not stated*	Pair's aerobic exercise delivered by researchers and a physical education trainer. ***Session Structure***: 10-minutes warm up (stretches, while listening to music), 40-minutes aerobics (heart rate was managed through exercise), 10-minutes cooling down.	Physical exercise improves health.	Self-Esteem	• Heart Rate • Demographics Questionnaire • Coppersmith Self-Esteem Inventory (CSEI) for adolescents
Jaworska, et al (2019) *Canada* *Ages:* 18-24 (38)	**Aerobic exercise** e.g. stationary bike, treadmill running, elliptical, eager rowing, or a combination of these	*Referral*: University *Intervention Delivery:* University	12 week supervised aerobics exercise intervention. Involving 30-minute sessions in target heart rate zone aiming to improve cardiovascular fitness as measured by VO2max. **Session structure**: 5-minute warm up exercise, 30-minute aerobic activity and 10 minutes cool down.	Physical exercise improves health.	Major Depressive disorder	• Mini International Neuropsychiatric Interview (MINI) • Hamilton Rating Scale for Depression (HAMD) & Physical Activity Readiness Questionnaire (PAR-Q) • Physical Activity Readiness Medical Examination (PARmed-x) • Physical activity measures e.g. BMI, VO2 max etc.

Kendall, et al (2015) *Australia* *Ages:* 12-22 (18)	**Horse riding & caring for horses**	*Referral*: Youth and Family services *Intervention Delivery:* Stables	Intervention in which participant is matched with a horse and a mentor. Provides an opportunity to learn to ride and gain skills to care for horses. Followed by a level 1 exam. ***Sessions include***: 1) introductory session including basic theory and principles of natural horsemanship, 2) subsequent sessions began with a discussion of expectation and feelings about playing with the horses. How understanding the horses may relate to their own lives, 3) engage with horses, 4) concluding with opportunity to discussed skills and abilities learned during the session and how these could be transferred into everyday life.	Natural Horsemanship - Parelli - Impact on health Teaching included tools and theory related to working with horses. Developing core skills for looking after horses. Constructive self-reflection.	Disengaged or At risk youth	• Rosenberg Self-Esteem Scale (RSES) • General Self-Efficacy Scale (GSE) • Social Behaviour Observation Form (SBOF) • Case Manager Surveys
Klizas, et al (2012) *Lithuania* *Ages:* 14-15 (28)	**Modified exercise vs usual exercise**	*Referral*: School *Intervention Delivery:* School	Modified lesson on physical education (e.g. sports games, basketball, volleyball, pilates and football aimed at enhancing abilities). Includes a theory class, once a month, on preventing communication disorders. Vs. Control group receiving non-modified psychical education lessons.	Physical exercise improves health.	Health Promotion / Psycho-social adjustment	• Multidimensional Students Life satisfaction scale • Psychosocial adjustment

Nabkasorn, et al (2006) *Thailand* *Ages:* 18-20 (39)	**Jogging**	*Referral*: University *Intervention Delivery:* University	University based 50-minute long group jogging intervention, in which they jog at their own speed, maintaining their heart rate at 50% of maximal heart-rate reserve. ***Session structure***: 5 to 10 minute warm-up, 30 minutes group based jogging exercise, concluding with 5 to 10 minute cool-down exercise.	Physical exercise improves health.	Depression	• Centre for Epidemiologic Studies Depression Scale (CES-D) • Urinary secretions of cortisol & epinephrine to assess psychophysical stress conditions • Pulmonary functional and exercise endurance testing.
Schell, et al (2012) *Australia* *Ages:* 15-25 (34)	**Mixed outdoor activities** e.g. rock climbing, canoeing etc.	*Referral*: Mental health services *Intervention Delivery:* Countryside	8 to 10 week graded mixed activity outdoor intervention including a 3-day camping experience. ***Sessions include:*** low ropes (wk1), canoeing (wk2), rock climbing and abseiling (wk3), caving (wk4), high ropes (wk5), planning preparing and packing for camp (wk6), 3 day canoe camp (wk7), celebration and sharing highlights and challenges (wk8),also includes daily individual and group reflections.	Mental illness disrupts development. Group based intervention may help social recovery. Participating in OAG will increase self-esteem, sense of mastery and social connectedness.	Mixed Mental Illness - Early Intervention (Psychotic and non-psychotic)	• Rosenberg Self-esteem, • Pearlin Mastery, • Social Connectedness Scale – Revised (SCS-R) • Personal Goals • Canadian Occupational performance Measures (COPM),

Thabet, et al (2005) *Israel* *Ages:* 9 – 17 (6)	**Creative activities** e.g. free drawing, writing, storytelling and role-play	*Referral*: Refugee camps *Intervention Delivery:* Refugee camps	Crisis Intervention Group (n47) involved treatment protocol of 7 weekly sessions. ***Sessions include***: creative activities used as communication techniques to describe direct experience of trauma, losses and impact of trauma. Enabling them to talk about the impact on their feelings and the resultant symptoms. Intervention included trauma specific exercise but there was no structure to the themes discussed.	Limited research into interventions for PTSD in children. Uses a debriefing intervention-aimed at facilitating discussion. Use creative activity as a debriefing intervention to reduce symptoms.	PTSD	• Child Post Traumatic Stress Reaction Index (CPTSD-RI) • Children's Depression Inventory (CDI)
Van Vliet, et al (2017) *Canadian* *Ages:* 12 – 17 (15)	**Mindfulness**	*Referral*: Psychiatric Residential Unit *Intervention Delivery:* Psychiatric Residential Unit	Adapted 8-week MBSR program on formal mindfulness, yoga and psychoeducational components. ***Sessions include:*** a mix of didactic teaching, experimental exercises and practice, group discussion and self-reflection. Formal meditation included mindful eating, sitting walking, body scan etc.	Mindfulness and Yoga	Psychological, behaviour and emotional problems in a psychiatric unit	Interpretive qualitative Analysis

Wunram, et al (2018) *Germany* *Ages:* 12 – 18 (16)	**Whole body vibration, cycling** vs TAU	*Referral*: Psychiatric Inpatient *Intervention Delivery:* Psychiatric Inpatient	**Intervention 1**: The whole body vibrations training executed on the Galileo training devise. ***Session structure***: four sessions a week doing six standard physical exercises conducted on the Galileo plate. **Intervention 2:** Ergosana Stationary Cycles. A 30-minute interval training calculated on maximal performance in the previous spiroergometry and supervised by trained staff. **Control Intervention 3**: Treatment as usual including normal therapy schedule on the inpatient unit, and sessions with the psychotherapist, psychiatrist, exercise therapy, art therapy and music therapy etc.	Physical exercise improves health.	Severe Depression	• Structured Interview DSM-IV • Youth Self-report (YSR 11-18) • Child Behaviour Check list (CBCL 6-18) Diagnostic System for mental disorder in childhood and adolescence (DISYPS-II) • Magglinger Sports Enjoyment Scale (MSES) • Self-Designed feedback questionnaire. • Eigenzustandsskala (EZK; Inherent State Scale), • Wahrgenommene Körperliche Verfassung (WKV; Perceived Corporal State) • Motivation und Hemmnisse in Bezug auf Sport (Motivational Factors and Barriers in Sports) • Modified Borg Scale (Rating of perceived Exertion). • Variety of physical measured e.g. Spiroergometry, VO2, VE, BMI etc.

Overall, the results of the scoping review illuminates a limited number of studies using occupation-based interventions targeting adolescent mental health issues in the academic literature. Furthermore, there is considerable variation between studies in terms of key intervention characteristics. Most noticeable is the lack of consistency in which measures are used, the minimal use of occupation-focused measures, and the primary focus on one occupation type rather than the complexity of every day occupations such as balance, choice and engagement.

3.6 DISCUSSION

The study strategy and subsequent criteria deliberately focused and targeted interventions designed to improve mental health and mental wellbeing in adolescents, using occupation. A relatively small but varied sample of international studies covering a wider variety of occupational types, theoretical positions and intervention settings was identified. The studies themselves highlight considerable variation in the aspects of mental health targeted, the intervention delivery methods applied, and the outcome measures used to evaluate interventions. Few studies appeared to utilise the staging model (Cross et al., 2014) to target levels of specific mental health needs, although the terminology used in the study does allow for the studies to be grouped according to the predominant public health three tiered model which groups interventions programs into universal, targeted and intensive (Arbesman et al., 2013). Alternatively intervention could also be grouped into health promotion, prevention and treatments (Arbesman et al., 2013). There is also little evidence of involving adolescents in intervention development and design. Furthermore, none of the identified intervention studies targeted the complexity of everyday occupations such as occupational choice or occupational balance.

The retrieved information serves two purposes. It provides an overview of the scientific evidence utilising occupation to target mental health issues in adolescent populations, illuminating conventions in intervention delivery (i.e. frequency, duration, and timing of sessions), and the scope of the interventions offered to adolescents. Research gaps were exposed as well. Secondly, it also positions occupational therapy within the wider field of academic literature, enabling comparisons between the unique perspective of occupational therapy and other approaches. The reported interventions are largely prescriptive and do not appear to harness the typical developmental process towards autonomy in adolescent daily occupational choices (Holmbeck, 2002). Principles such as enhancing engagement through meaningful occupation and supporting the development of skills to balance different occupational demands, are given high priority in adult occupation-based interventions for mental health (Eklund et al., 2017b, Kirsh et al., 2019), but were largely absent from the studies found during this review. That such information is lacking suggests that interventions to target specific aspects of occupational engagement in adolescent populations have either not been developed, have not been fully explored empirically, or have not been reported in the academic literature. This knowledge is of use to both clinicians in practice and researchers intending to develop or provide interventions for young people.

Practically, the findings provide relevant information, such as identifying outcome measures, types of intervention and typical intervention doses, information which can inform intervention development. The evident breadth of measures used reflects a largely unresolved issue in the study of child and adolescent mental health. Until recently, no sets of outcome measures existed for this population group and even in the most recent published outcome set for clinical practice, a lack of appropriate measures of daily occupational functioning is identified as problematic (Krause et al., 2021). The lack of appropriate measures presents a challenge for those developing occupation-based interventions, whilst also an opportunity for researchers to develop robust occupation-focused outcomes. Alternative measures such as time-use questionnaires may present a valid alternative outcome measure. Still, the lack of clarity around outcome measures makes it difficult to compare, and build an evidence base for occupation-based or occupation-focused interventions. The multiple measures identified are worthy of more detailed exploration, and may benefit from being mapped against the International Classification of Functioning for children and youth (ICF-CY), which could then be used to improve comparability of occupation-related interventions.

Interventions based in the school setting were most common, followed by those conducted in mental health services. These context this offered the greatest opportunities to learn about the interventions themselves. This echoes the findings of other review papers targeting adolescents (Das et al., 2016). Given the multiple impacts of the ongoing pandemic on adolescents, and the rise in use of online methods for delivering education (Bhatia, 2020), the fact that the reported interventions were primarily led by adult facilitators, who are physically present during the intervention, reveals a potential gap in the literature compared to current practices. Furthermore, the predominance of interventions in which occupation is prescribed and led by adults does not reflect the importance of supporting the adolescent's natural development of skills, necessary to manage the complexities of their daily occupations in a real world context. Interventions that can encourage or support adolescents to engage with the complexity of daily occupations in a healthy way, deliverable via online methods, may be important.

The intervention dose varied across setting but the average dose in terms of time allocation was once a day, two or three times a week, for a maximum of seventy minutes, although it is likely that this figure is increased as a result of a number of residential, outward bound interventions, and also influenced by the nature of the occupation itself. Physical exercise-based activities, such as sport and yoga, were most common, a finding that is consistent with other reviews and maybe linked to a

growing evidence base associating exercise with mental health. Interestingly, only four art-based studies were identified, despite a report suggesting that art and creative activities may be of benefit to mental wellbeing (All-Party Parliamentry Group on Arts Health and Wellbeing, 2017).

Interesting to note, is that a criticism exists that Occupational Therapy research and theoretical literature is weighted towards western societies (Hammell, 2011), but in this review we observed the representation of a broad range of countries. This is particularly relevant given that the existing mental health crisis is also acute in non-western cultures and particularly in low-income countries where resources are often limited (Patel et al., 2018). While countries such as Australia and Canada have a reputation for research excellence and shaping adolescent mental health care provision (Mei et al., 2020), economically and culturally this may be out of the reach of many lower income countries (Patel et al., 2018). Interventions harnessing the value of every day occupation may, by their nature, present an alternative low-cost and accessible intervention option to reduce the disease burden of mental health for countries with lower economic resources.

The theoretical rationales underpinning the development of complex interventions is highly important (O'Cathain et al., 2019a), and ideally should be reported alongside the intervention content (Hoffmann et al., 2014). Theoretical rationales inform the logic models that underpin reported interventions. In the context of this review, many different rationales were presented, explaining the choice of occupation and the reasoning behind how the activity could affect health. The multiple rationales presented in the review, illustrates that differing perspectives exist to explain the relationship between occupation and health. Each rationale potentially influences the assumptions and approaches applied to the reported occupation-based interventions. Furthermore, few studies stated a specifically Occupational Therapy or occupational science rationale. This highlights a lack of occupation-based interventions targeting adolescent mental health informed by an Occupational Therapy or occupational science perspective.

More specifically in regards to this PhD project, this review suggests that, to the best of the researcher's knowledge, no other occupational therapy-informed intervention that specifically targets the early stages of compromised mental health and mental wellbeing in 16 to 17 year olds seems to be reported in the reviewed literature. Furthermore, identified interventions primarily adopted a specific occupation type with little choice or opportunity to choose personally meaningful activities or develop skills to do so, despite reliance on occupational therapy theories and other widely recognised theories such as self-determination theory, which emphasises the importance of

autonomy and choice in adolescent motivation. This is surprising in light of the importance of occupational experience in developing skills and competencies for entering the adult world (Sawyer et al., 2018). A gap seems to exist addressing how to develop occupations that target complexity and meaningfulness, such as occupational choice and occupational balance. The paucity of occupation-based interventions in the academic literature informed by occupational therapy theory and science is a cause for concern and needs addressing given the reported mental health crisis amongst young people. The researcher's prior clinical experience suggests that many interventions go unreported and there is a need for occupational therapists to evaluate a number of adolescent-targeted mental health interventions currently used in practice. The consequence of a failure to do so is limited accessibility of potentially useful occupation-based interventions.

Study limitations, challenges and implications.

In line with the study's intentions, this chapter presents a descriptive overview of occupation-focused and occupation-based intervention studies targeting mental health and mental wellbeing issues in adolescent populations. The application of the findings requires some caution as the review did not assess, and does not report on, the quality of the studies against reporting guidelines such as Tidier (Hoffmann et al., 2014), and previous review studies such as Das et al. (2016) have commented on the variable quality of reported adolescent mental health interventions. Future studies should consider adding a quality assessment.

While this study potentially represents a comprehensive scoping review of this topic, terminology and search strategy are a challenge to those seeking occupation-focused or occupation-based literature. A reality, confirmed in this study, is that multiple iterative steps were required to refine an effective search strategy, which included the addition of peer-reviewed articles found through other papers. Furthermore, the broad scoping search strategy required to identify relevant peer reviewed articles produced a high number of results, consequently a broader search of the "grey literature" was not conducted. When compared with similar studies, such as the newly published review by Cahill et al. (2020), the terminology and search strategy challenge is further emphasised by the variation in the papers identified. However, it is also interesting to note that Cahill et al. (2020) do not report their search strategy, but refer to a strategy reported in a previous paper that searches by intervention type and diagnosis. This approach is questionable, given the breadth of occupations potentially used by occupational therapists and the related risks of inadvertently omitting a relevant intervention from the search strategy.

In future studies, adopting a large team approach, utilising a broader scope search strategy would help to address these limitations. A further recommendation would be that those reporting interventions give careful consideration to article titles, keywords, and abstracts. To increase the accuracy of targeting relevant articles, future researchers may find it helpful to consider using a PICO format to identify key terms and ensure inclusion of wider MESH terms alongside more traditional occupational therapy terms.

3.7 CHAPTER SUMMARY

This chapter reports a scoping review study that aimed to identify and describe interventions that utilise occupations to improve mental health or mental wellbeing in adolescent populations. The purpose of this was to draw out knowledge from the existing literature that can inform the development of an effective adolescent intervention. The scoping review has identified 39 studies using occupation-based and occupation-focused research, and only three specifically based on occupational therapy theory, which highlights the need for further research. More specifically the review has highlighted the apparent lack of reported interventions that specifically targets 16 to 17 year olds' choices and occupational balance.

The descriptive overview of the occupation-focused and occupation-based intervention studies targeting mental health and mental wellbeing issues in adolescent populations has illuminated key characteristics of this area of research, such as the lack of focus on outcomes measures assessing function or engagement in occupation, and a lack of interventions focused on supporting occupational choice or occupational balance. The application of the findings requires some caution as the review did not assess, and does not report on, the quality of the studies against reporting guidelines such as Tidier, and previous review studies have commented on the variable quality of reported studies. This reinforces the need to develop robust studies that are both occupation-based and occupation-focused for this population. The results of this study inform the Delphi study reported in chapter 6.

4 CHAPTER 4, STUDY 2. ADOLESCENT TIME-USE AND HEALTH

4.1 INTRODUCTION

This chapter reports the second of five studies that form this PhD thesis, introducing the concept of time-use, its relationship to the patterns of daily occupational engagement and its relevance to mental health and illness during the critical transitional phase of adolescence. The rationale, design and methods are stated for a self-report survey. The survey which included a 24-hour retrospective Time-use Diary and the Strengths and Difficulties Questionnaire which was completed by 16 and 17 year olds located in a typical mainstream secondary school cohort, was completed. Findings provide a unique description of the time-use characteristics in a current pre-pandemic cohort sample of English adolescents aged 16 to 17 years in an ethnically diverse, mixed sex, mainstream secondary school, at the beginning of a key transition point, developmentally, as they transition academically from GSCE to sixth-form education. The relevance of this is discussed in relation to the existing time-use literature. This study provides a description of a contemporary cohort sample of English adolescents' 24-hour time-use activities alongside their self-reported strengths and difficulties. It illuminates the recruitment and completion issues related to administering the time-use diary and SDQ in a school-based cohort and its potential as an outcome measure. The study also forms the basis of a purposive sampling frame for study two. This knowledge informs the logic model of the problem and highlights the potential for further research in this area.

4.2 BACKGROUND AND RATIONALE

Adolescence is recognised as a critical period of development, shaped by the time spent in different activities (Larson. and Verma., 1999, Ben-Arieh and Ofir, 2002, Wright et al., 2009), which differs from adult time-use (Krueger et al., 2009). Those aged 16 to 17 years face a significant transition point from the structured nature of preparation for GCSE's to qualifications such as A levels with potential implication for how they use their time and what activities they engage in, and commonly associated with onset or deterioration in mental health problems (Patton et al., 2016). The transition can be a difficult period for students as performance expectation increases at the same time as an increased expectation to work autonomously (Crafter and Maunder, 2012, Powell, 2017). There is also an

increased concern to identify and develop skills leading to future employment (Holmbeck, 2002) alongside the wider issues of adolescent development such as identity formation (Arnett and Jensen, 2002). Critically, patterns of health are established during adolescence with long-term health implications (Sawyer et al., 2012). The activities that adolescents engage with during this period have the potential to shape their immediate and long-term development with potential health implications; consequently, it may be an ideal time to target health-focused interventions.

A deep, inter-connected relationship exists between 24-hour time-use, and health dimensions (Meyer, 1922/1977, Farnworth, 2003, Hunt and McKay, 2012, Zuzanek and Zuzanek, 2015, Mellow et al., 2019). In fact a 24-hour trade off exists between daily occupations and the non-storable, finite resource of time, with potential implications for health and wellbeing (Hellgren, 2014, Ellegård, 2019). Research commonly considers the health impact of activities in isolation from other activities performed in a 24-hour context (Ben-Arieh and Ofir, 2002, Mellow et al., 2019, Sampasa-Kanyinga et al., 2020). Interest has grown in approaches that take a holistic, whole systems approach, with occupation considered within its context (Bartholomew-Eldredge et al., 2016, Kantartzis, 2019, Mellow et al., 2019). Indeed, beyond the term occupational therapy, 'lifestyle psychiatry' is now used, referring to how participating and engaging in different occupations and activities, can impact mental health (Firth et al., 2019).

The nature of time-use makes it objectively measurable (Ellegård, 2019). This makes it ideal for understanding trends and patterns in populations (Farnworth, 2003, Hägerstrand, 2009, Bauman et al., 2019, Ellegård, 2019), such as the interconnected relationship between the activities people do in the context of 24-hours and their health (Farnworth, 2003, Hunt and McKay, 2012, Bauman et al., 2019). Reviews of adolescent time-use research conducted over the last 28 years highlight: that development and developmental opportunities vary across cultures and across occupation types (Larson. and Verma., 1999); that some gender differences exist in terms of time-use and health related behaviours with potential health implications (Ferrar et al., 2013, Hunt et al., 2015, Paulsson-Do et al., 2017, Keles et al., 2019); while, time-related patterns and clustering have been used in an attempt to understand the relationship between 24-hour time-use trade-offs and health in adolescents (Wright et al., 2009, Ferrar et al., 2013, Hunt et al., 2014, Hunt et al., 2015, Wong et al., 2018). Time-use research is recognised for having potential to contribute important knowledge and understanding about the patterns of occupational engagement and health, with its potential to inform intervention development and evaluation (Ferrar et al., 2013, Sampasa-Kanyinga et al., 2020).

Overall, the literature suggests that there has been limited exploration of time-use and mental health in adolescence and advocates the need for further research in this area (Ben-Arieh and Ofir, 2002, Hunt and McKay, 2015b). In a review by Ferrar et al. (2013), some similarities were observed between adolescent time-use clusters across nineteen studies identified, suggesting that adolescent patterns of time-use exist but the relationship between patterns of time-use and health is not yet fully understood. In addition, adolescent time-use research to date, mainly reflecting wealthy western countries, are typically although not exclusively small scale and have methodological concerns, resulting in a need for caution when interpreting (Ferrar et al., 2013, Hunt and McKay, 2015a). To the best of the researcher's knowledge, no studies have been reported in the literature that specifically describe contemporary 24-hour time-use in a typical, English, school-based cohort of 16 to 17 years olds in relation to their mental health and illness as measured by the Strengths and Difficulties Questionnaire. Few quantitative time-use studies reported in the literature, link into a secondary qualitative study as part of a sequential mixed method design to develop an intervention as this study does. A need exists, to improve our understanding of contemporary adolescent occupational engagement, as measured by time-use, in 16 and 17 year olds in English schools, in relation to mental health and illness. This knowledge is of particular relevance to those who wish to develop and test occupational-based interventions and informs the development of the occupational intervention in this thesis.

4.3 STUDY AIM

To describe time-use characteristics and mental health as measured by the Strengths and Difficulties Questionnaire (SDQ) in a heterogeneous, UK school-based, adolescent cohort of new-starter, lower sixth pupils aged 16 to 17 years.

Objectives:

1) To determine feasibility of recruitment and completion of measures.
2) To determine the characteristics of the sample and compare to norm data for measures of SDQ and TUD.
3) To describe time-use and mental health in this sample.
4) To describe characteristics of females and males in mental health and difference in time-use.
5) To develop a stratified, purposive sampling frame for a follow-on qualitative study.

4.4 METHODOLOGY

4.4.1 Study design

This cross-sectional observational study, utilising a two-measure, self-report survey, was implemented to identify and describe the time-use and mental health characteristics, as reported by school-based 16 to 17 year olds

4.4.2 Ethics, study registration and safeguarding practicalities

The study proposal, developed in consultation with research supervisors, was submitted for ethical review and received approved from the Oxford Brookes University Research Ethics Committee (UREC no. 181192). See Appendix 9.1 for Ethics approval letters. The protocol for the full PhD research program was also made public on the ISRCTN registry (registration no. ISRCTN10573786).

Given that the research included participants under 18 years of age and was conducted on school premises during school hours, careful consideration was given to the management of safeguarding issues. In each school one teacher acted as gatekeeper and were briefed on the study protocol. The gatekeepers managed access to the students for briefing sessions and data collection. The gatekeeper's also ensured that parents were informed of the research in line with schools policy. Parental consent was not required as participants were over 16 years of age, although an alternative activity was devised should any parents object. There were no objections to the research from parents. The researcher worked in accordance with school safeguarding policies and a plan was agreed with each school for managing any untoward incidents or concerns that might arise especially given the potentially sensitive nature of talking about mental health. In addition to the above all those collecting data were DBS checked.

4.4.3 Recruiting schools and study size

Schools are the forefront of mental health provision for young people (Williams et al., 2020), regarded as a convenient (Wahid et al., 2021) and essential site for research (Demkowicz et al., 2020). Consequently, the study aimed to recruit at least two schools to achieve a combined cohort sample of at least n=189 with some heterogeneity in demographic characteristics which was considered

sufficient for the purposes of determining initial feasibility issues, for descriptive analysis, and to recruit to a follow-on qualitative study. Recruitment targeted UK provided secondary comprehensives, specifically the lower sixth-form serving those aged 16 to 17 years, who, having completed the general certificate of secondary education (GCSE) qualification, chose to continue at the school to take qualifications such as AS Levels, A levels or Btec qualifications.

Head teachers, heads of sixth form, and well-being leads in over 20 schools within one London borough were sent an email invitation; although two schools initially responded, only one agreed to participate. The London school is located in a highly urbanised and ethnically diverse borough, 70% of students speak English as a second language (School level data, 2017) compared to a national average of 16.2% (The United Kingdom Statistics Authority., 2017). Additionally, of students (School level data, 2017) receive free schools meals compared with the national average of 12.9% (The United Kingdom Statistics Authority., 2017) suggesting a low-income area. Due to the low response rate, a teaching consultant recruited the second school using established connections, which is located in an affluent, semi-rural, Oxford location, with a predominantly white British population. Demographically, 7.5% of students in the borough receive state school meals and only 8.6% spoke English as a second language (The United Kingdom Statistics Authority., 2017). At participating sites, head teachers received a study information sheet and were required to provide signed consent. Heads of Sixth Form received an information sheet and a briefing regarding their responsibilities. They contributed to the formation of localised research- related safeguarding protocols, and consented to adhere to the research protocols before starting data collection.

4.4.4 Recruiting adolescent participants

Data collection occurred at the beginning of the new academic year to co-inside with the early transition period from the main school to the lower sixth form. A week before data collection, lower sixth form students from both schools received a research information sheet and a brief, pre-piloted introductory research briefing during an assembly. The briefing included: the study purpose, requirements of involvement, outlined their rights, provided information on data storage, and contacts in case of concern. Sixth-form heads sent out an information letter to parents via the usual school systems, prior to the start of the study, in line with school policies. In order to avoid disrupting scheduled teaching sessions, data collection occurred during school enrichment time. A second briefing immediately preceded data collection, informing students about their rights, providing

instruction on completing the survey, and reinforcing their right to choose to complete the survey or read a research related article. Those choosing to complete the survey received a pack with a unique identification number for later anonymisation, containing an information sheet, a consent form and the questionnaires. Instructions given to students included: not discussing their answers with others, to sign the consent form before completing, and returning the questionnaire in the sealed envelope provided. Additional researchers were available to answer questions if needed. The survey took approximately forty minutes to complete.

4.4.5 Variables, measurement and data sources

4.4.5.1 **Strengths and difficulties questionnaire**

A broad range of general and specific mental health measures exist, based on differing constructs (Wigelsworth et al., 2010, Humphrey et al., 2011, Kwan and Rickwood, 2015). Despite the importance of measuring mental health to monitor clinical progress and cost effectiveness of provided services, the levels of reliability, validity and other psychometric properties of existing measures vary (Deighton et al., 2014), with few designed in partnership with teenagers (Kwan and Rickwood, 2015). It is from this context that the Strengths and Difficulties Questionnaire (SDQ) was chosen. The SDQ is a broad, behavioural and emotional screening tool that assesses general mental health difficulties, and is widely used in clinical settings to monitor change in clinical outcomes and intervention effectiveness (Goodman et al., 1998, Deighton et al., 2014, Law and Wolpert, 2014, Wolpert et al., 2015, Patalay et al., 2018). The SDQ has also been used to identify characteristics predictive of change in mental health in a population sample of 11 to 13 year olds (Wolpert et al., 2020).

The paper form of the SDQ self-report version is free to use and takes 5 minutes to complete (Deighton et al., 2014) (See Appendix 9.5 for example for measure). It comprises 25 items across five domains: prosocial behaviour, hyperactivity, emotional problems, conduct problems and peer problems (Goodman et al., 1998, Patalay et al., 2015). Each domain consists of five items, in which the participant indicates on a 3-point Likert scale if the statement is ‘not true’, ‘somewhat true’ or ‘certainly true’. Responses are scored providing 5 domain scores and a total score which been associated with a raised probability of an independent diagnosis of psychiatric disorders (Goodman,

2001, Vugteveen et al., 2019) and provides a clear distinction between clinical and non-clinical groups (Deighton et al., 2014, Kwan and Rickwood, 2015, Patalay et al., 2015).

The extensive international review and validation of the psychometrics of the measure has largely been positive, although some issues exist (Wolpert et al., 2015, Vugteveen et al., 2019). Internal consistency has received mixed results, ranging from strong to low internal consistency of sub-scales (Yao et al., 2009, Mieloo et al., 2012, Vugteveen et al., 2019). Results for test-retest reliability was moderate (Yao et al., 2009), concurrent and discriminant validity is considered good (Muris et al., 2003, Lundh et al., 2008). Given the practicalities, psychometric properties, and application as a broad screening tool, the SDQ is appropriate for this study.

4.4.5.2 **Time-use**

Time-use surveys illuminate time used in specific occupations or the balance of occupation across a number of occupation types (Hunt et al., 2015, Kelly et al., 2015, Gracia et al., 2019, Sampasa-Kanyinga et al., 2020). In representative samples time-use surveys are regarded as reliable and valid, enabling comparisons between populations, and highlighting the similarity and differences in time use between time points, ages, cultures, and across generations (Gershuny et al., 2017, Gershuny et al., 2019). Time-use diaries are considered the most accurate for measuring time and consequently are widely used (Ben-Arieh and Ofir, 2002, Ferrar et al., 2013, Wong et al., 2018, Bauman et al., 2019).

The diary method provides a detailed and comprehensive description of activities over a 24-hour time period including: duration, range, sequence and balance of activities (Kitterød, 2001, Sonnenberg et al., 2012, Hunt and McKay, 2015b, Chatzitheochari et al., 2018). Participants sequentially record all their primary and secondary activities over a 24-hour period against 10 or 15-minute time intervals (Chatzitheochari et al., 2018, Bauman et al., 2019). Additional data includes: location, who they were with, if they used technology, and level of enjoyment in the occupation (Eurostat, 2019)., This study uses an adapted form of the full retrospective Harmonised European 24-hour time-use diary (Eurostat, 2019), following piloting with the target population on two separate occasions.

The initial pragmatic plan, based on access to participants, involved one diary completed in school and one diary for home completion, to inform a picture of weekday and weekend time-use in the cohort. This was to ensure different days of the week were covered as suggested by (Eurostat, 2019). The study uses a 15-minute interval full diary in which participants use their own words to describe

their occupations (Eurostat, 2019) (See Appendix 9.5 for example of measure), preserving the detail of the occupation and avoiding pre-classification bias as the researcher ensures consistent coding of occupations across occupation categories. No international standard classification for categorising time-use survey activities exists (Hunt and McKay, 2015b), but the European Union has created a harmonised activity classification system that is widely used and was employed in this study (Eurostat, 2019). The 15-minute intervals rather than 10-minute interval version was used to reduce the well-documented burden of completion (Sonnenberg et al., 2012) also confirmed by the pilot.

4.4.5.3 **Addressing issues of bias**

Time-use survey guidance concerns large representative population-based samples and as such states a need for random allocation, to achieve this it suggests that diary records are best collected for every day of the year whilst also including entries from all variations of the population of interest (Hunt and McKay, 2012, Eurostat, 2019). This study describes one weekday at a key educational transition point at the start of the academic term and is therefore not representative of weekly' time-use or annual time use. Instead, the study describes the population chosen for the second qualitative study reported chapter 5.

24-hour time-use diary studies have been criticised for their vulnerability to recall bias and desirability bias (Sonnenberg et al., 2012). The author instructions to students on completing the time-use diaries, included, a request to complete the diary within 24 hours of the planned observation date and not to discuss their results with others. The first diary was completed in school; the second was to be completed over the weekend at home. The use of a school-based sample including all 16- and 17-year-olds in that year group reduces selection bias. Using two schools, with different socio-demographic profiles, increases the sample size but also enables description of the geographical and social differences of the schools. The inclusion of a second school also increases the diversity of the sample reducing possible bias towards white middle class participants and avoiding the under-representation of some ethnic groups.

4.4.5.4 **Piloting**

The study procedures, including the introductory presentations and questionnaire, were piloted with ten lower sixth form students from one school prior to data collection. The piloting led to modifications to the presentation, making it more succinct and engaging. Alterations to the time-use questionnaire include: removing questions of low relevance to the study, simplifying the instructions, and opting for 15-minute rather than 10-minute time windows to reduce completion time and responder burden. (For sample SDQ scores see Appendix 9.6)

4.4.5.5 **Data analysis**

Each recorded activity in the time-use diaries was coded using a unique activity code by the researcher according to the HECTUS three tiered coding system. In the coding system each activity code belongs to a sub category of similar related activities which in turn belongs to one of ten main categories (Eurostat, 2009). The main categories include: personal care (0), employment (1), school (2), household and family care (3), voluntary work and meetings (4), social life and entertainment (5), sports and outdoor activities (6), hobbies and computing (7), mass media (8), and travel and unspecified time use (9). The time spent in activities was explored at an individual level initially, before being grouped according to sub-categories and the main category level data. The data presented in this chapter is primarily presented as mean time use at a main category level, however specific sub-category data is also presented where it may be of relevance to adolescent health. For example under the HECTUS categorisation, the personal-care category incorporates sleep, eating and other personal care such as washing and dressing. In the results the sub-category of sleep is presented alongside the main Personal care category, because the potential association between sleep and mental illness is a current topic of research interest for those seeking to improve adolescent health.

A second researcher checked a sample of the survey data inputted into an Microsoft Excel (Microsoft Corporation, 2016) spreadsheet, to ensure that the paper responses matched those on the spreadsheet. The statistical program ‘SPSS’ was used to calculate aggregated mean time-use per occupation per individual which was used to describe the samples (Hellgren, 2014). Following the SDQ instructions (Youth in Mind., 2016), sub category summary scores and total scores were calculated. Issues with incomplete time-use diaries and self-report surveys is a known phenomenon

(McGinnity et al., 2005, Hunt et al., 2014), potentially affecting accuracy, reliability and validity of findings (Ayilara et al., 2019). Although Phipps and Vernon (2009) suggest studies show little bias due to non-response, missing data, the adopted management strategy is summarised for transparency.

Unlike the demographic and SDQ data, TUD variables are interconnected rather than independent, as they represent time spent in different occupation types which, when combined, must add up to 24 hours. The use of imputation methods such as carrying forward the last variable is questionable, because changing the time spent in one occupation type variable, direct impacts on the time spent in other activity types. Identifying the missing occupation type is difficult, thus decreasing the accuracy and reliability of the results. The literature suggests variety in the methods used to manage missing time-use data, with rationales primarily based on the intended study aim. Studies aiming to conduct statistical analysis and generalise to larger population typically use a combination of weighting and case-wise deletion to deal with missing data (Hunt et al., 2014, Gracia et al., 2019). Case-wise deletion was used by Hunt et al. (2014) following the precedent set by McGinnity et al. (2005) in which a >4-hour cut off was set which, if applied to this study, resulted in a loss of seventeen percent from a small cohort sample, and decreased the representativeness of these outcomes. A further case-wise deletion method use by (McGinnity et al., 2005, Hunt et al., 2014) involved excluding all school day diaries with less than sixty minutes spent in school. If applied to this study, two fully completed diaries would be deleted because participants were at home due to sickness. To exclude the possibility of a relationship between the missing TUD data and the SDQ scores, school, sex, and if they were born in the UK, Spearman's two-tailed test was used, to identify if the missing data occurred at random or reflected a particular bias. The analysis suggests a weak but significant relationship, between non-responder and school attended, and between non-responders and their place of birth, suggesting that TUD data is not missing at random (See appendix 9.5 for detailed for analysis).

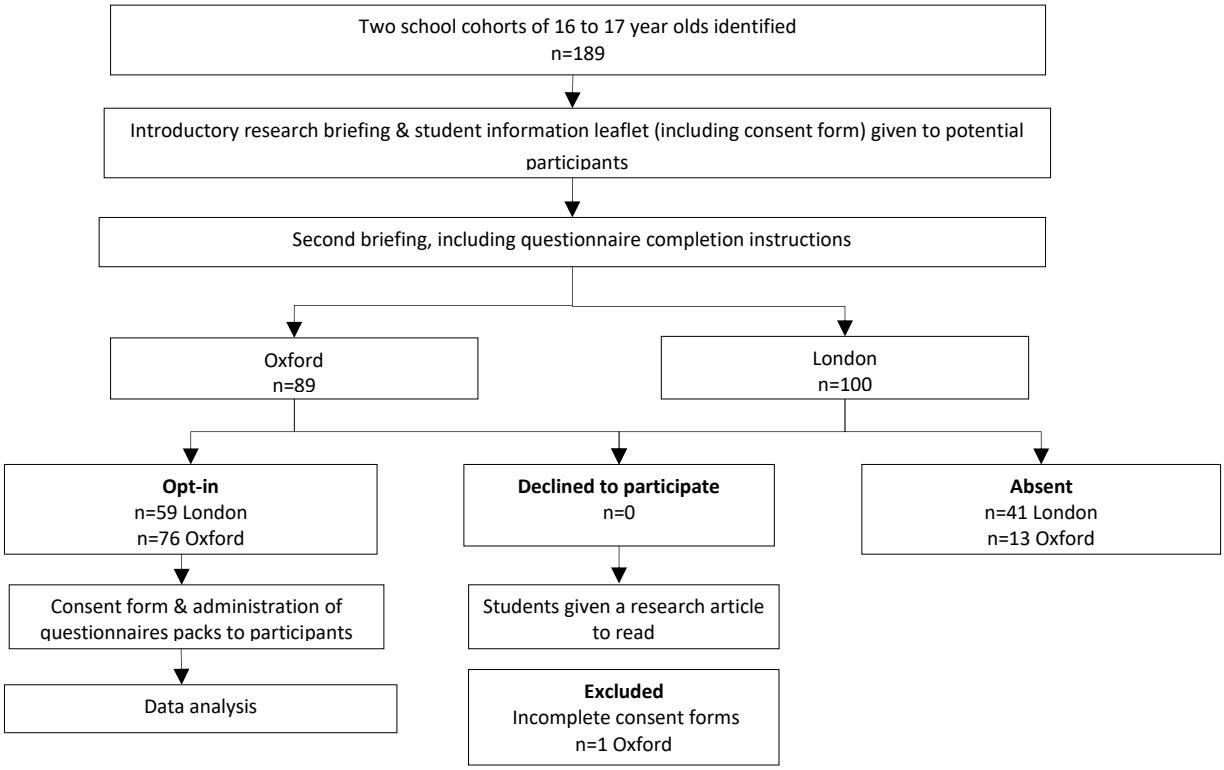
4.5 RESULTS

4.5.1 Recruitment and completion of measures

4.5.1.1 Recruitment

Two schools agreed to participate with a potential cohort from the two schools of n189 (n100 London and n89 Oxford), forty-one potential London school participants were lost due to absence, a concurrent activity booked by the teacher, or declined to take part. Similarly, thirteen potential Oxford school participants were lost due to absence or declined to take part. In total recruitment was n135 (71%) (See figure 4.1).

Figure 4.1: Study design



4.5.1.2 **Completion of measures**

135 questionnaires were completed. One set of responses was removed because of an incomplete consent form, therefore n134 (71% of the potential school cohort sample) are included in the data analysis. Due to poor return rates on the home-completed diary only the diary completed in school was analysed. Missing data from the biographical, SDQ and TUD questionnaires is reported below (Table: 4.2).

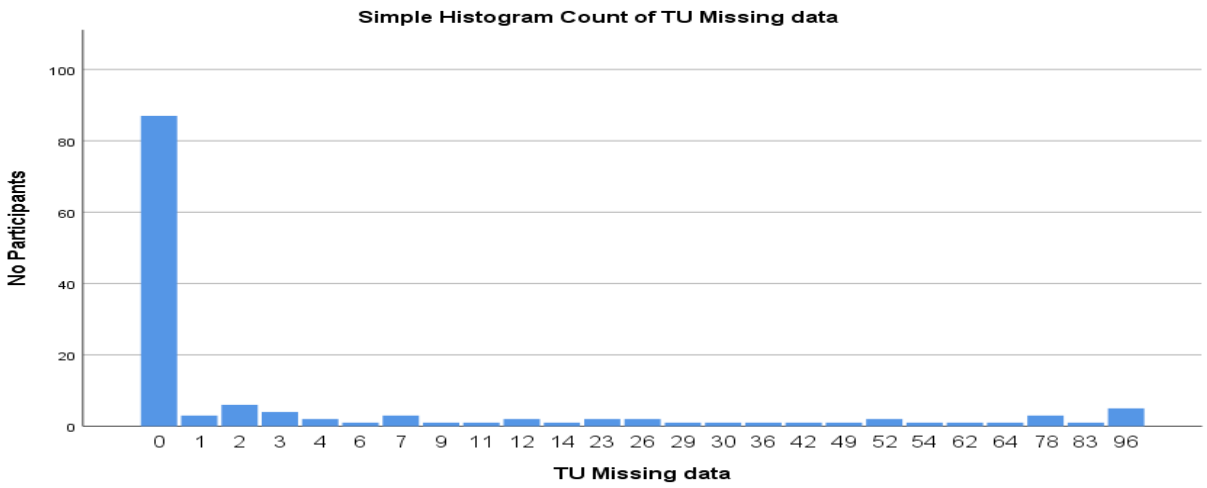
Table 4.2: Missing data summary

Data Description		**No. of variables**	**Total no. of individual observations**	**Total no of missing observations**	**% Missing**
Biographical Data		8	1072	5	0.47%
SDQ Data		5	804	19	2.36%
Sub Categories	*SDQ Emotion score*	*1*	*134*	*3*	*2.2%*
	SDQ Conduct score	*1*	*134*	*2*	*1.5%*
	SDQ Hyperactivity score	*1*	*134*	*5*	*3.7%*
	SDQ Peer Problems score	*1*	*134*	*4*	*3%*
	SDQ Prosocial score	*1*	*134*	*5*	*3.7%*
TUD		10	12864	1485	11.5%

The table shows that the missing data from the biographical and SDQ data is below four percent, the time-use data in contrast is nearly twelve percent of missing data. The SDQ guidance informed the management of the missing SDQ data. A closer look at the 134 TUD's identified that sixty-five percent (n87) are fully completed with activities ascribed to all ninety-six time points. While the remaining thirty-five percent (n47) of TUD's have some missing data ranging from one, fifteen minute time point to ninety-six time point observations equalling twenty-four hours, which is illustrated in the histogram below. The histogram (Figure 4.3) illustrates the wide distribution of the missing data across all items. Further analysis to investigate the nature of the missing data suggests a possibility

that the data may be missing at random (MAR) (See Appendix 9.7) rather than missing completely at random (MCAR), and missing not at random was not ascertained (MNAR).

Figure 4.3: Histogram of spread of missing data observations



Consultation with both study supervisors and an expert statistician regarding the management of missing data culminated in a decision not to impute or delete cases. A number of factors informed this decision, including the small sample size, the fact that missing data accounted for less than twelve percent of the sample, and the potential that imputation could distort the TUD data. Similarly, case-wise deletion at the four hours of missing data, as used by Hunt et al. (2014) and (McGinnity et al., 2005) would result in the loss of relevant SDQ data and affect the representativeness of the sample. Individuals with missing Data were included in the results.

4.5.2 Characteristics of the sample population

Out of a total of n189 potential male and female adolescent participants aged 16 & 17 years, from two schools, n134 (n59 London & n76 Oxford) completed questionnaires and are included in the following analysis. The characteristics of the sample are summarised in the table: 4.4.

Table 4.4: Percentage characteristics of the sample population

Characteristics				***Total Number***	***Total %***
School	Oxford (Female n35, Male n45)			n80	59.7%
	London (Female n20, Male n29)			n54	40.3%
Sex	Female			n55	41%
	Male			n74	55.3%
Ethnicity	***Place of Birth & Parents place of birth***	***Oxford Count***	***London Count***	***Total number***	**Total %**
	UK born & parents UK born	n71 (83%)	n15 (17%)	n86	64.1%
	UK born & parents not UK born	n4 (20%)	n16 (80%)	n20	14.9%
	UK born & missing parents place of birth	n1 (100%)	n0 (0%)	n1	0.74%
	Not UK born & parents UK born	-	-	-	0%
	Not UK born & parents not UK born	n2 (10%)	n19 (90%)	n21	15.6%
	Not UK born & parent data missing	n1 (50%)	n1 (50%)	n2	1.4%
First Language	English as a first language	n78 (76%)	n24 (24%)	n102	76%
	First Language not English	n2 (7%)	n28 (93%)	n30	22%
	Missing	0	2	n2	2%
Faith	Practices religion	n8 (21%)	n31 (79%)	n39	29%
	Does not Practice a religion	72 (78%)	20 (22%)	92	69%

Firstly, the table illustrates the sex and school characteristics in terms of the percentages of the population in each group. It goes on to illustrate the percentage of specific characteristics, such as ethnicity, first language and faith across the two schools, and then as a percentage of the total sample population. In addition to information provided in the table, those not born in the UK represent seventeen different countries including: Romania, India, Italy, Holland, Sweden, Hong Kong, Norway, Poland, Scotland, Spain, Russia, UAE, Somalia, Denmark, and Canada. Levels of religious practice varied. Faiths represented in the Oxford sample include, Buddhist (1.3%), Christianity (3.8%) and other (5.1%), while in the London sample faiths reported include, Islam (18%), Sikhism (10%), Christianity (7%) and other (1%).

4.5.3 Participants' SDQ total and sub-categories scores.

The SDQ 'total score' was calculated for 129 participants, of which seventy-nine adolescents (62.7%) had a total score of 'close to average'. The prevalence of reporting of difficulties were similar across each of the remaining three categories 'slightly raised', 'high' and 'very high'. Participants' sub-scores show that emotional problems were commonly reported, of which 19.4% reporting 'very high' levels of difficulty. Peer problems were also commonly reported, with 22.4% reporting 'slightly raised' scores, and those with 'very high' scores account for nine percent of the sample. Conduct and hyperactivity problem were less commonly reported.

Table 4.5: Total SDQ and Sub category Scores

		Total	Emotional	Conduct	Hyper-activity	Peer Problems	Prosocial
N	Valid	126	131	132	129	130	129
	Missing	8	3	2	5	4	5
Mean		12.91	4.06	2.33	4.2	2.41	7
Mode		8	5	1	4	2	8
Median		13	4	2	4	2	7
Std. Deviation		5.487	2.731	1.905	2.071	1.617	1.92
Minimum		2	0	0	0	0	1
Maximum		30	10	8	9	8	10
Range		28	10	8	9	8	9
Close to Average		79 (62.7%) (F52% & M70%)	69 (51.5%) (F30% & M70%)	98 (73.1) (F74% & M73%)	95 (70%) (F75% & M70%)	76 (56.7) (F48% & M67%)	79 (59%) (F75% & M50%)
Slightly Raised		20 (15.9%) (F17.5% & M14%)	22 (16.4%) (F20% & M13%)	13 (9.7%) (F11% & M9.5%)	19 (14.2%) (F17% & M14)	30 (22.4) (F30% & M18%)	24 (17.9%) (F11.5% & M25%)
High		13 (10.3%) (F17.5% & M6%)	14 (10.4%) (F11% & M10%)	12 (9%) (F11%& M8%)	4 (3%) (F4% & M3%)	12 (9%) (F13% & M5%)	13 (9.7%) (F4% & M14%)
Very High		14 (11.1%) (F13% & M10%)	26 (19.4%) (F39% & M7%)	9 (6.7%) (F4% & M9.5%)	11 (8.2%) (F4% & M13%)	12 (9%) (F9%& M10%)	13 (9.7%) (F9.5% & M11%)
SDQ UK Means 5-15yrs Sample norms		10.3	2.8	2.2	3.8	1.5	8
UK SDQ 5-15yrs Std. Deviation Sample norms		5.2	2.1	1.7	2.2	1.4	1.7
UK SDQ Means 17-22 yrs. 2020 (ONS data)		12.3	4	1.8	4.1	2.4	8

Key: F= female & M= male, calculated as a % of female or male sample for the category

The table illustrates the number and percentage of the sample who report 'close to average', 'slightly raised', 'high' and 'very high' levels of difficulty for the total SDQ score and each of the five sub-scores. Those participants reporting high or very high levels of difficulty represent twenty percent (n27) of the sample. In the female proportion of the sample fifty-two percent report 'close to average' total score. In relation to sub-scores thirty-nine percent of the female participants reported 'very high' emotion scores, four percent reported difficulties with hyperactivity and conduct, while seventy-five percent of female participants reported 'close to average' scores for the prosocial domain. In the male sample, seventy percent of reported total SDQ scores were within the 'close to average' range. In terms of sub scores seven percent of the male participants reported 'very high' emotion scores, thirteen percent reported 'very high' problems with hyperactivity and fifty percent reported 'close to average prosocial scores'

4.5.4 Time-use

In the sample, on the school day recorded, participants' mean time in sleep was reported as 451 minutes (7hrs 30 min), mean time spent in physical activity was thirty-nine minutes, mean time spent on mass media was seventy-eight minutes (1 hr 18 min), mean time spent in study related activities was 395 minutes (6hrs 35minutes) and computer gaming mean time was forty-nine minutes. Mean time spent in creative activities was five minutes and mean time in household chores came to seventeen minutes (See table: 5.6).

There were some interesting observations in time use for males and females. Perhaps most notable was male students spending eighty-three minutes (1 hours 23minutes) gaming and only five in hobbies. Whereas females reported spending five minutes gaming and in hobbies. In the male sample, the mean sleep time is 7 hour 41 minutes and the female sample is 7 hours and 15 minutes.

The table 5.6, illustrates the average number of 15-minute units per person, followed by the average total time in minutes per person. The table goes on to illustrate the number of male and female participants respectively reporting each category of occupation, the maximum number of 15-minute units of time recorded and the average number of 15-minute time units for each occupation type by Sex.

Table 4.6: Time-use categories by sex

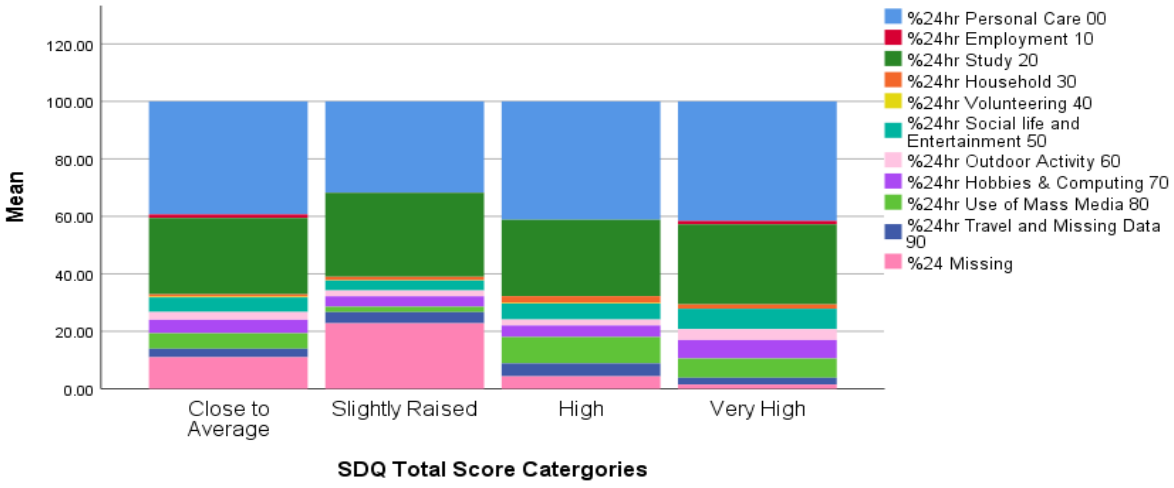
Occupation Type	Total Participants	Total Mean Time units	Mean Time in Minutes	Male					Female				
				N. of Participants	Maximum n. time units	Std. Deviation	Male Mean Time units	Mean Time in Minutes	N. of Participants	Maximum n. time units	Std. Deviation	Female Mean Time units	Mean Time in Minutes
Personal care - All	134	37.21	558	74	93	9.3	13.381	201	54	77	9.2	36.1	541
Sleep	134	30.04	451	74	74	7.4	30.73	461	54	69	7.2	29.02	435
Eating	134	4.62	69	74	30	1.1	4.786	72	54	20	1.1	4.69	17
Other	133	2.76	41	74	11	0.4	2.256	34	54	12	0.6	3.7	8
Study & study - All	132	26.36	395	73	45	8.9	24.64	370	55	53	11.2	28.04	167
Mass Media - All	131	5.19	78	73	43	7.3	5.68	85	53	29	6.9	4.96	103
Reading	134	0.25	4	74	7	0.8	0.9	14	55	8	1.4	0.47	21
Social media	134	0.41	6	74	10	1.8	0.53	8	55	7	1.2	0.29	18
listening to music	134	0.22	3	74	8	1.5	0.38	6	55	1	0.1	0.2	2
Watching	134	4.23	63	74	42	8.2	4.72	71	55	29	6.7	3.93	101
Social life entertaining - All	134	4.79	72	74	25	6.1	5.04	76	55	23	5.6	4.67	84
Hobbies and computing -All	129	4.66	70	73	41	10.0	7.36	110	54	29	4.6	1.25	69
Creative hobbies	134	0.35	5	74	23	2.7	0.31	5	55	18	2.5	0.44	37
Computer gaming	134	3.27	49	74	41	9.3	5.55	83	55	14	2.4	0.49	36
Travel-All	133	3.04	46	74	79	18.0	9.61	144	53	79	16.6	10.21	249
Physical activity -All	131	2.57	39	73	17	3.7	2.72	41	53	15	3.4	2.72	51
Household -All	129	1.12	17	72	7	1.5	0.65	10	52	17	3.7	1.87	55
Employment - All	134	1.83	27	74	18	3.9	1.03	15	55	19	3.3	0.64	50
Volunteering and meetings - All	126	0.21	3	72	3	0.4	0.06	1	49	6	1.3	0.33	19
TU Missing data-All	134	11.08	330		96	24.8	9.59	330				12.16	330

4.5.5 Time-use and SDQ

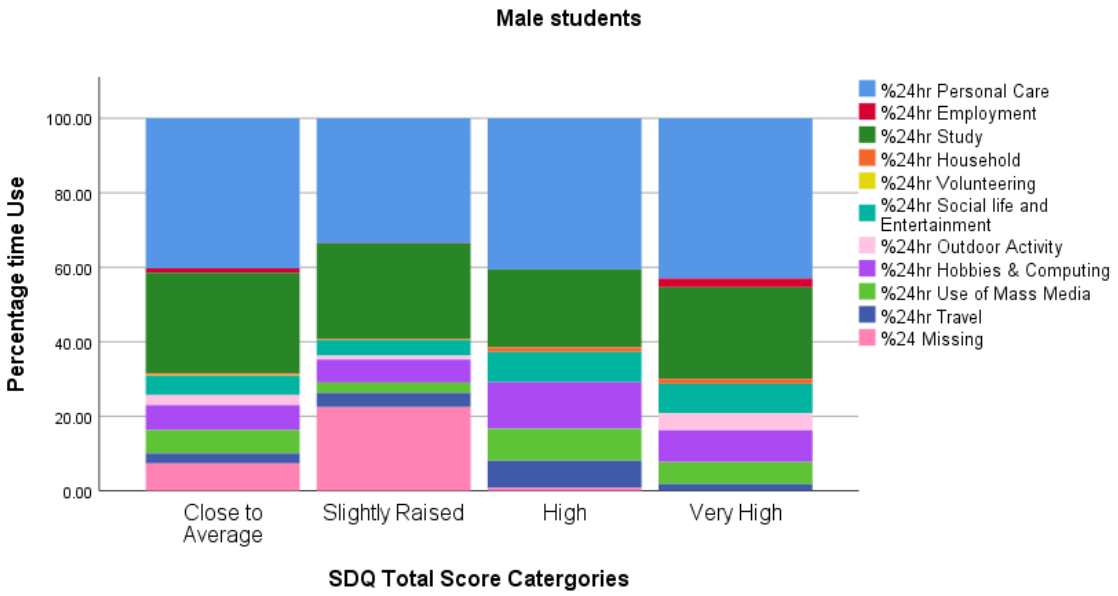
The following section looks at 24-hour time-patterns and SDQ total scores. A bar chart displays the data, with each of the four total SDQ score categories represented by one stacked bar. Each stack on the bar chart represents a different main occupation type.

Figure 4.7. Students appear to spend a similar amount of time in study across the different SDQ categories. Percentage mean time spent in 'Personal care' also appears similar across SDQ groups, with the exception of the group of students with 'slightly raised' total SDQ scores. Time spent in outdoor occupations and socialising occupations appear to be similar across the SDQ groups. Mass media use appears to be higher in the two higher total score SDQ categories. Missing data is highest in the lower two Total SDQ score categories. Also noteworthy is the fact that the time spent outdoors or in physical activity is less than half of the combined time spent in indoor activities (other than physical activity) such as socialising, social media and computing.

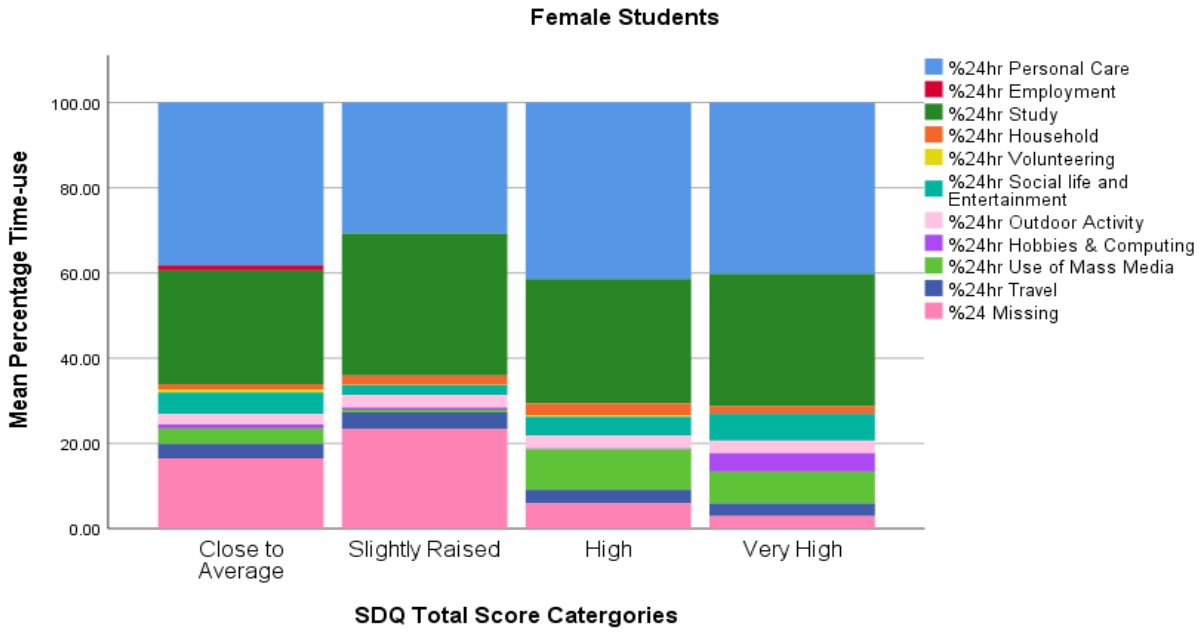
Figure 4.7: 24 hour mean percentage time-use per occupation type by SDQ total score



4.8 Figure: Male 24-hour mean percentage time-use per occupation type by SDQ total Score



4.9 Figure: Female 24-hour mean percentage time-use per occupation type by SDQ total score



4.5.6 Feasibility Issues

This final results section reports on the feasibility issues encountered during data collection and analysis based on the researcher's reflective log completed during the data collection and analysis phase. As previously stated the SDQ questionnaires had a good completion rate, but the quality and extent of the time-use diary completion varied across the sample. The feasibility findings relate to two groups, feasibility issues related to questionnaire completion and those related to analysis.

The school priorities and school environment significantly shaped and affected questionnaire completion. In one school an alternative activity had been organized for a group of students for the same day preventing them attending the data collection and therefore reducing the sample size. Another school related factor was the available location to present and brief students about the research and questionnaire completion. In one school this was an auditorium, while the other was a sixth form common room with poor acoustics and limited space. Only twenty out of 134 weekend diaries were returned. The data collection took place the week before half term in one school and despite teachers prompting, very few students returned their diaries after the half term break.

A review of the completed time-use diaries highlights variability in the quality and detail of activity recording with some including a high level of detail. The time-use diary was located after the SDQ questionnaire and required reflection to complete. Concerns were raised by a couple of students from a BAME background about confidentiality, expressing concern about sharing information. Feedback from those assisting the data collection suggests that there were also some language difficulties and evidence of poor reading ability, especially among those from different ethnic backgrounds.

The second group of feasibility issues relates to analysis of the completed questionnaires. Participants wrote activities in their own words, which were converted into the HECTUS coding system. The conversion process required the researcher to use the wider diary context to interpret some responses due to ambiguity, and overlap between categories. Where responses remained unclear they were left blank. A further issue emerged around classification of types of activity involving technology such as smart phones or computers for example listening to music or doing homework can also involve using a computer or mobile phone. Alternatively a participant may state using their mobile phone but not what activity they did using their phone.

4.6 DISCUSSION

4.6.1 Study outcome

Cross-sectional time-use surveys provide a momentary window on an individual's occupational engagement, in this case a day described in terms of SDQ and time use by lower sixth-form school day at the beginning of the academic year. Two schools participated in the study and 134 (71%) of invited participants were recruited, 59.7% of whom were male. The completion of measures was high, achieving 96% of SDQ and 88.5% of TUD data points and 90% overall. Observations from the SDQ showed that peer and emotional problems were common at 43.3% and 48% respectively, with 29.8% (emotion) and 18% (peer problems) meeting the score for clinically significant mental health difficulties. The incidence of clinically significant levels of mental health difficulties in this population sample appear consistent with the 2020 NHS Digital (2020) SDQ data for 17 to 22 year olds (see table 4.5). This suggests that the SDQ scoring in this sample population may be similar to other larger UK samples. Observations from the TUD suggest that there was a range of time-use across the participating young people and some variation across sexes, such as high screen time in males but not females, with an important observation of lower than recommended sleep for most of the sample. Taken together, the study supports the need for a fully powered study across this age group across the UK. Twenty-two participants were successfully recruited into the follow-on study with representation of sex, eleven female and eleven males.

The sample included a good representation of people from different ethnic backgrounds, with twenty-two percent of the sample participants for whom English was not their first language and a smaller group (14.9%) whose parents were not born in the UK with one school located in an affluent rural area and one in an urban, economically deprived area. Ethnicity has been associated with poorer mental health, access to mental health services and outcomes (Vines et al., 2017, Sashidharan and Gul, 2020). One school was located in a more rural and affluent area and the other in a more economically deprived urban area, which may account for the variation observed between the findings in each school. For example, wealth and environment are identified as determinants linked to health (Beye et al., 2016, Wahid et al., 2021). Although the sample was not powered for inferential statistics, but rather for addressing feasibility questions, the results suggest that further examination of the differences between adolescent time-use patterns, culture and economically different groups may be warranted and of value.

The SDQ total score provides insight into the levels of potential mental illness in the sample, with 62.7 % of responses falling into the 'close to normal category' and 15.9% into the 'slightly raised category'. Similar to the national average of one in four 17 to 19 years olds (NHS Digital, 2018) those in the sample presenting in the 'High' and 'Very high' categories, clinically significant scores (Youth in Mind., 2016), equates to 21.4% of the sample. A comparison of the sample with the UK normative dataset and a US dataset (Reported in the Appendix 9.8), suggests the distribution of the current scores is comparable, this suggests that the SDQ scores are likely to be representative. Another notable finding from the sample is the SDQ emotion scores, especially for female participants. Female participants above the clinical threshold for emotional symptoms equate to fifty percent, and male participants equate to only seventeen percent. Again consistent with UK national data, emotional difficulties are the most common type of difficulties with prevalence being higher amongst females (Youth in Mind., 2016).

The findings suggest that on a school day in a 24-hour period, the participants in the sample are on average are getting 451 minutes sleep, 39 minutes physical activity a day and 129 minutes screen time. The sample population's mean sleep scores is below that of a UK sample of 10 to 17 year olds reported between 2009 and 2015, in which the mean sleep score was 577 minutes (Gracia et al., 2019). Similarly, sample population mean sleep scores are below those reported in an Irish population of 15 to 19 year olds which reported 495 minutes (Male) and 480 minutes (Female) (Hunt et al., 2014). Interestingly sample data and the data presented in Hunts study, both suggest that male participants get more sleep than female participants. Mean time spent in physical activity (39 minutes) in the sample is slightly higher than another UK data set of 11 to 17 year olds reporting thirty three minutes, which appears to be lower than the mean time spent in other European countries such as Finland (46 minutes) or Spain (50 minutes) (Gracia et al., 2019). This suggests that the sample population gets less sleep and less exercise than other samples of a similar age.

Considering the study findings against the recently published Canadian guidelines on 24-hour time-use for those under 18 years of age (Tremblay et al., 2016), suggests the sample time-use characteristics are lower than may be ideal for optimal health. The guidelines suggest 14 to 17 year olds need between eight and ten hours sleep, more than sixty minutes exercise, and less than two hours of recreational screen time a day (Tremblay et al., 2016). These guidelines have been associated with improvement in health (Sampasa-Kanyinga et al., 2020).

Sleep is a multidimensional construct, which when studied is often separated from the occupations and related trade-offs that affect or influence how much time is spent engaged in sleep (Matricciani et al., 2018). Essential for optimum functioning, sleep affects emotional regulation, cognitive processing and the executive functioning required to learn (Bowman et al., 2020). Existing studies, summarising the effects of poor sleep, as a risk indicator for early mental illness, with potential to affect school engagement and performance (Bowman et al., 2020, Wahid et al., 2021). Combinations of sleep, physical and sedentary occupations have been associated with ill health (Grgic et al., 2018) and with depression and mental illness in 5-17 year olds study (Sampasa-Kanyinga et al., 2020).

Screen time is also thought to have an effect on mental health (Sampasa-Kanyinga et al., 2020). Another striking characteristic from the time-use data in terms of screen time is that male participants spent seventy minutes on average playing computer-based gaming activities, where female participants spent nineteen minutes on average. The average mass media time-use appears highest for those with 'high' or 'very high' categories SDQ scores, but particularly for female participants. In the literature, the relationship between recreational screen time and mental health is described as complex (Keles et al., 2019). The impact of screen time such as social media on mental health is a relatively new area of research, affected by multiple confounders (Kelly et al., 2018, Keles et al., 2019, Orben et al., 2020). While some studies have suggested a correlation between the two they cannot establish causation (McCrae et al., 2017, Keles et al., 2019). It is interesting to note that in Ferrar et al. (2013) systematic review of time-use clusters, produced from modelling analysis that a 'techno –active' category consistently emerges that is predominately male, and found consistent differences across studies in relation to sex. Previous studies in adolescent populations have also identified sex differences (Hunt et al., 2014, Hunt, Eithne et al., 2015, Kelly et al., 2018, Orben et al., 2020). Taken together this evidence suggests that sex related time-use patterns are an important factor for consideration when developing time-use or activity related interventions.

Four types of time-use were described by Ås (1978) and further highlighted by Hellgren (2014). These are, 'necessary time' akin to self-care; 'contracted time' which a person is obliged to do, such as school; 'committed time' such as volunteering or housework; and 'free time', the remaining time after the other forms of time-use are fulfilled. In the reality of a 24-hour trade-off, adolescent choices to engage in online activities typically occur during 'free time', meaning less time spent in other activities. If this is the case, it may account for the noticeable fact that few adolescents spent time engaged in hobbies and volunteering-type activities, despite its potential value to wellbeing (All-Party

Parliamentry Group on Arts Health and Wellbeing, 2017). The nature and impact of occupational trade-offs and occupational choices is an area of study that would benefit from further exploration, particularly from a qualitative perspective.

Whilst the study was set up to determine feasibility of recruitment, and completion of measures, and to recruit to a follow-on study, the observations support the potential for use of time-use alongside mental health as measured by strength and difficulties questionnaire. Initial observations are interesting although not powered to appropriately explore statistical differences. The results provide a picture of contemporary adolescent time-use in the sample population alongside patterns of mental health and illness that are consistent with prevalence reported in other populations. While this data provides an objective view, it does not account for how adolescents choose and prioritise what activities to do, or how the activities they choose influence their experience of mental health. This subjective perspective is equally important to understanding contemporary adolescent occupational engagement.

4.6.2 Strengths and limitations

This study is one of few studies using a 24-hour time-use study with a school-based cohort to describe and explore adolescent time-use in relation to health outcomes. As far as the author is aware, this study is the only one to describe time-use as reported in time-use diaries in relation to self-report SDQ in a UK adolescent population. The study forms part of a novel mixed method design, thus addressing the criticisms that time-use data does not consider the subjective aspects of time-use (Ellegård, 2019). The use of mixed methods is increasingly encouraged within health research, ideally combining the strengths of both the quantitative and qualitative approaches, but ultimately necessitates a compromise. Feasibility testing of these methods, in conjunction with the mixed method nature of the study, influence what data and how much is collected, affecting statistical power. Thus, caution is required when interpreting the data beyond the sample, although it is a notable strength that both the SDQ and the time-use characteristics observed are consistent with other relevant literature.

The cross-sectional nature of the study provides a heterogeneous school cohort of 16 and 17 years old students, illuminates the prevalence of potential mental health difficulties in that sample, and illuminates patterns of time-use in a cost effective way, but prevents exploration of causal relationships or prediction of outcomes (Leufstadius and Eklund, 2007). Cross-sectional time-use studies present one moment in time and the current study concerns one school day in the beginning

of the academic school year starting a new academic qualification. It does not account for how SDQ or time-use might differ at weekends, or across the academic year, such as exams or holidays. Nor can it account for the impact of unexpected events such as pandemics. An argument exists that longitudinal studies are needed (Hunt and McKay, 2012, Orben et al., 2020) which can look at patterns across the year and if suitably powered could also explore causal relationships.

A further strength of this study is that 'opt in' rates are high in comparison with other school-based time-use studies, reporting sixty percent and fifty-two response rates (Hunt et al., 2014, Gracia et al., 2019), and overall the level of missing data was low. Primarily the missing data was 'missing at random,' and originated from the time-use diaries. Inspection of the diaries highlighted that participant reporting varied in terms of level of completeness, quality and accuracy, which may be attributable to a number of factors. Firstly, the known completion burden associated with the method may be responsible (Phipps and Vernon, 2009). Although often regarded as burdensome to complete, the time-use diary is considered preferable to the alternative real time sampling method known as the Experience Sampling Method (ESM) (Desha and Ziviani, 2007, Vilaysack et al., 2016) which has a number of drawbacks in the context of a school-based study. These include: cost of administering, intrusive nature of alerts, the risk of not hearing alerts, being unable or unwilling to enter data under certain circumstances such as being in class or with friends, and does not allow for accurate calculation of time spent in activities (Desha and Ziviani, 2007). Secondly, the lack of participant familiarity with the diary method may have contributed, given the complexity and detail of the instructions. Thirdly, given the ethnic diversity of the population, language barriers or cultural issues may have contributed to lower completion rates, and should be considered in the future. To address these issues, future research could consider providing additional guidance and opportunity to practice with the diary, use a structured digital diary format, or alternatively use a simplified category-based condensed version of the time-use diary.

Finally, activities such as using social media, listening to music, or searching the internet were frequently reported, but as secondary activities or used alongside other activities, and are reported in this chapter. This means that time spent using mass media is likely to be greater than that presented, although beyond the scope of this study, further analysis of this data can provide insights into the use of technology amongst 16 and 17 year olds. A potential ambiguity emerged during the analysis of the self-completed time-use diaries in relation to technology related occupations, specifically blurring of occupational boundaries. For example, 'using my phone', could imply social media, phoning a friend,

surfing the internet, texting a friend, streaming, or listening to music. Whilst this represents a potential source of bias that needs considering when planning future studies, it also raises two important questions that would benefit from further exploration: in what way do adolescents define the occupational boundaries of technology use? And, what impact do these technology-related occupational boundaries have on health, versus more traditional, singular occupation types?

Those wishing to conduct similar studies or use these measures to screen cohort populations should consider the development of a user friendly digital platform for administering the questionnaires, especially the time-use diaries. A digital platform can provide additional support and prompts to improve questionnaire completion and avoid the feasibility issues identified. Such a platform could also help to clarify if activities are conducted using technology or not, whilst also reducing completion burden.

4.7 CHAPTER SUMMARY

The second study in this five-study project has determined the feasibility of recruitment and completion of measures, highlighted feasibility challenges, described the SDQ and time-use characteristics of the sample, and provided a purposive sampling frame for study two. The study has highlighted that the combined administration of time-use diaries and SDQ with adolescents aged 16 to 17 years, in the school context, is achievable, and the data appears representative against normative data for the population. The measures are appropriate, but some feasibility issues could be improved before using in the context of the planned intervention.

In the study sample, adolescent screen time, sleep, physical activity, and leisure-related daily time-use may be less than optimal for health, and further well-powered research to explore the applicability of these findings to a wider population sample is necessary. The study has also highlighted some interesting findings in relation to this population, including sex, ethnicity, the influence of technology on time-use, the effect of geography on time-use, and the patterns of 24-hour time-use in relation to health, highlighting the need for further research. This study serves to inform a developing understanding of occupational development in 16 to 17 year olds and provides normative information of use to occupational therapists working with this age group.

5 CHAPTER 5, STUDY 3. AN EXPLORATION OF OCCUPATIONAL CHOICES IN ADOLESCENCE

This is an adapted version of the author's original manuscript of an article published by Taylor & Francis in the Scandinavian Journal of Occupational Therapy on November 2020, available at https://doi.org/10.1080/11038128.2020.1839965

5.1 INTRODUCTION

This next chapter reports the third part of this mixed method project and involves a purposive sample of students who came from the previous study reported in chapter 4. The content of this chapter explains the background and methodology of a qualitative grounded theory study, exploring the subjective perspectives of adolescent time use. Specifically, how, and why adolescents choose to engage in an occupation and its impact on them. The 'theory of adolescent occupational choice' presents a model based on the perspectives of 27 adolescents who participated in 6 focus groups, which informs the aspects, structure and content of the intervention reported in chapter 7.

5.2 BACKGROUND AND RATIONALE

Adolescence is widely regarded as a sensitive and critical period of development (Lassi et al., 2015). The period is associated with neurological, psychological, physiological, emotional, social and economic development (Patton and Viner, 2007, Viner et al., 2012, Lassi et al., 2015), as well as development of the occupational competence required for adult roles (Taylor, 2017). Today's adolescents are developing in a rapidly changing world facing increased uncertainties such as increased occupational choice, changes to normative working patterns, increased 'free-time', and existing in a culture of individualism as well as a digital online age in which behavioural norms are still being established (Arnett, 2010, Coleman, 2010). Health behaviours are established during this critical period, consequently the study of adolescence is of particular interest to those hoping to improve the health of this population (Sawyer et al., 2012).

The human experience of health, wellbeing and identity has been linked to the activities or occupations in which people engage (Wilcock, 1998). The relationship between what a person does

and the experience of health and wellbeing is complex, and is thought to be influenced by the meaning, purpose, value and balance of occupations (Eklund et al., 2003, Eklund and Leufstadius, 2007, Persson et al., 2009, Eklund et al., 2017a). This occupational perspective is an area of increasing interest to those seeking to promote health. New terms such as 'lifestyle psychiatry' are being used to describe evidence such as the link between engaging in physical activities and mental health (Firth et al., 2019).

According to a moral and ethical argument, complex interventions designed to improve health and health related behaviours should be based on evidence based logic models (Craig et al., 2006). Effective promotion of healthy occupational patterns and behaviours in adolescence that endure into adulthood require an understanding of the adolescence occupational nature, experience and perspectives. The presence of the adolescence perspective is limited, in both in occupational therapy, the occupational science theory and the empirical research literature. Time-use studies have begun to illuminate the complexity of adolescent occupational patterns in relation to health, but research to date has been mainly quantitative in nature. Furthermore, existing research fails to consider trade-offs between necessary and desired occupations and focuses mainly on single types of activities, for example, the impact of time spent in sedentary activities versus time being physically active (Hunt, E. et al., 2015).

Similarly, the extent to which the empirical base of occupation-focused models reflect the occupational nature of children and adolescence is questioned (Widmark and Fristedt, 2019). This raises the question to what extent adolescent occupational choices are the same or different to that of adults. The concept of 'Occupational choice', defined in the Model of Human Occupation (MOHO) as "deliberate commitments to enter an occupational role, acquire a new habit, or undertake a personal project" (p14 Taylor, 2017), is also currently debated, particularly by those interested in adolescent or mental health perspectives. 'Occupational choice' as represented by the Model of Human Occupation (MOHO), and also other models such as the Canadian Model of Occupational Performance and Engagement (CMOP-E) or the Person-Environment-Occupation-Performance Model (PEOP), is regarded as basically individualistic, with limited conceptualisation of how choices are shaped by the externally situated environmental determinants (Gallagher et al., 2015, Galvan et al., 2015). Taken together, to inform a logic model, we propose the need for research that delves thoroughly into a variety of external factors, and specific examination of the subjective process by

which adolescent populations make choices between one occupation and another on a daily basis, particularly in late adolescence.

Late adolescence, typically categorised as aged 15 to 19 years of age (World Health Organisation., 2018a), is an important educational transition point and a key time for the onset of mental health problems, which typically occur between 14 and 18 years of age (Kessler et al., 2007). Rising levels of reported mental health problems among adolescents has placed increasing strain on services with few young people receiving timely and effective treatments (Patel et al., 2007, Patel et al., 2018). Untreated or inappropriately treated illness can cause disruption to the normal development of occupational patterns, behaviours and choices with long-term implications for future functioning (Mei et al., 2019). Improving our understanding of how young people make choices can inform the development of occupation-based interventions to improve health outcomes during this period.

This study focuses on deepening understanding of occupational choice during the critical period at a key educational transition point within many school systems system. The ultimate purpose of the study is to inform the logic model of a larger study to develop an occupation-based intervention, to improve the mental health of 16 to 17 year olds in a mainstream school environment.

5.3 STUDY AIMS AND OBJECTIVES

This study aimed to explore the processes involved in choosing occupations from the perspective of late adolescents in mainstream school and to develop a proposed theory to explain these processes.

5.4 MATERIALS AND METHOD

A qualitative methodology was chosen for this study, because it is considered to be best suited to understand the experience, meaning and perspectives of participants (Hammarberg et al., 2016). This methodology enables exploration of how adolescents make choices and why. An open-ended, inductive constructivist grounded theory method was selected for its potential to build both substantive and general theories from qualitative data (Birks and Mills, 2011, Corbin and Strauss, 2015, Charmaz and Belgrave, 2018).

The constructivist approach to grounded theory, proposed by Charmaz, considers knowledge and truth as created rather than objectively knowable, and emerging theory as co-constructed between researcher and participants, through the interactive research process (Charmaz, 2006, Birks and Mills, 2011, Charmaz, 2017, Charmaz and Belgrave, 2018). This methodological approach was considered appropriate because it enables exploration of connections, identification of process, construction of theory, and acknowledges the researcher's involvement and impact on the research process. This enables the researcher to conceptualise how young people make occupational choices, and achieve the study aim.

5.5 RESEARCHERS' CHARACTERISTICS, REFLEXIVITY AND TRUSTWORTHINESS

The constructivist perspective acknowledges that studying a phenomenon influences both the data collected and its interpretation, and no consensus view between researchers is considered necessary (Charmaz, 2006). The primary researcher (first author), who is from a white British, middle-class background with nineteen years clinical experience as an occupational therapist aimed to critically examine personal responses, avoid assumptions not grounded in the data, and ensure fidelity to constructivist grounded theory methods. Three female co-authors provided a critical and analytical reflexive space for the primary researcher to discuss emerging ideas. The background of the co-authors includes; experience of conducting research, a professional qualification as an occupational therapist or physiotherapist, and different cultural backgrounds including British, Swedish and American

5.6 STUDY DESIGN

A focus group method was used as it provides an insight into the complexity of everyday interactions and normative assumptions (Kamberelis and Dimitriadis, 2011), whilst also being considered a less intense and more acceptable method for adolescence than one to one interviews (Kitzinger, 1995). The method was chosen as it provides an opportunity to engage with the complexity of group dynamics and how people position themselves in their environment (The World Medical Association, 2011). Time constraints related to limited access to the school environment was a further rationale

for the use of focus group rather than individual interviews, allowing involvement of more students. A first group was run to pilot procedures and later included in the main study.

5.6.1 Recruitment, sampling and study procedures

The first five participants were recruited purposively through conveniently available personal networks for the pilot group. The remaining participants were recruited from two schools involved in multi-phase study to develop an occupation-based intervention, the first phase of which involves a quantitative study examining time-use in relation to mental health. In this earlier quantitative study gaining access to schools for research purposes had been difficult. The primary researcher emailed over 20 local schools inviting them to participate in the study.

The first school recruited was situated in a low income, highly urbanized area with a broad range of ethnic diversity and was the only one to respond to the email recruitment method. A minimum of two schools were need for the earlier quantitative study; therefore a second school was recruited via a teaching consultant who, using her connections, approached further schools about the study. The second school recruited was situated in an affluent semi-rural location with a mainly white British population. Information was provided to the headmasters of both schools prior to acquiring signed consent for school participation. Gate keeping responsibilities were delegated to the heads of year following a research protocol briefing.

Across both schools a total of 135 typical year twelve students (aged 16 to 17 years) participated in the quantitative study and were invited to indicate their interest in being contacted about participating in focus groups. The original research design intended to construct a stratified sampling frame based on adolescent time use and mental health from which to purposively select participants. Twenty-three indicated an interest in participating in a focus group. The low opt in rates meant that the planned stratified sampling frame, was not possible. Therefore, all twenty-three students were invited to participate and given further information before being asked for signed consent. One student indicated an interest in participating but chose not to take part for personal reasons after reviewing the study information and discussing alternative ways to engage. Following the low response rate the pilot group was also incorporated into the analysis and viewed as an earlier iterative stage of the analysis process. A total of six focus groups were conducted in English with a total of twenty-seven adolescents which included the twenty-two of the twenty-three who volunteered from the schools and the five participants from the initial pilot group.

5.6.2 The sample description and demographics

All twenty-seven participants spoke English, had recently completed their General Certificates of Secondary Education (GCSE), attended a mainstream local secondary comprehensive school and were either due to start or had just started the first semester of year twelve. Sixteen females and eleven males took part, twelve participants came from the semi-rural school and fifteen from the urban school, while the pilot consisted of five English speaking, UK born females. The urban school sample was ethnically diverse with eight participants born outside of the UK (Romania, Russia, India, United Arab Emirates and Afghanistan), and nine of the participants (33% of the total sample) identified as non-white, such as Black or Asian. Two disclosed that they had previously been schooled in India. All participants had previously completed their English GCSE qualification, demonstrated a good understanding of the English language and engaged actively and fluently in English throughout discussions.

5.6.3 Ethical considerations

The study was approved by a University Research Ethics Committee (UREC no. 181192) (See appendix 9.1) and compliant with the good clinical practice (GCP) and requirements of the Helsinki declaration (The World Medical Association, 2011). Those aged 16 and over are considered able to give informed consent to participate in research studies of this nature. However, in the school setting, it is considered appropriate to keep parents informed about what occurs within the school environment as those under the age of 18 are still considered to be children. Consequently, parents were also informed about the study.

5.6.4 Data collection

All participants were briefed on the ground rules, their rights and what to do if they felt distressed while participating. The focus groups were conducted on school premises during self-directed study

periods and each participant was given an online shopping voucher for 20 pounds to acknowledge their contribution.

An adapted version of an interactive card sorting activity developed for 13 to 24 years olds called the Activity Card Sort - Adolescent, Children and Young Adult (ACS-AYA) (Ediger and O'Day, 2011) was used as an warm up exercise for the focus groups leading into the semi-structured topic guide (see Figure 5.1). The tool uses photographs depicting different activities to elicit lived experience of engaging and participating in activities (Ediger and O'Day, 2011, Berg et al., 2015). The purpose of using ACS-AYA was to promote rapport (Hennink, 2014), active participation, engagement in the topic of enquiry (Kitzinger, 1994), and develop of rich data. The semi-structured topic guide then formed the main structure of the interviews (see Figure 5.1). Additional prompt questions were used to explore responses related to the impact of occupational choices. Adaptions were also made to the topic guide between focus groups.

5.1 Figure: Initial semi-structured topic guide

Semi-structured topic guide
Thinking about the activity (ACS-AYA Cards) you just completed: -
1) Is there any thing you notice about the task you just completed?
2) Are there any activities that are not here that you do? Alternatively, are there activities that you used to do but no longer do? Why did you stop doing these activities?
3) Of all the activities, you have identified that you do, are any more important or more meaningful to you than others are?
4) Can you explain why ACTIVITY X is more important to you than ACTIVITY Y?
5) How do you feel when you do an activity you feel is more important to you?
6) When you are making choices about what to do with your time, what influences your choice?
7) How would you feel if I asked you to do something you have not done before?
8) What messages do you feel your culture give about how you spend your time?

Figure 1: Initial semi structured topic guide

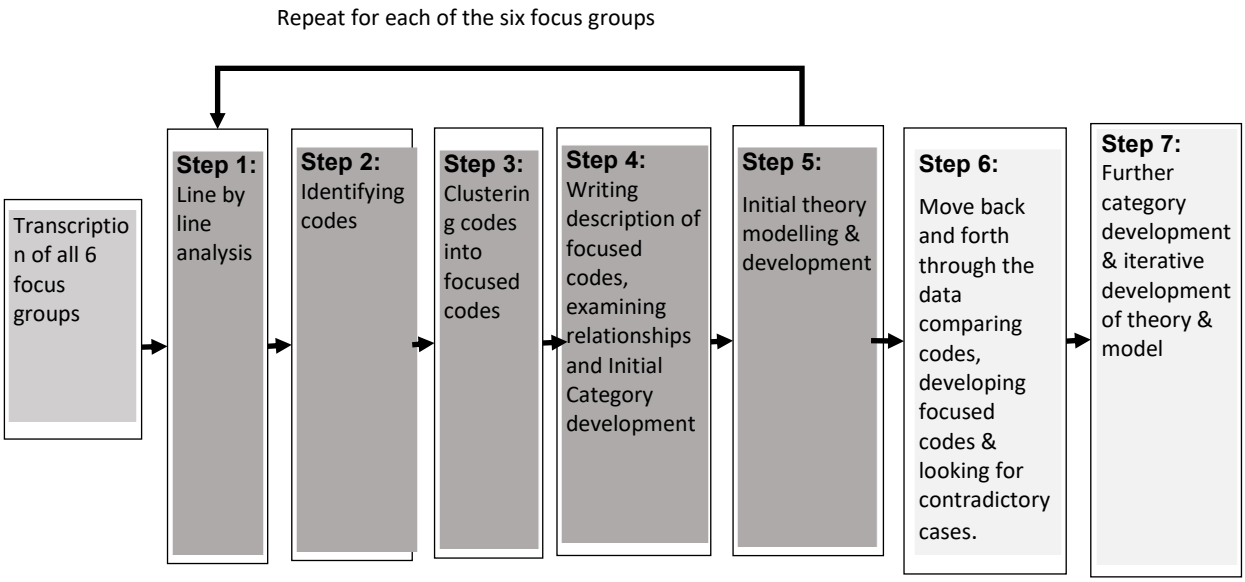
There were between two and seven participants in each group, and each audio-recorded session took between twenty-six and fifty-three minutes. Audio recordings were transcribed verbatim by the primary researcher as advised by Charmaz (Charmaz, 2006). A reflexive diary was kept by the primary researcher throughout the analysis. A second researcher observed and made notes, which the primary researcher used as an aide-memoire for her own reflexive analysis. In order to maintain

confidentiality and data security, pseudonyms were used, and all data was kept securely according to the university data protection policies.

5.6.5 Data analysis and saturation

The analysis was undertaken according to the constructivist grounded theory approach proposed by Charmaz (Charmaz, 2006). The pilot group was analysed first, which involved each of the first four steps illustrated in Figure 5.2. Initial theory modelling was explored and was later used in comparative analysis.

5.2 Figure: The analysis process



Due to school timetables and the planned curriculum, access to the schools for the purpose of conducting the main focus groups was limited to one day for both schools and occurred a week apart. Ideally, data is collected and analysed concurrently to enable categories and concepts to be identified, explored and tested through theoretical sampling until the data is saturated and a satisfactory theory developed (Charmaz, 2006). The fact that three focus groups were completed in one day in the first school, and two in one day in the other school a week later, limited theoretical sampling based on detailed analysis between the data collections, potentially impacting on the iterative process of data generation that is core to grounded theory. To mitigate the limited opportunities for theoretical sampling caused by restricted school access, several actions were taken. Firstly, the topic guide was adapted between the pilot, the groups and between schools, based on

initial reflections rather than after detailed analysis of each focus group. Secondly, each focus group was individually analysed from step one to step four as illustrated in Figure 5.2 before moving on to the next focus group, enabling questions and ideas to develop which could be explored in the next group. A chart was used retrospectively to record all themes in the order that they emerged during the analysis, which confirmed that no new ideas emerged from the analysis of the last group, thus suggesting that saturation had been achieved.

Once all six transcripts were individually analysed to step four, a detailed process of constant comparison was undertaken as illustrated in steps six and seven in Figure 5.2. Focused codes and provisional categories were collated into a spreadsheet that recorded which code emerged from which focus group (See appendix 9.9 for categories, codes and descriptors). A total of 151 individual codes were initially identified. Similarities and differences were compared before being reduced and refined to a core version, for which descriptive definitions were further developed. Specific attention was given to contradictory cases.

Memos and reflexive notes were kept by the primary researcher at all stages of the data collection and analysis process, ensuring attention was also given to the relationships between codes, focused codes and categories. Through constant comparison and moving back and forth through the data and memos, four categories appeared to be strongly interconnected and of importance to the adolescent process of making an occupational choice. These main categories would be described as domains and were central to the proposed model. The process of making a choice, appeared to begin with identifying the need and the urge to fulfil it. These emerging ideas were explored further in the data and through various diagrammatic models in an iterative process to develop a cohesive proposed theory, which is described below. General grounded theory principles were followed, which advocate minimal literature reviewing prior to data collection (Birks and Mills, 2011). Instead, literature was reviewed after data collection to develop theoretical sensitivity and originality in relation to existing knowledge.

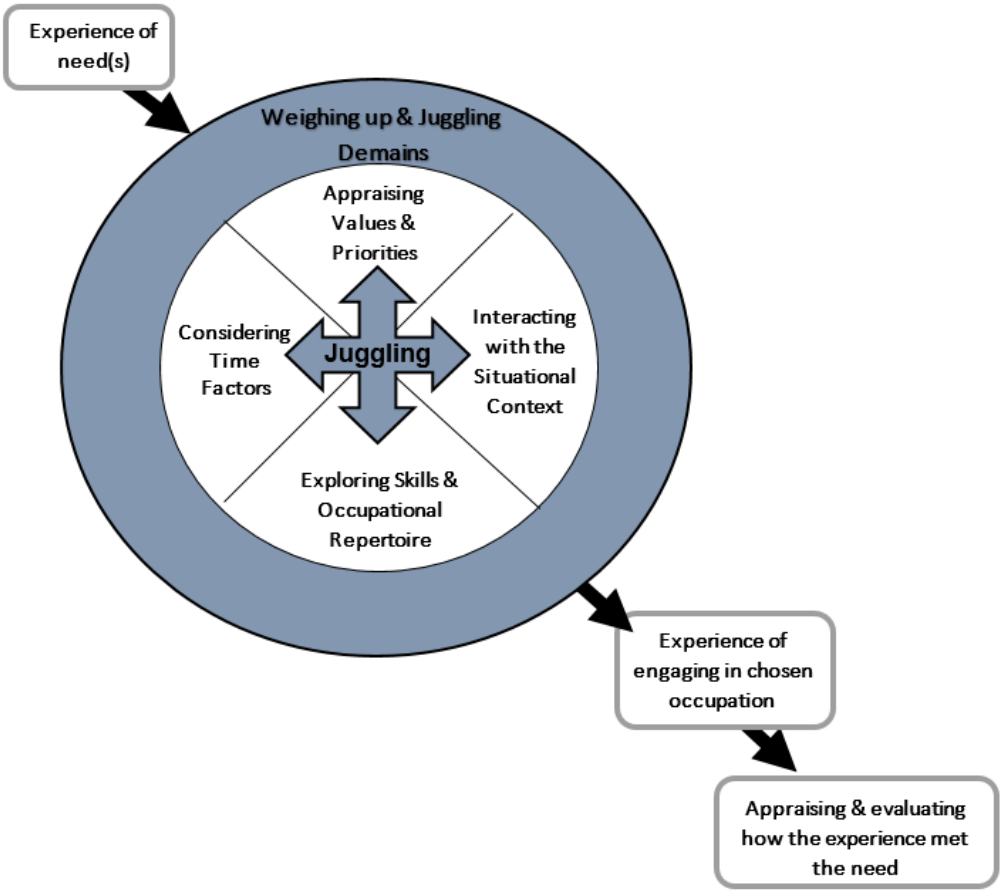
5.7 RESULTS: DEVELOPING THE FUTURE OCCUPATIONAL SELF THROUGH OCCUPATIONAL CHOICES AND OCCUPATIONAL EXPERIENCE

The findings that emerged from the focus group transcripts are presented as a proposed theory. Pseudonyms are used in place of participants' names, quotes are written in italics and ‘FG’ refers to

originating focus group. An overview of the four inter-connected domains that make up the core of the proposed theory is explained first, followed by an explanation of the two sub-processes involved in occupational choice.

The proposed theory starts as the adolescent first experiences a need to engage in occupation for a specific purpose, such as need to connect with others, need to achieve, need to become competent, need to relax and need to develop. This prompts them to engage in a complex process of weighing up and juggling at least one of four interconnected domains; **Appraising Values and Priorities, Interacting with the Situational context, Exploring Skills and Occupational Repertoire,** and **Considering Time factors** (see Figure 5.3 for illustration of the core model of the theory)**.**

Figure 5.3: The core theory model



The four categories describe four different but interrelated domains that affect the process of choosing what to do. **Appraising Values and Priorities** refers to the values and priorities that influence the adolescents' choices. Values are made up of beliefs, preferences, opinions, ideas and norms that collectively are reflected in the importance and meaning placed on any given occupation or need. Regarding values, one participant said, "I mean like my parents have done a good job of teaching me good values" Komal (FG2). Priorities, in contrast, refer to the adolescents' prioritization of one occupation or need against another, often based on the value of the occupation or need such as, "Well the things you know you should do you have to do eventually, but you sort of put them off to the last minute. Till you really have to do it" Ben (FG4). The adolescents express that both values and priorities are influenced and based on the socio-culture, gender, and family norms in which the young person lives and develops. As illustrated by Abrial's (FG4) response to a question about how culture shape choices of time use, "It depends…cause my English family are like do what you want but my Dad's family (from Asia) are very how's your school work…and did you get good grades…all my cousins are like sometimes we pull all-nighters and I'm like yeah, I get to 9 and that is enough work for me." They also appear to reflect the way occupation is classified, judged and prioritized within the community in which the adolescents live, providing standards of competency and mastery by which occupation is perceived to be given a value, participation appraised, and experience is judged. For example, one participant said: "I think there is a feeling like when you are relaxing… you have had a really busy day… you are sure you should not be doing anything but you feel you should revise or whatever" Maria (FG5).

The **Interacting with the Situational Context** refers to the present physical and social situation or environment in which the adolescents finds themselves, and how this affects them. This can also include; specific preferred environments; whom they are with or where they are at a given time; and the resources available to them such as money, internet or the nature of the support provided by others. For example, one adolescent who was sent to the UK by his parents under the conditional that he must perform well in his studies, demonstrates awareness of the impact of his situational context on his choices of occupation: "I personally don't get much pressure at home because I am already aware of what is at stake" Barry (FG3).

Exploring Skills and Occupational Repertoire domain describes the personal resources and skills an individual has, including both their perception of confidence in using their skills and their past experiences of using these skills to meet arising needs. Skills describes the unique abilities required to

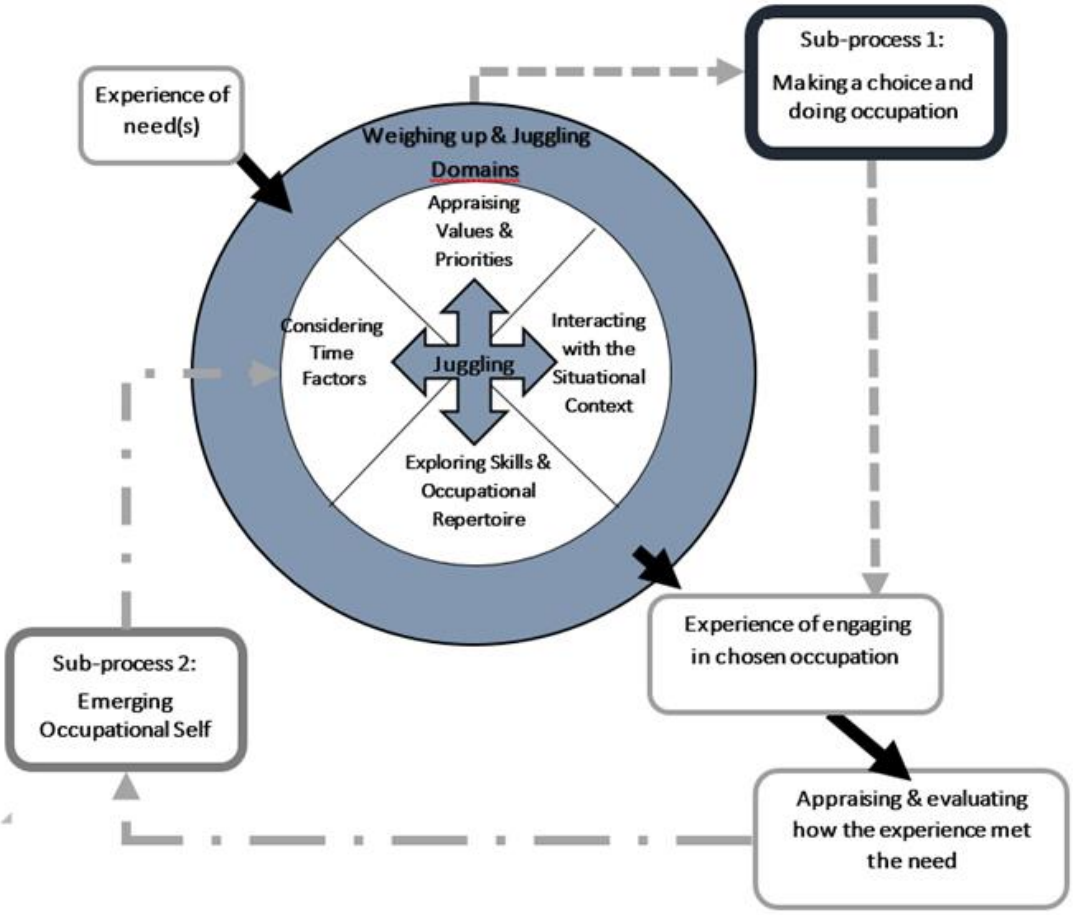
complete an occupation while the occupational repertoire is the library of experience from which an individual can draw as in this example of learning to cook: “Cooking is a really good activity to do… you learn new things which helps out later in life” Tom (FG5).

Finally, **Considering Time Factors** domain refers to the multiple aspects of time, such as its perceived value, the amount of time available, deadlines, length of timelines and how well the participants feel they manage time. For example: “I think I have… poor time management skills… I will have forgotten about certain homework and then I’ve realized I have to do it and it might be late into the night that I might start doing something” Barry (FG3).

Weighing up and juggling these domains is then followed by making an occupational choice (sub process 1) and then the **experience of engaging in the chosen occupation**. The nature of the experience is then **appraised/evaluated as to how the experience met the need**, leading the adolescent to weigh up and juggle the experience in relation to the four domains. This results in nuanced and personalized version of the domain: “If someone is trying to tell me to do something I personally don’t listen. I think I know myself. I know what I am doing is the correct way of doing things” Gemma (FG3). These domain modifications have the potential to influence future occupational choices and contribute to the construction of the emerging occupational self (sub-process 2).

Figure 5.4: Detailed model description

The model presented in Figure 5.4 illustrates the two model sub-processes; Making a choice and doing occupation, and the Emerging occupational self, which are added to the core model presented earlier in Figure 5.3. The two separate sub-processes are the active processes involved in choosing an occupation and are connected through the four central domains already described. This process involves the adolescent ‘weighing up’ and ‘juggling’ the four domains, with the purpose of informing which occupation to choose to best meet the identified need.



5.7.1 Sub process 1: Making a choice and doing occupation

5.7.1.1 **Domain Appraising values and priorities**

The adolescent engages in a process of weighing up the value and priority status of the identified occupational need and any potential occupations that may meet that need. Simultaneously they also engage in a process of juggling the external values and priorities that structured and guided earlier stages of development, and their own internalised and emerging values and priorities, as illustrated by Gurdip (FG3): "If you think it's wrong, you think twice like should I do it, should I not do it and study?" Values and priorities appear changeable and can be influenced by the other three domains,

such as the availability of time, the adolescents' skill level and the context in which the choice and occupation take place.

Adolescents appear more likely to ascribe a higher priority status to occupations in which they find enjoyment. As the participant Charles (FG4) articulates, "if you like something more than something else, you are obviously going to do the thing you like more obviously than the thing they should do." There is a clear sense of their ability to articulate and provide a rationale for their own priorities, occupational preferences, value statements, and judgements about what occupations they choose, including how they meet specific needs or purposes. Almost universally, occupations were discussed in terms of the adolescents' experience of doing the occupation, but adolescents described and grouped occupations into what are widely-recognized western occupational classifications such as work or leisure. Occupations were frequently judged in relation to their potential to provide or enable future work roles, as illustrated by Alan's (FG3) statement, "Work is priority, because work is the future."

5.7.1.2 Domain: Interacting with the situational context when making a choice and doing occupation

Adolescents juggle multiple and sometimes conflicting aspects of the situational context that surrounds them which can be experienced as influencing, supporting, obstructing or enhancing in relation to both choosing occupation and meeting one's needs. Emma (FG5) expressed the following regarding her drama class: "Well I've stopped now, but when we did shows and stuff for years which was fun…it was just fun to like meet new people. And like put on shows and that sort of thing….they changed the teacher and I didn't like the new teacher." At the same time, they experienced juggling the ongoing transition from externalized control to personal autonomy and responsibility.

The participants identify the impact of multiple environmental aspects including culture, religion, gender, upbringing, social norms, romantic relationships, peers, family, family history and expectations. The nature of the support they receive from others, whether informal or formal, impacts their occupational choices. Appropriate support at the right time can encourage experimentation with new occupations, which may or may not meet their needs, while the inadequate support from others may discourage some occupations. How support is perceived and

experienced can impact the likelihood of an occupation being maintained over time or stopped: "When they ask me if I have anything to do or if they nag me then I don't do it, just to annoy them." Jess (FG5).

The situational context can also be enhanced or obstructed affecting the process of choosing an occupation. Various obstructions exist, for example parental rules about where and when a young person can go out, or limited availability of public transport. Situational context can also refer to experimenting with personally preferred environments, such as where an occupation is best preformed. Examples include noise levels, type of surroundings, and preferred company: "During my exams I went to the library every day. It didn't work… It was more distracting for me. I study better when I am at home." Gurdip (FG1). Situational context also includes the resources available such as financial resources and external demands, or requirements like as meeting homework deadlines. For example Liz (FG2) used to play the violin but is no longer able to because of her situational context, "I used to play violin and I don't do it here…we don't have a guide…who can guide us…my Dad loves it because his family is all into music…and I am the only one now that's not doing it so he gets upset I don't do it anymore…it's really expensive to get someone"

Limited autonomy and independence necessitates that the adolescents weigh up the best response to their situational context and any restrictions. Responses include accepting, agreeing to, conflicting with, adapting by choosing another occupation, rebelling, deceiving, or concealing a preferred occupation behind a more acceptable occupation. They may also engage in bargaining or negotiating around occupational decisions, such as what Natalie (FG1) describes: "Sometimes I have to negotiate with them and then they will eventually let me, like the other day or the next day."

5.7.1.3 Domain: Exploring skills and occupational repertoire in making a choice and doing occupation

In making a choice the adolescent must weigh up what physical, cognitive, and emotional abilities they have as well as the skills they do or do not yet have to complete an occupation. Occupational skills are many and varied including the ability to act, play football, sustain relationships, wash oneself or care for a pet. Skills can also include self-knowledge such as knowing personal limits, how to assess risk, and knowing which occupation to use to meet an arising need, as well as judging competencies and capabilities. Adolescents engage in weighing up their confidence in their own skills, and the

likelihood that current skills will successfully meet their arising need(s). For example, Anna (FG0) states:

I want to start this new job. I need to think about what I'm going to be, where my head is going to be at in 6 months' time and whether I am going to be able to cope with playing rugby, going to work, and helping out at boys brigade…like doing all my A levels and things…it's the first thing you think of and it's kind of frustrating having to let go of things.

The adolescent draws on historical experiences of making choices about occupations and their subsequent experience of doing that occupation; a personalized narrative is constructed of past experiences of how needs were met by chosen and unchosen occupations. This is illustrated by Simon (FG1):

Yeah [going to the gym] is my favourite activity. I used to hate exercising but since I started gym, I feel more healthy and stuff so... I go five days a week… Yeah kind of makes a difference I feel more healthy. It changed my diet as well… I didn't feel that good before gym. I was like let me try gym for the first time… it wasn't so good after the first two weeks. I felt the change after the first two weeks or three weeks so.

Past successes and failures have shaped perceptions of skills, competencies, and self-knowledge. Consequently, perceptions of past occupational experiences, choices and self-knowledge are weighed up when making an occupational choice. This is evidenced by a comment by Gurdip (FG1): "Everything that we do throughout our lives we've done it before, even whether you like it or not you've done it before." By this he was illustrating a relationship between how current skills build on past experiences of doing.

Collectively, the adolescent's unique set of occupational skills and abilities, history of occupational experiences, knowledge and perception of their capabilities forms their repertoire of occupations. Adolescents appear focused on developing their repertoire of occupations, have expectations of their capability to do so and provide examples of developing new skills, which affects their choice of occupation. The perceived distance between the adolescent's current skill level and the level required to successfully complete an occupation appears important when making these choices. Occupations may be avoided if the adolescent perceives them to be too challenging because they do not have the required skills, are uninteresting or consider the occupation boring because they are already competent in the skills required for the occupation. For example, one boy described an occupation he

used to do with his mother to develop his writing skills: “Creative writing… I thought it was good but it’s one of those things that I could live without” Tom (FG5). This suggests that there may be an optimum exposure and level of challenge for each individual with a given occupation that is more likely to result in a positive experience and continued engagement in that occupation.

The skills and occupational repertoire must again be juggled alongside one or more of the other three domains when making a choice of occupation. For example, values and priorities may affect how much effort an adolescent is prepared to put into learning a new skill. In addition, time factors may affect perceived competence to complete an occupation, and context may affect the perceived challenge of an occupation.

5.7.1.4 **Domain: considering time factors when making a choice and doing**

The final aspect of the making a choice is the time domain, which includes weighing up and juggling the time available, the time an occupation takes, balancing multiple demands on one’s time, and organizing occupational priorities. As illustrated by what David (FG4) explains about giving up cricket. “It takes too long… [I stopped] last summer when I could be doing other stuff during the day...it likes takes too much time… well it felt like you’re doing a lot of nothing when you could be doing more productive things.” Time has been given a value and is considered an important asset requiring careful management to avoid waste. Adolescents experience a sense of increased autonomy over their time-use as they grow older. For example, Mathew (FG4) talks about his studies in relation to time-related stress, and refers to “the preciousness of time.” He continues, “but it’s not really necessarily that important right now but later on we will be like we need more time”. The participants reported needing to weigh up meeting immediate and longer-term needs, and how the short term may affect long-term needs; for example, homework is linked to exam performance, and ultimately career choices. A complex juggling process occurs between differing needs, and levels of urgency, which affects how the individual engages with an occupational and how they feel, as described by Jess (FG5):

It’s quite hard to relax when you have school for 6 hours a day and then you go home and you do homework. And I dance from six to nine-thirty… And then… come home… have a shower and go to bed. …I have my work… on a Saturday… and then I go out… and I don’t have time to do anything else.

The adolescent constantly has to weigh up their use of time and the level of balance achieved between different occupations at any given time. They have increased freedom to use their time wisely or unwisely as this adolescent describes:

I've got into a bad habit of not getting enough sleep… so I'll work late… sometimes it's due to how long the work is… I'll get five or six hours of sleep and then… I'm getting myself pumped on caffeine and then coming into school… it hurts my head sometimes. Gemma (FG3).

5.7.1.5 Domain: Weighing up and juggling the interconnected nature of the four domains.

When choosing an occupation the adolescent appears to weigh and juggle multiple factors within each domain, and also the interconnected nature of the four domains, when making a choice. For example the situational context of an occupation may change, thus affecting the occupation's priority and value, which, when weighed against time constraints, may result in an occupation being deliberately dropped or rejected, impacting on skill development. As described by one adolescent who explained why she gave up playing the piano: "I played the piano for about ten years. I just stopped because the piano teacher wasn't very nice. So now I've basically quit altogether… It's not that I don't like it…it's just that I don't have time for it anymore." Jess (FG5). This in turn may lead to conflict with family members or others who are unhappy with the adolescent's choice.

Other examples of the interconnected nature of the domains include deciding to learn a new skill, which may be affected by availability of time, situational context, skills and occupational repertoire domains. Values and priorities may be affected by the situational context, such as when out with friends or at home with family. The past experience of doing occupations influences how a person views or values those occupations, resulting in avoidance of occupations associated with negative performance experiences, despite the adolescent's potential capability to complete the task. The experience may have been strongly affected by the situational context, such as the level of support from others. How the adolescent weighs up and juggles these domains affects the experience of how well their needs are met through a chosen occupation, potentially impacting on feelings of wellbeing. This is illustrated by Kimali (FG3) who, despite finding that sport involvement helps her anxiety, explains the challenge she experiences in getting both sleep and finding time to play sport:

If I do my homework I don't get enough sleep, because there is too much homework… I can't survive the day without seven hours sleep so if I do my homework… I do not get time to sleep… when I come back from school, I go on the TV, I watch something, I eat something and after that I go have a bath and freshen up…then I go to start studying but in this thing like I don't get to play sports…you don't get enough time to yourself.

Adolescents' choices may have a detrimental impact, such as when choosing to leave school work to the last minute may result in the individual experiencing pressure, avoiding occupations and generally failing to meet personal needs. "I don't recognise that I feel like I am constantly kind of under pressure but then I recognise it when it gets too much. So it's like too late before we recognise it if that makes sense." Jess (FG5). If they manage to juggle domains effectively, they appear more likely to experience a sense of balance with in their occupational experience.

5.7.2 Sub-process 2: The emerging occupational self

The second sub-process concerns the process of appraising the experience of engaging in the chosen occupation, selected through process 1, and shapes the transition towards a more self-governed occupational self. The occupational self can be described as emerging, because the four domains which were previously structured or influenced by a "scaffold" created by significant people such as family, teachers or friends. This structure was initially experienced as both compulsory and necessary to establish patterns and routines of occupation, but during adolescence is gradually replaced by a more personalized version of the four domains in readiness for adulthood. Specifically, the adolescent appears to adopt many aspects of the external scaffold but the reliance on the scaffold appears to decrease. This occurs as they take a greater level of ownership for making their own occupational choice and do so increasingly autonomously. For Example Nora (FG0) talks about her reading behaviours: "But when you get older, I just think as soon as I started secondary school, I stopped reading, except if I was on holiday." This transition is further outlined in relation to each of the four domains.

5.7.2.1 Domain: Appraising values and priorities in the development of the emerging self

The experience of engaging in a chosen occupation offers the adolescent the opportunity to weigh up how the occupation met their values and priorities, and to juggle between the values and priorities of the world around them (the external scaffold) on which they have previously shaped their views and their own emerging ideas and values. Adolescents may choose to align more firmly with external values or reject them. For example, one participant talked about wanting to play the drums but ultimately giving up the occupation: "I used to play drums to be specific and it's been a long time since I stopped it" and he highlighted the impact of culture and his father's opinion on that decision: "it depends on the culture… like Asian family is like more strict and stuff." Simon (FG1). They demonstrate an awareness of increased autonomy to make their own choices about what occupations they do and their right to accept or reject externally provided values and priorities. "When I was in year nine and ten they would ask me if I have any homework and stuff but now they just let me get on with it." Jess (FG5). Adolescents express hope for their future occupational self, including articulating personal aims, dreams and aspirations, with particular importance placed on acquiring a good job and connecting with friends and family.

5.7.2.2 Domain: Interacting with the situational context and the emerging occupational self

The most evident situational context transition for the adolescent is increased freedom over their own world, providing an opportunity to experience the consequences of both good and bad choices. *"So at home I am free to do whatever because after my GCSE's they saw how much my chilled out nature still is good enough… I've got freedom now. I wouldn't say I had that last year."* Barry (FG3). There is evidence that adolescents experiment with occupational choice, such as trying to do homework in different locations, or managing relationships with others that influence where an occupation is done and when.

The participants' desire to take increased control over their environment fluctuates; their desire to master domestic chores within the home is low, but the desire to travel independently of their parents is higher, to the extent that some adolescents in rural locations stated they took a part time

job to pay for driving lessons in order to gain more travel freedom. This suggests that adolescents are weighing up their desire to be more independent against the other environmental factors. In contrast, some adolescents in an urban location had to negotiate a different type of restriction, as illustrated by Liz and Komal's discussion in FG2 about the restrictions on their desire to travel:

Liz: I want to travel more than just being in school….I want to explore…Komal: like travel and stuff which we can't…we have to be home before five…we have strict parents and they are scared that something might happen to us…I feel they don't trust us but they do…they don't trust the other people.

The transcripts indicate that the support an individual receives from others influences the occupational transition and whether an occupation is adopted or rejected as an occupational preference. "I think it [parental support] can be useful sometimes, they are right a lot of the time, but sometimes I think they should let me do it myself and learn from my mistakes." Tom (FG5). Adult support decreases as the adolescent develops skills competence. At the same time the adolescent becomes increasingly selective about what support and opinions they accept, as illustrated by one participant (FG4) (unable to identify which boy) talking about the influence of others "quite a bit by close friends but then sometimes you don't care what people think about it (occupation). If you want to do it then that's it." Another participant stated "the more people that know then the more people have an opinion on what you do and then they can be either more negative than positive and then you can get a bit put off by it" Mathew (FG4). Increased competence is accompanied by increased responsibilities to juggle, such as expectations to do chores or cook their supper while parents are at work. "…my mom washes the clothes and things before work. She tells me to fold them and put them back in the cupboard and stuff like that" Liz (FG2).

5.7.2.3 Domain: Exploring skills and the occupational repertoire in relation to the emerging occupational self

Adolescents experience a skills gap which requires them to juggle and weigh up previous experiences and their own personal occupational choices, in order to choose how best to address their skills gap. Their previous experience of engaging in an occupation, including both competence and achievement, appears to shape their expectations of success, the likelihood that they will persevere in the face of obstacles or difficulty, the methods chosen to develop a skill and indeed the likelihood

that they will develop the skill successfully. For example, Natalie (FG1) talked about her experiences of auditions "No matter how hard it gets…..you have to like put…yourself in the mind-set that you can do it." The experience of competence or achievement influences if an occupation is accepted or rejected. Therefore poor competence experiences impact skill development, and, in some cases, may adversely impact their ability to meet their need.

There is evidence in the narratives that some previously valued occupations are being discontinued while others are being prioritized and perfected, alternatively new occupations are developed. Many of the new skills involve new roles in new contexts, such as getting a job or learning to drive. There is an awareness of required standards of competence and an aspiration towards it, with varying levels of success. Each experience provides an opportunity to evaluate and improve competence.

5.7.2.4 **Domain: Considering time factors in relation to the emerging self**

Adolescents are increasingly structuring their own time, which involves practicing and developing the required skills. They experience increased self-responsibility and time conflicts, which can impact on how they feel: "you can be doing something more productive, but you're wasting your time" Rob (FG4). Learning to manage time factors can result in procrastination and unwise use of time, especially when not under the pressure of exams or deadlines. "I can choose not to use my phone but I still do, but it could be also like my mom's given me some other work to do so I'm occupied there so I can't do my own work." Liz (FG2).

5.7.2.5 **Appraising and evaluating the four domains and the emerging self**

The transition from an externally structured world to their own internally constructed world that occurs across all four domains, is complex to negotiate, especially when adolescents are required to take increased responsibility for their choices concurrently with developing the ability to make those choices. Mathew's (FG4) describes, "sometimes it's hard to find the balance between, cause you only need to do school work, but if you have a football match or something that you're committed to you can't just leave so you work after." Although they are aware of their own preferences and reasons for engaging in occupation, they are still in a process of developing their occupational self and as such are still influenced by how chosen occupations may be judged by their parents, their peers and the

educational system of which they are part. “I think it’s like at least when…I’m trying to decide what to do. I think what will be the best story” Mathew (FG4).

The participants are aware of their growing freedom and autonomy to choose, even to choose socially unacceptable behaviours, and to experiment with new occupations**.** Through each experience of weighing up and juggling the four domains, making a choice and experiencing the consequences of that choice, they develop the four domains influencing future choices and shaping their future occupational self.

5.8 DISCUSSION

The proposed theory describes a process by which adolescents make choices about what occupations they engage in, what affects how they choose to juggle activities and how those choices shape occupational development. Aligning with existing developmental literature, this theory provides unique insights, from an occupational science perspective, on the conscious process by which adolescents make, develop and adapt choices about the occupations they do. This includes considering contextual and individual opportunities and constraints. The theory provides new insights that complement wider developmental literature, existing occupation-based theories and contributes new conceptual renderings. In keeping with the constructivist grounded theory approach, the findings are discussed in relation to the literature.

Firstly, the proposed theory suggests a mechanism for occupational development, which meets three validity criteria for life course developmental theory by Baltes (Baltes, 1997) selection in favour of specific desired characteristics or functions, optimization towards improved functioning and efficacy, and finally compensation results from the fact that to develop new characteristics or abilities something else is lost. For example, adolescents articulated the value and prioritization of future employment or career aspirations over other occupations, exemplifying occupational selection. While ‘optimisation’ is articulated in aspirations and strivings towards adult task competencies, ‘compensation’ is evident in the loss of previously valued occupations as a direct result of developing newly prioritized characteristics or abilities, such as those associated with gaining their future adult self. Previously valued occupations may be stopped in preference for occupations associated with higher value or priority to their future occupational self.

Secondly, parallels can be drawn between this study's findings and developmental theories such as stage theories, decision-making theories, and theories of moral development among others. For example, Erikson's ideas on resolving identity conflict versus role confusion stage in late adolescence (Sokol, 2009, Wright and Sugarman, 2009) are evident but are viewed from an occupational perspective. Specifically, adolescents make a choice based on weighing up and juggling the four domains and appraising their experiences in relation to the four domains through which the occupational self is developed. Internal and external conflict are potential consequences of this process. For example: parental imposed restrictions on the situational context may prevent engaging in a valued or prioritized occupation, potentially creating a source of conflict, necessitating a response that draws on their developing skills and occupational repertoire. The resulting outcome may potentially affect an individual's sense of mental health and wellbeing. Other theories such as Harvinghurst's ideas about personal ideology development in 12 to 18 years (Havinghurst, 1972, Wright and Sugarman, 2009) also resonate, as do theories relating to the development of autonomy, independence, individualism and ego development (Kitzinger, 1995). These theories can be linked to the development of responsibility which is a prominent feature in the proposed theory.

Thirdly, a commonality with established existing occupation based theories, such as the Model of Human Occupation (Taylor, 2017), is that occupational choice arises from experiencing need within the context of the environment and then leads to a response involving engagement in an occupation. Similarly, ideas evidenced within the widely accepted Self-Determination Theory (Ryan and Decci, 2000, Koole et al., 2018) such as autonomy, competence, and relatedness, are evident in the proposed theory. Study participants articulate the transition toward increased autonomy, developing competence, and discuss their connectedness with others in relation to making occupational choices. The proposed theory's credibility is thus strengthened by commonalities with established theories, but also contributes new insights. Figure 5.5 summarizes the specific finding of the proposed theory, further discussed below.

Figure 5.5: Brief summary of key findings

Brief summary of key findings

The proposed theory:

- Shows the impact of the fit between existing skills, new occupational challenges and wellbeing.
- Proposes an integrated view of interaction between the adolescents internal and external world.
- Illuminates the complexity of attempting to achieve balance between the domains and suggests that poor balance may impact wellbeing.
- Identifies the challenge adolescents experience in attempting to balance domains balance at the same time as developing the necessary capacity and capability.
- Illustrates how experience shapes the emerging occupational self in 16 to 17 year olds and its potential to impact on health.

5.8.1 The fit between existing skills, new occupational challenges and the impact on wellbeing

The first insight relates to the concept of 'the just right challenge'. It describes the balance between the level of challenge an occupation presents in relation to the skills and competencies an individual has to successfully complete it, which can impact both occupation completion and wellbeing (Yerxa, 2000). It was first identified as an essential aspect of flow in Csikszentmihalyi's theory of optimal experience (Csíkszentmihályi, 1990, Rebeiro and Polgar, 1999). This concept has received little attention within the literature from an adolescent perspective, but was evident in the experiences reported in this study. Specifically, adolescent participants were focused on developing new competences and capabilities, drawing on past experience, which in turn impacted on feelings of competence, and skills development. Occupations deemed childish or too easy were avoided or discontinued in favour of challenges focusing on future aspirations. This suggests that late adolescents are actively engaged in a process of applying existing abilities to develop new ones. The 'fit 'between drawing on old abilities to develop new ones may influence the development of occupation competencies.

5.8.2 An integrated view of interaction between the internal and external world

The second insight relates to the common occupational conceptualization of a person's internal world, external environment and the interface between the two as described in models such as MOHO and CMOP-E. As compared to these models, which do emphasise the influence of the environment of occupations performed, the proposed theory suggests a more complex, multi-directional, integrated and ongoing interaction between the adolescents' developing internal world and their evolving external world, involving weighing up and juggling the four domains, and their resulting experience in the context of frequently overlooked temporal and developmental aspects. The process of choosing an occupation and its effect on the individual is perhaps more reflective of a complex systems approach, such as that described by Kantartzis (Kantartzis, 2019) where change is viewed as a dynamic, ongoing, process that occurs both through the interaction within the system, and with the system and its envrionment. Potentially, this also addresses criticisms regarding the cross-cultural transferability of occupational theory models (Iwama et al., 2009, Wong and Fisher, 2015). Especially in relation making occupational choice, such as the view point forward by Gallagher, Pettigrew, and Muldoon (Gallagher et al., 2015) who highlight that those in deprived areas with limited resources have little or no occupational choice.

5.8.3 The complexity of achieving occupational balance and the consequence of poor balance on wellbeing

The third insight concerns how the proposed theory dynamically demonstrates the interrelated, and commonly used, theoretical concepts of occupational balance, patterns of daily occupations and their impact on health. It confirms the findings of a recent literature review that occupational balance is a subjective experience, and that patterns of daily occupation are a contexualised objective experience occurring within one's environment (Eklund et al., 2017a). That review further suggests that occupational balance concerns one's ability and resource, congruence *(of occupation)* with values and meaning, and the harmonic mix of occupations, while patterns of daily occupation concerns the alteration, taxonomies and complexity of occupation from a time use perspective. These concepts are strongly evident in the proposed theory. For example, parallels can be drawn between abilities and resources and the skills and occupational répertoire domain, and between a 'harmonic mix' of

activities and the effort of juggling and weighing up the different domains to best meet multiple, and often conflicting, needs.

The findings suggest that when occupational balance is not achieved, adolescent health is affected. Adolescents described the objective realities and complexities of taking responsibility for choosing their occupations, and the subjective impact of attempting to achieve occupational balance on their feeling of wellbeing. Examples include feelings of pressure or stress in relation to the need to complete schoolwork, experiencing time constraints, conflicting value and priorities, which results in healthy or unhealthy occupational choices. In some cases, this led to unhealthy occupational patterns that could be identified by the individual subjectively and objectively as unhealthy. These findings support the view that the balance and pattern of everyday occupations in which adolescents engage influence health.

5.8.4 The challenge and complexity of attempting balance while also developing

The penultimate insight suggests that adolescent occupational choice is a complex and challenging process, where the adolescent is increasingly required to decide how best to identify and meet their own needs, and develop the skills required to meet the need within their own unique situational context. An example of this complexity is time management, where the adolescent juggles their immediately presenting needs against choices that meet longer term aspirations.

Another significant example is the cases where adolescents had migrated to the UK. Most described the challenge of adapting to a new environment, and the impact that had on the occupations they chose to do, and in some cases, this had resulted in the loss of valued occupations. They reported challenges weighing up and juggling conflicting situational contexts, as well as values and priorities domains, such as the challenge of juggling UK culture experienced at school, and that experienced in their home or the communities of which they were a part. The impact of this on wellbeing was less clear but it was evident that factors within the situational context were potentially an additional challenge for adolescents to manage. Adolescent responses to this potential stressor varied, but in some cases, it created an additional barrier to help seeking and was described as having a negative impact on their mental wellbeing. Indeed, in other recent research, the situational context has been identified as important in shaping occupational choices with potential impact on wellbeing (Bonder,

2001, Nagle et al., 2002, Galvan et al., 2015). In particular, Galvan's (Galvan et al., 2015) work with marginalised youth in South Africa highlighted that the social environment together with the collective and contextual histories of an individual can shape not only the occupational opportunities but also which occupations are engaged in. This area would benefit from further exploration using grounded theory approaches.

5.8.5 Experience shapes the emerging adolescent occupational self

The final insight relates to the emerging occupational self. The proposed theory describes how, through experience, adolescents develop the ability to meet their needs, and how the experience of engaging in a chosen occupation shapes the development of a personalized version of the four domains, which in turn leads to development of the individual's future occupational self. Considered in relation to existing models and occupational theory, such as the Model of Human Occupation (Taylor, 2017), the proposed theory provides a more in-depth and contextualized view of the potential interactive mechanisms that make up occupational choice and their influence on adolescent development and wellbeing.

Most significantly, the proposed theory differs from traditional occupation-based theories in that its foci is on the typical adolescent's process of making an occupational choice in the context of their environment and how the environment also shapes that process. It focuses on the domains that influence adolescent's choice and how they interact through the process. This is in contrast to existing models in which choices appear to be based on internal intentions

5.8.6 Practical applications in occupational therapy

Occupational therapists working with adolescents have previously drawn from psychological theories related to adolescent behaviour and stage theories of development to inform their practice. This knowledge has been used in conjunction with existing occupation based theories which do not fully illuminate the adolescent life stage. The proposed theory, represents the complexity of making an occupational choice, and illuminates how that choice informs the individual's development from an occupational perspective. The theory offers a holistic and dynamic complex view of developmental transition, in relation to occupational choice, which aligns well with and supplements both existing developmental and occupation based theories.

The proposed theory also provides a rationale for how typical occupational skill development and occupational identity development occurs in late adolescence, and potentially how it could be impacted by illness or biographical disruption. Such knowledge can be used to inform both preventative and targeted interventions for those aged 16 to 17 years at risk of disrupted occupational development. The strong alignment between the emergent theory and ideas related to occupational balance suggests knowledge of weighing up and juggling the four domains can be used to enable adolescents to achieve a more healthy occupational balance, potentially leading to improved mental health and wellbeing. Consequently, the proposed theory may be of interest to occupational therapists and others seeking to promote healthy time use behaviours, occupational balance or develop occupation-based interventions for late adolescent populations.

5.9 METHODOLOGICAL CONSIDERATIONS AND LIMITATIONS

This study was designed as a pragmatic, small-scale feasibility study. Therefore, generalization is applied cautiously and further studies would be of value. All methodologies have limitations and it is possible that the self-selecting nature of the sample and choice of focus group over individual interviews may also have influenced the nature of responses given, both in terms of the information shared during the group and who chose to take part in the study. Theoretical sampling was also limited because of the school based sampling method, although saturation appeared to have been achieved which adds credibility. The study has significant strengths including the fact that study participants came from two significantly demographically different schools, providing culture related insights and furthermore the 'fit' with other substantiated theories boosts confidence in the proposed theory's representation of the late adolescent population. The use of a constructivist grounded theory is also a further strength of this study providing a structured approach to theory generation grounded in the data, which attempts to place prior knowledge to one side to avoid bias, whilst also acknowledging the co-created nature of the research process. It is acknowledged that the fact that the primary researcher's clinical experience as an occupational therapist and her familiarity with practice models influenced the questions asked in the focus groups. Similarly, familiarity with the core concepts of occupational science may have influenced the initial analysis process and construction of the emerging theory to some extent, accounting for this alignment with the meta-theory of occupational science.

The study specifically addressed how late adolescents make occupational choices. The relationship between health and the process of choosing an occupation emerged to towards the end of the time allocated for the focus group. This prevented detailed discussion about the impact of occupation on health. Specifically, participants tended to normalize subjects relating to health and wellbeing such as stress, conflicts, and tiredness within the context of everyday life. The fact that the participant population was generally a healthy one means that the findings of this study may not be representative of those with more severe health difficulties such as mental health problems.

Further research is therefore required to examine the generalizability of the proposed theory both to the broader adolescent population and to specific groups such as those with mental health illness. The exploration of the relationship been adolescent choices and the experience of health and wellbeing would also be a valuable area of further injury.

There is also potential for future research to develop the emergent themes, including exploring how the theory may vary across age groups, gender or cultural factors.

5.10 CHAPTER SUMMARY

This third study focused on the rarely explored, subjective experiences of choosing occupations, as reported by 16 to 17 years old, sampled from a school cohort of typical adolescents as viewed from an occupational science perspective. The adolescents' accounts highlight the complexity of the process involved in occupational choices, the importance of experiencing occupational engagement, and confirm the existence of bi-directional relationship with development. This leads to the development of a new emergent theory and model to explain the interactive nature of a number of different domains on adolescent occupational choice. Domains are influenced by the dynamics of the individual's internal and external world. The proposed theory aligns well with existing occupational science and OT theory, mostly developed with adult populations, contributing new developmentally relevant understandings of the process of occupational choice in 16 and 17 year olds. This information illuminates the process behind what they do in the present, how this contributes to the development of their future occupational identity and may influence health behaviours. The information gained from this study, illuminates mechanisms that are important when looking at occupational choices, which influence and affect health. Thus, the information contributes to the

formation of the logic model of the problem, the logic model of change and the development of the intervention reported in the following chapters.

6 CHAPTER 6, STUDY 4. PRIORITISING OCCUPATIONAL DETERMINANTS USING THE DELPHI METHOD

6.1 INTRODUCTION

This chapter reports the rationale, methods and outcomes of the fourth and penultimate study in this thesis, involving a Delphi survey method to ascertain the consensus opinion of occupational therapists and researchers, on specific occupational determinants that influence adolescents' time-use choices, and consequently their mental health. The study utilises the knowledge gained form the three earlier studies and relevant additional literature to identify occupational determinants that may influence emerging mental health issues, guided by the IM framework. An adapted Delphi method was used to select and prioritise the determinants in line with the stage of the IM development process. This study informs the prioritisation of determinants, which form the basis of the final intervention discussed in chapter 7.

6.2 SELECTING AND PRIORITISING DETERMINANTS FOR AN OCCUPATION BASED INTERVENTION

Mental health and illness is a complex issue in the context of adolescence, with difficulties typically beginning to emerge in adolescence (Kessler et al., 2007). Emergent mental illness often impacts daily functioning, causing disruption or changes to daily occupations, routines, and patterns (Parsonage, 2016, McGorry and Mei, 2018) with long lasting impacts (Patton and Temmerman, 2016, Patton et al., 2016). Multiple inter-related personal, social and environmental determinants influence the onset, nature and subsequent course of those difficulties (Viner et al., 2012, McGorry et al., 2014, Patel et al., 2018, Mei et al., 2020). Many of these determinants are modifiable factors that affect behaviour and the environment and can be divided into groups of interpersonal, organisational, community or societal. Determinants affect the nature of the health problem and may include both risk factors and protective factors (Bartholomew-Eldredge et al., 2016, Taff et al., 2017). The value of addressing determinants early, when symptoms are at a sub-clinical threshold levels and before severe functional impairments emerge, is strongly advocated internationally, but remains a challenge (McGorry and Mei, 2018).

Knowledge of which determinants have the greatest influence on health outcomes and which are realistic to attempt to change, is important. Any assumption that a single approach or type of intervention can address all influencing determinants in equal measure is unrealistic (Hayes and Kyriakopoulos, 2018, Philipp et al., 2018, Mei et al., 2020). To inform the development of an occupation-based intervention it is necessary to select and prioritise determinants, shaping the core focus, design and delivery methods chosen to affect behaviour change and improve health outcomes (Bartholomew-Eldredge et al., 2016).

Knowledge of determinants and their impact on emerging mental health issues is at an early stage (Cairns et al., 2015, Bale et al., 2020), yet a wealth of experiential knowledge exists that can help inform the provision of care to those experiencing mental health issues (Beresford and Rose, 2009). Multiple methods exist to identify and prioritise these determinants, but IM advocates consulting the literature and a wide variety of stakeholders at all stages of the project. Stakeholder involvement: helps maintain focus on issues of concern; ensures intervention acceptability to the target population; increases expertise on the project; and improves external validity (Bartholomew-Eldredge et al., 2016). Additionally, stakeholder involvement reduces researcher bias towards certain topics or ideas of personal interest and can highlight ideas the researcher may not otherwise have thought of (Bartholomew-Eldredge et al., 2016).

Key stakeholders in this project are: adolescents, occupational therapists, occupation-based researchers, teachers, parents, other mental health professions, and policy makers. This study focuses on occupational therapists and researchers working with adolescents or researching topics related to adolescent occupational determinants in order to develop an occupation-based intervention informed by occupational therapy theory and occupational science. The earlier literature review in chapter 3, highlighted three occupational therapy-based studies reporting interventions targeting adolescent mental health, and thirty-six other occupation-based or occupation-focused studies, none of which specifically targeted occupational complexity such as occupational choice or occupational balance. Yet there are occupational therapists and researchers working with adolescents with mental health difficulties across the country and abroad who have valuable experiential knowledge that can help to inform the intervention. At an early stage, consulting teachers and parents was considered, but, given the complexity and phraseology of occupational therapy theory, the current access to networks by which to recruit, and the limited timescales of a PhD, this was deferred to post PhD. This study aimed to establish an expert consensus view of which occupational

determinants to prioritise in the development of an occupation therapy-based intervention for adolescents with emerging mental health difficulties.

6.3 AIM

To establish an expert consensus view of which occupational determinants should be prioritized within the development of an occupation therapy-based intervention for adolescents with emerging mental health difficulties.

6.4 THE DELPHI METHOD AND SEEKING CONSENSOUS

A stakeholder consultation day in Oxford to discuss determinants, enable prioritisation and establishing a focus informing the intervention's development was rejected because of the limited time clinicians had available to commit and the extent of their geographical spread across the UK. Financial and project-related limitations also suggested face-to-face meetings were less advisable. Alternative methods of stakeholder engagement were considered, and the systematic and structured Delphi method was chosen. The utility of adopting the Delphi method to identify and prioritise determinants affecting adolescent mental health has previously been demonstrated (Cairns et al., 2015, Bale et al., 2020).

The Delphi method has many strengths making it ideal for the selection and prioritisation of determinants. A key characteristic of the method is the simultaneous collection of quantitative and qualitative data, particularly in the first round, which can be beneficial when trying to identify and prioritise all relevant determinants related to a specific problem (Bowles, 1999). The method is well suited to addressing practice-related problems where human judgement is required over other forms of knowledge to solve complex problems, providing new perspectives (Powell, 2003, Steurer, 2011, Dimitrijević et al., 2012, Donohoe et al., 2012). Given its usefulness in developing criteria and priorities, it is a frequent choice for healthcare research. (Steurer, 2011).

The method is designed to establish an expert 'consensus of opinion', evolved from individual experts' anonymised judgements, disclosed through multiple iterative rounds of questionnaires (Keeney et al., 2001, Dimitrijević et al., 2012, McPherson et al., 2018, Sossa et al., 2019). Opting for a Delphi methodology overcomes geographical barriers, enabling broader and wider participation of

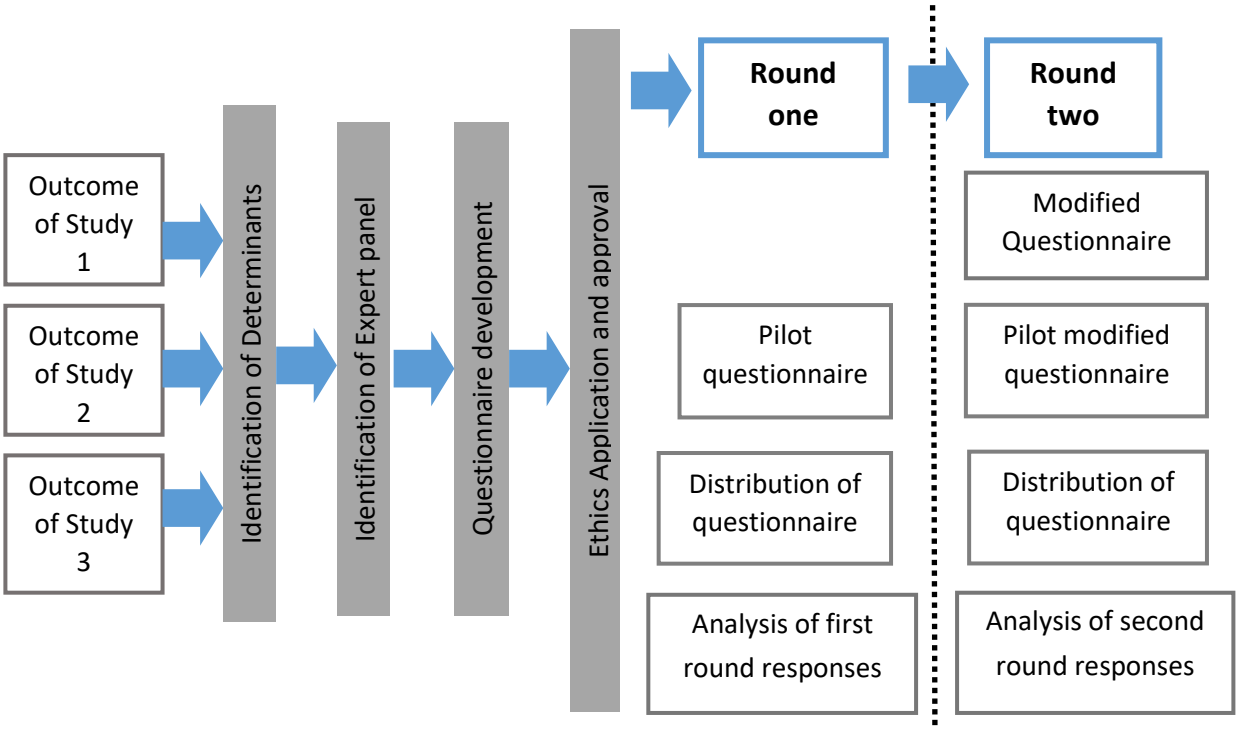
individual experts than would be possible in a face to face context, such as those who reside overseas (McPherson et al., 2018). The availability of electronic methods to distribute, collect and analyse data, makes the Delphi method cost-effective and time-efficient (Dimitrijević et al., 2012, Donohoe et al., 2012) and therefore ideal within the time and financial constraints of a PhD. The Delphi also affords panel members anonymity (Bowles, 1999), thus empowering them to express their view, avoiding potential sources of bias such as the influence of dominant, revered or dogmatic group members (Keeney et al., 2001, Dimitrijević et al., 2012).

Despite the strengths and widespread use of Delphi method, there is considerable variation in its application in practice (Keeney et al., 2001). A lack of clear methodological guidelines (Massaroli et al., 2017), exposes the method to criticism around its scientific merit (Murphy M.K. et al., 1998, Powell, 2003). Counter arguments have suggested that the scientific value of a Delphi study rests on the justification, detailed decision-making and rigour applied when planning and conducting a study (Powell, 2003). Examples include the 'fit' and justification between the research question and the choice of Delphi methodology over other traditional positivist paradigm-based methodologies (Keeney et al., 2001, Powell, 2003, Steurer, 2011). The justification of sample sizes and selection of experts, data collection measures and consensus statement, as well as other aspects of the Delphi process, are also important (Powell, 2003). This chapter intends to explain and justify each aspect of the Delphi process used and to support the validity of this study.

6.5 METHODOLOGY

This study consists of a two round, modified Delphi, rather than the classic Delphi of three or more rounds. This decision, was based on three key factors: the content and structure of the rounds, time constraints, and the wider fit of the study with the PhD project. The illustration below provides an overview of the study.

Figure 6.1: Delphi study structure



6.5.1 Identifying the expert panel

The formation of an expert panel, which is both essential to and characteristic of the Delphi method, is a highly debated and contentious issue (Powell, 2003, Keeney et al., 2006). No formal rules exist for an ideal selection process (Powell, 2003), leaving the method vulnerable to selection bias through convenience sampling (Steurer, 2011), or panel members most affected by the outcome may be more likely to participate (Goodman, 1987, Keeney et al., 2001). Others have questioned the notion of 'expert' and suggest that it is an illusionary concept (McPherson et al., 2018). The literature also suggested that what is important is in fact not the representativeness of the population but how the panel reflects the nature of the information the researcher wants to gather (Steurer, 2011). A further suggested safeguard is that panel selection criteria are identified and stated at the study outset (McPherson et al., 2018).

As stated, this study aimed to gain stakeholder input from an occupational therapy perspective on the identification and selection of determinants in a timely and practical way, to inform the intended intervention. The criteria for selecting appropriate stakeholders to the expert panel was that members must hold a qualification as an occupational therapist and have experience of working with

adolescents, or be researcher, or other professional, working with adolescents with an occupation focus. Identification of appropriate panellists was through manual review of relevant peer-reviewed literature, personal networks and relevant specialist interest groups. Potential panellists received an email, sent directly or indirectly through email networks, inviting them to participate. While the literature makes no formal recommendation regarding number of panel members, above eight is considered acceptable, but approximately twenty is common (Keeney et al., 2001, Dimitrijević et al., 2012). Verification of the match between membership expertise and criteria occurred through self-report, verification questions incorporated into the questionnaire. Prompting emails were send to participants at various points to encourage and maintain involvement.

6.5.2 Development of the questionnaire

Delphi studies are based on sequential questionnaire rounds, typically starting with open, qualitative questions and moving towards quantitative questions in latter rounds (McPherson et al., 2018). The design of the questionnaire is important (Keeney et al., 2001). The development of the questionnaire for this study used a pragmatic, mixed method approach based on IM, stakeholder involvement ideals, rather than the usual use open questions based on qualitative approaches to identify determinants that will be ranked or prioritised in the next round (Keeney et al., 2001, Powell, 2003, McPherson et al., 2018). Determinants with the potential to affect adolescent choice, mental health and mental illness, identified through Study 1, 2, 3 and a wider review of the literature, which were organised into six types, based on the IM framework categories of organisational level, societal level, community level, interpersonal level and personal level, illustrated in the figure 6.2 below.

As suggested by Dimitrijević et al. (2012) to ensure reliability, questions were formalised using Microsoft office before being converted into an appropriate questionnaire format using the online platform, Qualtrix XM (Qualtrix, 2005), was piloted by three researchers, and then distributed following amendments. Qualitrix XM (Qualtrix, 2005), distributes questionnaires, collates responses, providing basic data analysis, is easily accessible to panellists, cost effective and time efficient, and is considered superior to mail out options (McPherson et al., 2018).

Qualtrix XM (Qualtrix, 2005) has a publish function that updates questionnaire versions following amendments, unfortunately the first version was not initially updated following pilot amendments until alerted to the issue by a respondent. Consequently, the questionnaire was updated, and those

who had received the unedited version were contacted to minimise impact of the error on the study. The study information, consent form and data protection information were incorporated both at the beginning of the questionnaire and in the invitation email (See Appendix 9.10 for provisional questionnaire).

6.5.3 Ethical approval and ethical issues

The study received approval from University Research Ethical Committee (UREC no.191347). The invitation to participate in the Delphi was sent out to two individual special interest networks. Both networks required evidence of ethical approval before sending out the study invitation to its members. The questionnaire was also sent out to individuals using publicly available email addresses. Data was kept securely on a password protected file downloaded from the secure Qualitrix XM (Qualtrix, 2005) platform and contact data was only viewed by the main researcher. All data was anonymised and no participant was aware of who else was participating.

6.5.4 Delphi rounds

Panel members, based on their professional opinion chose determinants from a list in the first round. They had option to add items before ranking the selected items according to greatest impact on mental health. Thus, the first two rounds of the traditional Delphi is condensed into round one. Email was used to distribute the link for the questionnaire to specific panellists directly, or to specialist interest group members through a network email address. Closure of round one occurred a month later than planned in order to increase the initial number of panel members.

Following the closure of the first round, the Qualtrix XM (Qualtrix 2005) report was downloaded, and the data exported to Microsoft Excel (Microsoft Corporation, 2016). Responses to each of the first six questions were analysed for the number of times selected determinants within a question appeared, and a rank identified for each. The determinants added by panellists were excluded from this ranking but added to the second round. The questions related to running groups (See Appendix 9.10) were qualitative in nature and only asked in the first round.

Similar to the first round the second round was piloted. Panellists received a summary of their responses and those of the panel from round one. The rationale was that providing feedback is

important, as the questionnaire seeks clarification on the previous round and forms the only communication with the panel (Murphy M.K. et al., 1998, Powell, 2003). Panellists were able to reflect on their choice in relation to the panel's choices, which is thought to encourage continued involvement (McPherson et al., 2018). Prompt emails were also sent out to maximise engagement in the second round. The data from the completed second round was downloaded from Qualtrix XM (Qualtrix, 2005)

A third round of the Delphi was initially considered but not conducted for a number of reasons. Firstly, a clear hierarchy emerged and was largely maintained across the two rounds. Secondly, the onset of the pandemic it was likely to impact completion due to the increased workloads on clinicians. Thirdly, the choice to conduct a Delphi was an addition to the original PhD plan, to effectively ascertain stakeholder perspectives and incorporates findings from earlier studies.

6.5.5 Achieving consensus

Delphi studies aim to achieve a consensus opinion but many have been criticised for the lack of clarity regarding how consensus is defined and achieved (Powell, 2003). McPherson et al. (2018) define consensus as the general agreement or consensus arrived at. Little agreement exists about how to establish consensus but ranking systems are common (Powell, 2003). In the context of informing intervention development, an agreed hierarchy of determinants was required. A scoring system was used in which the highest ranked items were scored highest. Each score ranking was added to form a total score for each determinant, which was used to rank them. IM states that determinants must be prioritised based on best available evidence, as it is not possible to target all. The three highest ranked items from each section are used. The non-parametric assessment, Kendall's W coefficient of concordance, was also used to consider the extent of agreement between raters in each round (Sossa et al., 2019).

6.6 RESULTS

The results are divided into three sections: describing the participants, identifying and prioritizing determinants, and finally designing and delivering an intervention.

6.6.1 Describing panellists

Qualtrix XM (Qualtrix 2005) recorded twenty responses. Two responses, one of which arrived after the survey deadline, were blank entries and consequently excluded. One participant submitted two responses, only the fully completed questionnaire was retained. Six of the remaining seveneen participants had completed all seven consent questions while the remaining eleven had completed all but one of the seven consent questions, attributed to one missing consent question on the first draft of the Delphi questionnaire. Following discussion with supervisors, an email requesting additional confirmation of consent to cover the missing question was sent to all participants apart from one who had not supplied an email address. Email responses providing the additional required consent were received from eight participants. The final total of consenting participants included in round one and invited to participate in round two was fifteen. The second round received thirteen responses.

All but one of the fifteen participants self-identified as a researcher (n4/ 27%) or state registered Occupational Therapist working with adolescents (n12/ 73%). Over eighty-seven percent (n13) of the panel had over five years of experience of which forty percent (n6) have over ten years' experience in this area. All but one of the participants agreed with the statement that in their professional opinion the way adolescents spend their time impacts on their wellbeing.

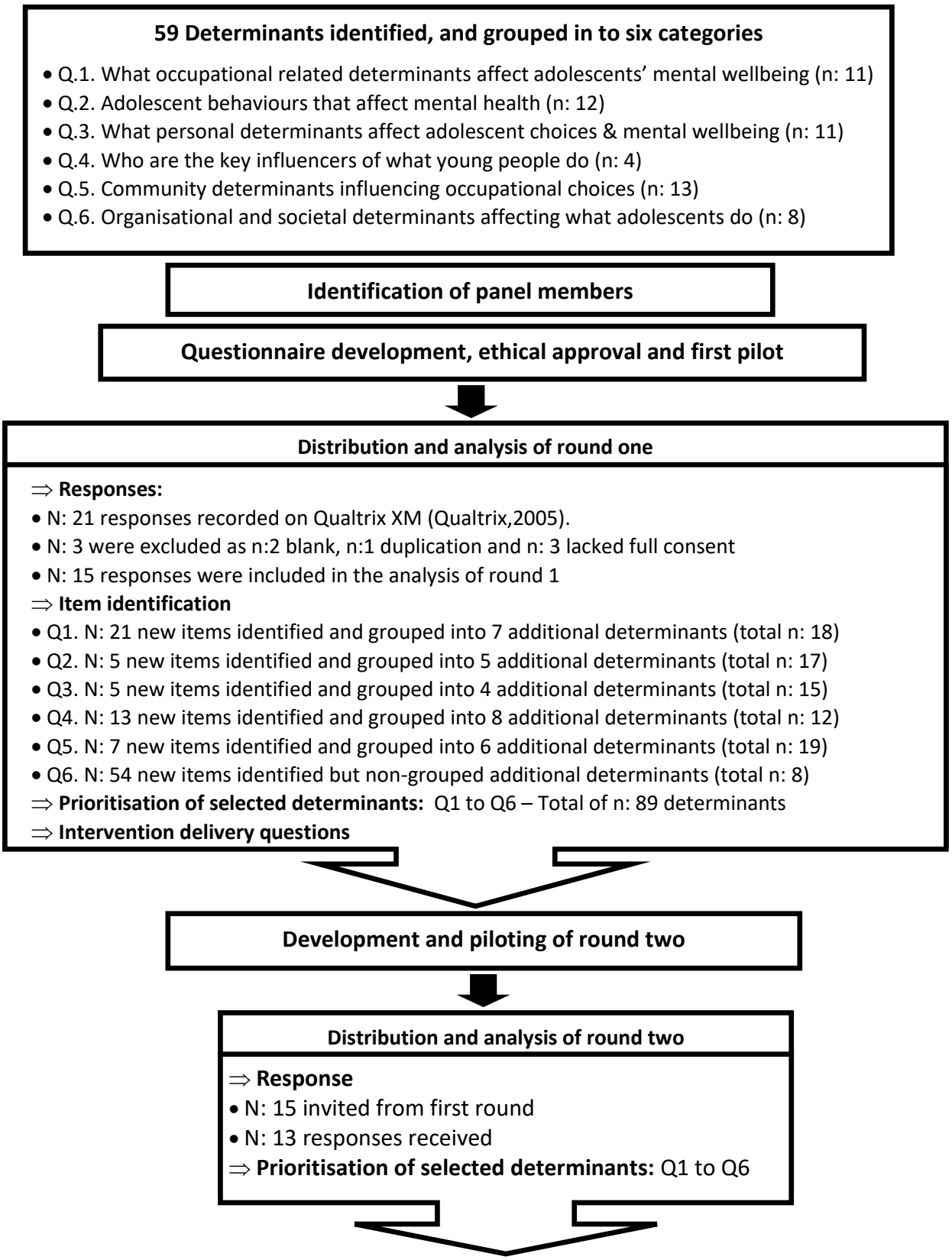
6.6.2 Identifying and prioritising determinants

An additional 30 determinants were added to the original fifty-nine determinants across the six questions (See figure 6.2 for details). In the first round the determinants most commonly selected as affecting mental health were: types of activity (93%), and Balance of activity (93%), closely followed by occupational identity (80%), freedom of choice (75%) and pressure to conform (73%), with the remaining determinants selected by less than ten of the fifteen panel members (See Appendix 9.11 for more details). The most frequently selected determinants thought to adversely affect adolescent performance when they (adolescents) choose what to do, included coping skills (97%), and risk behaviours (87%), followed by inadequate help-seeking behaviour or access to support (80%), over or under consumption of some activities (80%), and poor balance of activity types (80%). The remaining determinants were selected by thirty-three to sixty-six percent of panellists. Ninety-three percent of panellists selected personal self-confidence and eighty percent selected perception of confidence as

personal determinants that impact adolescent occupational choices. This was followed by personal skills (73%), cultural values (73%) societal values (73/%), and personal values (66%).

The fourth question asked about interpersonal-related determinants and identified peers as the most significant (86%), closely followed by parents (80%), teachers (66%) and then siblings (66%). Of the community determinants the most frequently selected was the geography and the locality (89%), followed closely by the nature and quality of relationship with family (80%). After that community attitude and support for different activities (73%), the nature and quality of relationships with non-family members (73%), and social determinants (73%) were selected most often by panellists. Finally, at the organisational societal level, the local council (86%) was the most frequently selected item of influence on adolescent mental health, followed by investment in extra-curricular activities (73%), work-life balance (66%) and national curriculum (66%).

Figure 6.2: Selecting and identifying determinants



6.6.3 Determinant ranking and prioritisation

The following section presents the ranking and prioritisation of the determinants selected in round one and two. The rankings and prioritisations are summarised in Table 6.3. Overall, what is evident is that the ranking remains similar between rounds, while the percentage level of agreement appears to increase. Agreement appears be greatest at the upper and lower ends of the ranking with the items in the middle showing lower levels of agreement.

In the first round, the most frequently selected determinants thought to affect adolescent mental wellbeing were 'types of activity' and 'balance of activity'. These two determinants also achieve the highest level of agreement (31%) in the first round and this increased in the second round to ninety and sixty percent respectively. The item ranked third was the pressure to conform but the level of agreement decreased from twenty-seven to twenty percent between rounds. Of the determinants ranked from four to thirteen, the level of agreement is below thirty percent across both rounds, while the level of agreement for items ranked fourteen to sixteen is higher across both rounds. Time related factors are ranked fourteenth with only two determinants ranked lower.

In terms of behaviours that affect adolescent activity-related performance, 'under-developed coping skills' was rated highest, but 'over or under consumption of activities' was ranked highest in round two, although there is little difference in the score between both determinants. The level of agreement in the first round between these first two determinants is very similar at thirty-three and thirty-one percent but increases in round two, with 'over or under consumption of activities' gaining the highest level of agreement (67%) for this question. It is also interesting to look at the range between the minimum and maximum ranking of these two items in round two with the range between one and six for coping skills, in contrast to one and three for over and under consumption of activities. This suggests a higher level of disagreement regarding the importance of coping skills. After these first two determinants, 'inadequate balance of activities' and 'risk behaviours' rank next highest, but the level of agreement is higher for 'risk behaviours'. Levels of agreement appear to range from sixty-seven percentage at extremities of the ranking to twenty-two percent at position six in the rankings.

6.6.4 Questions

The ranking in relation to 'Personal self-confidence', ranked as having the greatest impact on mental wellbeing, and the level of agreement, increased from forty-six to seventy percent between rounds. Some movement in the ranking and level of agreement is observed between the determinants: 'perception of competence', 'personal skills', and 'cultural values'. These three determinants change position in the ranking but the level of agreement is higher than round one. The 'hierarchy of activity', which was identified in study two, ranked relatively low against other determinants.

Table 6.3 reports the second round. 'Peers' and 'siblings' score highest on ranking, while 'peers' get the highest level of agreement (90%) between panellists. Except for the 'peer' score, a higher level of agreement is seen in the lower ranked determinants (80%) 'councillors' and 'other professionals'. The level of agreement between middle ranked determinants was low ranging from twenty to fifty percent.

In terms of the impact and influence of community determinants, 'geography and locality' is ranked highest across both rounds and again the level of agreement increases. After that there are two items ranked joint second: 'social determinants' and 'nature and quality of family relationships', both of which received a fifty percent level of agreement. Those ranked lowest were primarily those added by panellists in the first round. Open responses highlighted that this was a particularly difficult question to answer because of the variety of different community setting and how importance may vary depending on an individual's circumstances.

Finally, in question six the highest ranked societal or organisational determinant affecting mental health, which also had the highest level of agreement, was 'local council investment in services'. The first three highest ranked determinants did not change between rounds, but the level of agreement increased. Lower ranked items demonstrate a higher level of agreement between rounds. Again, a similar pattern is seen of lower levels of agreement for items ranked in the mid-range. Table 6.3 presents summarised data for each question.

Table 6.3: Determinants, ranking, score and percentage agreement between rounds

Determinants and responses to Question 1: What adolescents do that affects mental wellbeing?						
Determinants	**Delphi Round 1**			**Delphi Round 2**		
	Rank	**Score**	**% Agree**	**Rank**	**Score**	**% Agree**
Types of activity. *E.g. sleep, exercise, social media, creative arts, pets, time with friends, reading, time with family, schoolwork.*	1	175	31%	1	154	90%
Balance of activity. *E.g. such as the particular combination of activities that meeting basic needs, like food, safety, security, personal development*	2	156	31%	2	137	60%
Pressure to conform. *E.g. to achieve, to identify a future career path, fit in with friends.*	3	132	27%	3	130	20%
Other relationships (non family)	Added by Panelists			4	106	30%
Family	Added by Panelists			5	103	20%
Freedom of choice over activity. *E.g. Level of autonomy, level of responsibilities, etc.*	4	129	18%	6	101	20%
Occupational identity – How one sees one's self from an activity perspective. *E.g. I am a good footballer, I am a dressmaker etc.*	5	118	27%	6	101	20%
Level of personal development. *E.g. Competence at managing their time to meet differing demands and needs.*	6	98	30%	7	84	30%
Level of resources, opportunity and/or support.	7	80	25%	8	77	30%
Internalized expectation	Added by Panelists			9	70	20%
Level of challenge vs level of competence in a given activity or activities.	8	72	25%	10	61	30%
Culture & societal influences	Added by Panelists			11	18	20%
Personal capabilities	Added by Panelists			12	20	20%
Level of engagement	Added by Panelists			13	21	20%
Time related factors. *E.g. time available for valued activities, etc.*	8	72	25%	14	21	40%
Multiple conflicting and competing activity choices	9	62	25%	15	21	50%
Level of transferable skills the adolescent can draw on	10	36	25%	16	21	50%

Determinants and responses to Question 2: What behaviours adversely affect adolescent's activity performance and consequently their mental well-being?						
Determinants	**Delphi Round 1**			**Delphi Round 2**		
	Rank	**Score**	**% Agree**	**Rank**	**Score**	**% Agree**
Over or under consumption of some activities *e.g. social media, passive activities*	2	153	33%	1	100	67%
Underdeveloped coping skills	1	167	31%	2	95	44%
Inadequate balance of activity types *e.g. balance of self-care, leisure & work*	3	144	33%	3	89	44%
Risk behaviours	4	135	31%	4	68	56%
Poor awareness of personal resources and capabilities	7	90	33%	5	65	33%
Inadequate help seeking behaviour or of access to support	6	102	25%	6	61	22%
Procrastination and avoidance	5	118	40%	7	59	44%
Underdeveloped awareness of self-care needs	7	90	33%	8	48	44%
Limited occupational repertoire	10	60	40%	9	40	44%
Poor self-advocacy skills to act on personal needs	9	82	33%	10	36	33%
Ineffective time management	8	84	25%	11	34	33%
Poor priority identification	11	53	40%	12	30	67%

Determinants and responses Question 3: What are personal determinant or factors with greatest impact on mental well-being?						
Determinants	**Delphi Round 1**			**Delphi Round 2**		
	Rank	**Score**	**% agree**	**Rank**	**Score**	**% Agree**
Personal self confidence	1	173	46%	1	146	70%
Personal Values	2	135	40%	2	131	70%
Perception of Competence	5	115	27%	3	120	50%
Personal skills	3	124	27%	4	113	70%
Cultural values	4	114	36%	5	102	50%
Friendships	Added by Panel			6	93	30%
Activity preference	9	67	29%	7	84	50%
Societal values	6	111	27%	8	77	30%
Historical experiences/ exposure	Added by Panel			9	70	30%
Activity priorities *E.g. how and why an activity is prioritized over another*	7	87	25%	10	69	30%
Activity experiences/ repertoire	10	66	13%	11	53	30%
Hierarchy of activity preference. *E.g., which activity is meaningful or preferred in any given situations?*	8	86	25%	12	49	60%
Health status	Added by Panel			12	49	20%
How much time an activity takes them	11	59	38%	13	32	60%
Perceived occupational roles	Added by Panel			14	28	70%

Determinants and responses Question 4: Who at an interpersonal level are likely to influence adolescent choices about what to do?

Determinants	Delphi Round 2		
	Rank	Score	% Agree
Peers	1	119	90%
Siblings	1	119	30%
Parents	2	96	50%
Teachers	3	80	30%
Celebrities	4	74	30%
Social media 'friends'/Virtual Friends	5	72	20
Social media - Online groups *E.g. tumbler, Facebook, Instagram*	6	69	30%
Gaming 'friends'	7	64	20%
Other family, *e.g., grandparents, extended family etc.*	8	46	70%
Councillors/advisors in schools	9	29	80%
Community Leaders, *e.g., pastors*	10	26	60%
Other professionals	11	19	80%

Determinants and responses Question 5: What are the Community Determinants that influence what young people do in their daily lives?						
Determinants	**Delphi Round 1**			**Delphi Round 2**		
	Rank	**Score**	**% Agree**	**Rank**	**Score**	**% Agree**
Geography and locality *E.g. what facilities are available in the local area or access to public transport.*	1	145	25%	1	169	90%
Social determinants *E.g. wealth, and culture of the area*	3	126	36%	2	151	50%
Nature and quality of relationships with family members	2	137	27%	2	151	50%
Quality of available support systems *E.g. mentors, guides, counselling etc.*	4	96	11%	3	124	30%
Local Resources to support activities *E.g. music lesson, local bus network, sports facilities*	4	96	22%	4	120	20%
Opportunity for exploring or developing interests in specific occupations	4	96	33%	5	118	40%
Community attitude and support for different activities	6	82	20%	6	105	20%
Behaviour norms of school	7	62	22	7	86	40%
Local patterns and routines *E.g. time table structuring – is there time to do exercise, leisure activities etc.*	5	83	33%	8	84	30%
Physical attributes of the community *E.g. concrete jungle vs wilderness, urban vs rural*	Added by Panellist			9	65	30%
School time tables	8	50	38%	10	55	20%
School homework policies	9	49	25%	11	52	20%
Support available to parents	Added by Panellist			12	52	30%
Weather	Added by Panellist			13	51	30%
Safety	Added by Panellist			14	48	10%
IT infrastructure, *e.g., availability of internet, proximity to get daily needs met*	Added by Panellist			15	45	50%
Academic calendar	10	38	50%	16	45	40%
Crime	Added by Panellist			17	21	60%
Nature and quality of relationships with non-family members	3	129	38%	Excluded 2nd round		

Determinants and responses Question 6: What are the organisational and societal factors that affect what late adolescents do in their daily lives?						
Determinants	**Delphi Round 1**			**Delphi Round 2**		
	Rank	**Score**	**% agree**	**Rank**	**Score**	**% Agree**
Local council investment in services	1	101	45%	1	75	80%
Finance investment in schools for extracurricular activities	2	95	50%	2	68	70%
National curriculum	3	84	22%	3	51	40%
Resource allocation	8	48	38%	4	42	20%
Public transport networks	6	60	25%	5	49	40%
Government mental health policies	4	82	25%	6	31	30%
Work life balance attitudes	5	64	22%	6	31	50%
High pupil to staff ratios	7	59	33%	7	17	50%

6.4 Table: Levels of agreement between rounds

	Question	Round	Kendal's W	Agree	Round	Kendal's W	Agree
1	Doing determinants	1	0.057	Poor	2	0.458	Moderate
2	Behavioural determinants	1	0.289	Poor	2	0.42	Moderate
3	Personal determinants	1	0.091	Poor	2	0.504	Moderate
4	Interpersonal determinants	1	N/A	N/A	2	0.537	Moderate
5	Community determinants	1	0.083	Poor	2	0.535	Moderate
6	Societal and organisational determinants	1	0.078	Poor	2	0.468	Moderate

In addition to the consensus achieved by identifying the rankings of each group of determinants, the agreement between those rating items was also examined, for which Kendal's co-efficient of concordance (Kendal's W) was used (Sossa et al., 2019). This non-parametric test assesses agreement between panellists, the results of are recorded in the table 6.4

What Table 6.4 shows is that the level of agreement between raters during the second round of the Delphi has increased from that observed in the first round. This suggests that the level of consensus has increased. This provides little indication to the extent or level of agreement between items. The following divisions can help to provide a benchmark for considering levels of agreement (Landis and Koch, 1977): poor agreement = less than 0.20, Fair agreement = 0.21 to 0.40, Moderate agreement = 0.41 to 0.60, good agreement = 0.61 to 0.80 and very good agreement = 0.81 to 1.00. The observed levels of agreement, for the first round of the Delphi can be rated as poor, increasing to a moderate level of agreement in round two.

Table 6.5: summarising prioritised determinants

Personal Determinants
Occupational factors that adolescents do that impact mental health and mental wellbeing
The types of activity in which they engage.
The balance of activity in which they engage.
Pressure to conform
Freedom of choice over occupation engagement.
Behaviour that affects occupational performance affecting mental health and wellbeing
Over and under consumption of activties
Underdeveloped (occupation based) coping skills.
Inadequate balance of activity types.
Risk behaviours
Poor awareness of personal resources and capabilities
Personal factors that affect occupational related behaviour
Personal self-confidence
Personal values.
Perception of competence
Personal Skills
(Activitiy priorities/Heirarchy of activity preference)
Environmental determinants
Interpersonal influencers
Peers
Siblings
Parents
Community Influencers
Geography and locality
Quality of availble support systems
Level of resources and support
Societal & organisational Influencers
Local council investement in services
Financial investment in schools for extra-curricular activities
National curriculum

6.6.5 Designing and delivering an intervention

This section of the results reports on the questions asked in the first round about delivering the intervention. Panel members were not asked these questions in the second round because of concern regarding panel fatigue and a decision that a second round would provide minimal additional information for the development of the intervention.

Timing of Sessions: The panellists were asked questions about the practicalities of delivering an intervention. The panel suggested that sessions should last between thirty and sixty minutes with twelve out of fourteen suggesting forty-five minutes or longer. While the number of sessions ranged from daily to weekly for a total of four weeks to ten weeks with one person suggesting weekly for a whole year. The most frequently selected number of sessions was six sessions. The most frequent response from panellists, regarding what time of day to provide the session, was the morning, with rationales that adolescents would be less tired, more alert, more motivated, and more likely to engage. Morning also meant that there was time to apply lessons learned during the school day. One panellist suggested that research shows adolescents are more engaged in the afternoon. A further panellist suggested embedding the session in the curriculum of the school is better than delivering a separate intervention.

Resources: Based on the panellist's responses, five types of resources were suggested. 1) Media such as computers, apps, digital media including films, but ensure media is appropriately targeted, nuanced and well informed. 2) Facilitators or guests delivering in person or through virtual means such as peers, community leaders, those with relevant experience. 3) Occupational therapy resources such as tools to teach about balancing self-care, leisure and work, that help them to identify what is meaningful and of interest to them, zones of regulation was also suggested. 4) The fourth group identified was the use of occupations such as arts, crafts, mindfulness, yoga and sensory activities. 5) Lastly, environmental aspects were identified, such as access, setting and creating an experimental and practical milieu.

Session topics: Due to a high response rate, items were grouped into categories and the number of panellists raising an item in each category was counted by way of summary. The most frequently suggested content was developing coping strategies, such as self-management, self-care, self-regulation, sensory process, and discovering what is meaningful to you, closely followed by suggestions that the intervention should include activities such as leisure interests, community opportunities, outdoor activities, social occupations and physical occupations. Panellists advocated

developing relaxation skills and mindfulness in various ways. The next most popular topic was managing, or dealing with, difficult situations, like bullying, coping with exams, diversity issues, social media and issues related to gender and sex. After that, emphasis was placed on psychoeducation and mental health awareness, such as identifying what is mental illness, what is normal in adolescence, emotional awareness and how to access and seek support. Other suggestions included developing occupational balance, self-esteem, occupational identity, sustaining routines and patterns, managing relationships and supporting others.

Facilitating sessions: Responses primarily focused on creating and supporting engagement with adolescents, including avoiding judging, lecturing, pressurising, patronizing or being overly competitive. Panellists expressed concern that sessions should avoid being: too lesson based, overlap with the school curriculum, psychoeducation, talking therapy approaches, a problem focused approach, focusing on diagnosis, or opening up sensitive issues in class such as trauma of adverse childhood events. Also mentioned was the need to carefully consider contraindication regarding inclusion and participation in the group; where possible enable choice creating autonomy; focus on the adolescent's future not just careers; target the whole class perspective; and take into account dark occupations.

Developing the intervention: Panellists expressed that it is important to collaborate and consider different professional roles within the school environment and that the relevance of the person designing and delivering the intervention is important. Collaboration with teachers, families and adolescents in the design of the program. Also, it is important to make sure that the intervention is client-centred and appropriately targeted for the age group. Subject matter should be evidence-based, relevant, and engaging, support the lowest learning level, be fun, be relaxing, and interactive, providing an opportunity to talk. The intervention should be empowering, leave them feeling valued, involve some technology and be embedded in school routines in some way to avoid a pull-out therapy type approach.

6.7 DISCUSSION

Knowledge gained though experience is a recognised source of knowledge and one that is recognised by both the wider field of health related research and IM (Bartholomew-Eldredge et al., 2016). Experiential knowledge provides insights not easily reached via other methods and indeed the Delphi

is recognised for being able to provide insights that cannot easily be achieved via other means (Powell, 2003, Steurer, 2011, Dimitrijević et al., 2012, Donohoe et al., 2012). Those who are currently researching, or providing interventions to adolescents with either emerging or diagnosed mental health problems are a valuable source of experiential knowledge. The use of the Delphi methodology enabled access to expert, experiential knowledge from occupational therapists and researchers working with adolescents, leading to a consensus on the selection and prioritisation of occupational determinants that affect mental health where none previously existed.

IM, advocates listing all the determinants and then the need to focus in on the most important or appropriate determinants to target in the intervention. The knowledge generated through this Delphi provides a means by which to prioritise these occupational determinants. The first three to five determinants that achieved the highest consensus for each category (Summarised above in table 6.5) is carried forward to inform the next stage of the intervention development, which is developing the logic model of change and the intervention designed to target the prioritised determinants. It is interesting to note that none of the additional determinants identified by participants ranked among the highest ranked items. The determinants that achieved highest consensus, that are thought to affect mental health were; 'types of activity', 'balance of activity', 'choice' and 'pressure to conform'. Ideas consistent with core ideas within occupational therapy. It also aligns well with the perspectives of the young people involved in the third study (reported in chapter 5). The highest ranked determinants related to behaviours that affect occupational performance and consequently health. These appear to fall in to two groups. The first is occupational balance and the second is about that which can enable optimum occupational performance, e.g. skills, resources and risk awareness. If this result is trusted, then it emphasises that occupational therapists and researchers place importance on skills in the context of occupational performance and its impact on health. The results of the ranking of the determinants in the Delphi is interesting and reinforces the importance of stakeholder consultation when developing an intervention in an area where the knowledge base is continuing to develop. As both researcher and clinician conducting this PhD, project expectations emerge as to which items are most likely to rank highest, therefore, the value of stakeholder involvement is that it avoids this bias and provides a focus for which determinants should be addressed.

The second part of the first round identified practical considerations when designing an intervention for adolescents. Suggestions considered timing, topics, resources, facilitation and development. Asked only in the first round, the question responses provide an overview rather than a prioritisation

of the factors that occupational therapists and those engaged in adolescent research should consider when developing an intervention. The suggestions and breadth of expressed views emphasise the importance of engaging young people, encouraging participation, and detail what to avoid when designing adolescent interventions. This knowledge provides valuable insights, for intervention development and can serve as a checklist for clinicians to consider in the clinical setting.

In summary, this study aimed to achieve a consensus view regarding which occupational determinants to prioritise in the development of an occupation-based intervention for adolescents with emerging mental health difficulties. The results showed a moderate consensus in the final round and ranking between rounds was 100% consistent for the top three ranked items. The results form a list of occupational determinants that inform the next stage of intervention development. To the best of the author's knowledge, this is the first Delphi study conducted to identify and prioritise specifically occupational determinants that affect mental health in adolescents, and informs an occupational therapy theory informed, occupation-based intervention for adolescents with emerging mental health issues.

6.7.1 Strengths and limitations of the study

Despite the moderate level of consensus reached, the levels of agreement increased between rounds and the rankings remained mostly consistent for items at the upper and low ends of the scale, resulting in the identification of three determinants for each of the six groups, which will inform the development of the occupation-based intervention. However, it is important to note that this panel is small, vulnerable to selection bias, may not represent all views, and the views of two participants were lost from round two, potentially affecting both the ranking and the levels of agreement observed. Although this should be balanced against the fact that the target group is relatively small and specialised. While the demographic data from the Delphi confirms that, this group has both relevant experience and a high number of years of experience in this field.

Although every effort to address the version error in the first round was made, this may also have affected recruitment and retention adversely. The Delphi method is also subject to a time lag between rounds, which unexpectedly increased whilst waiting for responses and while developing the required data analysis skills. The complexity of the questions, and introduction of less familiar terms, may have also have added to the burden of completion, leading to incomplete responses. Other

techniques such as the nominal technique provide more opportunity for discussion, coupled with specially designed online platforms occurring in real time, may have helped reduce this burden, providing opportunity for more detailed explanations of ideas and more comprehensive discussion prior to developing a consensus view. However, such techniques risk participants influencing each other and reduces the level of anonymity, in a way that the Delphi does not.

The Delphi method is widely described as a consensus method but considerable variability exists in how consensus is both defined and achieved (Bowles, 1999). Initially a score-based ranking system was used. Further analysis, was conducted to provide more detail of the level of agreement for each to prioritise item. Consequently, in some cases the position of items according to the ranking may be different to the level of agreement about that item. In doing so, the results are more transparent. In many cases both the ranking and level of consensus are consistent, increasing confidence in the prioritisation of the item.

Furthermore, an argument exists that the complexity observed in the Delphi responses reflects the complexity of the occupational determinants, which other determinants affected. This was particularly evident in response to the question about environmental determinants such as geography, with one panellist's open response highlighting the challenge of rating these items because of the variability of the environment and its impact on the individual, such as urban vs rural.

Finally, as intended, this study provides a largely occupational therapy perspective on occupational determinants. Given the reality that many occupational therapy concepts would benefit from further research, there is a risk of bias towards more recognised and familiar concepts such as occupational balance over newer idea such as the activity hierarchy, identified in study two. Similarly, the strength of the ranking and prioritisation of the 'personal determinants' question may reflect the influence of psychology research on this area. Although this initially seems problematic, it perhaps reflects an evidenced-based approach embedded in clinicians thinking, and is a potential indicator of the consideration given to safe best practice. This study highlights the need for more research into the impact of occupational determinants on adolescent mental health and the prioritised determinants are a potential focus for further research.

6.8 CHAPTER SUMMARY

This chapter has reported on a Delphi stakeholder consultation with specialist occupational therapists and researchers working with adolescents. An online Delphi questionnaire, based on the knowledge identified from the three earlier studies in this PhD project, was created, providing stakeholders with the opportunity, as panellists, to add additional determinants from their own experience and to prioritise which determinants have the greatest impact on adolescent mental health. Three determinants from each of the six categories of determinants stated in the IM process were reliably prioritised. Following the guidance of the IM process, these determinants will form the basis for developing the research objectives, outcomes and protocol outline for the intervention, which is detailed in the next chapter.

7 CHAPTER 7, STUDY 5. CONSTRUCTING THE LOGIC MODEL AND DEVELOPING THE INTERVENTION DESIGN

7.1 INTRODUCTION

Earlier chapters of this thesis have identified that a mental health crisis exists among young people, with adolescence being a key time for the clinical onset of symptoms. A case was made that adolescents' time-use and occupational choices may affect their mental health, and that an occupation-based intervention utilising new knowledge in combination with occupational therapy theory, and occupational science is an approach worthy of further exploration. The reported studies have explored how adolescents use their time and why they choose to engage in the occupations they do. The paucity of occupation-based interventions informed by occupational therapy theory and occupational science targeting adolescent's mental health has been established and in Chapter 6 the prioritisation of occupational determinants that are most likely to influence mental health was reported. The final study reported in this chapter combines these multiple findings with IM informing and guiding development of the logic model of the problem, the logic model of change, and the intervention program named the Activity Time-use Intervention (ATI). Then, finally, it reports the review of the ATI intervention with a PPI group of young people and required modifications.

7.2 BACKGROUND AND RATIONALE

Interventions are needed which positively influence mental health determinants, or minimize the disruption caused by mental ill health to normal development trajectories (Sawyer et al., 2012, McGorry et al., 2013, Patton et al., 2016). Existing school-based mental health-focused interventions include CBT based interventions, early intervention for depression, suicide prevention, health promotion, risk reduction, nurture groups, mentoring to prevent suicide, brief solution-focused therapy, school nurse guided interventions, interpersonal psychotherapy and attachment-based family therapy (Das et al., 2016). Many of these studies are adapted from clinical populations (Patton et al., 2016) and not tailored to school-based populations. Furthermore, the complexity of development itself and the evolving nature of the determinants affecting mental health (Sawyer et al., 2012), combined with the difficulties of identifying those 'at risk' of developing difficulties

(McGorry et al., 2014), make one approach alone unlikely to be sufficient (Mei et al., 2020). A broad range of interventions and an exploration of novel alternative approaches is needed (McGorry et al., 2013, Patton and Temmerman, 2016, Patton et al., 2016). The occupations in which we engage and participate on a daily basis shape many areas of adolescent development, including identity, roles, habits and future employment (Lobo, 1999, Taylor, 2017), may offer a novel and alternative approach targeting mental health in adolescent populations.

Neurological development in late adolescence is associated with the development of executive functioning and self-management that occurs concurrently with increasing self-determination, choice and freedoms, thus affecting how individuals navigate the complexity of the multiple determinants that influence their actions and shape their transitions into adult roles (Patton et al., 2016). Critically, adolescent choices and engagement in occupation affect health, wellbeing and ability to cope with change and challenge (Patton and Viner, 2007, Viner et al., 2012, Lassi et al., 2015, Patton et al., 2016). The adolescent occupational landscape is changing rapidly and research has struggled to keep pace with advances affecting the way adolescents use their time, for example advances in technology (Patton et al., 2016). A 24-hour time-use trade-off exists that affects engagement in occupations (Ellegård, 2019), yet the earlier scoping review, presented in chapter 3, highlights that occupation-based intervention studies primarily focus on one or two occupations in isolation. Given the long-term health impact of adolescent choices, promoting health literacy in terms of making healthy choices is advocated (Patton et al., 2016). Yet only three occupational-centred intervention studies were identified that target adolescent mental health. None specifically targeted occupational choice or occupational balance in those aged 16 to 17 years of age.

Interventions reported in the literature are developed for, and delivered in, a wide variety of contexts. The scoping review in this thesis highlighted interventions delivered in community and clinical inpatient settings, in natural setting such as wilderness, refugee camps, youth centres, residential settings, and schools. Online and digital interventions are also being developed for use in this population (Das et al., 2016). Schools are considered ideal locations for identifying and reaching potentially at risk populations (Patton and Temmerman, 2016); consequently a number of school-based interventions exist, targeting adolescent mental health. A review of thirty-eight adolescent mental health systematic reviews found twelve reviews investigating school-based interventions, suggesting mixed outcomes with variations in research design, interventions, core outcome sets and small sample sizes, preventing meta-analysis (Das et al., 2016). The scoping literature review in this

PhD study identified only one school-based occupational therapy informed study, which was conducted in New Zealand with a younger adolescent age group (Tololahi et al., 2018). It is also important to note that few existing studies have been developed with the involvement of young people in the design process, despite the accepted benefits in improving intervention uptake and accessibility (Lassi et al., 2015, Das et al., 2016, Patton et al., 2016). Therefore, a need exists for further carefully designed controlled research, utilising core outcome sets and well described interventions (Deighton et al., 2014, Das et al., 2016, Demkowicz et al., 2020). This study, building on the information gathered from the studies reported earlier in this thesis, aims to use IM to structure the construction of an occupation-based intervention that supports the adolescent's natural development towards making healthy occupational choices and 24-hour time-use related occupational balance. Underpinning the intervention is a philosophy of empowering adolescents to adopt healthier, holistic patterns of everyday time-use during the critical stage of developing activity-related skills required for adult life, consequently influencing mental health in the early stages of illness development.

7.3 AIMS AND OBJECTIVES

Informed by studies 1, 2, 3, 4, and the IM framework, the aim of this study is to construct an occupation-based intervention informed by occupational therapy theory and occupational science for 16 and 17 year olds with emerging mental health issues and, secondly, to conduct a preliminary patient and public involvement review to explore initial acceptability with an adolescent population.

7.4 METHOD

Developing and designing effective interventions to influence health outcomes in human subjects is a complex process (Medical Research Council, 2006, O'Cathain et al., 2019a). So-called 'complex interventions' present multiple challenges for the researcher, including, but not limited to, the trade-off between best evidence and clinical applicability, challenges around testing and evaluation (including the ethics of withholding treatment and randomisation), and the cost of development (Medical Research Council, 2006). The guidance, literature and research practice concerning intervention development has rapidly changed in an attempt to improve effectiveness and reduce

research waste (Bleijenberg et al., 2018, O'Cathain et al., 2019a). Essential components typically include identifying the evidence base, application of appropriate theory, and modelling the process and outcomes (Medical Research Council, 2006, O'Cathain et al., 2019a). Detailed frameworks now exist that provide the researcher with systematic and comprehensive instructions to develop interventions, which double as frameworks for critical appraisal of intervention studies (O'Cathain et al., 2019b). IM is a framework designed to systematically guide the development of complex interventions and consists of six steps; developing the logic model, developing program outcomes and objectives, program design, production, implementation and evaluation. The framework systematically gathers evidence regarding the relationship between occupational engagement and mental health, with the intention of informing the development of a specialised occupation-based intervention informed by occupational therapy theory and occupational science to targeting emerging mental health issues in adolescents aged 16 to 17 years (a detailed rationale is provided in chapter 2).

7.4.1 Intervention Mapping approach

Literature explaining the IM framework describes a sequence of six consecutive steps leading to the intervention development, which are based on the PRECEDE-PROCEDE model, originally developed by Green and Kreuter (1991, 2005) (Bartholomew-Eldredge et al., 2016). The official manual points out that the approach is both a pragmatic and iterative process, therefore those using the approach can expect to revisit steps to make refinements based on the emerging evidence (intervention model explained in chapter 2). This chapter, similarly, presents the process of bringing the studies together to create the intervention sequentially from step one up to step three, but was in reality an iterative process consisting of pragmatic decision-making.

7.4.2 Step 1: The process of creating the logic model of the problem

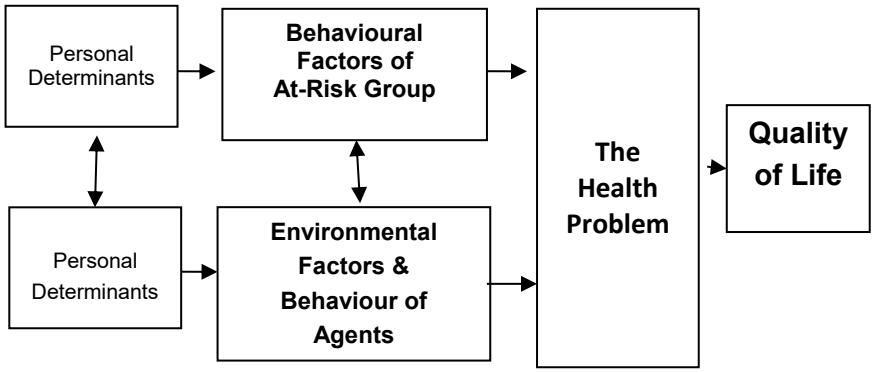
IM begins with the needs assessment, which involves focusing on a specific problem, identifying all the determinants related to the problem. Then, formulating a logic model of how the determinants affect the problem, before identifying performance objectives as part of a logic model of change designed to improve the problem. The process of conducting the 'needs assessment' begins with answering questions such as: what is the health problem, whom does it affect, what is its impact, and

what causes or sustains the problem? It looks at the individual, and at the multiple levels of the environment in which the individual is a part, such as interpersonal, organisational, community and society (Bartholomew-Eldredge et al., 2016). Practically in this project, the author began with free association brainstorming to identify the behavioural and environmental factors that increase the risk of experiencing the mental health problems and the related determinants that influence those factors. This was followed by narrowing the focus to specific occupation related behavioural and environmental factors, and the occupational determinants that affect mental health in adolescents. The literature gathered during this first step is summarised in the overview of the subject area given in Chapter 1.

Where information is limited, unavailable or of poor quality, the researcher can choose to undertake further empirical research (Bartholomew-Eldredge et al., 2016). Subsequently, three earlier studies informed and provided additional information, which further informs the 'needs assessment'. Study one, looked at how young people use their time in relation to their self-perceived strengths and difficulties, highlighting the complexity of occupation over a period of 24 hours. This raised the possibility that an intervention to improve occupational balance may be of benefit to young people. In this PhD the second study informed the construction of a model explaining how 16 to 17 year olds make occupational choices about what do with their time. The work highlighted the multiple domains that affect choices to engage in healthy or unhealthy occupations. It also highlighted the interactive relationship between the development process, choice and engagement in occupation. The information guided further exploration and reading around occupational balance and occupational choice and guided the decision to focus on balancing occupational complexities in daily life. Following further reading and in combination with Studies one, two and the Delphi questionnaire (Study four) was developed to prioritise the identified occupational determinants which to inform the creation of the performance objectives.

The information from these four studies informs the construction of a model of the problem based on the IM template (See figure 7.1). The template reads from right to left, starting with the quality of life issue of interest. Next, the health problems that influence quality of life are listed, followed by the behavioural and environmental factors that influence each of the listed health problems; then finally a list of the personal determinants that are attributed to each of the behaviours and environmental factors is added. This collectively forms the logic model of the problem.

Figure 7.1: The IM template for the logic model of the problem



7.4.3 Step 2: Describe the process of creating the logic model of change

The second step involves a change in perspective, in which the researcher shifts from focusing on the cause of the problem focusing on what behaviour or environmental condition should change in order to alter the health problem and improve the quality of life. The research engages in a systematic process of sub-steps, including reviewing, prioritising and rewriting aspects of the logic model of the problem to form one that focuses on what should change, known as the logic model of change. The first sub-step, 2.1, of this process begins with reviewing and rewriting the previously identified behaviours and environmental factors as health outcomes of the intervention to be developed (Bartholomew-Eldredge et al., 2016).

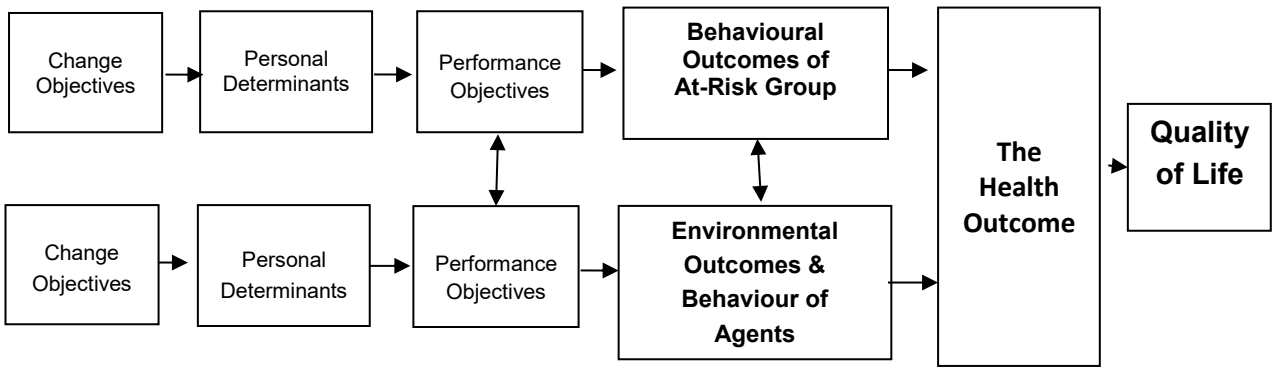
The next sub-step, 2.2, involved the translation of identified personal determinants into performance objectives. The performance objectives are what the individual needs to perform or what needs changing in the environment to achieve the health outcome. The more performance objectives incorporated with in an intervention the more complex the intervention becomes. Consequently not all the personal determinants identified can be addressed and it is necessary to pragmatically prioritise determinants (Bartholomew-Eldredge et al., 2016). Study four involved consultation with clinicians, academics and researchers working in adolescent mental health, to inform the prioritisation of personal determinants and the writing of performance objectives. The project steering group discussed the resulting outcomes from the Delphi Study, deciding to focus on the first three determinants from each of the six areas. In total, eighteen personal occupational determinants

were re-written as performance objectives, stating what needs to happen to achieve the intended change. Nine referred to behaviours and the other nine to environmental changes.

The following sub-step, 2.3, revisits the brainstorming, consultation, literature and evidence reviewed in step one, in order to identify the personal determinants, within the individuals' control that affect the behavioural and environmental performance objectives. In preparation for sub-step 2.4, the importance and changeability of the personal determinants is considered. The behavioural and environmental personal determinants are equally important in IM. A pragmatic decision was made to enable a quality focus on the behavioural outcomes in the next sub-steps.

The complex sub-step, 2.4, uses tables, known as matrices in IM, to form a framework of personal determinants and performance objectives, to assist the construction of change objectives. Change objectives are small, specific, and occasionally sequential actions required of the participant to achieve a performance objective. In essence, the change objectives identify the individual steps necessary to change the personal determinants in order to influence the performance objective. The previous sub-steps inform the construction of the logic model of change, based on the IM template (see figure 7.2).

Figure 7.2: The IM template for logic model of change



7.4.4 Step 3: Describe the process of creating the intervention outline and content overview

The third step of the intervention development IM involves three tasks: identifying appropriate behaviour change theories for each of the change objectives; considering the parameters of the methods and selecting practical applications; and generating the program themes, components, scope and sequence (Bartholomew-Eldredge et al., 2016). Practically, matrices are used again, this time the change objectives are grouped into types such as skills, knowledge or norms. The organised change objectives are then mapped against an appropriate theory for the type. IM lists multiple theories that can inform intervention development and highlights that those listed in the manual are not exhaustive. The emphasis in this step is on choosing the most appropriate theory to achieve the desired change for each objective. The mapping of objectives against theory informs what strategy should be employed to change that behaviour and achieve the stated outcomes. Once the methods and applications are identified, the next step is to organise them into an intervention program. Ideas of how to structure the program typically begin to form after completing the first two steps, and the IM manual encourages that these are recorded, whilst also highlighting that, dependent on experience, these tasks may be completed in different ways (Bartholomew-Eldredge et al., 2016).

The initial attempt at step three followed the sequence and method explained above, but was later adapted and the intervention developed drawing on previous clinical experience of developing occupational therapy interventions. This adapted version involved grouping performance objectives and change objectives according to key areas identified in Study two, including choice, balancing occupations, values and priorities, developing skills, and dealing with the situational context.

Each group of change objectives was ascribed a name, describing the topic content, which were gradually refined in to eight program sessions. The topics were then prioritised in order to develop the program sequence. The author then formulated the session plans based on the performance and change objectives for each topic group and considerations about timings to deliver content appropriately, which is reported in Table 7.5. The next step involved referring back to occupational therapy theory, occupational science and the behaviour change methods suggested in IM to identifying the theory that best influences the behavioural determinants and environmental conditions to achieve the desired outcomes. The final step involved a PPI consultation about content,

timings and acceptability with the group of young people initially involved in the Study two pilot. The next step, step four, is beyond the scope of this PhD and involves the production of the intervention materials.

The emphasis in this step is on choosing the most appropriate theory to achieve the desired change for each objective. The Model of Human Occupation (MOHO) provides the primary and overarching occupational therapy theory that informs how the intervention will achieve change. IM, in contrast, advocates the selection of behaviour change theories and methods according to the behaviour that needs to change. This raises a question of compatibility between occupational therapy theory and the use of behaviour change theories as suggested by IM.

Compatibility between MOHO and the use of a behaviour change theory as advocated by IM is achievable. At the theoretical level, IM is pragmatic, problem focused, rooted in socio-ecology and takes a systems theory perspective (Bartholomew-Eldredge et al., 2016). These ideas share similarities with the MOHO perspective, which values a practice orientated, holistic and client-centred approach that adapts to the needs of the individual, recognises the importance and value of the environment, and takes a dynamic systems perspective (Taylor, 2017). The similarities become evident at a practical level, although the language used is different. Both advocate that intervention development should include a comprehensive assessment of the personal needs and environmental factors of the target population, comprehensive stakeholder consultation and involvement, a conceptualisation of the needs of the group and related environmental determinants, and the application of theory based on the conceptualisation of the 'real-life' needs assessment.

MOHO was designed with the intention of use alongside other occupational therapy theory and interdisciplinary concepts, but states how the unique features of MOHO interventions must be maintained when used in conjunction with other theories (Taylor, 2017). Specifically, the program design must: respect the principles of MOHO; provide clear reasoning between assessed needs and goals; demonstrate cohesion between goals, planned activities, and the environmental components. It must also include a basic dynamic that goals are achieved and implemented through engagement in meaningful occupational opportunities that incorporate the principles of diversity, flexibility and continuity (Taylor, 2017). Finally, the group program design should incorporate collective and personal exploratory participation projects. To achieve an occupational therapy theory-informed intervention, MOHO provides the overarching theoretical framework, maintaining the intervention's

occupational perspective whilst also enabling the researcher to draw on a wider body of evidence and change theory, as appropriate, to address specific aspects of the logic model.

7.5 OUTCOMES OF APPLYING IM:

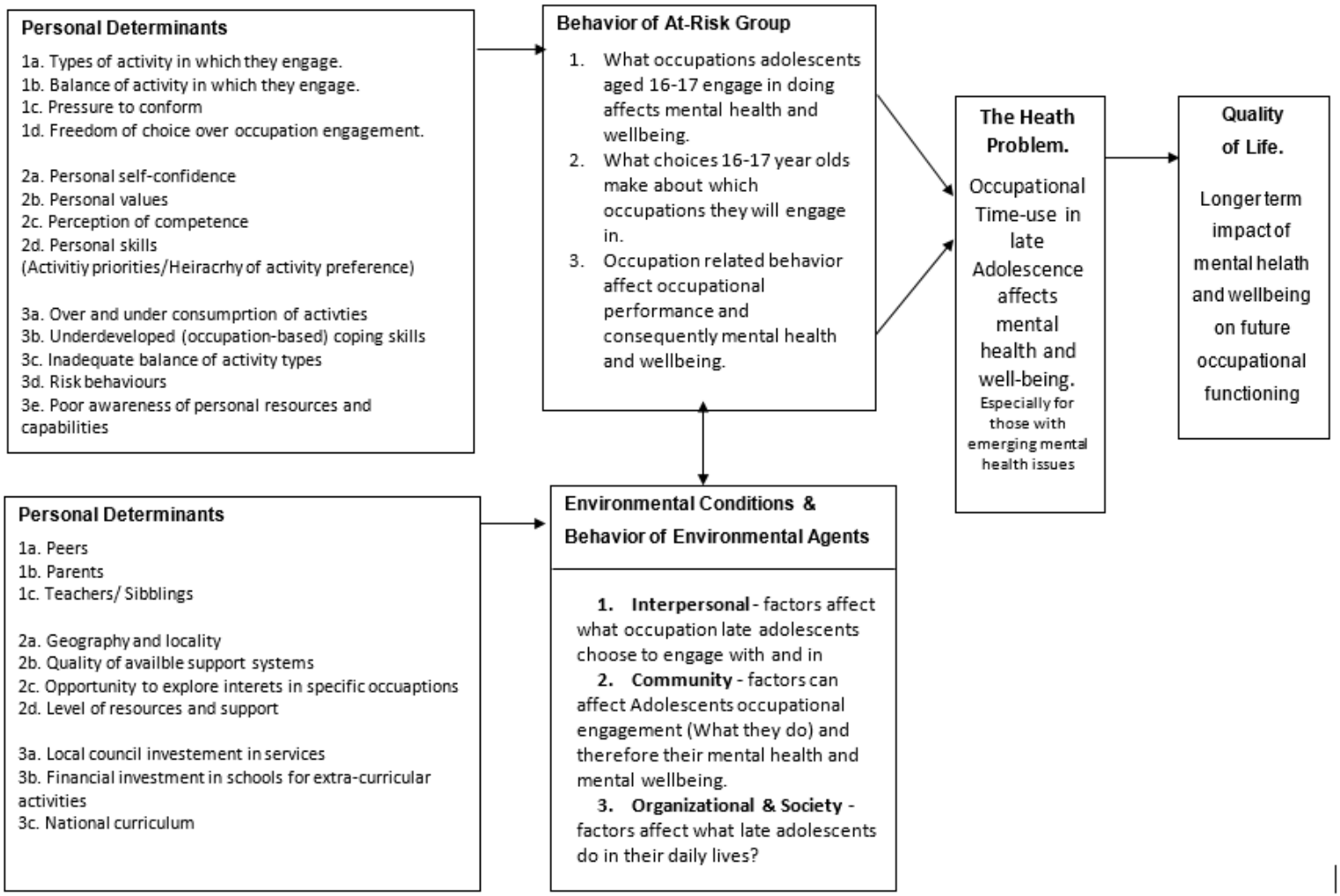
7.5.1 Outcome of step 1: Developing the logic model of the problem

As described earlier, three studies informed the creation of the logic model of the problem, known as step one, illustrated in Figure 7.2. In reading the model from left to right, we encounter a causal model of the problem, which begins with personal determinants of the 'at risk' population and ends with the impact on their quality of life. It begins with the personal determinants affecting behaviours: types of activities, the balance of activities, a pressure to conform, and freedom of choice over occupational engagement, which affect the mental health of 16 to 17 year olds. Similarly, the individual's perception of self-confidence, personal values, perception of competence, and personal skills affect the choices individuals make about what occupations to do. Finally, over and under consumption of activities, underdeveloped coping skills, inadequate balance of activity types, risk behaviours and poor awareness of personal resources can affect occupational performance. The occupations adolescents engage in, the types of occupations they choose to engage in, and how the individual performs in the occupation all contribute to the health problem. Specifically, how adolescents use their time in late adolescence affects their mental health - especially those with emerging mental health issues.

Secondly, the personal determinants that affect the environmental conditions are stated. Peers, parents, teachers and siblings are identified as the most influential interpersonal aspects affecting what occupations adolescents engage with. The personal determinants identified in relation to the community in which the adolescent belongs are: the geography and locality, quality of available support systems, opportunity to explore occupations, and the levels of resource and support available to the adolescent. Next, at an organisational and society level, local council investment, financial investment, particularly for extracurricular activities, and the national curriculum are sited as affecting adolescent engagement in occupation, how they use their time, and the corresponding impact on mental health. The environment and the behavioural factors of the 'at-risk' population

influence each other and together impact on how adolescents use their time. The logic model of the problems goes on to suggest that how adolescents use their time impacts on their mental health, affecting the individuals' occupational functioning in both the short and longer term.

Figure 7.3: the logic model of the problem



7.5.2 Outcome of step 2: Developing program outcomes, objectives and the logic model of change

Following the completion of step one, the following behavioural and environmental outcomes were formulated, based on the behaviours identified in the logic model of the problem (Figure 7.3).

Health promoting behavioural outcomes:

1. Adolescents will increase their engagement in occupations that promote mental health and wellbeing, while decreasing engagement in occupations that adversely affect their mental health and wellbeing. (*Improved balance of activities*)

2. Adolescents will develop skills to identify and choose occupations congruent with their circumstances that promote their mental health and wellbeing. (*Make better choices*)

3. Adolescents will identify and develop skills, resources and capabilities to better moderate unhelpful behaviours that impact performance in daily occupations. (*Improve occupational performance*)

Health promoting environmental outcomes and behaviour outcomes of agents:

1. Peers, parents, teachers and siblings will support adolescents to engage in occupations that promote mental health and wellbeing. (*Support*)

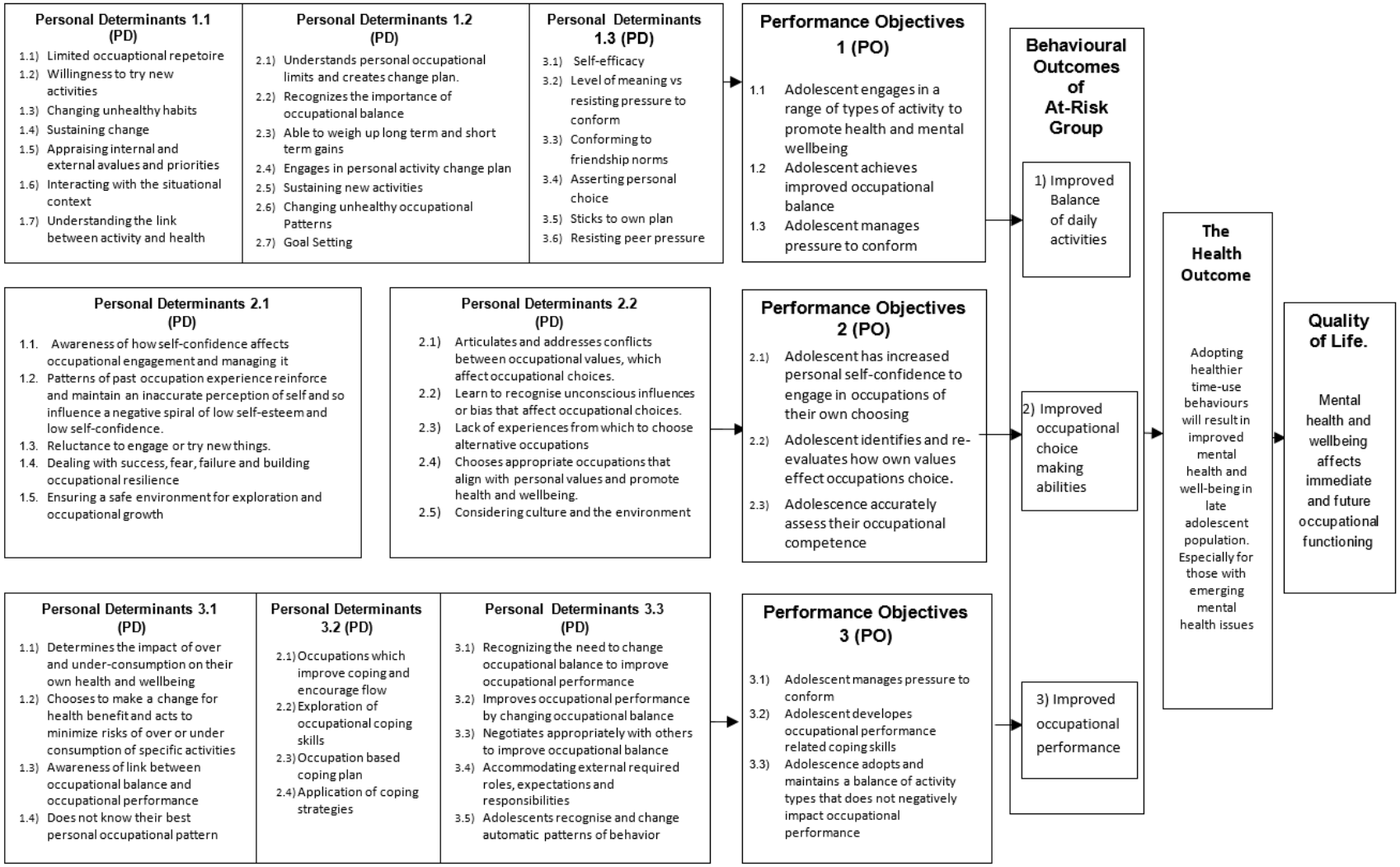
2. Adolescents will have opportunities to explore and engage in occupations that support their mental health. (*Exploration*)

3. The school will support and encourage engagement in occupations that promote mental health and wellbeing. (*Promotion*)

To understand the logical model of change it is necessary to read from starting with the personal behaviours of the At-risk group (see Figure 7.3). These personal behaviours are 'flipped', to become change orientated health promoting behavioural outcomes known as 'Behavioural health outcomes'. Nine selected personal determinants, consisting of the first three personal determinants for each of the three personal behaviours as they emerged from the Delphi study reported in Chapter 6 (see Figure 7.3), are 'flipped' to become the nine change orientated 'performance objectives' as seen in the logic model of change in Figure 7.4. These nine newly created performance objectives, in turn, influence the development of a list of key personal determinants that influence that objective. Thus the logic model of the problem is flipped to become the logic model of change.

Thus a logic model of change becomes evident when reading the logic model of change from left to right. For example, if we read Figure 7.4 from left to right, and take the personal determinants (PD) in box 1.1, seven personal determinants are identified including: limited occupational repetoire, willingness to try new activities, changing unhealthy habits, sustaining change, appraising internal and external values, and priorities, interacting with the situational context, and understanding the link between activity and health. These seven personal determinants can affect performance objective PO1.1. affecting the adolescent engagement in a range of types of activity that promote health and mental wellbeing. Consequently, by changing the personal determinants, the performance objective is changed. The performance objectives similarly influence the success or failure to achieve the behavioural outcome, then affects the overall health outcome, and, consequently, quality of life. This is repeated for each of the boxes of personal determinants illustrated in figure 7.4.

Figure 7.4: Logic Model of Change



7.5.3 Outcome of step 3: Program design

The conceptualisation of the overarching program theme began to emerge in the early stages of the PhD, as patterns of time-use emerged and the theory developed around occupational choices, suggesting that poor occupational balance may affect adolescent mental health. A core concept of occupational therapy, Occupational balance is a complex, multi-dimensional concept that is subjective in nature and related to patterns of daily occupation (Wagman et al., 2015, Eklund et al., 2017a). The emerging determinants and change objectives aligned with the concept so 'occupational balance' was adopted as an appropriate choice for the overall program theme.

The developed logic model of change consists of multiple change objectives derived from the prioritised personal determinants identified in study four. The personal determinants included in the logic model of the problem were organised into six categories based on the themes that emerged during the IM process. The themes included exploring skills and developing the occupational repertoire, balancing occupations and time, volition and valuing occupation; managing the situational context, managing occupational choice, and appraising occupational choice and developing the occupational self. Two of the groups were too large and subdivided, forming eight groups. These themes then formed the basis of developing an eight-session intervention program.

The intervention program was formulation around the identified themes and achieved by using each of the six categories of determinants and change objectives in conjunction with the therapeutic strategies and core principles identified in MOHO to develop session plans. The strategies include validating, identifying, giving feedback, advising, structuring, negotiating, coaching, encouraging and practical support (Taylor, 2017). Occupational therapy and change theories were considered appropriate to achieve the change objectives. Practically, sessions were designed to last no longer than fifty minutes to fit with school timetabling. An outline of the course content and structure is presented in table 7.5.

Table 7.5: program outline including Themes, performance objectives, targeted determinants and intervention structure

The activity Time Use intervention Program				
Theme	**Performance objectives**	**Targeted personal determinants**	**Week No:**	**Intervention outline**
Overarching performance objectives	**PO1.1 Adolescent engages in a range of types of activity to promote health and mental health.**	PD.7 Understanding the link between activity and health	1-8	N/A
	PO1.2 Time-use in late adolescence affects mental health, especially for those with emerging mental health issues.	PD.4 Engaging in personal activity change plan		
		PD.7 Goal setting		
	PO2.1. Adolescent has increased personal self-confidence to engage in occupations of their own choosing.	PD.5. Ensuring a safe environment for exploration and occupational growth		
Exploring skills and developing the occupational repertoire (Part 1 & 2)	**PO 1.1 Adolescent will increase their engagement in occupations that promote mental health, while decreasing engagement in occupations that adversely affect their mental health.**	PD.1 Limited skills and occupational repertoire for managing non-directed free time for health.	1	1) Welcome and introduction 2) Activity 1: Activity card sort/activity check list activity. 3) Activity 2: Menti online quiz 4) Introduce time use diary & activity plan
		PD.2 Willingness to try new things and expand the occupational repertoire		
		PD.7 Understanding the link between activity and health	2	1) Welcome and introduction 2) Activity 3: Exploring occupational experience 3) Activity 4: Planning to try something new 4) Homework: Time-use diary and experience activity
	PO.3.2. Adolescent develops occupational performance-related (doing occupation) coping skills.	PD.1. Occupations which improve coping and encourage flow		
Balancing occupations and time (Part 1 & 2)	**PO1.1 Adolescent engages in a range of types of activity to promote health and mental wellbeing.**	PD.3 Breaking unhealthy and unconscious patterns and habits	3	1) Welcome and Introduction 2) Activity 5: Activity balance- discussing experience of getting it right/getting it wrong activity. 3) Activity 6: Exploring time-use 4) Homework: Occupational balance work sheet
		PD.4 Sustaining change		
	PO1.2 Adolescent achieves improved occupational balance.	PD.1 Understands personal occupational limits and creates change plan		
		PD.2 Recognises the importance of occupational balance		
		PD.3. Able to weigh up long term and short term gains		
		PD.5. Sustaining new activities		

		PD.6. Changing unhealthy occupational patterns		
	PO3.1. Adolescent avoids over and under consumption of activties.	PD. 1. Determines the impact of over and under-consumption on their own health and wellbeing	4	1) Welcome and Introduction 2) Warm up activity 7: Revisit and discuss last week's activity homework 3) Activity 8: Making connection between time-use, health and wellbeing. 4) Homework: Occupational change task
		PD.2. Chooses to make a change for health benefit and acts to minimize risks of over or under consumption of specific activities		
		PD.3. Recognises link between occupational balance and occupational performance		
		PD.4. Experimenting to find best personal pattern		
	PO3.3. Adolescent adopts and maintains a balance of activity types that does not negatively impact occupational performance.	PD.1 Recognising the need to change occupational balance to improve occupational performance		
		PD.2 Improves occupational performance by changing occupational balance		
Volition and valuing occupation	**PO1.1. Adolescent engages in a range of types of activity to promote health and mental wellbeing.**	PD.5. Appraising internal and external values and priorities	5	1) Welcome and Introduction 2) Activity 9: Values and beliefs 3) Activity 11: Assigning values to a hypothetical time-use diary 4) Homework: Personal time-use diary evaluation
	PO2.1. Adolescent has increased personal self-confidence to engage in occupations of their own choosing.	PD.2. Patterns of past occupation experience reinforce and maintain an inaccurate perception of self, and so influence a negative spiral of low self-esteem and low self-confidence.		
	PO.2.2 Adolescent identifies and re-evaluates how own values effect occupations choice.	PD 1. Articulates and addresses conflicts between occupational values, which affect occupational choices		
		PD.2 Learn to recognise unconscious influences or bias that affect occupational choices		
		PD.3 Lack of experiences from which to choose alternative occupations		
		PD.4. Chooses appropriate occupations that align with personal values and promote health and wellbeing.		
Managing the situational context	**PO1.1. Adolescent engages in a range of types of activity to promote health.**	PD.5. Appraising internal and external values and priorities	6	1) Welcome and Introduction 2) Activity 11: Identifying supports and blockers 3) Activity 12: Role-playing an occupation based negotiation with others
		PD.6 Interacting with the situational context		
	PO1.2. Adolescent achieves improved occupational balance.	PD.8 Negotiates situational context to engage in healthy occupation behaviours		
		PD.1. Improving self-efficacy		

	PO1.3. Adolescent manages pressure to conform.	PD.2 Level of meaning vs resisting pressure to conform		4) Homework: self-reflection exercise and continue personal activity plan
		PD.3 Conforming to friendship norms		
		PD.4 Asserting personal choice		
		PD.5. Sticks to own plan		
		PD.6. Resisting peer pressure		
	PO2.2. Adolescent identifies and re-evaluates how own values effect occupations choice.	PD.5 Considering culture and the environment		
	PO3.3. Adolescence adopts and maintains a balance of activity types that does not negatively impact occupational performance.	PD.3 Negotiates appropriately with others to improve occupational balance		
		PD.4 Accommodating external required roles, expectations and responsibilities		
Managing occupational choice	**PO2.1. Adolescent has increased personal self-confidence to engage in occupations of their own choosing.**	PD.1. Awareness of how self-confidence affects occupational engagement and managing it.	7	1) Introduction and Welcome 2) Activity 13: The occupational model of choice. 3) Activity 14: Dealing with occupation you cannot avoid. 4) Homework: Planned activity and evaluation sheet
		PD.3. Reluctance to engage or try new things		
		PD.4. Dealing with success, fear, failure and building occupational resilience		
	PO3.1 Adolescent avoids over and under consumption of activties.	PD. 1. Determines the impact of over and under consumption on their own health and wellbeing		
	PO3.2 Adolescent develops occupational performance-related (doing occupation) coping skills	PD.1. Occupations which improve coping and encourage flow		
		PD.2 Exploration of occupational coping skills		
		PD.3 Occupation based coping plan		
		PD.4 Application of coping strategies		
	PO3.3. Adolescent adopts and maintains a balance of activity types that does not negatively impact occupational performance.	PD.5 Adolescent recognises and change automatic patterns of behaviour		
Appraising occupational choice and developing the occupational self	**PO2.1. Adolescent has increased Personal self-confidence to engage in occupations of their own choosing**	PD.2. Patterns of past occupation experience reinforce and maintain an inaccurate perception of self, and so influence a negative spiral of low self-esteem and low self-confidence.	8	1) Welcome and introduction 2) Activity 15: Identifying and evaluating competencies 3) Activity 16: Closing activity - writing change plans 4) Activity 17: Good-bye and closure activity.
	PO2.3 Adolescent accurately assesses their occupational competence (Perception of Competence)	n/a		

7.5.4 Outcome: Initial acceptability testing

A small PPI group consisting of one young person known to the researcher, invited a number of other young people to participate in order to prospectively, explore the acceptability of the initial program outline and content. The group consisted of four young women, three of whom were previously involved in the piloting studies one and two at the beginning of the PhD project. Conducted over zoom, the participants received an explanation of the purpose of the group and an overview of the Intervention program, its aims, structure and the content of each session, before discussing and providing feedback on the acceptability of each part of the proposed Intervention outline as a potential intervention for 16 and 17 year olds.

The PPI group agreed to record the meeting for the sole purpose of the researcher drawing notes from their discussion. The researcher reviewed the feedback after the group, summarising and grouping the feedback according to the seven aspects of acceptability proposed by Sekhon et al. (2017) which include affective attitude, burden, ethicality, intervention coherence, perceived effectiveness, and self-efficacy of the intervention to the target population. The information collected illuminated areas of the program that will need to be changed prior to any further acceptability or feasibility testing.

Firstly, '*Affective Attitude':* Referring to feelings about the intervention (Sekhon et al., 2017), the concept and overall content of the intervention received positive feedback. The wording and terminology used needs to be addressed to 'sell' it to young people and encourage engagement. Specifically, there is a need to understand how the intervention will directly help them in their situation. Sessions should be engaging, requiring active involvement, and avoid over-simplification, jargon or complicated words. Some will, otherwise, lose interest. Additionally, sixth-form students have considerable control over their time and choices, so relevance, practical utility and value, demonstrated against other activities, is required to encourage engagement.

The second concept of '*Burden*' refers to the effort required to participate in the intervention (Sekhon et al., 2017). The group approved of the plan to schedule the sessions at the beginning of year twelve, between GSCE and A levels, because it is a time when students want to make a good start, are thinking about their future and have not settled into a fixed routine. The group predicted that interest in engaging would decline later in the term, as adolescents become established in their patterns and routines, coupled with the additional pressure of exams.

The key feedback regarding the third concept '*ethicality*' concerned disclosure. *'*Ethicality' describes the fit between the intervention and the individual's value system (Sekhon et al., 2017). The group were concerned about the perceived and real safety to discuss and share content during sessions. Lack of safety particularly referred to who would facilitate the session and how well students knew each other before starting the intervention.

The fourth concept, '*Intervention coherence*', describes the extent to which the intervention is understood by participants (Sekhon et al., 2017). The intervention purpose and content were valued for the target population, providing they can be fully engaged at the beginning. The logical flow and particularly the theme of how adolescents use their time was most relevant because of a need to be more self-motivated and self-organised in sixth form.

The fifth concept, '*Perceived effectiveness*', describes the extent to which the intervention is likely to achieve its purpose (Sekhon et al., 2017). Considered key to the effectiveness of the intervention, delivery needs to address the barriers that exist around discussing some topics in the classroom, and an external facilitator was recommended. The group highlighted that young people like debates, quizzes, competitions and getting statistics about themselves.

'*Self-efficacy*' refers to confidence to perform, as required by the intervention (Sekhon et al., 2017). Role-play and activities involving a high level of reflection or writing were thought to be difficult for some. Replacing role-play with debates and reflection with Likert scales was suggested to improve feelings of self-efficacy in tasks. The group stated preference for activity-based interventions around which discussion could happen, rather than small group discussions tasks. They cited past experiences of stilted conversations and feeling awkward in such situations. They argued that it often did not result in the intended outcome.

Completion rates for homework done outside of planned sessions was likely to vary depending on the group of adolescents involved, the length of time required to complete it, and how boring or challenging it is perceived to be. Others thought it might be easy to forget and end up being completed last minute. Participants preferred logbook type activities via an app to paper-based activities, stating that it was more convenient, private and secure. Consequently, they were more likely to complete homework on an app on their phone. In contrast, they felt they would be unlikely to complete non-facilitated online sessions and preferred in person-facilitated delivery methods.

The final aspect was '*opportunity costs*', which concerns what must be given up to engage in the intervention in terms of benefits, profits or values (Sekhon et al., 2017). Though not discussed in detail, some participants highlight the need to know the intervention's relative value to their schoolwork, highlighting the value of school time for getting work done.

Discussion: The developed intervention program received mostly positive feedback. Where the group identified issues, the group made suggestions that could improve the program design and make the intervention more acceptable. Consequently, the intervention program needs some minor modification prior to developing the program materials and further acceptability testing.

7.6 DISCUSSION

This study reported on the construction of a new intervention program that aims to improve mental health through enabling 16 and 17 year olds in mainstream education to adopt a healthier, holistic balance of everyday meaningful occupations that align with their own values, beliefs and environmental context. The creation of this intervention has highlighted the complexity of mental health determinants and changing occupational behaviours and highlighted the challenges of developing a realistic time-limited school-based intervention.

The program development combined the evidence-based IM framework with occupational therapy theory, informed by information gained from four earlier studies, in conjunction with additional peer review literature. Consistent with intervention methodological science, development began with the construction of the theoretical base, also known as a logic model of the problem, followed by the identification of practical logical steps required to address the problem, which included defining the performance and change objectives. The third step involved organising the change objectives into a structured program on which the practical session plans, content and materials can be conceptualised and developed.

MOHO provided an occupational perspective and a means to ensure consideration of appropriate occupational science theory. The earlier stages of the study aligned with the MOHO principle of starting intervention development with immersion in the real-life experience (Taylor, 2017), followed by stakeholder consultation and involvement in the construction and development of the intervention. Specifically, two of the studies informing the intervention developed primary data about the occupational experience of adolescents engaging in mainstream school. Studies three and four

provided information regarding occupation-related determinants from the literature and professionals. Consequently, the core intervention theme, session topics, determinants and change objectives have an occupational focus.

Practically, this systematically developed intervention program is a promising start to developing an intervention to address occupational determinants affecting mental health. This would contribute to the variety of interventions available to tackle early and emerging mental health issues in the adolescent population. The study is of particular relevance to the emerging field of life psychiatry, which is interested in how lifestyle factors influence and shape mental health. In contrast to much of the existing lifestyle psychiatry literature, which tends to focus on specific occupations such as sleep, diet, exercise and hobbies, this study combines a recognition of interplay between the individual's unique characteristics, their environment and the finite nature of time in the context of occupational choice. It provides an intervention program designed to empower young people to make real-world occupational choices with the purpose of achieving a realistic, meaningful and healthy balance of occupations. Furthermore, this study provides an example of how behaviour-change theories and approaches, such as IM and occupational therapy theory, can inform the development of an evidenced based intervention.

7.6.1 Limitations and implications

The IM approach used is comprehensive, thorough, and likely to produce effective results, but it is a lengthy process and completion was beyond the scope of a PhD thesis. Using the IM framework, the work completed thus far, forms the basis of post PhD work. Next steps include adding the identified environmental components to the intervention, developing the program materials, and a more thorough review of the intervention plan with key stakeholders, especially teachers, with regard to implementation in a school environment. After this, the intervention can be trialled evaluated.

In its present state the intervention could potentially be adapted for a school population as originally intended or, potentially, other populations of young people, such as those accessing mental health services. Completing the environmental conditions assessment more specifically would facilitate the tailoring of the intervention plan to specific groups of adolescents. Although this intervention is not yet complete, the project has a tangible product that can be readily adapted to different contexts,

and provides scope for adaptation to different delivery contexts, which can be further explored post doctorate.

7.7 CHAPTER SUMMARY

This chapter has reported on the process and methods used to construct the planned intervention program, detailing how knowledge gained from the four earlier studies informed the development of the unique ATI intervention, using the IM framework in conjunction with occupational therapy theory. A logic model of the problem was developed from which a logic model of change was also developed. The intervention was subsequently developed and discussed with a PPI group who provided positive feedback. The ATI is the first, systematically developed, intervention program informed by occupational therapy theory and occupational science, designed using IM. That development draws on new knowledge gathered over the course of this PhD, a recognised occupational therapy theoretical model of practice, as well as behaviour change theory, to enable and empower adolescents' occupational choice. The intention is to recognise and improve occupational balance and engagement in occupations that contribute positively to mental health.

8 CHAPTER 8, SUMMARY AND CONCLUSIONS

8.1 WHAT THIS STUDY SET OUT TO DO AND HOW WELL IT ACHIEVED THIS

This PhD study developed a novel intervention program to improve the mental health of adolescents aged 16 to 17 years, an age associated with the onset of mental health problems such as depression, anxiety and particularly the transition to psychosis. The study sits within the context of an international problem of rising adolescent mental illness and adds to international efforts to find new ways to improve mental health. The focus on occupational determinants and application of the occupational science that underpins the practice of occupational therapy provides a necessary and much needed alternative to psychiatric or psychological approach to determinants affecting mental health. Practically, an approach focused on occupational determinants in the context of everyday life has potential to be both more accessible and acceptable to adolescents and non-clinical professionals such as teachers. It also has relevance to those in lower income countries were resources are likely to be limited.

Literature found in this study adds evidence to support a relationship between adolescent occupational engagement and health; furthermore, adolescence is a significant period of occupational development, with long-term implication for functioning and patterns of occupation-related behaviours linked to health (Sawyer et al., 2012). This supports the view that engaging in occupation may have, protective short-term effects, support development of long-term habits that protect mental health, and help to maintain occupational functioning following the onset of clinical symptoms. This collated information adds weight to the foundational premise on which occupational therapy is based, that occupation and health are linked. The literature provides a summary of a wide spectrum of information relevant to adolescent development with a specific occupation focus that is both of interest to those working with young people and can help inform the practice of occupational therapists. The literature also illuminates the multiple factors which shape occupational development which may be important to those working in clinical practice. Given the evidence supporting the critical period for occupational development, there is also an argument for occupation-based interventions, and the involvement of occupational therapists in the care of adolescents with emerging mental health issues.

Complexity exists around the translation of knowledge into effective and feasible interventions, evidence based theoretical approaches can help. The study adopted a contemporary design, reflecting best practice guidance chosen from the rapidly developing field of complex intervention development, incorporating the creation of a logic model and involving stakeholder perspectives. Although it is important to note that few identified components of intervention development have been fully investigated (O'Cathain et al., 2019a). The use of the thorough and comprehensive IM approach represents the first time, based on the peer-reviewed literature, that the approach has been used in conjunction with occupational therapy theory and occupational science in the context of adolescent mental health intervention development. As such, the study is potentially useful for occupational therapists hoping to develop interventions, providing an example of the application of intervention science and frameworks such as Intervention Mapping alongside occupational therapy theory. The study also raises potential questions for the occupational therapy profession to consider about how its own theoretical position relates to the emerging science of intervention development, especially where knowledge is adopted from other knowledge bases. It is important to note that occupational therapists or other clinicians working in clinical practice may find it challenging to develop interventions using frameworks such as Intervention Mapping because of their complex, time –consuming and involved nature. Clinicians in practice may find it helpful to link with researchers in academic settings or seek research funding to support quality intervention development and testing at RCT level.

Each of the five studies helped to inform the intervention development, whilst also aiming to produce knowledge that could practically support or inform clinical practice. An approach of this nature maximises research resources and potentially improves the likelihood of knowledge translation.

The systematic scoping review of 3976 academic papers, identified 39 using occupation to improve mental health and mental well-being in adolescents. Despite the use of occupational therapy interventions in clinical mental health settings with adolescents, only three occupation-based studies informed by occupational science or occupational therapy theory, were identified. This finding highlights the need for this PhD project and others like it. The author's own clinical experience suggests that existing interventions go unreported. To address this, clinicians should be encouraged to publish intervention plans enabling researchers to examine effectiveness. This could be supported through writing groups, intervention related training sessions, collaboration between researcher and clinicians, and allocated time for research and writing. The findings themselves provide occupational

therapists with a detailed overview of the wide variety of types of occupation-based interventions that have been reported including details of intervention setting, the conventions of intervention delivery, outcome measures and some dose related information. As quality of the studies included was not assessed any application to a real world context requires some caution and considered clinical reasoning. The contribution of the review to the process of intervention development, is the identification of occupational determinants, whilst also highlighting the novel value of this project.

The findings from study two, describe how 16 and 17 year olds use their time, illuminating adolescent occupational engagement within the context of the 24-hour time-use trade-off, and affirming the view that occupation is a complex phenomenon. The data collected from 134 participants, demonstrated good uptake and completion of questionnaires amongst adolescents. The exploration of sample characteristics, suggests that the SDQ total scores were consistent with existing normative data, while some time-use patterns for specific occupational types appear to be consistent with the existing literature. The combination of the SDQ, and time-use findings in conjunction with the applied methodology, suggests a larger multi-site study to explore patterns between time-use and strengths and difficulties may be appropriate. Such knowledge can also inform the use of SDQ and TUD as outcome measures. Significantly, this is the first time, as far as the author is aware, that a school-based cohort of adolescent aged 16 to 17 years has been surveyed using time-use diaries and the SDQ questionnaire in England. The fact that the SDQ is widely used in clinical practice means potential exists for comparing populations and exploring daily time-use to identify occupational patterns suggestive of emerging mental health difficulties. In the school setting, this knowledge could indicate potential At-risk mental states.

Potential exists for further research into the use of the SDQ and time-diaries as a mass, non-stigmatising screening measure identifying occupation related problems at earlier stages of the staging model before individuals reach the threshold for clinical diagnosis. Enabling early intervention around occupation related difficulties that may affect mental health. Time-use data sets such as the one in this study, may also collectively provide clinical occupational therapists with norm data around the balance of occupation within twentry-four hours. Time-use data combined with other research disciplines such as neuroscience may also help improve our understanding of the processes involved in occupational choice, brain development and the impact on mental health.

Time-use studies have rarely considered both the subjective and objective perspective of daily time-use in the context of the 24-hour time-use trade off. The use of a sequential mixed-method design is

novel, and enabled consideration of the phenomenon from both a subjective and objective perspective with the same school-based population as study two. Thus, presenting a holistic view of occupational engagement that illuminates the complexity of adolescents' occupational choices in relation to time-use, the rationale behind those choices and the potential to affect mental health. This knowledge presents the study problem from different perspectives that are of interest to occupational therapists and occupational scientists, and informs the logic model.

Through using a constructivist grounded theory approach, a novel theory emerged from the analysis explaining the complex and dynamic interaction of an adolescent's internal and external world when in the process of choosing how to engage at an occupational level. Illuminates how that choice informs the adolescent's personal development, providing a rationale for how typical occupational skill development and occupational identity development occurs in late adolescence (Parsonage et al., 2020). The specific focus on the occupational choices of adolescents aged 16 to 17 in mainstream education from an occupational science perspective is a contemporary exploration of determinants that may have relevance to current global mental health crisis. The emergent theory compliments and adds to existing occupational therapy and clinically can inform both individual treatments and preventative group interventions for those aged 16 to 17 years at risk of disrupted occupational development. The theory could be useful to those seeking to promote healthy time use behaviours, occupational balance or develop occupation-based interventions for late adolescent populations.

Building on the findings from the three earlier studies, the expert opinion from occupational therapists and researchers working with adolescents achieved a moderate level of consensus as it prioritised eight-nine occupation related determinants in a two round Delphi. The highest-ranking items remained the same for both rounds and informed the intervention performance objectives. The author is not aware of any studies that have specifically identified and prioritised occupational determinants in order to develop an occupation-based intervention informed by occupational therapy theory and occupational science, for adolescents with emerging mental health difficulties. The determinants are an articulated list of occupation related factors that potentially influence mental health. The list can be used to research occupation related causal factors, inform other interventions, provide an age appropriate occupational guide in occupational therapy assessments or be developed into age appropriate outcome measures.

In the context of clinical practice occupational therapists typically aim to adopt a client centred approach but it may be helpful for clinicians to consider the occupational determinants identified in

the scoping review when assessing and identifying goals with a young person with emerging or diagnosed mental health difficulties. Given the emerging role for occupational therapists in the school setting, the findings may also be useful to consider when delivering health promotion and prevention interventions in the school context.

Following the six step IM framework, all four studies, each individually clinically relevant, collectively inform the development of the novel eight-week manualised time-use intervention manual (ATI). The ATI is a unique, evidence based intervention, systematically developed using recognised guidance for developing interventions alongside occupational therapy theory and occupational science. Having received positive feedback from the PPI group the next stage is to develop the program materials and conduct feasibility testing. The intervention has potential to empower adolescents to make appropriate choices about engaging in occupation that promotes mental health and establish longer-term healthy patterns of occupational behaviour. The intervention was based on behavioural outcomes rather than environmental outcomes, as such the intervention can be tailored to different environmental settings such as schools, CAMHS services, in patient units and residential settings.

8.2 THE STRENGTHS AND LIMITATIONS OF THE STUDY

The decision to use the intervention-mapping framework was based on the intention to develop an intervention systematically using the best available evidence drawing on the latest in intervention science. Intervention science has developed rapidly, and the importance of both qualitative and quantitative elements have been emphasised, highlighting the need to adopt mixed methods as the project has done (O'Cathain et al., 2019a). IM is one of a number of guiding frameworks that provide a structure around which to develop an intervention (O'Cathain et al., 2019b), based on a pragmatic position while drawing on mixed research methods and information sources (Bartholomew-Eldredge et al., 2016). While other methods exist, it has been argued that IM is superior because of its unique approach to combining behavioural change theories according to the specific determinant and nature of the determinant that you want to change. Certainly, the regard for IM is positive in the literature as one of the most comprehensive, detailed, and complex behaviour-change methods, but has also been criticised for being a lengthy, time consuming and costly approach (O'Cathain et al., 2019b). Indeed some aspects of the six-step process were beyond the scope of this PhD and are planned for post-doctoral work.

As far as the author is aware, IM and occupational therapy have not been used together to develop an intervention of this nature before. This raised some interesting questions about combining behavioural change theory, and occupational therapy theory, in the context of complex intervention development. Whilst still holding to the tenants and principles of occupational science that underpins the approach and values, and indeed the structure of an intervention. The model of human occupation represented the occupational therapy theoretical base. A particular strength of using Moho is that it was designed with the intention that it can be used in conjunction with knowledge bases beyond the scope of the model itself (Taylor, 2017) thus making it ideal to use in conjunction with a behavioural change theory-based framework for developing interventions.

IM strongly advocates the importance of involving stakeholders (Bartholomew-Eldredge et al., 2016). Built within the context of this study were opportunities to engage with young people and occupational therapists. However, it was beyond the scope of this project to engage with teachers and parents, who can add important insights. Further development of this project should consider exploring occupational determinants related to teachers, and parents providing a key perspective currently missing from this study. An ongoing youth advisory panel and a stakeholder consultation group should be considered to inform and shape the intervention ensuring acceptability of the manual and subsequent materials developed to support delivery of the intervention manual.

Study one, was a broad and comprehensive review of the literature, confirming the limited number of reported occupational-based interventions informed by occupational therapy theory and occupational science targeting adolescent mental health. The study also served to illuminate the breadth of outcome measures currently used in this area, which is problematic for some forms of evidence-based literature reviewing. The original search was conducted in 2018 and informed the development of the intervention, but an updated review is necessary before the study can be submitted for peer review publication. Another problem, anticipated and reinforced in this area, is the problem of language used in relation to occupation or activity-based studies, making it difficult to locate and identify studies that may be of interest to those developing interventions in this area. This is strongly highlighted by the recently published literature review by Cahill et al. (2020) exploring a similar topic but highlighting an almost completely different set of studies. However, taken together, a comprehensive review of the literature is presented. Terminology and outcome measures deserve attention in order to strengthen the field and develop knowledge that supports occupation-based interventions. The study remains unique in that it is the only one to exclusively focus on mental

health and exclude neurodevelopmental disorders. A large-scale multi-team approach maybe warranted in future studies to adopt a broader scope and, in addition, search the grey literature with an added quality assessment.

Time-use diaries continue to be a potentially useful resource to occupational therapists. Study two used a gold standard retrospective full 24-hour time-use diary and got a high level of completion when completed during school hours. Using time-use diaries appears to be appealing to adolescents but the number of home completed weekend diaries was poor, suggesting the need for further exploration around the efficacy and acceptability of the time-use questionnaire. Burden of completion has previously been cited as a problem with time use diaries (Sonnenberg et al., 2012). The use of a well-designed digital version could help reduce the burden of completion and reduce missing data. Combining a time-use diary with personalised feedback may further improve adolescent's interest and, therefore, completion of the diaries.

The use of the SDQ was also positive as it represents a quickly administered method of assessing strengths and difficulties, can provide an indicator of potential mental health problems and is widely used in clinical practice and research (Patalay et al., 2018). The SDQ data had high levels of completion, possibly attributable to the order of the two questionnaires or the short time required to complete. Questionnaire completion in a school environment when students are seated next to friends may also be an influencing factor when considering the feasibility of using the tool in this manner, however, in this study the mean totals for the different domain totals appear similar.

While the sample provide an interesting description of occupational engagement, no power calculation was completed, included schools were not randomly sampled, and the schools reflect only one type limiting generalisability of the findings beyond the sample they describe. From a feasibility perspective, the method and approach do show promise for developing understanding of occupational engagement in this population in the context of their current environment and at a critical time of transition from GSCE to A level. It is important to mention that the time use diaries collected cover only one weekday during the school year and do not represent the full week. Further studies should explore ways to improve return rates and cover aim to cover more days of the week.

The mixed method nature of this study presents a particular strength in that it provides not only a picture of adolescent time-use, but also an understanding behind why they choose to engage in the

occupations they do. Thereby, it goes some way to address one of the common criticism of time diary research, which suggests that is that it does not reflect the subject perspective (Ellegård, 2019).

Positively, the two very different schools are included, increasing the ethnic diversity in the sample, avoiding a common criticism of studies. The analysis led to the development of an occupational model of adolescent choice, grounded in the experience of the target population. As with qualitative methodologies this study is small, and further exploration and testing of the theoretical model is important especially to ensure the model works across different cultures and contexts. Unfortunately, the limited number of adolescents volunteering to participate prevented a comparison between groups based on the SDQ, however the researcher was aware of participant SDQ scores, which informed the analysis. Engagement could be improved by recruiting separately to the survey questionnaires, specifically inviting students to participants based on their SDQ score, offering alternative interview methods, and incentives to participate.

The use of constructivist grounded theory was a good fit alongside a pragmatic based IM framework. The nature of grounded theory means that it illuminates new areas to explore (Charmaz, 2006), as it has in this study. Specifically, the emerging theory highlights a mechanism by which health is affected by occupational choices, and highlights the additional challenges ethnicity can have on healthy occupational engagement, further exploration of these areas would be advantageous to understanding the relationship between occupation and health. The study has added to occupational theory and occupational science, which enriches the knowledge and theory that is already there and confirms and strengthens the theories that are already in existence but gives a particular perspective on 16 and 17-year-olds occupational experience.

The fourth study was an addition to the original PhD plan, which had originally envisaged getting experts together in person to discuss and prioritise determinants. An approach which would have resulted in a smaller sample of experts prepared to commit the time to be involved and to travel. The Delphi consensus method was an appropriate alternative solution for this project. The method is advisable where evidence is limited, or the items difficult to prioritise, consequently the method proved to be effective for identifying and prioritising determinants with stakeholders. A moderate level of agreement was achieved. However, greater clarity of the research questions and the questionnaire structure would be advantageous and may have reduced participant loss in the second round. The method is not without criticism, a key concern being the nature of the expert panel. This study attracted interest from a small but appropriately qualified group of occupational therapists and

researchers, including representation from experts located overseas. The group therefore had relevant stakeholder experience and knowledge to inform the prioritisation of determinants. The method enabled these perspectives to be captured, and used immediately in a way other valid empirical methods could not have done in the time available for this PhD. The method also represents a more rigorous structured process for building a consensus of opinion. Future studies may benefit from increasing the number of participants and including a Delphi with parents, teachers and young people. Alternatively an exploration of determinants identified during the study may also be important.

The final part of this project was the development of the intervention manual outlined in this thesis, informed and based on the identified determinants. The developed manual built on existing literature, new knowledge generated through this project and on the principles of occupational therapy theory and, more specifically, MOHO. Several challenges arose using the IM process in conjunction with occupational therapy theory. Firstly, even using only the first three prioritised determinants resulted in a considerable quantity of material to include in an eight-week intervention. Secondly, it was necessary to adapt the process ascribed by IM pragmatically, for intervention development, to sit alongside an occupational therapy approach. Arguably this enhanced the detail and consideration given to the intervention's development and enriched the process rather than detracted from it. As the intervention is based only on the personal determinants, this intervention can be used in schools, and adapted for other settings, such as acute or community-based clinical settings. As one of the first Occupation-based interventions informed by occupational therapy theory and occupational science targeting 16- to 17-year-olds with emerging mental health difficulties, developed systematically using IM, and the outline was received positively by the PPI group of young people. Future work is now required to build the resources in collaboration with young people and test its effectiveness with the intended population.

8.3 IMPLICATION, APPLICATIONS AND THE WAY FORWARD

This unique project provides a systematically developed occupation-based intervention for young people aged 16 to 17 with emerging mental health difficulties informed by occupational therapy theory and occupational science. Next steps involve developing the intervention materials in partnership with young people, conducting acceptability and feasibility testing in a school

environment. An opportunity also exists to adapt the project for other clinical settings such as impatient units, universities, and residential units.

The project highlights several interesting areas for further research, for example, further exploration of adolescent time-use can help to inform an understanding of occupational development and how time-use influences mental health. There is opportunity to combine and explore relationships between time-use research and other research disciplines such as neuroscience for example. Time-geography may also present an interesting methodology through which, to further identify and explore adolescent occupational engagement, and patterns within the context of the environment. Time-use, as measured with time diaries could be developed for use as an outcome measure for occupational therapy interventions targeting occupational balance.

Detailed exploration of time dairies, and differences between UK based ethnic groups could help to illuminate health inequalities related to patterns or occupational routines. Qualitative exploration of how occupational choice varies culturally could meaningfully add to the emerging theory of adolescent choice developed in this PhD thesis. Further sampling using interviews could also add deeper insights not likely to be shared in a peer group session. The theory could also be enhanced through exploration of adolescent's reported experiences of choosing occupation on a daily basis and how their choices effects their mental health. Understanding of the influence of adolescent time-use and occupational choice on mental illness could be further enhanced by conducting similar studies in other countries around the world. Collectively such research could help to inform an understanding of how adolescent choices are shaped, contributing to an understanding of occupational balance and its effect on mental health.

Another clear implication that emerged from this research is the need for unifying the terminology used by occupational therapists to describe mental health interventions and to identify a research appropriate outcome set to strengthen the evidence-base. Greater clarity around terminology and outcome measures would ensure that relevant literature can be identified and other more detailed types of systematic analysis could be completed. The evident lack of occupation-based and occupational therapy informed interventions targeting mental health difficulties during the unique and critical period of adolescent occupational development serves to highlight the need for more systematically developed interventions. This could be addressed through encouraging and supporting clinicians to write and publish about the interventions they are using in clinical setting. Researcher

and clinician collaborations could help to further develop the evidence base to support interventions for this population.

This study has also prioritised a list occupational determinants that are relevant to adolescents and their mental health. An opportunity exists to explore each of these determinants in further detail to better understand the mechanisms and ways in which they affect adolescent mental health. Further research and intervention development could be focused around the determinants not targeted in this thesis.

This study intends to develop an occupational therapy theory based intervention for young people with emerging difficulties, using a multi study design, with each study designed to be useful to clinicians in clinical practice. An intervention has been developed but further development and testing is necessary. The knowledge generated in this thesis is however of use to clinicians, but should be used judiciously alongside clinical reasoning as further research is indicated.

8.4 CHAPTER SUMMARY

This PhD, creatively and pragmatically adopted a novel mixed-method, sequential, five study, methodology informed by IM. Clinical utility was a key consideration in study design. The project, provides insights into: the time-use and mental health characteristics of adolescents; illuminated the process by which 16 and 17-year-olds make choices about how they use their time; has explored the academic literature for occupation-based interventions targeting mental health in adolescents; sought expert opinion on the prioritisation of multiple occupational determinants that affect mental health; and, finally, developed the first stages of a novel intervention informed by occupational therapy theory and occupational science for adolescents. Collectively, these studies contributed to the knowledge base that informed the development of an occupation-focused intervention for adolescents aged 16 to 17, with emerging mental health difficulties, that is now ready for the next stage of iterative, usability, acceptability, safety and feasibility work.

9 APPENDIX

9.1 APPENDIX. ETHICAL APPROVAL LETTERS FOR ALL STUDIES

OXFORD BROOKES UNIVERSITY

Professor Helen Dawes
Director of Studies
Movement Science Group
Oxford Brookes University
Faculty of Health and Life Sciences
Headington Campus

22 May 2018

Dear Professor Dawes

UREC Registration No: 181192
A mixed method investigation to develop a specialised Occupational Therapy based manual for use with young people with emerging mental health issues

Thank you for the email of 15 May 2018 outlining your response to the points raised in my previous letter about the PhD study of your research student Jackie Parsonage and attaching the revised documents. I am pleased to inform you that, on this basis, I have given Chair's Approval for the study to begin.

The UREC approval period for the data collection phase of the study is two years from the date of this letter, so 22 May 2020. If you need the approval to be extended please do contact me nearer the time of expiry.

Should the recruitment, methodology or data storage change from your original plans, or should any study participants experience adverse physical, psychological, social, legal or economic effects from the research, please inform me with full details as soon as possible.

Yours sincerely

Dr Sarah Quinton
Chair of the University Research Ethics Committee

cc Mona Eklund, Supervisory Team
Jackie Parsonage, Research Student
Kellie Tune, Research Ethics Officer
Jill Organ, Research Degrees Team
Louise Wood, UREC Administrator

www.brookes.ac.uk

OXFORD BROOKES UNIVERSITY

Jackie Parsonage
Research Student
Centre for Movement, Occupational and Rehabilitation Sciences
Oxford Institute of Nursing, Midwifery and Allied Health Research
Faculty of Health and Life Sciences
Oxford Brookes University
Headington Campus

12 September 2018

Dear Jackie

UREC Registration No: 181192
A mixed method investigation to develop a specialised Occupational Therapy based manual for use with young people with emerging mental health issues

Thank you for your email of 6 September 2018 requesting some amendments to the original study approved by UREC on 22 May 2018.

You would like to make the following amendments:

1. The time-use questionnaire has been amended to make it more user-friendly and you would like to increase the completion time to 15 minutes.

2. During the class session participants will complete the SDQ questionnaire and the time-use questionnaire once, a second time-use questionnaire will be given to participants to take away and complete during the following week and will be returned to the researcher either via the teacher or in an envelope.

3. Participants will be given the opportunity to opt in to complete further time-use diaries later in the year and this has been added to the consent form.

4. You would like to add some background questions to the time-use questionnaire to understand how typical the recorded day is in the participant's life and get a sense of ethnic diversity. Asking for ethnic origin and religious belief is classed as sensitive information and because of this you will need to provide participants with a privacy notice to explain why this data is being gathered and how it will be used and stored. This is a new requirement following the implementation of the General Data Protection Regulations (GDPR) on 25 May 2018. A copy of the template is attached to the covering email for this letter and once completed a copy should be forwarded to UREC to keep as an adequate audit trail.

There are no other changes to the study and you have provided updated documentation for these changes (privacy notice to be sent separately) and on this basis I give Chair's approval for these changes. The UREC approval remains the same as the original study, so until 22 May 2020.

Should the recruitment, methodology or data storage change from your original plans, or should any study participants experience adverse physical, psychological, social, legal or economic effects from the research, please inform me with full details as soon as possible.

I wish you continued success with your research.

Yours sincerely

Dr Sarah Quinton
Chair of the University Research Ethics Committee

cc Helen Dawes and Mona Eklund, Supervisory Team
Kellie Tune, Research Ethics Officer
Jill Organ, Research Degrees Team
Louise Wood, UREC Administrator

OXFORD BROOKES UNIVERSITY

Professor Helen Dawes
Director of Studies
Faculty of Health and Life Sciences
Oxford Brookes University

10th October 2019

Dear Professor Dawes,

UREC Registration No: 191347
A Delphi Study to identify core determinants of adolescent engagement and participation and establish priorities for an occupational therapy based intervention to improve mental wellbeing

Thank you for submitting the application to the University Research Ethics Committee on behalf of your research student, Jackie Parsonage. The Committee reviewed the application at its meeting on 8th October 2019, and have agreed **approval subject to meeting the following conditions:**

1. The process of recruitment is underspecified generally. Please clarify how school teachers and academics will be identified and approached to participate.

2. Please outline the piloting process for the questionnaire.

3. Under the requirements of the General Data Protection Regulations (GDPR) there needs to be tick boxes at the start of the questionnaire to allow for explicit opting in and consenting. The phrase 'by completing this survey you confirm that...' must be removed as completion is not consent.

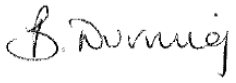
4. The reference to data being stored for 20 years should be amended to 10 years.

5. There is inconsistency in the documentation of the age range of interest, which may cause confusion for the participants: both 16-17 and 15-18 are referred to.

Please note that the study should not commence until these conditions have been fully met and approved by UREC.

Could you please confirm in writing to both the UREC cover administrator (jcripps@brookes.ac.uk) and myself (bdurning@brookes.ac.uk) that you will meet these conditions? Please use the attached template to explain how the conditions have been met along with copies of any revised documentation. When this has been received and agreed, I will send another letter indicating full approval.

Yours sincerely



Dr Bridget Durning
Deputy Chair of the University Research Ethics Committee

cc Professor Mona Eklund, Supervisory Team, Lund University, Sweden
Jackie Parsonage, Research Student
Dr Adam Bibbey, Research Ethics Officer
Jill Organ, Research Degrees Team

www.brookes.ac.uk

OXFORD BROOKES UNIVERSITY

Professor Helen Dawes
Director of Studies
Faculty of Health and Life Sciences
Oxford Brookes University

30th October 2019

Dear Professor Dawes,

UREC Registration No: 191347
A Delphi Study to identify core determinants of adolescent engagement and participation and establish priorities for an occupational therapy based intervention to improve mental wellbeing

Thank you for the email from your research student, Jackie Parsonage, of 29th October 2019 outlining your response to the points raised in my previous conditional approval letter about the above PhD study, and attaching the revised documents. I am pleased to inform you that, on this basis, UREC is happy to grant full approval for this study.

The UREC approval period for the data collection phase of the study is two years from the date of this letter, so until 30th October 2021. If you need the approval to be extended please do contact me nearer the time of expiry.

Should the recruitment, methodology or data storage change from your original plans, or should any study participants experience adverse physical, psychological, social, legal or economic effects from the research, please inform me with full details as soon as possible.

Yours sincerely,

Dr Sarah Quinton
Chair of the University Research Ethics Committee

cc Professor Mona Eklund, Supervisory Team, Lund University, Sweden
Jackie Parsonage, Research Student
Dr Adam Bibbey, Research Ethics Officer
Jill Organ, Research Degrees Team

www.brookes.ac.uk

9.2 APPENDIX CHAPTER 3, STUDY 1, INITIAL SEARCH STRATEGY

	Table 3.1 No of articles yielded on PUBMED key term search							
	Occupation	No. of articles in PubMed search	Mental Health	No. of articles in PubMed search	Interventions	No. of articles in PubMed search	16-17 year olds	No. of articles in PubMed search
Individual search terms	Occupation		Psychosis	76753	Social Recovery Therapy	-	Youth	1948380
	Function	12142342	Mental health	306543	Interventional	-	Young Adult	
	Activity	2698680	Psychiatry		Recovery	-	Adolescent	1926925
	Doing	36482	Mood disorders	134870	Occupational Therapy	-	Adolescen*	1963598
	Employment	115070	Personality disorders	85055	Psycho-socio interventions	-	Teenager	1928419
	Leisure	223214	EIP (Early intervention for psychosis)	2408	Rehabilitation	-	Kid	1917
	Self care/ Self-care	169011	'At risk mental state'	23798	Allied Health professionals	-	Teenager(s)	1928755
	Time Use, Time-Use,	1304	CAARMS /ARMS	-	AHPs	-	Young person	927115
	Time diary/ Time diaries	-	Psycho social	-	Occupational therapist(s)	-	Teen	1927711
	Work / Employment/ trade / vocation/ labour	-	Mental Wellbeing/ Well-being	306543	Professions Allied to Medicine / PAMs	-	Child	2071493
	Time geography	14934	Health/ Healthiness	-	Early Intervention	76236	Childhood	234399
	Time-Space interaction	44	Positive mental state	5090	Clinical Trial	-	Juvenile	78506
	Daily occupation(s)	1395	Schizophrenia	13326	RCT	-	Puberty / Pubescence	37550
	Social functioning	67405	psychological	464755	CAMHS	-		

	Activities of daily living	76778	Intellectual disability	97214				
	Occupational Science	23320	Stress	808422				
	Occupational performance	15060	Mentally Ill	1181044				
	Participation	162596	Mental disorders	1165651				
	Engagement	49683	NOT Pharmacological					
	Human activity	1068901	NOT medicine					
	Everyday activities	3705						
	Occupational Balance	2770						
	Physical activity	490741						
	Action	727978						
	Taking part	16301						
	Performing/ Performance	129063						
	Recreation	195117						
	Past time	57184						
	Hobby / hobbie	2414						

9.3 APPENDIX CHAPTER 3, STUDY 1, FINAL SEARCH STRATERGY

Query

Strand 1 Occupation

S1 "life skills"[Title/Abstract]
S2 "purposeful activit*"
S3 recreation[MeSH Term]
S4 "Occupational Balance"
S5 "social participation"[MeSH Term]
S6 "self care"[MeSH Terms]
S7 "leisure activities"[MeSH Terms]
S8 "Human Activities"[Mesh]
S9 "Activities of daily Living"[MeSH Terms]
S10 "occupation*"[Title/Abstract]

S11 / S1 OR S2 OR S3 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10

Strand 2 Mental health

S12 "stress, psychological"[MeSH Terms]
S13 "mental well-being"
S14 "mental wellbeing"
S15 "emotional well-being"
S16 "emotional wellbeing"
S17 Mood disorder[MeSH Terms]
S17 "self-esteem"[Title/Abstract]
S18 "prodromal symptoms"[MeSH Terms]
S19 Depression[MeSH Terms]
S20 Anxiety[MeSH Terms]
S21 Behaviour, self injury[MeSH Terms]
S22 "Adolescent health"[MeSH Terms]
S23 "At risk mental state"
S24 "mental health"[MeSH Terms]

S25 / S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24

Strand 3 Intervention

S26 therap*[Title/Abstract]
S27 Intervention
S28 "early intervention" (MeSH Term]
S29 "occupational therapy"[MeSH Terms]
S30 "recreation therapy"[MeSH Terms]
S31 "occupation* performance"[Title/Abstract]

S32 "time management"[MeSH Terms]

S33/ S26 OR S27 OR 28 OR 29 OR 30 OR 31 OR 32.

Strand 4 Adolescents

S34 "young person"[Title/Abstract]
S35 child*[Title/Abstract]
S35 Adolescen*[Title/Abstract]
S36 "young people"[Title/Abstract]
S37 teen*[Title/Abstract]
S38 "young adult"[Title/Abstract]

S39 / S34 OR S35 OR S36 OR S37 OR S38
S40 / S11 AND S25 AND S33 AND S39

Search ((((((((((("occupation*"[Title/Abstract]) OR "Activities of daily Living"[MeSH Terms]) OR "Human Activities"[Mesh]) OR "leisure activities"[MeSH Terms]) OR "self care"[MeSH Terms]) OR "social participation") OR "Occupational Balance") OR recreation[Title/Abstract]) OR "purposeful activit*"[Title/Abstract]) OR "life skills"[Title/Abstract])) AND ((((((((((("mental health"[MeSH Terms]) OR "At risk mental state"[Title/Abstract]) OR "Adolescent health"[MeSH Terms]) OR Behaviour, self injury[MeSH Terms]) OR Anxiety[MeSH Terms]) OR Depression[MeSH Terms]) OR "prodromal symptoms"[MeSH Terms]) OR "self esteem"[Title/Abstract]) OR Mood disorder[MeSH Terms]) OR "Emotional wellbeing"[Title/Abstract]) OR "emotional well-being"[Title/Abstract]) OR "mental wellbeing"[Title/Abstract]) OR "mental well-being"[Title/Abstract]) OR "stress, psychological"[MeSH Terms])) AND (((((("time management"[MeSH Terms]) OR "occupation* performance"[Title/Abstract]) OR "recreation therapy"[MeSH Terms]) OR "occupational therapy"[MeSH Terms]) OR "early intervention education"[MeSH Terms]) OR Intervention[Title/Abstract]) OR therap*[Title/Abstract])) AND ((((("young adult"[Title/Abstract]) OR teen*[Title/Abstract]) OR "young people"[Title/Abstract]) OR Adolescen*[Title/Abstract]) OR child*[Title/Abstract]) OR "young person"[Title/Abstract])

Search (((((("young adult"[Title/Abstract]) OR teen*[Title/Abstract]) OR "young people"[Title/Abstract]) OR Adolescen*[Title/Abstract]) OR child*[Title/Abstract]) OR "young person"[Title/Abstract]

Search ((((("time management"[MeSH Terms]) OR "occupation* performance"[Title/Abstract]) OR "recreation therapy"[MeSH Terms]) OR "occupational therapy"[MeSH Terms]) OR "early intervention education"[MeSH Terms]) OR Intervention[Title/Abstract]) OR therap*[Title/Abstract]

Search (((((((("occupation*"[Title/Abstract]) OR "Activities of daily Living"[MeSH Terms]) OR "Human Activities"[Mesh]) OR "leisure activities"[MeSH Terms]) OR "self care"[MeSH Terms]) OR "social participation") OR "Occupational Balance") OR recreation[Title/Abstract]) OR "purposeful activit*"[Title/Abstract]) OR "life skills"[Title/Abstract]

9.4 APPENDIX CHAPTER 3, STUDY 1, DATA EXTRACTION FORM

Criteria	Articles
Author	
Year published	
Year of study - If available	
Article Title	
Title of Journal	
Name of intervention	
Level on the Staging model	
Demographics	
Study Population e.g. School, hospital, general, native, refugee etc.	
Age of population	
Country of origin e.g. UK, Australia, USA, Canada, Asia, Africa	
Gender of population	
Female	
Other LGBTQ+	
Male	
Mixed gender	
Aims	
Rational	
Theories used	
Wider Goals /elements sessional to the intervention	
The aim(s) (Specific to the research study)	
Targeted improvement e.g. stress, depression, self esteem	
Methods Section	
Outcome measures e.g. Detail all tools used to measure outcomes	

Randomisation
When measures were conducted
No of sites
Type of study e.g. RCT, feasibility, qualitative
Philosophical position if stated
no. participants enrolled/start
Inclusion
Exclusion
No. participants in control group
No. participants in intervention arm
Details of drop out/loss to follow up
No follow up/ repeat evaluations
Recruitment/referral processes used
Results
Outcome
What was the Adherence?
What was the fidelity?
How was adherence and fidelity assessed?
Strategies used to maintain fidelity and adherence.
Who assessed adherence and fidelity
To what extent did the study achieve its aims and objectives?
When did follow up occur?
How long was outcome sustained?
Intervention Details
Description of the Intervention
Any Parental aspect
Location of Intervention delivery e.g. school, youth centre, hospital
Details regarding the control group
Type of Intervention e.g. group, app, 1:1

What specifically was the Activity/Intervention and what did it include
Theoretical framework e.g. CBT, OT, Other etc.
No of sessions/ Dose
Length of session
Modes of delivery e.g. face to face, virtual etc.,
Group or Individual, App
Group Size (number of participants in each group)
Run/provided by whom (Profession/back ground)
Expertise of provider or extra training given
Run when e.g. During school day, school holidays, in the evenings etc.
Run where e.g. location intervention was delivered
What material are required - Physical information - Type /details of
What materials were available?
Content of sessions (Tick all that apply)
Includes Mental health awareness training
Tailoring and personalisation if the intervention
Modifications during study. When, what, why and how?
Includes Lifestyle education e.g. sleep, exercise etc.
Includes Stress management
specific focus on Skill development
Focus in on Activity participation
Focus on Occupational repertoire development
Specific focus on Social engagement not just incidental
Lessons learned
Record all aspects designed to promote engagement, e.g. approach, incentives etc.
Record all disengagements, things that did not work well
Any other details

9.5 APPENDIX CHAPTER 4, STUDY 2, MEASURES USED

The Strengths and Difficulties Questionnaire (SDQ)

Strengths and Difficulties Questionnaire S 11-17

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of how things have been for you over the last six months.

Your Name ..... Male/Female

Date of Birth.....

	Not True	Somewhat True	Certainly True
I try to be nice to other people. I care about their feelings	☐	☐	☐
I am restless, I cannot stay still for long	☐	☐	☐
I get a lot of headaches, stomach-aches or sickness	☐	☐	☐
I usually share with others (food, games, pens etc.)	☐	☐	☐
I get very angry and often lose my temper	☐	☐	☐
I am usually on my own. I generally play alone or keep to myself	☐	☐	☐
I usually do as I am told	☐	☐	☐
I worry a lot	☐	☐	☐
I am helpful if someone is hurt, upset or feeling ill	☐	☐	☐
I am constantly fidgeting or squirming	☐	☐	☐
I have one good friend or more	☐	☐	☐
I fight a lot. I can make other people do what I want	☐	☐	☐
I am often unhappy, down-hearted or tearful	☐	☐	☐
Other people my age generally like me	☐	☐	☐
I am easily distracted, I find it difficult to concentrate	☐	☐	☐
I am nervous in new situations. I easily lose confidence	☐	☐	☐
I am kind to younger children	☐	☐	☐
I am often accused of lying or cheating	☐	☐	☐
Other children or young people pick on me or bully me	☐	☐	☐
I often volunteer to help others (parents, teachers, children)	☐	☐	☐
I think before I do things	☐	☐	☐
I take things that are not mine from home, school or elsewhere	☐	☐	☐
I get on better with adults than with people my own age	☐	☐	☐
I have many fears, I am easily scared	☐	☐	☐
I finish the work I'm doing. My attention is good	☐	☐	☐

Do you have any other comments or concerns?

Please turn over - there are a few more questions on the other side

Overall, do you think that you have difficulties in one or more of the following areas: emotions, concentration, behaviour or being able to get on with other people?

No	Yes- minor difficulties	Yes- definite difficulties	Yes- severe difficulties
☐	☐	☐	☐

If you have answered "Yes", please answer the following questions about these difficulties:

• How long have these difficulties been present?

Less than a month	1-5 months	6-12 months	Over a year
☐	☐	☐	☐

• Do the difficulties upset or distress you?

Not at all	Only a little	Quite a lot	A great deal
☐	☐	☐	☐

• Do the difficulties interfere with your everyday life in the following areas?

	Not at all	Only a little	Quite a lot	A great deal
HOME LIFE	☐	☐	☐	☐
FRIENDSHIPS	☐	☐	☐	☐
CLASSROOM LEARNING	☐	☐	☐	☐
LEISURE ACTIVITIES	☐	☐	☐	☐

• Do the difficulties make it harder for those around you (family, friends, teachers, etc.)?

Not at all	Only a little	Quite a lot	A great deal
☐	☐	☐	☐

Your Signature .....

Today's Date .....

Thank you very much for your help

(Goodman et al., 1998)

Time-Use Diary

How to complete the Time use Questionnaire.

1) The questionnaire asks you to record '**what you did'**, '**where you were' and 'who you were with'** over a specific **24 hour** period, starting at **4 am** in the morning. Please try to write down as accurately as possible all the activities you did during that.

2) **An activity is ANYTHING you did** such as sleeping, eating, and looking after yourself or others, cleaning, time with others, hobbies and work. **If it's personal write personal**.

3) **About the form**: As you look at the Questionnaire you will see the left hand side column has 15 minute time intervals. This starts at 4 am and goes through 24 hours to and finishes at 4am the following day. Along the top you will see columns headings which tell you what needs to go in the corresponding column.

4) For each time interval **write the main activity** that you were doing in the "**what were you doing column**?"

5) The next column is for you to write down if you were doing another activity at the same time as the first or main activity. **"If you did something else at the same time what did you do?"**. E.g. Watching TV and knitting.

6) **Please circle Y** if you used a smart phone and **N** if you did not in the column titled: "**Did you use a smart phone, tablet or computer**".

7) In the "**Where were you**?" column write where you were when you completed the activity. E.g. Bus, car, Home, school, work, friend's house, cinema etc.

8) **Please tick** the appropriate box for who you were with under the column heading "**Were you alone or with somebody you know?**"

9) For the final column on a scale of 1 to 10 rate '**How much did you enjoy this time'?** 1 = did not enjoy much and 10 enjoyed very much.

10) Where ever you have done an activity for more than 15 minutes draw an arrow down to the time when the activity ended. Do this for each column & activity, See the example below.

Example

Time Use 24 hrs Diary

Day 1	24 hour diary. 4AM TO 4AM. Date recorded: ..... Date: Completed:..... How many days between recorded day and day form completed?.....Days				**Where you alone or with somebody you know?** People who live with you							
Time	**What were you doing?** Please write down one main activity.	**If you did something else at the same time, what did you do?**	Did you use a smart phone, tablet, or computer?	**Where were you?** Location, or mode of transport	Alone	Boy / Girlfriend	Mother	Father	Child 0-7	Other Persons	Person(S) you know	**How much did you enjoy this time?** 1 = not much 10 = very much
04:00-04:10	Sleep											
04:10-04:20	↓											
04:20-04:30												
04:30-04:40												
04:40-04:50												
04:50-05:00												
05:00-05:10												
05:10-05:20												
05:20-05:30												
05:30-05:40	↓											
05:40-05:50	Breakfast	Read the news	x	Home								5
05:50-06:00	Got dressed and fed cat	↓	x	↓								↓
06:00-06:10	Packed bag											
06:10-06:20	Walked to station	Listen to Music		Local area								3
06:20-06:30	Caught the tube	↓		Tube								↓
06:30-06:40	↓	↓	↓	↓								
06:40-06:50												
06:50-07:00												

Key things to remember

Try to be as honest as you can

Don't worry about what others might think. No one will know what you wrote.

Try to complete the form as accurately as you can,

Remember by activity we mean: anything that you do including: resting, taking out the rubbish, cleaning teeth, hobbies, having a bath, listening to music, taking care of yourself, leisure activities,……among many others.

Name:……. No……

Allocated record day: ……. Date recorded:……

Back Ground Questions

1) In a **typical week, how many hours** on average do you spend doing **homework**?

Number of hours on average …….

2) In a **typical week, how many hours** do you spend doing **things you have to do**?
E.g. helping-out at home, chores, looking after family members etc. **Do not include school or homework**

Number of hours on average ……..

3) In a **typical week, how many hours** on average a week are spent **doing leisure activities** such as such as sports, hobbies entertainment actives, social etc.? **Do not include eating and sleeping.**

Number of hours on average …….

4) In a **typical week, how many hours** on average **do you sleep a night?**

Number of hours on average …….

5) In a **typical week, how many hours** on average do you **spend on a computer or using your smart-phone**?

Number of hours on average …….

6) It is helpful to us to know:-

a) If you were born in the UK? **Yes / No** *(circle which is appropriate)*

b) If not where were you born?.....(please state)

c) How would you describe your cultural identity? ……*.(please state)*

d) If your parent were born in the UK? **Yes / No** *(circle which is appropriate)*

e) Is English your first Language? **Yes / No** *(circle which is appropriate)*

f) Do you actively practice any religious beliefs, **Yes / No** *(circle which is appropriate)*

g) Please state which religion you practice? ……..

Time use hrs Diary Name: ……..

Day 1	24 hour diary. 4AM TO 4AM. (Sheet 1: 04.00 to 08:30) Day recorded: …….. Date recorded: …….. How many days between the day recorded and completing this form? ……Days				**Were you alone or with somebody you know?**							
						People who live with you						
Time	**What were you doing?** Please write down one **main** activity**.**	**If you did something else at the same time, What did you do?**	Did you use a smart phone, tablet, or computer?	**Where were you?** Location, or mode of transport	Alone	Partner	Mom/Dad	Child 0-7	Child 8-16	Other Persons	Other Person(S)	**How much did you enjoy this time?** 1 = not much 10 = very much
04:00-04:15			Y/N									
04:15-04:30			Y/N									
04:30-04:45			Y/N									
04:45-05:00			Y/N									
05:00-05:15			Y/N									
05:15-05:30			Y/N									
05:30-05:45			Y/N									
05:45-06:00			Y/N									
06:00-06:15			Y/N									
06:15-06:30			Y/N									
06:30-06:45			Y/N									
O6:45-07:00			Y/N									
07:00-07:15			Y/N									
07:15-07:30			Y/N									
07:30-07:45			Y/N									
07:45-08:00			Y/N									
08:00-08:15			Y/N									
08:15-08:30			Y/N									

Day 1	24 hour diary. 4AM TO 4AM. (Sheet 2: 08:30 to 13:00)				**Were you alone or with somebody you know?**							
						People who live with you						
Time	**What were you doing?** Please write down one main activity.	**If you did something else at the same time, What did you do?**	Did you use a smart phone, tablet, or computer?	**Where were you?** Location, or mode of transport	Alone	Partner	Mom/Dad	Child 0-7	Child 8 -16	Other Persons	Other Person(S)	**How much did you enjoy this time?** 1 = not much 10 = very much
08:30-08:45			Y/N									
08:45-09:00			Y/N									
09:00-09:15			Y/N									
09:15-09:30			Y/N									
09:30-09:45			Y/N									
09:45-10:00			Y/N									
10:00-10:15			Y/N									
10:15-10:30			Y/N									
10:30-10:45			Y/N									
10:45-11:00			Y/N									
11:00-11:15			Y/N									
11:15-11:30			Y/N									
11:30-11:45			Y/N									
11:45-12:00			Y/N									
12:00-12:15			Y/N									
12:15-12:30			Y/N									
12:30-12:45			Y/N									
12:45-13:00			Y/N									

Day 1	24 hour diary. 4AM TO 4AM. (Sheet 3: 13:00 to 17:30)				**Were you alone or with somebody you know?**							
						People who live with you						
Time	**What were you doing?** Please write down one main activity.	**If you did something else at the same time, What did you do?**	Did you use a smart phone, tablet, or computer?	**Where were you?** Location, or mode of transport	Alone	Partner	Mom/Dad	Child 0-7	Child 8-16	Other Persons	Other Person(S)	**How much did you enjoy this time?** 1 = not much 10 = very much
13:00-13:15			Y/N									
13:15-13:30			Y/N									
13:30-13:45			Y/N									
13:45-14:00			Y/N									
14:00-14:15			Y/N									
14:15-14:30			Y/N									
14:30-14:45			Y/N									
14:45-15:00			Y/N									
15:00-15:15			Y/N									
15:15-15:30			Y/N									
15:30-15:45			Y/N									
15:45-16:00			Y/N									
16:00-16:15			Y/N									
16:15-16:30			Y/N									
16:30-16:45			Y/N									
16:45-17:00			Y/N									
17:00-17:15			Y/N									
17:15-17:30			Y/N									

Day 1	24 hour diary. 4AM TO 4AM. (Sheet 4: 17:30 to 22:15)				Were you alone or with somebody you know?							
						People who live with you						
Time	**What were you doing?** Please write down one main activity.	**If you did something else at the same time, What did you do?**	Did you use a smart phone, tablet, or computer?	**Where were you?** Location, or mode of transport	Alone	Partner	Mom/Dad	Child 0-7	Child 8-16	Other Persons	Other Person(S)	**How much did you enjoy this time?** 1 = not much 10 = very much
17:30-17:45			Y/N									
17:45-18:00			Y/N									
18:00-18:15			Y/N									
18:15-18:30			Y/N									
18:30-18:45			Y/N									
18:45-19:00			Y/N									
19:00-19:15			Y/N									
19:15-19:30			Y/N									
19:30-19:45			Y/N									
19:45-20:00			Y/N									
20:00-20:15			Y/N									
20:15-20:30			Y/N									
20:30-20:45			Y/N									
20:45-21:00			Y/N									
21:00-21:15			Y/N									
21:15-21:30			Y/N									
21:30-21:45			Y/N									
21:45-22:00			Y/N									
22:00-22:15			Y/N									

Day 1	24 hour diary. 4AM TO 4AM. (Sheet 5: 22:15 to 03:00)				**Were you alone or with somebody you know?**							
						People who live with you						
Time	**What were you doing?** Please write down one main activity.	**If you did something else at the same time, What did you do?**	Did you use a smart phone, tablet, or computer?	**Where were you?** Location, or mode of transport	Alone	Partner	Mom/Dad	Child 0-7	Child 8-16	Other Persons	Other Person(S)	**How much did you enjoy this time?** 1 = not much 10 = very much
22:15-22:30			Y/N									
22:30-22:45			Y/N									
22:45-23:00			Y/N									
23:00-23:15			Y/N									
23:15-23:30			Y/N									
23:30-23:45			Y/N									
23:45-24:00			Y/N									
24:00-24:15			Y/N									
24:15-24:30			Y/N									
24:30-24:45			Y/N									
24:45-01:00			Y/N									
01:00-01:15			Y/N									
01:15-01:30			Y/N									
01:30-01:45			Y/N									
01:45-02:00			Y/N									
02:00-02:15			Y/N									
02:15-02:30			Y/N									
02:30-02:45			Y/N									
02:45-03:00			Y/N									

Day 1	24 hour diary. 4AM TO 4AM. (Sheet 6: 03:00 to 04:00)				**Were you alone or with somebody you know?**							
						People who live with you						
Time	**What were you doing?** Please write down one main activity.	**If you did something else at the same time, What did you do?**	Did you use a smart phone, tablet, or computer?	**Where were you?** Location, or mode of transport	Alone	Partner	Mom/Dad	Child 0-7	Child 8-16	Other Persons	Other Person(S)	**How much did you enjoy this time?** 1 = not much 10 = very much
03:00-03:15			Y/N									
03:15-03:30			Y/N									
03:30-03:45			Y/N									
03:45-04:00			Y/N									

Before you finish

A couple of questions

7) On a scale of 1 to 5, (where 1 means not at all and 5 means very well), How typical was this day? ……

8) Please let us know if you had any difficulty completing the diary in the space below:-

Adapted from the Harmonised European time use survey 2008 guidelines (Eurostat, 2009)

9.6 APPENDIX CHAPTER 4, STUDY 2, PILOT GROUP SDQ SCORES

The table shows the SDQ scores for each of the 10 PPI members in the pilot group

	Participant									
Symptom score	P:1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Emotional	Average	High	High	Average	Average	Average	Average	Average	High	Average
	5	7	9	2	3	4	3	3	8	3
Conduct	Average	High	Average	Average	Average	Average	Average	Average	Average	High
	3	6	0	2	1	1	2	1	2	7
Hyperactivity	Average	Raised	Average	Average	Average	Average	Raised	Average	Average	High
	4	6	1	0	3	4	7	3	5	9
Peer problem	Average	Average	Raised	Average	Average	Average	Average	Average	Average	Average
	1	2	4	3	3	2	3	1	2	1
Total difficulties Score	Average	High	Average	Average	Average	Average	Average	Average	Raised	High
	13	21	14	7	7	11	15	8	17	20
Prosocial behaviour Score	Average 7	Average 6	Average 8	Average 8	Average 10	Average 9	Average 7	Average 9	Average 7	Average 7

9.7 APPENDIX CHAPTER 4, STUDY 2, DETAILED MISSING TUD DATA

Figure 9.2, 'TU Missing data' provides a detailed picture of the frequencies of missing observations. The furthest left column shows the number of missing time observation presented as hours and minutes and, in brackets, the percentage of time missing from the 24-hour clock. The next column is the number of missing 15-minute observations, followed by the frequency of diary entries with the corresponding number of missing observations. The far-right column is the total number of 15 minutes observations missed for the sample. Colours divide the table to illustrate the different percentages of missing data and potential cut off points for case-wise deletion. They are divided into less than 10% missing (Green), 11% to 25% missing (Grey), 26% to 50% missing (Yellow), 51% to 75% missing (Amber) and finally over 76% missing (Red). In dividing the table this way, it is possible to consider the effect of case-wise deletion on the sample

Figure 9.2 **TUD Missing data**

No. Hrs / (% of 24hrs)	Value	Frequency	Percent	Valid Percent	Cumulative Percent	Total No. Of Observations missed
Valid	0	87	64.9	64.9	64.9	0
0.15 (1.04)	1	3	2.2	2.2	67.2	3
0.30 (2.08%)	2	6	4.5	4.5	71.6	12
0.45 (3.125%)	3	4	3.0	3.0	74.6	12
1 (4.16%)	4	2	1.5	1.5	76.1	8
1.30 (6.25%)	6	1	.7	.7	76.9	6
1.45 (7.29%)	7	3	2.2	2.2	79.1	21
2:15 (9.37%)	9	1	.7	.7	79.9	9
2.45 (11.45%)	11	1	.7	.7	80.6	11
3 (13%)	12	2	1.5	1.5	82.1	24
3.30 (15%)	14	1	.7	.7	82.8	14
6 (24%)	23	2	1.5	1.5	84.3	46
6.30 (27%)	26	2	1.5	1.5	85.8	52
7.15 (30%)	29	1	.7	.7	86.6	29
7.30 (31%)	30	1	.7	.7	87.3	30

9 (37%)	36	1	.7	.7	88.1	36
10.30 (44%)	42	1	.7	.7	88.8	42
12.15 (51%)	49	1	.7	.7	89.6	49
13 (54%)	52	2	1.5	1.5	91.0	104
13.30 (56%)	54	1	.7	.7	91.8	54
15.30 (64%)	62	1	.7	.7	92.5	62
16 (67%)	64	1	.7	.7	93.3	64
19.30 (81%)	78	3	2.2	2.2	95.5	234
20 (86%)	83	1	.7	.7	96.3	83
24 (100%)	96	5	3.7	3.7	100.0	480
	Total	134	100.0	100.0		1485

.

The table below shows the results of a Spearman correlation used to explore the nature of the missing data.

Relationship	Spearman correlation	Sig. (2 tailed)	Relationship and significance
Missing time-use data & SDQ Emotion score	-.031	.725	Weak relationship and not significant
Missing time-use data (Dependent) & SDQ Conduct	-.034	.697	Weak relationship, and non-significant
Missing time-use data (Dependent) & SDQ Hyperactivity	.079	.373	No relation
Missing time-use data (Dependent) & SDQ Peer Prob	-.097	.271	Weak relationship and not significant
Missing time-use data (Dependent) & SDQ Total score	-.000	1.00	No relationship but not significant.
Missing time-use data (Dependent) & School	.398**	.000	Weak relationship and significant at 0.01 level
Missing time-use (Dependent) & UK Born	-.181*	.036	Weak relationship but significant at 0.05 level
Missing time-use data (Dependent) & Gender	-.057	.524	Weak relationship, and not significant.

9.8 APPENDIX CHAPTER 4, STUDY 2, SDQ DISTRIBUTIONS

The sample SDQ data appears normally distributed and a comparison between the SDQ data from this study and the existing normative data for 15 to 17 year olds (Youth in Mind., 2001) from the US, and 11 to 15 from UK (Meltzer et al., 2000), was conducted. The Table 11.3.1 below presents the results with the highest scores highlighted in bold.

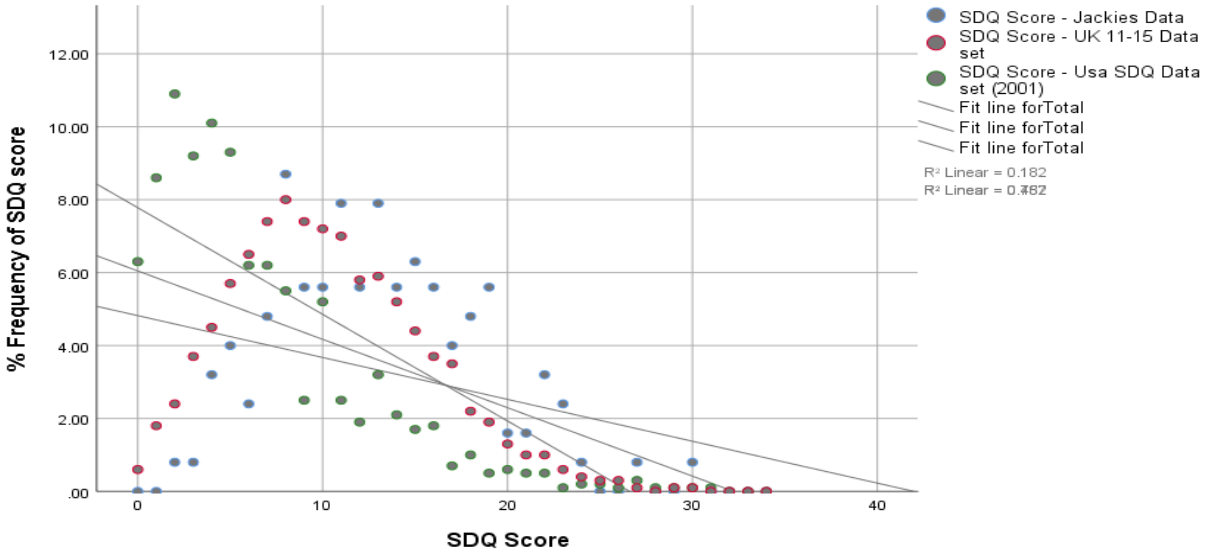
11.3 Table: SDQ distributions compared with normative data

		No of participants in Study sample	Percent of participants from study sample 16-17yrs (n=126)	Percentage US Data (2001) 15-17yrs (n=2265)	Percentage UK normative Data (2000) 11-15yrs (n=4228)
SDQ Total score	0	0	0	**6.3**	0.6
	1	0	0	**8.6**	1.8
	2	1	0.8	**10.9**	2.4
	3	1	0.8	**9.2**	3.7
	4	4	3.2	**10.1**	4.5
	5	5	4.0	**9.3**	5.7
	6	3	2.4	**6.2**	**6.5**
	7	6	4.8	6.2	**7.4**
	8	11	**8.7**	5.5	8
	9	7	5.6	2.5	**7.4**
	10	7	5.6	5.2	**7.2**
	11	10	**7.9**	2.5	7
	12	7	5.6	1.9	**5.8**
	13	10	**7.9**	3.2	5.9
	14	7	**5.6**	2.1	5.2
	15	8	**6.3**	1.7	4.4
	16	7	**5.6**	1.8	3.7
	17	5	**4.0**	0.7	3.5
	18	6	**4.8**	1	2.2
	19	7	**5.6**	0.5	1.9
	20	2	**1.6**	0.6	1.3
	21	2	**1.6**	0.5	1.0
	22	4	**3.2**	0.5	1.0
	23	3	**2.4**	0.1	0.6
	24	1	**0.8**	0.2	0.4

	25	0	0	**0.2**	**0.3**
	26	0	0	**0.1**	**0.3**
	27	1	**0.8**	0.3	0.1
	28	0	0	**0.1**	0.0
	29	0	0	**0.1**	**0.1**
	30	1	**0.8**	0.1	0.1
	31	0	0	**0.1**	0.0
	32-34	0	0	0.0	0.0
	Total	126	100.0	100%	100%
Missing	System	8			
Total		134			

The table suggests that the study sample has higher levels of mood and behaviour problems than the normative samples. A scatter graph (See Figure 11.4 below) and Kruskal-Wallis test was used to compare the percentage frequencies across groups. The significance value was 0.932 and therefore not significant meaning the null hypothesis cannot be rejected. The distribution of data is not significantly different to the other SDQ samples.

Figure 9.4: Simple scatter graph with fit line comparing data sets



Typically, SDQ total scores group into four categories: close to average, slightly raised, high, and very high. The categories give a broad indication of the level of emotional and/or behavioural difficulty

experienced in the sample. In the sample, 62.7%, reported a total SDQ score of close to average, while, 15.9% were in the slightly raised category, 10.3% in the high category, and 11.1% in the very high group.

9.9 APPENDIX CHAPTER 5, STUDY 3, CATAGORIES, FOCUS CODES AND DESCRIPTIONS

The following table illustrates the focused codes grouped according to the category they were linked to and where developed in to the theory presented earlier.

Category	Focused Code	Brief Description
Valuing and Prioritising Occupation (Internal)	Not Knowing	Unable to identify clear preference for activity, or ambivalent.
	Expressing preferences e.g. like/disliking	Articulating their preference, and reasons for preferences, based on experience, often taken for granted and to some extent unconsciously automatic. Rationale for liking can be at least partially deconstructed.
	How Interesting is the activity to the individual	The value that the activity has for the individual.
	Prioritised activity by preference	Hierarchy of activity priorities.
	Valuing activities	An activity that has value.
	Dreaming/Aspiring/Occupational ambitions/Aims, goals	To dream or aspire to do or achieve in a particular occupation.
	Defending beliefs	Articulating own belief system against the alternative belief systems.
	Desirability of socially unacceptable behaviours	Some activities may be attractive, that are otherwise viewed as unacceptable by society.
	Developing a personal narrative	Developing the story they tell about themselves.
	Telling their story	The part of who they are formed as a result of engaging in activity.
	Evaluating/Developing preferences	Preferences have changed and are continuing to change in response to experiences.
	Comparative value labelling	An activity is given a comparative value label which implies the value of the activity in relation to other activities (or their value).
	Investing in activity	Extent to which an individual has invested in an activity in terms of effort participating, learning etc. May include related plans for the future career etc..
	Appraising & valuing activity	Assessing the value an activity is given.
	Rewarding	Engaging in an activity for a specific reward, such as making friends feel happy, or money.

Choosing Occupation	Making a change/Choosing an occupation	Choosing to do a new activity, possibly for a specific purpose OR changing patterns of behaviour for specific reasons, e.g. one's health.
	How interesting is the activity to the individual	The value that the activity has for the individual.
Valuing and Prioritizing Occupation (External)	Compulsory time/Necessary occupations	Activity that must be done, e.g. school work.
	Just right Challenge/Scaffold	The level of challenge vs individual capability to meet the challenge.
	Grading tasks	Activity has multiple stages that build skills towards activity competence, e.g. sharing adult roles, like walking the dog.
	Established patterns, habits or routines	Routines or patterns regularly practiced.
	Standards of competency/Mastery	Feelings of competence in an activity or task, e.g. fear of getting it wrong.
	*External activity hierarchies	The status level given to an activity in relation to other activities, based on the value that the activity has to the environment in which they live.
	Valuing productivity/"Work is priority because work is the future"	A future focus, particularly with reference to developing a work role or career.
	Differentiation of activity categories	Where activity is differentiating into specific categories such as work, leisure etc., including associated value labels.
	Judging others choices	Actively appraising activity choices of others against own activity value system/activity Hierarchy.
	Remembering/Retrospective	Familiarity with occupation has occurred though experiencing the activity in the past.
Drawing on Skills and Occupational Repertoire	Identifying need/Prescribing activity	The process of matching an occupation or activity to meet a recognised self-need.
	Using/Purposeful activity	Occupations are used to meet a need.
	Taking responsibility for one's self or others. Vs relying on others	Individual takes responsibility for their own activity choices, or relies on others for help.
	Developing adult competencies	Experiencing an adult role or activity (completely or in part) through participation, because of which competence is developed.
	Knowing your own limits and when to stop doing.	Highly individualised skill of recognising when to engage and when to stop an activity to achieve best performance/wellbeing.

	Knowing how to assess risk, and taking risks	Where the level of risk associated with an activity is assessed and subsequent choice to take a risk or not.
	Occupational thinking	The perspective the individual has about their ability to engage in activity.
	Competence/Capability	Helping parents or others because they have acquired a level of competence/capability.
	Dealing with emotion	Strategies used to cope with emotion, e.g., females crying, males sleeping.
	Experiencing restrictions or inhibitions around communicating with parents and adults	Perception of ease or difficulty of communication with parents.
	Experiencing challenge in communicating stress	Difficulties encountered when trying to communicate feelings of stress.
	Experiencing the consequences of sharing emotions with others	Sharing how you feel with others, including multiple formats.
	Coping with significant change	Managing and dealing with significant change, e.g. loss of familiarity due to cultural change.
	Responding to stress	How stress is recognised and how they respond to it. "We are used to stress" & "Don't show signs of stress."
	Learning or experimenting	Trying new activities and ways of doing activities. Developing understanding of need and preferences.
	Doing/Experiencing/Not experiencing	Experience of engaging in activity. "Everything we have done…..we have done before."
	Describing	How they describe the activity they do.
	Developing through learning	Activities that provide an opportunity to learn e.g. studying, surfing the internet.
	Exploring	Engaging in new experiences/Expanding one's experience.
	Developing through exposure	This is about becoming familiar with an activity through experience. It is about developing competence in the task. It is also potentially a drive to develop one's self
	Developing though interactive exposure	This is about the interaction between the person and the activity, in terms of emotional experience, transferability of skills, and the feedback received through engagement.
Occupational Repertoire and Fears	Fearing failure	The fear of failing to achieve a target/expectation/goal, and disappointing others.
	"Fear of missing out"	Individuals were afraid of missing out in things.
	Concern about others' perceptions	Expressing concerns or worries about how others perceive, view or judge them based on what they do.

	Feeling guilt (enough is never enough)	Feeling guilty for doing one activity rather than another, e.g. an activity with a higher external priority rating.
	Experiencing thinking errors	Negative thinking errors/bias, e.g. over thinking
Experiencing Need	Motivators	Level of skill & competence.
	Comparing performance & performing	Engaging in an activity and how well the activity is done or completed.
	Needing/wanting to achieve Achieving	Striving towards or enjoying feelings of accomplishment.
	Competition	Activity has an element of competition.
	Completing/Finishing a task	Where an individual enjoys or values completing a task.
	Supporting friends	Activity undertaken to provide support to friends.
	Needing to connect	Engaging in activity as a means of connecting and maintaining connection with others.
	About community membership	Feeling parts of a community that you potentially identify with.
	Experiencing tiredness	Experiencing physical symptoms of emotional distress, resulting from unmet needs.
	Experiencing headache	
Using occupation to manage how I feel (Purpose)	Using occupation to manage feelings/mood	Activity undertaken to manage feelings and emotions.
	Needing to find stress relief	Activity used to relieve feelings of stress.
	Using activity to make me look good	Managing image.
	Using occupation to compensate for other things	Activity undertaken consciously or unconsciously to compensate for some form of loss e.g. caring for others because unable to see grandmother.
	Needing to distract myself	An activity is used in such a way as to distract from something else.
	Relating to music	Ways in which music influences how they feel.
	Distracting	Environment or other factor diverts focus away from specific activity or activities.
	Using activity to forget/escape	Choosing activities to avoid thinking, feeling or remembering. Escaping ones internal world. Also, can provide escape from boredom and provide entertainment.
	Influencing feelings	Engaging in an activity influences feelings.
	Emotional expression through activity	When an activity acts as a means of expressing emotion. An outlet or cathartic release.
	Needing to entertain or enjoy one's self	An activity undertaken for fun, entertainment or enjoyment.

	Enjoying/Excitement	Enjoyment of an activity.
	Secondary gain	A reward that does not come directly from the activity but because of it, e.g. doing a boring job has no reward in itself but the money pays for driving lessons which give freedom of mobility etc.
	Compensating for absent parents	Parental absence necessitating adoption of more adult activities, e.g. cooking or cleaning.
	Avoiding boring	To be bored - associated with a lack of absence, or limited motivation for an activity.
	Feeling happy	To feel happy while doing an activity.
	Feeling loneliness	To feel lonely.
	Feeling anxiety	
	Feeling annoyed	Feeling annoyed.
	Being lazy	Finding easy things to do or not putting self to hard effort.
Time	Long term vs Short term	The balance between activities meeting needs in the short term and those meeting long term needs.
	Loosing track of time (Flow)	The experience of engaging in activity and forgetting or not noticing the flow of time.
	"Juggling" between options	The breadth and range of activities available to decide between.
	Activity linking	Interest in one activity leading to other related activities.
	Managing time vs procrastination	Experience of choosing one's activities to fit the available time to maximise specific activity-related goals.
	Repeating and/or using an activity frequently	Refers to ideas relating to the frequency with which an activity is performed.
	Wasting time	Where time is wasted rather than used wisely, such as doing nothing.
	Wise use of time	Consciously (strategically) choosing which activity is the most valued use of the time available.
	Valuing time/Judging activity/Time as a commodity	Judgements about how time is used betray the beliefs about the value of time and activity.
	Not "enough time"	Time is a limited resource.
	Relative perception of time	How time is perceived in relation to choice.
	Experiencing time conflicts and demands	Where time is limited, an individual is forced to choose between activities.
Situational Context	Coupling constraints	Restrictions occurring as a result of a relationship to another limiting or affecting occupational choice.
	Freedom to choose vs Occupational restriction	The level of freedom to choose activities and determine the best use of time.

	Depending/Context	Perception/feelings about an activity may be context dependent, including learning preferences.
	Influencing	Things or factors that influence engagement in activities.
	Opportunities for travelling	Relates to the opportunity and ability to travel independently or with others in order to engage in activity.
	Availability of information/knowledge	
	Responding to different points of view	How an individual deals with feedback from others, received as a result of making, or planning a choice, e.g. from friends or family etc.
	External deadlines	A fixed end for work to be completed.
	Barriers to occupation	Factors that become barriers to occupations, such as lack of money.
	Optimal context	Ideal and suboptimal conditions for occupation.
	Opportunity	The opportunities available to engage in occupation.
	Being invited to participate	The invitation to engage in an activity that they would not otherwise have engaged in.
	Being taught, supported and guided to engage in activity	The level and nature of support provided to engage in activity
	Supporting	Support of others influences activity, e.g. initiation, choosing and sustaining/maintaining.
	Adult's attitudes/Responses/Role models	Experienced response from adults in relation to activity, e.g. respect, exploitation etc.
	Being influenced by culture	Cultural views on adolescent activity.
	Being influenced by changing times	Societal change influencing patterns of activity.
	Being influenced by religious values	Influences of religious beliefs and values on engagement in occupation.
	Being influenced by gender stereotypes	Differences in occupation related to gender.
	Stereotypes	
	Being influenced by family expectations	The expectations of the family about which activities, and how they should be engaged in, including family history of activity.
	Being influenced by upbringing	The experience of being shaped and developed in the past, particularly around occupation and activity.
	Being influenced by social expectations/norms	Standards of norms of behaviour, or expectations around occupational engagement.
	Being influenced by romantic relationships	Primarily experienced by females but the impact of having a relationship on occupation, e.g., can be disruptive to life goals.

	Using own language with peers	YP adapt or corrupt existing words to mean something specific that is understood within their peer group.
	Responding to pressure vs lack of pressure	Pressure to perform in a certain way, e.g. family, school, self.
	Responding to internal conflict /conflicting values	External hierarchy of activity conflicts with aspects of emerging internal hierarchy.
	Responding to cultural transition/change	The internal personal conflict occurring because of migration.
	Responding to occupational restriction/permission	Adjusting to restrictions imposed by others, particularly parents and other adults.
	Responding by permitting	Acquiesce to authority and do what authority requires, including denying activity preferences.
	Responding by resisting	Resistance to parental restrictions around occupational choice.
	Responding by deception /deceiving	The choice engaged in a restricted occupation by lying to authority, e.g. using an acceptable occupation as cover for an unacceptable one.
	Responding by negotiating	Effort to agree a compromise between preferred occupation and an applied restriction.
	Responding by rebelling & rule breaking	Choosing to reject authority and do the opposite.
:Transitioning /Developing Situational context	Identifying parental roles	Where a participant recognises an activity, they have not done by recognising it as part of an adult or parental role with which they have observed, e.g., paying bills.
	Learning values	Previous and ongoing process of internalising and adopting values from significant others, e.g., Parents
	Developing skills	Engaging in an activity that develops skills as a result.
Remembering	Influence of past experience	Experience of activities influencing current activity engagement.
	Persevering	When an activity does not feel good and requires perseverance.
Juggling and Making a Choice Experience of Weighing up,	Choosing	An active process of choosing and judging which activity to do from a range of activities available.
	Emotional decision making	Using emotions to make decision about an activity's value.
	Consequences of poor choices	Effects of poor choices e.g. little sleep, loss of fitness.
	Prioritised activity by preference	Hierarchy of activity priorities.
	Choosing Avoidance	When an activity is avoided for whatever reason.

	Choosing passive activities	Activities that require little active involvement apart from passive observance e.g. TV etc.
	Religious choice	The level of freedom experienced around adopting or rejecting belief systems.
	Choosing to take a break	Stopping an activity for a while.
	Experiencing pressure	Experiencing pressure in relation to choosing or engaging in an activity.
	Making a change/Choosing an occupation	Choosing to do a new activity, possibly for a specific purpose OR changing patterns of behaviour for specific reasons, e.g. one's health.
	Conditional engagement	Where engagement in one activity is conditional to another activity of higher priority, e.g., Homework is done before you relax.
	Consequences of poor occupational choices/poor occupational balance "otherwise it's not going to work"	Actions taken to alter the external or internal environment in order to achieve a priority activity aim, such as drinking stimulants to help complete homework.
	Multi-purpose occupations	Activities that meet multiple purposes or functions.
	Experiencing negative emotional Impact	Loosing occupation perceived to have a negative impact on the individual.
	Considering adapting	The idea that they would adapt and find new occupations.
	Loosing friends	Losing friends through restricted activity engagement.
	Visiting friends	
	listening to music	
	helping others/caring for others	
	Spirituality/Praying	
	Entertaining	
	Caring for a pet	Looking after an animal such as a cat or dog.
	Sharing time with others	
	Playing a musical instrument	
	Friendship	
	Hanging with friends	Spending structured or unstructured time with friends.
	Playing sport	To play sport
	Sleeping	To sleep
	Homework/Study	Study given to students to do outside class.
	Drinking stimulants	E.g. coffee energy drinks

	Drawing	
	Working	A concept of being paid for work completed.
	Relaxing /Taking a Break/resting	An activity that lowers the heart rate or requires less mental effort, provides rest from more demanding activities.
	Chess	
	Multi-step tasks	A task involving multiple stages in order to complete occupation.
	Hobbies	Activities done for leisure.
	Surfing the internet	
	Cooking	
	Taking photographs	
	Creative writing	
	Roller hockey	
	Going to festivals	
	Learning to drive	
	Doing exercise	
	Eating healthily	
	Social media	

9.10 APPENDIX CHAPTER 6, STUDY 4, PROVISIONAL E-MAIL AND QUESTIONAIRE

Provisional questions for Delphi round

Preliminary Questions

Information

Study Title: **A Delphi Study to identify core determinants of adolescent engagement and participation and establish priorities for an occupational therapy based intervention to improve mental well-being.**

What is the Purpose of the study?

This Delphi study forms part of a PhD study to develop an occupational therapy based intervention to improve the mental health and well-being of adolescents aged 16 to 17 years old in the school environment. This method seeks to establish a consensus view, on the influence of occupation or activity related behaviours and environmental factors on mental well-being. Additionally expert opinion is sort regarding intervention development for this population. This consensus view of occupational therapists, teachers and researchers working with adolescents will be used to help inform the construction of the occupational therapy based intervention.

Taking part

Taking part involves completing a three rounds of questionnaires designed to identify and rate factor determinants and strategies which impact mental well-being. Web-links to each questionnaires will be sent email and will include a summary of the last round and further similar questions. Each questionnaire will take approximately 20 to 30 minutes to complete. Email reminders may also be sent unless you contact the researcher to request not to take part

Please return all questionnaire rounds as promptly as possible to ensure that each round can be sent out in a timely fashion.

Remember taking part is voluntary and you can withdraw at any time before data is analysed and will not adversely affect your career in any way. All personal data will be kept securely in accordance with

Oxford Brookes University policies and separately from anonymised questionnaire responses. (Please refer to invitation email for full information about taking part and how your data will be protected)

The findings from this study will be used as part of a PhD study to inform the development of an occupational therapy intervention. This means that the findings will be presented anonymously in a PHD thesis available from the Radar repository, and the RCOT library. Similarly findings may be published in a variety of formats including journal articles, conferences presentations and teaching purposes.

This study has been approved by the University Research Ethics Committee, Oxford Brookes University.

If you have any concerns or questions about how this study has been conducted please do not hesitate to make contact. Contact details are below:-

Faculty of Health and Life Science

Department of Movement, Occupation, Rehabilitation and Exercise Science

Headington Campus, Gipsy Lane, Oxford Brookes University.

Researcher: Jackie Parsonage, PhD Student, Email: 17002703@brookes.ac.uk

Supervisor: Prof Helen Dawes, Email: hdawes@brookes.ac.uk

Chair of the University Research Ethics Committee, Email: ethics@brookes.ac.uk.

Thank you for taking the time to read this information sheet

and for considering taking part in this study.

1. **Consent questions**

By completing this survey you agree and confirm that:-

1. You have read and understood the information above and that provided in the invitation email?

2. You have had opportunity to contact the researcher to ask further questions should you wish too.

3. You understand your participation is voluntary and that you are free to withdraw your data without giving a reason, until such time as the data analysis begins. After this time, you understand you will no longer be able to withdraw your data.

4. You have chosen to take part in this study

5. Your email can be stored securely by the researcher for the purpose of being contacted later with further Delphi rounds.

6. Your occupation and duration of occupation can be stored by the researcher to verify you meet the inclusion criteria for the study.

7. Anonymised data gathered from this study can be used in the planned PHD thesis, for teaching and conference purposes and research related publications. And that it can be stored in a specialist data centre or repository relevant in accordance with Oxford Brookes University data protection policies for up to 20 years.

If you do not agree to the above you will be unable to participate in this study.

Please tell us your email address so we can send out further Delphi rounds

Please confirm your email address.

Check question – re inclusion criteria

Pick all that apply:-

I am a state registered occupational therapist working with adolescents.

I am a registered Teacher working with adolescent.

I am a researcher in the area of adolescent health.

How long have you been working in this area? :-

Under 5 years

Between 6 and 10 years

Over 10 years

Delphi main questions

This questionnaire focuses on the activities or occupations that late adolescents aged 15 to 18 years do as part of their daily life and that in turn may affect their mental health and wellbeing. For the purpose of this study,

"Mental health is defined as a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community."

Who (2014) https://www.who.int/features/factfiles/mental_health/en/

The questionnaire is divided into the following 3 sections:-

Part A. What Adolescents do and the Impact on their Mental Wellbeing.

Part B. The Impact of Environmental Factors

Part C. Developing a Targeted Intervention.

A brief explanation of the focus for each section is included at the start of the section. Please try to complete the questions as fully and comprehensively as possible.

Thank you for taking the time to do this questionnaire

Part A: What Adolescents do and the Impact on their Mental Wellbeing.

This section explores and seeks consensus on factors that affect what late adolescents (15 to 18 years) do and how that in turn impacts their mental wellbeing. Specifically it asks about what types of behaviour and personal factors underpin what they do and how that impacts on wellbeing.

1) To what extent does the way adolescent spend their time impacted their mental wellbeing?

Yes or No

Please give and explain why you gave the answer you gave?

Please answer the following questions based on your professional opinion and experience of working with adolescents aged 15 to 18 years of age or researching the area of Adolescent mental health:-

2**) Identify the types of factors that relate to what adolescent's do, which you consider to impact mental wellbeing? Then prioritise the factors according to those with the greatest impact on mental wellbeing (0 no impact, 10 high)**

Tick all that apply, add missing and rank, then comment in the box

Types of activity. E.g. Sleep, Exercise, social media, creative arts, pets, time with friends, reading, time with family, school work.

Balance of activity. E.g. such as the particular combination of activities that meeting basic needs, like food, safety, security, personal development

Freedom of choice over activity. E.g. Level of autonomy, level of responsibilities, etc.

Level of personal development. E.g. Competence at managing their time to meet differing demands and needs.

Level of challenge vs level of competence in a given activity or activities.

Level of resources or opportunity.

Time related factors. E.g. time available for valued activities, etc.

Multiple conflicting and competing activity choices

Level of transferable skills the adolescent can draw

Pressure to conform. E.g. to achieve, to identify a future career path, fit in with friends.

Occupational identity – How one sees one's self from an activity perspective. E.g. I am a good footballer, I am a dressmaker etc.

Other……

Opportunity to comment ……

3) When adolescents choose what activities to do, what behaviours adversely affect their performance in that activity and consequently their mental wellbeing?

Choose all that apply from the list, and add any that are not on the list that apply.

Rank according to the behaviour with most impact on mental wellbeing

Poor time management

Poor priority identification

Procrastination and avoidance

Limited occupational repertoire

Over or under consumption of some activities e.g. social media, passive activities

Poor balance of activity types e.g. balance of self-care, leisure and work

Poor coping skills

Poor awareness of self-care needs

Poor awareness of personal resources and capabilities

Poor self-advocacy skills to act on personal needs

Poor help seeking behaviour or of access to support.

Risk behaviours

Other……

Please add additional Thoughts here:-

4) What personal determinants or factors that affect adolescent activity related behaviours?

Tick all that apply, add missing and comment in the box

Personal Values

Activity Priorities (The how and why an activity is prioritised over another)

Hierarchy of activity preference. (I.e. which activity is meaningful or preferred in any given situations?)

How much time an activity takes them

Personal skills

Personal self confidence

Activity preference

Activity experiences/repertoire

Perception of Competence

Cultural values

Societal values

Other……..

Opportunity to comment…….

Part B The impact of Environmental Factors

This section explores and seeks consensus on environmental factors that affect what late adolescents (15 to 18 years) do and their mental wellbeing. Specifically this section considers environment from the Interpersonal, Community, Organisation, and societal levels.

5) The Interpersonal level refers to the individuals or groups whom have close connection with late adolescent and who are likely to influence what late adolescents choose to do.

Who are the key interpersonal influences on what young people do in their daily lives?

Families

Peers

Teachers

Other

List all you think that apply

6) The Community level refers to the factors in the immediate community in which an adolescent lives that affect the individual's choice of what activity to do.

What are the Community factors that influence what young people do in their daily lives?

Tick all that apply and rank according to greatest impact on mental wellbeing.

Geography and locality e.g. what facilities are available in the local area or access to public transport.

Quality of available support systems e.g. Mentors, guides, counselling etc.

Opportunity for exploring or developing interests in specific occupations

Local Resources to support activities e.g. music lesson, local bus network, sports facilities

Nature and quality of relationships with Non family members

Nature and quality of relationships with family members

Community attitude and support for different activities.

Local patterns and routines e.g. time table structuring – is there time to do exercise, leisure activities etc.

Social determinants e.g. wealth, and culture of the area.

School time tables

School homework policies

Academic calendar

Behaviour norms of school

Other …….

Other comments ……

7) The Organisational and societal level refers to the organisational and societal systems, formal multi-level decision making process and policies, and practices.

What are the organisational and societal factors that affect what late adolescents do in their daily lives?

Tick all that apply, add missing and comment in the box

Government Mental health policies

National curriculum

Finance investment in schools for extracurricular activities

High pupil to staff ratios

Local council investment in services

Public transport networks

Resource Allocation

Work life balance attitudes

Other…….

Part C. Developing a Targeted Intervention

The final section focuses on developing an intervention to improve the mental wellbeing of typically developed 16 to 17 year olds. Specifically, what factors contribute to good intervention design for typically developed 16 to 17 year olds in the context of the school environment.

If you were to design a school based intervention aimed at improving mental wellbeing in 16 to 17 year olds by targeting what they do on a daily basis….

8) How many session would you have?

9) How long would each session last?

10) What time of the school day would you choose and why?

11) What resources would you want to use?

12) What would you do to promote student engagement during sessions?

13) What would you avoid doing or including?

14) Is there anything you would advise caution on in the context of designing or implementing an intervention?

15) Is there anything else that you feel is important in relation to designing an intervention for late adolescents?

16) What other interventions targeting mental wellbeing have you previously come across?

Thank you for taking time to complete this form.

9.11 APPENDIX CHAPTER 6, STUDY 4, TABLE OF SELECTED DETERMINANTS

R1Q1. Identify the types of determinants relating to what adolescent's do, which affects mental well-being?	%	Times selected	R1Q2a) When adolescents choose what activities to do, what behaviours adversely affect their performance in that activity and consequently their mental well-being?	%	Times selected
Types of activity. E.g. sleep, exercise, social media, creative arts, pets, time with friends, reading, time with family, schoolwork.	11.20 %	14	Poor time management	6.56%	8
Balance of activity. E.g. such as the particular combination of activities that meeting basic needs, like food, safety, security, personal development	11.20 %	14	Poor priority identification	4.10%	5
Freedom of choice over activity. E.g. Level of autonomy, level of responsibilities, etc.	8.80%	11	Procrastination and avoidance	8.20%	10
Level of personal development. E.g. Competence at managing their time to meet differing demands and needs.	8.00%	10	Limited occupational repertoire	4.10%	5
Level of challenge vs level of competence in a given activity or activities.	7.20%	9	Over or under consumption of some activities e.g. social media, passive activities	9.84%	12
Level of resources or opportunity.	6.40%	8	Poor balance of activity types e.g. balance of self-care, leisure and work	9.84%	12
Time related factors. E.g. time available for valued activities, etc.	6.40%	8	Poor coping skills	10.66%	13
Multiple conflicting and competing activity choices	6.40%	8	Poor awareness of self-care needs	7.38%	9
Level of transferable skills the adolescent can draw on	3.20%	4	Poor awareness of personal resources and capabilities	7.38%	9
Pressure to conform. E.g. to achieve, to identify a future career path, fit in with friends.	8.80%	11	Poor self-advocacy skills to act on personal needs	7.38%	9
Occupational identity – How one sees one's self from an activity perspective. E.g. I am a good footballer, I am a dressmaker etc.	9.60%	12	Poor help seeking behaviour or of access to support	9.84%	12

Additional Ideas suggested	12.8%	16	Risk behaviours	10.66%	13
Total	100%	125	Other ideas suggested	4.1	5
			Total	100%	122
Determinants added: Family, Internalised expectations, Level of engagement, Other relationships (Non family), Personal capabilities, Culture and societal			**Determinants added**: Underdeveloped coping skills, Attachment, underdeveloped, Awareness of self-care needs, Parenting support / Community Supports, Friendships		

R1Q3a) what personal determinants or factors affect adolescent activity related choices?	%	Times selected
Personal Values	8.77 %	10
Activity Priorities (The how and why an activity is prioritised over another)	7.02 %	8
Hierarchy of activity preference. (I.e. which activity is meaningful or preferred in any given situations?)	7.02 %	8
How much time an activity takes them	7.02 %	8
Personal skills	9.65 %	11
Personal self confidence	12.28 %	14
Activity preference	6.14 %	7
Activity experiences/repertoire	7.89 %	9
Perception of Competence	10.53 %	12
Cultural values	9.65 %	11
Societal values	9.65 %	11

R1Q4. Who at an Interpersonal level (individuals or groups) have a close connection with the adolescent and are likely to influence their choices of what to do?	%	Times selected
Parents	20.34 %	12
Peers	22.03 %	13
Teachers	16.95 %	10
Siblings	16.95 %	10
Other suggestions	23.72 %	14
Total	100%	59
Determinants added: Celebrities, Extended family, Grandparents, Society, Community leaders e.g. pastors, social media, Social media 'friends', counsellors/advisers in schools, other professionals, online groups e.g. via tumbler, Facebook, Instagram, virtual friends/internet		

Other Ideas suggested	4.38 %	5
Total	100%	114

Determinants added:
Friendships, Health status, Historical experiences / exposure, Perceived occupational roles

R1Q5a). What are the community Determinants that influence what young people do in their daily lives?	%	Times selected
Geography and locality e.g. what facilities are available in the local area or access to public transport.	9.56%	13
Quality of available support systems e.g. mentors, guides, counselling etc.	7.35%	10
Opportunity for exploring or developing interests in specific occupations	6.62%	9
Local Resources to support activities e.g. music lesson, local bus network, sports facilities	7.35%	10
Nature and quality of relationships with non-family members	8.09%	11
Nature and quality of relationships with family members	8.82%	12
Community attitude and support for different activities.	8.09%	11
Local patterns and routines e.g. time table structuring – is there time to do exercise, leisure activities etc.	6.62%	9
Social determinants e.g. wealth, and culture of the area.	8.09%	11
School time tables	5.88%	8
School homework policies	5.88%	8
Academic calendar	5.88%	8
Behaviour norms of school	6.62%	9
Other Ideas	2.21%	5.16
Total	100%	136

Determinants added:

R1Q6a) What are the organisational and societal factors that affect what late adolescents do in their daily lives?	%	Times selected
Government mental health policies	11.11 %	9
National curriculum	12.35 %	10
Finance investment in schools for extracurricular activities	13.58 %	11
High pupil to staff ratios	7.41 %	6
Local council investment in services	16.05 %	13
Public transport networks	11.11 %	9
Resource allocation	11.11 %	9
Work life balance attitudes	12.35 %	10
Please add your own ideas here	4.93 %	4
Total	100%	81

Determinants added:

Weather, support available to parents, Physical attributes of the community e.g. concrete jungle vs wilderness, urban vs rural, IT infrastructure e.g. availability of internet, proximity to get daily needs met (which may affect time available for preferred activities), safety, crime

10 REFERENCES

Addington, J. (2003). 'The prodromal stage of psychotic illness: observation, detection or intervention?'. *Journal of Psychiatry and Neuroscience*, 28 (2), pp. 93-97.

Agger, B. (2011). 'iTime: Labor and life in a smartphone era'. *Time and Society*, 20, pp. 119-136. doi:10.1177/0961463X10380730.

Akiyama, T., Gregorio, E. R., Jr. & Kobayashi, J. (2018). 'Youth sports activity and young people's well-being after a disaster: a trial with the Mastery Approach to Coaching (MAC) in the Philippines'. *BMC Research Notes*, 11 (1), pp. 747. doi:10.1186/s13104-018-3860-1.

All-Party Parliamentry Group on Arts Health and Wellbeing. (2017). *Creative Health: The arts for health and wellbeing* [Online]. APPG Inquiry. Available at: www.artshealthandwellbeing.org.uk/appg/inquiry [Accessed on: 15/12/2020].

American Psychiatric Association. (2013). 'Diagnostic and statistical manual of mental disorders'. 5th ed. Washington, American Psychiatric Association.

Antonson, C., Thorsén, F., Sundquist, J. & Sundquist, K. (2018). 'Upper secondary school students' compliance with two internet-based self-help programmes: a randomised controlled trial'. *European Child Adolescent Psychiatry*, 27 (2), pp. 191-200. doi:10.1007/s00787-017-1035-6.

Arango, C., Diaz-Caneja, C. M., McGorry, P. D., Rapoport, J., Sommer, I. E. C., Vorstman, J. A., McDaid, D., Martin, O., Serrano-Drozdowskyj, E., Freedman, R. & Carpenter, W. (2018). 'Preventive strategies for mental health'. *Lancet Psychiatry*, 7 (7), pp. 592-604. doi:10.1016/S2215-0366(18)30057-9.

Arbesman, M., Bazyk, S. & Nochajski, S. M. (2013). 'Systematic review of Occupational Therapy and mental health promotion, prevention, and intervention for children and youth'. *American Journal of Occupational Therapy*, 67, pp. 120-130. doi:10.5014/ajot.2013.008359.

Arskey, H. & O'Malley, L. (2005). 'Scoping studies: towards a methodological framework'. *International Journal of Social Research Methodology: Theory and Practice*, 8 (1), pp. 19-32. doi:10.1080/1364557032000119616.

Arnett, J. J. (1995). 'Beyond effects: Adolescents as active media users'. *Journal of Youth and Adolescence*, 24 (5), pp. 511-518. doi:0047-2891/95/1000-0511.

Arnett, J. J. (2001). 'Conceptions of the transition to adulthood: Perpectives from adolescence through midlife'. *Journal of Adult Development*, 8 (2), pp. 133-143. doi:1068-0667/01/0400-0133.

Arnett, J. J. (2010). 'Oh, Grow Up! Generational grumbling and the new life stage of emerging adulthood—Commentary on Trzesniewski & Donnellan'. *Perspectives on Psychological Science*, 5 (1), pp. 89-92. doi:10.1177/1745691609357016.

Arnett, J. J. & Jensen, L. A. (2002). 'A congregation of one: Individualized religious beliefs among emerging adults '. *Journal of Adolescent Research*, 17 (5), pp. 451-467. doi:10.1177/0743558402175002.

Ås, D. (1978). 'Studies of time-use: Problems and prospects'. *Acta Sociologica*, 21 (2), pp. 125-141. doi:154.59.124.76.

Ayilara, O. F., Zhang, L., Sajobi, T. T., Sawatzky, R., Bohm, E. & Lix, L. M. (2019). 'Impact of missing data on bias and precision when estimating change in patient-reported outcomes from a clinical registry'. *Health and Quality of Life Outcomes*, 17 (106), pp. 1-9. doi:10.1186/s12955-019-1181-2.

Bale, J., Grové, C. & Costello, S. (2020). 'Building a mental health literacy model and verbal scale for children: Results of a Delphi study'. *Children and Youth Services Review*, 109, doi:10.1016/j.childyouth.2019.104667.

Baltes, P. B. (1997). 'On the incomplete architecture of human ontogeny; selection, optimization, and compensation as foundation of developmental theory '. *American Psychologist*, 52, pp. 366-380.

Bartholomew-Eldredge, L. K., Markham, C. M., Ruiter, R. A. C., Fernández, M. E., Kok, G. & Parcel, G. S. (2016). *Planning health promotion programs: an intervention mapping approach,* USA, Wiley.

Bassett, J., Lloyd, C. & Bassett, H. (2001). 'Work issues for young people with psychosis: Barriers to employment'. *The British Journal of Occupational Therapy*, 64 (2), pp. 66-72. doi:10.1177/030802260106400203.

Bauman, A., Bittman, M. & Gershuny, J. (2019). 'A short history of time use research; implications for public health'. *BMC Public Health* 19 (2), doi:10.1186/s12889-019-6760-y.

Baxter, A. J., Patton, G., Scott, K. M., Degenhardt, L. & Whiteford, H. A. (2013). 'Global epidemiology of mental disorders: What are we missing?'. *PLoS One*, 8 (6), doi:10.1371/journal.pone.0065514.

Bebbington, P., Rai, D., Strydom, A., Brugha, T., McManus, S. & Morgan, Z. (2016). 'Psychotic disorder'. *In:* McManus, S., Bebbington, P., Jenkins, R. & Brugha, T. (eds.) *Mental health and wellbeing in England: Adult psychiatric morbidity survey 2014.* Leeds: NHS Digital.

Ben-Arieh, A. & Ofir, A. (2002). 'Time for (more) time-use studies: studying the daily activities of children'. *Childhood*, 9 (2), pp. 225-248.

Bendixen, R. M. & Kreider, C. M. (2011). 'Review of occupational therapy research in the practice area of children and youth'. *American Journal of Occupational Therapy,* 65, pp. 351-9. doi:10.5014/ajot.2011.000976.

Beresford, P. & Rose, D. (2009). Introduction. *In:* Sweeney, A., Beresford, P., Faulkner, A., Nettle, M. & Rose, D. (eds.) *This is survivor research.* Ross-on-Wye: PCCS Books.

Berg, C., McCollum, M., Cho, E. & Jason, D. (2015). 'Development of the adolescent and young adult activity card sort'. *Occupational therapy Journal of rehabilitation: Occupation, participation and health*, 35 (4), pp. 221-231. doi:10.1177/1539449215578651.

Bertolote, J. & McGorry, P. (2005). 'Early intervention and recovery for young people with early psychosis: consensus statement'. *The British Journal of Psychiatry,* 187 (48), pp. 116-119. doi:10.1192/bjp.187.48.s116.

Beye, K. M. M., Szabo, A. & Nattinger, A. B. (2016). 'Time spent outdoors, depressive symptoms, and variation by race and ethnicity'. *Amreican Journal of Preventative Medicine*, 51 (3), pp. 281-290. doi:10.1016/j.amepre.2016.05.004.

Bhatia, R. (2020). 'Effects of the COVID-19 pandemic on child and adolescent mental health'. *Current opinion in psychiatry,* 33, pp. 568-570. doi:10.1097/YCO.0000000000000651.

Birks, M. & Mills, J. (2011). *Grounded theory: a practical guide,* London, SAGE.

Bland, R. & Foster, M. (2012). 'Families and mental illness: Contested perspectives and implications for practice and policy'. *Australian Social Work,* 65, pp. 517-534. doi:10.1080/0312407X.2011.646281.

Bleijenberg, N., De Man-Van Ginkela, J. M., Trappenburga, J. C. A., Ettemab, R. G. A., Sinob, C. G., Heima, N., Hafsteindóttir, T. B., Richards, D. A. & Schuurmans, M. J. (2018). 'Increasing value and reducing waste by optimizing the development of complex interventions: Enriching the development phase of the Medical Research Council (MRC) Framework'. *International Journal of Nursing Studies,* 79, pp. 86-93. doi:10.1016/j.ijnurstu.2017.12.001.

Bonder, B. R. (2001). 'Culture and occupation: A comparison of weaving in two traditions'. *Canadian Journal of Occupational Therapy*, 58 (5), pp. 310-319. doi:10.1177/000841740106800507.

Bonhauser, M., Fernandez, G., Puschel, K., Yanez, F., Montero, J., Thompson, B. & Coronado, G. (2005). 'Improving physical fitness and emotional well-being in adolescents of low socioeconomic status in Chile: results of a school-based controlled trial'. *Health Promotion International*, 20 (2), pp. 113-22. doi:10.1093/heapro/dah603.

Bowen, D. J. & Neill, J. T. (2016). 'Effects of the PCYC Catalyst outdoor adventure intervention program on youths' life skills, mental health, and delinquent behaviour'. *International Journal of Adolescence and Youth*, 21 (1), pp. 34-55. doi:10.1080/02673843.2015.1027716.

Bowles, N. (1999). 'The Delphi technique'. *Nursing Standard*, 13, pp. 32-36.

Bowman, S., McKinstry, C., Howie, L. & McGorry, P. D. (2020). 'Expanding the search for emerging mental ill health to safeguard student potential and vocational sucess in high school: A narrative review'. *Early Intervention In psychiatry*, 14, pp. 1-22. doi:10.1111/eip.12928.

Bremer, E., Graham, J. D., Veldhuizen, S. & Cairney, J. (2018). 'A program evaluation of an in-school daily physical activity initiative for children and youth'. *BMC Public Health*, 18 (1), pp. 1023. doi:10.1186/s12889-018-5943-2.

Brooks, R. & Bannigan, K. (2018). 'Occupational therapy interventions in child and adolescent mental health: a mixed methods systematic review protocol'. *JBI database of systematic review and implementation reports*, 16, pp. 1764-1771. doi:0.11124/JBISRIR-2017-003612.

Brooks, R., Monro, S. & Jones, J. (2018). 'Occupational Therapy in children and young peoples mental health: a UK survey of practice'. *Children, Young People and Families Occupational Therapy Journal*, pp. 9-14.

Bugajska, K. & Brooks, R. (2020). 'Evaluating the use of the Model of Human Occupation Screening Tool in mental health services'. *British Journal of Occupational Therapy* doi:10.1177%2F0308022620956580.

Bury, M. (1982). 'Chronic illness as biographical disruption'. *Sociology of Health and Illness*, 4, pp. 167–82.

Cahill, S. M., Egan, B. E. & Seber, J. (2020). 'Activity and occupation-based interventions to support mental health, positive behavior, and social participation for children and youth: A systematic review'. *The American Journal of Occupational Therapy*, 74, pp. 1-28. doi:10.5014/ajot.2020.038687.

Cairns, K. E., Yap, M. B. H., Reavley, N. J. & Jorm, A. F. (2015). 'Identifying prevention strategies for adolescents to reduce their risk of depression: A Delphi consensus study'. *Journal of Affective Disorders*, 183, pp. 229-238. doi:10.1016/j.jad.2015.05.019.

Carney, R., Cotter, J., Bradshaw, T. & Yung, A. R. (2017). 'Examining the physical health and lifestyle of young people at ultra-high risk for psychosis: A qualitative study involving service users, parents and clinicians'. *Psychiatry Research*, 255, pp. 87-93. doi:10.1016/j.psychres.2017.05.023.

Carskadon, M. A. (2011). 'Sleep in adolescents: The perfect storm'. *Pediatric Clincial North America*, 58, pp. 637-647. doi:10.1016/j.pcl.2011.03.003.

Carter, T., Callaghan, P., Khalil, E. & Morres, I. (2012). 'The effectiveness of a preferred intensity exercise programme on the mental health outcomes of young people with depression: a sequential mixed methods evaluation'. *BMC Public Health*, 12, pp. 187. doi:10.1186/1471-2458-12-187.

Caruana, E., Allott, K., Farhall, J., Parrish, E. M., Davey, C., Chanen, A., Killackey, E. & Cotton, S. (2017). 'Factors associated with vocational disengagement amoung young people entering mental health treatment'. *Early Intervention In psychiatry*, 13(4), pp. 961-968. doi:10.1111/eip.12718.

Caruana, E., Cotton, S. M., Farhall, J., Parrish, E. M., Chanen, A., Davey, C. G., Killackey, E. & Allott, K. (2018). 'A comparison of vocational engagement among young people with psychosis, depression and borderline personality pathology'. *Community Mental Health Journal*, 54 (6), pp. 831-841. doi:10.1007/s10597-017-0197-5.

Charmaz, K. (2006). *Constructing grounded theory: a practical guide through qualitative analysis,* London, Sage.

Charmaz, K. (2017). 'Special invited paper: Continuisties, contradictions and critical inquiry in Grounded Theory'. *International Journal of Qualitative Methods*, 16, pp. 1-8. doi:10.1177/1609406917719350.

Charmaz, K. & Belgrave, L. (2018). 'Thinking about data with Grounded Theory'. *Qualitative Inquiry*, 25 (8), pp. 743-753. doi:10.1177/1077800418809455.

Chatzitheochari, S., Fisher, K., Gilbert, E., Calderwood, L., Huskinson, T., Cleary, A., & Gershun, J. (2018). 'Using new technologies for time diary data collection: Instrument design and data quality findings from a mixed-mode pilot survey'. *Social Indicators Research* 137 pp. 379-390. doi:10.1007/s11205-017-1569-5.

Chawla, L., Keena, K., Pevec, I. & Stanley, E. (2014). 'Green schoolyards as havens from stress and resources for resilience in childhood and adolescence'. *Health Place*, 28, pp. 1-13. doi:10.1016/j.healthplace.2014.03.001.

Christensen, T. H. & Rommes, E. (2019). 'Don't blame the youth: The social-institutional and material embeddedness of young people's energy-intensive use of infromation and communication technology'. *Energy Research and social science,* 49, pp. 82-90. doi:10.1016/j.erss.2018.10.014.

Christiansen, C. (2007). 'Adolf Meyer revisited: Connections between lifestyles, resilience and illness'. *Journal of Occupational Science*, 14 (2), pp. 63-76. doi:10.1080/14427591.2007.9686586.

Christiansen, C., H., & Townsend, E. (eds.) (2010). *An introduction to occupation.* Upper Saddle River: Pearson.

Clark, F., Jackson, J., Carlson, M., Chou, C.-P., Cherry, B., Jordan-Marsh, M., Knight, B., Mandel, D., Blanchard, J., Granger, D., Wilcox, R., Lai, M. Y., White, B., Hay, J., Lam, C., Marterella, A. & Azen, S. (2012). 'Effectiveness of a lifestyle intervention in promoting the wellbeing of independently living older people: results of the well elderly 2 randomised control trial'. *Journal of epidemiol community health,* 66, pp. 782-790. doi:10.1136/jech.2009.099754.

Clark, G. F., Laverdure, P. & Polichino, J. (2017). 'Guidelines for occupational therapy in early interventions and schools'. *The American Journal of Occupational Therapy*, 71 (2), doi: 10.5014/ajot.2017.716S01.

Coleman, J. (2010). *The nature of adolescence,* London, Routledge.

Conus, P., Cotton, S. M., Abdel-Baki, A., Lambert, M., Berk, M. & McGorry, P. (2006). 'Symptomatic and functional outcomes 12 months after a first episode of psychotic mania: barriers to recovery in a catchment area sample'. *Bipolar disorder*, 8, (3) pp. 221-231. doi:10.1111/j.1399-5618.2006.00315.x.

Corbin, J. & Strauss, A. (2015). *Basics of qualitative research: techniques and procedures for developing grounded theory,* London, SAGE.

Corrigan, P. & Watson, A. (2002). 'Understanding the impact of stigma on people with mental illness'. *World Psychiatry*, 1 (1), pp. 16-20. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1489832/ (Accessed 14/03/2021).

Costigan, S. A., Eather, N., Plotnikoff, R. C., Hillman, C. H. & Lubans, D. R. (2016). 'High-Intensity Interval Training for cognitive and mental health in adolescents'. *Medicine & Science in Sports & Exercise*, 48 (10), pp. 1985-93. doi:10.1249/mss.0000000000000993.

Cotton, S. & Butselaar, F. (2013). 'Outdoor adventure camps for people with mental illness'. *Australasian Psychiatry*, 21 (4), pp. 352-358. doi:10.1177/1039856213492351.

Cottrell, D. & Kraam, A. (2005). 'Growing up? A history of CAMHS (1987-2005)'. *Child & Adolescent Mental Health*, 10 (3), pp. 11-7-117. doi: doi: 10.1111/j.1475-3588.2005.00366.x.

Crafter, S. & Maunder, R. (2012). 'Understanding transitions using a sociocultural framework'. *Educational and Child Psychology*, 29 (1), pp. 10-18. Available at: http://oro.open.ac.uk/33563/ (Accessed 14/03/2021)

Craig, P., Dieppe, P., MacIntyre, S., Michie, S., Nazareth, I. & Petticrew., M. (2006). 'Developing and evaluating complex intervention: the new Medical Research Council guidance'. *The British Medical Journal*, 337, pp. 1-6. doi:10.1136/bmj.a1655.

Creek, J. (2014). The knowledge base of occupational therapy in Creek's Occupational Therapy and mental health *In:* Bryant, W., Fieldhouse, J. & Bannigan, K. (eds.) *Creek's Occupational Therapy and Mental Health.* 5th ed. Churchill Livingstone.

Crockett, L. J. & Beal, S. J. (2012). 'The life course in making: Gender and the development of adolescents' expected timing of adult role transitions'. *Developmental Psychology*, 48 (6), pp1727-38. doi:10.1037/a0027538.

Cross, S. P. M., Hermens, D. F., Scott, E. M., Ottavio, A., McGorry, P. D. & Hickie, I. B. (2014). 'A Clinical staging model for early intervention youth mental health services'. *Psychiatric Services*, 65 (7), pp. 939-943. doi:10.1176/appi.ps.201300221.

Csíkszentmihályi, M. (1990). *Flow: the psychology of optimal experience.* New York, Harper and Row.

Daley, C., Gligora, C., Brzozowski, J., Pääkkönen, H., Väisänen, P., Ricroch, L., Tabajdi, M., Mikami, H., Hancock, A., Frank., V. O., Istrate, G.-M., Fredberg, M., Mercy, J.-L., Gagel, S., Barrio, L. D., Smith, C., Fisher, K., Gershuny, J., Vikat, A., Boko, D. & Lawrence, S. (2013). 'Guidelines for harmonizing time-use surveys'. United Nations Economic Commission For Europe.

Das, J. K., Salam, R. A., Lassi, Z. S., Khan, M. N., Mahmood, W., Patel, V. & Bhutta, Z. A. (2016). 'Interventions for adolescent mental health: An overview of systematic reviews'. *Journal of Adolescence Health,* 49, pp. 49-60. doi:10.1016/j.jadohealth.2016.06.020.

Davidow, J. Y., Insel, C. & Somerville, L. H. (2018). 'Adolescent development of value-guided goal pursuit'. *Trends in Cognitive Science*, 22 (8), pp. 725-736. avilable at: https://doi.org/10.1016/j.tics.2018.05.003.

Davis, J. & Polatajko, H. (2006). The Occupational development of children. *In:* Rodger, S. & Ziviani, J. (eds.) *Occupational Therapy with children: Understanding children's occupations and enabling participation,* Blackwell Publishing.

Daykin, N., De Viggiani, N., Moriarty, Y. & Pilkington, P. (2017). 'Music-making for health and wellbeing in youth justice settings: mediated affordances and the impact of context and social relations'. *Sociology of Health and Illness*, 39 (6), pp. 941-958. doi:10.1111/1467-9566.12549.

Daykin, N., Orme, J. & Evans, D. (2008). 'The impact of participation in performing arts on adolescent health and behaviour: A systematic review of the literature'. *Journal of Health Psychology*, 13 (2), pp. 251-264. doi:10.1177/1359105307086699.

Deacon, B. J. (2013). 'The biomedical model of mental disorder: A critical analysis of its validity, utility, and effects on psychotherapy research'. *Clinical Psychology Review*, 33, pp. 846-861. doi:10.1016/j.cpr.2012.09.007.

Deighton, J., Croudace, T., Fonagy, P., Brown, J., Patalay, P. & Wolpert, M. (2014). 'Measuring mental health and wellbeing outcomes for children and adolescents to inform practice and policy: a review of child self-report measures'. *Child and Adolescent Psychiatry and Mental Health,* 8(14), doi:10.1186/1753-2000-8-14.

Demkowicz, O., Ashworth, E., Mansfeld, R., Stapley, E., Miles, H., Hayes, D., Burrell, K., Moore, A. & Deighton, J. (2020). 'Children and young people's experiences of completing mental health and wellbeing measures for research: learning from two school-based pilot projects'. *Child and Adolescent Psychiatry and Mental Health*, 14 (35), pp. 1-18. doi:10.1186/s13034-020-00341-7.

Department of Health (2000). *The mental health policy implementation guide*. Available at: http://webarchive.nationalarchives.gov.uk/20120514200638/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4058960.pdf (Accessed:22 May 2018).

Department of Health (2011). 'No health without mental health: A cross-government mental health outcomes stratergy for people of all ages'. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/138253/dh_124058.pdf (Accessed: 1 October 2021).

Department of Health (2014). 'Closing the Gap: Priorities for essential change in mental health. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/281250/Closing_the_gap_V2_-_17_Feb_2014.pdf (Accessed on: 1 October 2021).

Department of Health (2017). *Transforming children and young people's mental health provision: a GreenpPaper*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664855/Transforming_children_and_young_people_s_mental_health_provision.pdf (Accessed on: 1 October 2021.

Department of Health (2012). *Future in mind: Promoting, protecting and improving our children and young people's mental health and wellbeing* Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/414024/Childrens_Mental_Health.pdf).

Department of Health (2016) *The five year forward view for mental health*. Available at: https://www.england.nhs.uk/wp-content/uploads/2016/02/Mental-Health-Taskforce-FYFV-final.pdf (Accessed:21/09/2021).

Desha, L. N. & Ziviani, J. M. (2007). 'Use of time in childhood and adolescence: A literature review on the nature of activity participation and depression'. *Australian Occupational Therapy Journal*, 54, (1), pp. 4-10. doi:10.1111/j.1440-1630.2006.00649.x.

Di Rezze, B., Nguyen, T., Mulvale, G., Barr, N. G., Longo, C. J. & Randall, G. E. (2015). 'A scoping review of evaluated interventions addressing developmental transitions for youth with mental health disorders'. *Child: Care, health and development*, 42 (2), pp. 176-167. doi:10.1111/cch.12306.

Dimitrijević, B., Simic, V., Radonjic, V. & Kostic-Ljubisavljevic, A. (2012). 'The Delphi method as a research tool: an application in transportation and logistics systems evaluations'. *6th International Quality Conferences.* Centre of Quality, Faculty of Engineering, University of Kragujevac.

Donohoe, H., Stellefson, M. & Tennant, B. (2012). 'Advantages and limitations of the e-Delphi technique: implications for health education researchers'. *American Journal of Health Education*, 43 (1), pp. 38-46. doi:10.1080/19325037.2012.10599216.

Doucette, P. A. (2004). 'Walk and talk: an intervention for behaviorally challenged youths'. *Adolescence*, 39 (154), pp. 373-388.

Duberg, A., Moller, M. & Sunvisson, H. (2016). '"I feel free": Experiences of a dance intervention for adolescent girls with internalizing problems'. *International Journal of Qualitative Studies on Health and Wellbeing*, 11 (31946), doi:10.3402/qhw.v11.31946.

Ediger, J. & O'Day, K. (2011). 'Occupation participation sort: adolescent and young adult'. *Innovative Practice Projects*, 13.

Eklund, M., Erlandsson, L. K. & Persson, D. (2003). 'Occupational value among individuals with long-term mental illness'. *Canadian Journal of Occupational Therapy*, 70 (5), pp. 276-84. doi:10.1177/000841740307000504.

Eklund, M. & Leufstadius, C. (2007). 'Relationships between occupational factors and health and well-being in individuals with persistent mental illness living in the community'. *Canadian Journal of Occupational Therapy*, 74 (4), pp. 303-13. doi:10.1177/000841740707400403.

Eklund, M., Orban, K., Argentzell, E., Bejerholm, U., Tjörnstrand, C., Erlandsson, L.-K. & Håkansson, C. (2017a). 'The linkage between patterns of daily occupations and occupational balance: applications within occupational science and occupational therapy practice'. *Scandinavian Journal of Occupational Therapy*, 24 (1), pp. 41-56. doi:10.1080/11038128.2016.1224271.

Eklund, M., Tjörnstrand, C., Sandlund, M. & Argentzell, E. (2017b). 'Effectiveness of Balancing Everyday Life (BEL) versus standard occupational therapy for activity engagement and functioning among people with mental illness – a cluster RCT study'. *BMC Psychiatry*, 17 (363), doi:10.1186/s12888-017-1524-7.

Ellegård, K. (2019). *Thinking Time Geography. concepts, methods, and applications* Oxon, Routledge.

Enns, J., Holmqvist, M., Wener, P., Halas, G., Rothney, J., Schultz, A., Goertzen, L. & Katz, A. (2016). 'Mapping interventions that promote mental health in the general population: A scoping review of reviews'. *Prevention Medicine*, 87, pp. 70-80. doi:10.1016/j.ypmed.2016.02.022.

Eurostat. (2009) *Harmonised European timeuse surveys: Manual and guidelines*. Publications Office of the European Union, Luxembourg.

Eurostat (2019) *Harmonised European Time Use Surveys (HETUS) 2018 guidelines*. Publications Office of the European Union, Luxembourg.

Farb, F. A. & Matjasko, J. L. (2012). 'Recent advances in research on school-based extra-curricular activities and adolescent development'. *Developmental Review,* 32 (1), pp. 1-48. doi:10.1016/j.dr.2011.10.001.

Farnworth, L. (2003). 'Time use, tempo and temporality: Occupational therapy's core business or someone else's business'. *Australian Occupational Therapy Journal*, 50 (3), pp. 116-126. doi:10.1046/j.1440-1630.2003.00391.x

Feilzer, M. (2010). 'Doing mixed methods research pragmatically: Implications for the rediscovery of pragmatsim as a researcch paradigm'. *Journal of Mixed Methods Research*, 4 (1), pp. 6-16. doi:10.1177/1558689809349691.

Ferguson, D. D. & Jones, K. (2001). 'Cross-country skiing as a self-efficacy intervention with an adolescent female: An innovative application of Bandura's theory to therapeutic recreation'. *Therapeutic Recreation Journal*, 35 (4), pp. 357-64.

Ferrar, K., Chang, C., Li, M. & Olds, T. S. (2013). 'Adolescent time use clusters: A systematic review'. *Journal of Adolescent Health*, 52 (3), pp. 259-270. doi:10.1016/j.jadohealth.2012.06.015.

Fervaha, G., Agid, O., McDonald, K., Foussias, G. & Remington, G. (2014). 'Daily activity patterns in remitted first-episode schizophrenia'. *Comprehensive Psychiatry*, 55 (5), pp. 1182-1197. doi:10.1016/j.comppsych.2014.04.001.

Firth, J., Ward, P. & Stubbs, B. (2019). 'Editorial: lifestyle psychiatry'. *Frontiers in Psychiatry*, doi:10.3389/fpsyt.2019.00597.

Fisher, A. (2014). 'Occupation-centered, occupation-based, occupation-focused: Same, same or different?'. *Scandinavian Journal of Occupational Therapy*, 21 (3), pp. 96–107. doi:10.3109/11038128.2014.952912.

Fitzsimons, E., Goodman, A., Kelly, E. & Smith, J. P. (2017). 'Poverty dynamics and parental mental health: Determinants of childhood mental health in the UK'. *Social Science and Medicine*, 175, pp. 43-51. doi:10.1016/j.socscimed.2016.12.040.

Fleary, S. A., Joseph, P. & Pappagianopoulos, J. E. (2018). 'Adolescent health literacy and health behaviors: A systematic review'. *Journal of Adolescence*, 62, pp. 116-127. doi:10.1016/j.adolescence.2017.11.010.

Fowler, D., French, P., Banerjee, R., Barton, G., Berry, C., Bryne, R., Clarke, T., Fraser, R., Gee, B., Greenwood, K., Notley, C., Parker, S., Shepstone, L., Wilson, J., Yung, A. & Hodgekins, J. (2017a). 'Prevention and treatment of long-term social disability amoungst young people with emerging severe mental illness with social recovery therapy (the PRODIGY Trial): study protocol for a ransomised controlled trial'. *Trials*, 18 (1), doi:10.1186/s13063-017-2062-9.

Fowler, D., Hodgekins, J. & French, P. (2017b). 'Social Recovery Therapy in improving activity and social outcomes in early psychosis: Current evidence and longer term outcomes'. *Schizophrenia Research*, 203, pp99-104. doi:10.1016/j.schres.2017.10.006.

Fox, K. R. & Choukas-Bradley, S. (2020). 'Mental health among sexual and gender minority adolescents: Examining interactions with race and ethnicity'. *Journal of Consulting and Clinical Psychology*, 88 (5), pp. 402-415. doi:10.1037/ccp0000486.

Frank, J. L., Kohler, K., Peal, A. & Bose, B. (2017). 'Effectiveness of a school-based yoga program on adolescent mental health and school performance: Findings from a randomized controlled trial'. *Mindfulness*, 8 (3), pp. 544-553. doi:10.1007/s12671-016-0628-3.

Gallagher, M., Pettigrew, J. & Muldoon, O. (2015). 'Occupational choice of youth in a disadvantaged community'. *The British Journal of Occupational Therapy*, 78 (10), pp. 622-629. doi:10.1177/0308022615583065.

Galvan, M., Uauy, R., Lopez-Rodriguez, G. & Kain, J. (2015). 'Association between childhood obesity, cognitive development, physical fitness and social-emotional wellbeing in a transitional economy'. *Annals Human Biology*, 41 (2), pp. 99-104. doi:10.3109/03014460.2013.841288.

García-Carrión, R., Villarejo-Carballido, B. & Villardón-Gallego, L. (2019). 'Children and adolescents mental health: A systematic review of interaction-based interventions in schools and communities'. *Frontiers in Psychology*, 10, doi:10.3389/fpsyg.2019.00918.

GBD 2013 DALY's and Hale Collaborators. (2015). 'Global, regional, and national disability-adjusted life years (DALYs) for 306 diseases and injuries and healthy life expectancy (HALE) for 188 countries, 1990–2013: quantifying the epidemiological transition'. *Lancet.*

Gehue, L. J., Scott, E., Hermens, D. F., Scott, J. & Hickie, I. (2015). 'Youth Early-intervention Study (YES) - group interventions targeting social participation and physical well-being as an adjunct to treatment as usual: study protocol for a randomized controlled trial'. *Trials*, 16, pp. 333. doi:10.1186/s13063-015-0834-7.

Gershuny, J. (2011). 'Time-use surveys and the measurement of national well-being'. Oxford: University of Oxford, Centre for Time Use Research. Available at: https://www.timeuse.org/sites/ctur/files/public/ctur_report/4486/timeusesurveysandwellbein_tcm77-232153.pdf (Accessed on: 14/03/2021).

Gershuny, J., Harms, T., Doherty, A., Thomas, E., Milton, K., Kelly, P. & Foster, C. (2017). 'Testing self-report time-use diaries against objective instruments in real time'. Methodology, 50(1), pp. 318-349. Available at: https://doi.org/10.1177/0081175019884591 (Accessed on: 14/03/2021).

Gershuny, J., Harms, T., Doherty, A., Thomas, E., Milton, K., Kelly, P. & Foster, C. (2019). 'Capture 24: Testing self-report time-use diaries against objective instruments in real time '. *Sociological Methodology*, 50 (8), pp. 1-32. doi:10.1177/0081175019884591.

Godfrey, C., Devine-Wright, H. & Taylor, J. (2015). 'The positive impact of structured surfing courses on the wellbeing of vulnerable young people'. *Community Practitioner*, 88 (1), pp. 26-29.

Goodman, C. M. (1987). 'The Delphi technique: a critique'. *Journal of Advanced Nursing,* 12 (6), pp. 729-734. doi:10.1111/j.1365-2648.1987.tb01376.x.

Goodman, R. (2001). 'Psychometric properties of the strengths and difficulties questionnaire'. *Journal of the American Academy of Child and Adolescent Psychiatry*, 40 (11), pp. 1337-1345. doi:10.1097/00004583-200111000-00015.

Goodman, R., Meltzer, H. & Bailey, V. (1998). 'The Strengths and Difficulties Questionnaire: A pilot study on the validity of the self-report version'. *European Child and Adolescent Psychiatry*, 7 (3), pp. 125-130. doi:10.1007/s007870050057.

Gordon, J. S., Staples, J. K., Blyta, A., Bytyqi, M. & Wilson, A. T. (2008). 'Treatment of post traumatic stress disorder in postwar kosovar adolescents using mind-body skills groups: A randomized controlled trial'. *Journal of Clinical Psychiatry*, 69 (9), pp. 1469-1476. doi:10.4088/JCP.v69n0915.

Gould, A., Desouza, S. & Rebeiro-Gruhl, K. (2005). 'And then I lost that life: A shared narrative of four young men with schizophrenia'. *British Journal of Occupational Therapy*, 68 (10), pp. 467-473. doi:10.1177/030802260506801005.

Goulding, S., Chien, V. & Compton, M. (2010). 'Prevalence and correlates of school drop-out prior to initial treatment of non affective psychosis: Further evidence suggesting a need for supported education'. *Schizophrenia Research*, 116 (2-3), pp. 228–233. doi:10.1016/j.schres.2009.09.006.

Gracia, P., Garcia-Roman, J., Oinas, T. & Anttila., T. (2019). 'Child and adolescent time use: A cross-national study'. *Journal of Marriage and Family*, 82 (4), pp. 1304-1324. doi:10.1111/jomf.12626.

Green, L. W. & Kreuter, M. W. (1991). *Health promotion planning: An educational and environmental approach,* Mountain View, Canada, Mayfield Publishing.

Grgic, J., Dumuid, D., Bengoechea, E. G., Shrestha, N., Bauman, A., Olds, T. & Pedisic, Z. (2018). 'Health outcomes associated with reallocations of time between sleep, sedentary behaviour, and physical activity: a systematic scoping review of isotemporal substitution studies'. *International Journal of Behavioral Nutrition and Physical Activity*, 15 (1), pp. 69. doi:10.1186/s12966-018-0691-3.

Gronski, M. P., Bogan, K. E., Kloeckner, J., Russell-Thomas, D., Taff, S. D., Walker, K. A., & Berg, C. (2013). 'Childhood toxic stress: A community role in health promotion for occupational therapists'. *American Journal of Occupational Therapy*, 67 (6), pp. 148-153. doi:10.5014/ajot.2013.008755.

Guo, Y., Xu, M., Ji, M., Wei, Z., Zhang, J., Hu, Q., Yan, J., Chen, Y., Lyu, J., Shao, X. & Et Al. (2018). 'The effect of imaginary working Qigong on the psychological well-being of college students: study protocol for a randomized controlled trial'. *Medicine*, 97 (44), pp. e13043. doi:10.1097/MD.0000000000013043.

Hägerstrand, T. (2009). *Tillvaroväven. (Eng. The fabric of existence),* Stockholm, Formas.

Haller, M., Hadler, M. & Kaup, G. (2013). 'Leisure time in modern societies: A new source of boredom and stress?'. *Social Indicators Research,* 111, pp. 403-434. doi:10.1007/s11205-012-0023-y.

Halliday Hardie, J. (2014). 'The consequences of unrealised occupational goals in the transition to adulthood'. *National Institute of Health Social Science Research*, 48, pp. 196-211. doi:10.1016/j.ssresearch.2014.06.2006.

Hammarberg, K., Kirkman, M. & De Lacey, S. (2016). 'Qualitative research methods: when to use them and how to judge them'. *Human Reproduction*, 31 (3), pp. 498-501. doi:10.1093/humrep/dev334.

Hammell, K. W. (2011). 'Resisting theoretical imperialism in the disciplines of occupational science and occupational therapy'. *British Journal of Occupational Therapy*, 74 (1) pp. 27--33. doi:10.4276/030802211X12947686093602.

Hammell, K. W. (2020). 'Engagement in living during the Covid-19 pandemic and ensuing occupational disruption'. *OT Now*.

Hansen, E., Sund, E., Skjei Knudtsen, M., Krokstad, S. & Holmen, T. L. (2015). 'Cultural activity participation and associations with self-perceived health, life-satisfaction and mental health: the Young HUNT Study, Norway'. *BMC Public Health*, 15, pp. 544. doi:10.1186/s12889-015-1873-4.

Hargreaves, J., Bond, L., O'Brien, M., Forer, D. & Davies, L. (2008). 'The PATS Peer Support Program: Prevention/early intervention for adolescents who have a parent with mental illness'. *Youth Studies Australia*, 27 (1), pp. 43-51.

Harrison, M. & Forsyth, K. (2005). 'Developing a vision for therapists working with children and adolescent mental health services poised or paused for action'. *British Journal of Occupational Therapy*, 68 (4), pp.181-185. doi.org/10.1177%2F030802260506800407.

Hasanpour, M., Tabatabaei, M., Alavi, M. & Zolaktaf, V. (2014). 'Effect of aerobics exercise on self-esteem in Iranian female adolescents covered by welfare organization'. *Scientific World Journal*, 2014, pp.1-6. doi:10.1155/2014/456483.

Havinghurst, R. J. (1972). *Developmental tasks and education* New York, David McKay.

Hayes, D. & Kyriakopoulos, M. (2018). 'Dilemmas in the treatment of early-onset first-episode psychosis'. *Therapeutic Advances in Psychopharmacology*, 8 (8), pp. 231-239. doi:10.1177/2045125318765725.

Hayward, J., Jacka, F. N., Skouteris, H., Millar, L., Strugnell, C., Swinburn, B. A., & Allender, S. (2016). 'Lifestyle factors and adolescent depressive symptomatology: Associations and effect sizes of diet, physical activity and sedentary behaviour'. *Australian & New Zealand Journal of Psychiatry*, 50 (11), pp. 1064-1073. doi:10.1177/0004867416671596.

Hellgren, M. (2014). 'Extracting more knowledge from time diaries'. *Social Indicators Research*, 119, pp. 1517-1534. doi:10.1007/s11205-013-0558-6.

Hennink, M. M. (2014). *Focus group discussion: understanding qualitative research,* Oxford University Press.

Hense, C., Skewes McFerran, K., Killackey, E. & McGorry, P. (2015). “How can research practice promote young people’s recovery from mental illness? A critical look at the Australian context”'. *Youth Voice Journal*. Available at: https://minerva-access.unimelb.edu.au/bitstream/handle/11343/59450/C.Hense%202015%20How%20Can%20Research%20Promote%20Young%20People%27s%20Recovery%20from%20Mental%20Illness%20Published%20Version.pdf?sequence=1&isAllowed=y (Accessed on 14/03/2021).

Hetrick, S. E., Parker, A. G., Hickie, I. B., Purcell, R., Yung, A. R. & McGorry, P. D. (2008). 'Early identification and intervention in depressive disorders: Towards a clinical staging model'. *Psychotherapy and Psychosomatics*, 77 (5), pp. 263-270. doi:10.1159/000140085.

Hitch, D. & Pepin, G. (2020). 'Doing, being, becoming and belonging at the heart of occupational therapy: An analysis of theoretical ways of knowing'. *Scandinavian Journal of Occupational Therapy*, 28 (1), pp. 13-35. doi:10.1080/11038128.2020.1726454.

Hitch, D., Pepin, G. & Stagnitti, K. (2014). 'In the footsteps of Wilcock, part one: the evolution of doing, being, becoming and belonging'. *Occupational THerapy in Health Care*, 28 (3), pp. 231-246. doi:10.3109/07380577.2014.898114.

Hitch, D., Pepin, G. & Stagnitti, K. (2017). 'The pan occupational paradigm: development and key concepts'. *Scandinavian Journal of Occupational Therapy*, 25 (1), pp. 27-34. doi:10.1080/11038128.2017.13378808.

Ho, F. K. W., Louie, L. H. T., Wong, W. H., Chan, K. L., Tiwari, A., Chow, C. B., Ho, W., Wong, W., Chan, M., Chen, E. Y. H., Cheung, Y. F. & Ip, P. (2017). 'A sports-based youth development program, teen mental health, and physical fitness: an RCT'. *Pediatrics*, 140 (4), doi:10.1542/peds.2017-1543.

Hocking, C. (2013). Occupational Science. *In:* Gellman, M. D. & Turner, J. R. (eds.) *Encyclopedia of Behavioral Medicine.* New York, NY: Springer New York.

Hoddinott, P. (2015). 'A new era for intervention development studies'. *Pilot and Feasibility Studies*, 1 (36), pp. 1-4. doi:10.1186/s40814-015-0032-0.

Hoegh Poulsen, P., Biering, K. & Andersen, J. H. (2016). 'The association between leisure time physical activity in adolescence and poor mental health in early adulthood: a prospective cohort study'. *BMC Public Health*, 16 (3). doi:10.1186/s12889-015-2658-5.

Hoffmann, T. C., Glasziou, P. P., Boutron, I., Milne, R., Perera, R., Moher, D., Altman, D. G., Barbour, V., MacDonald, H., Johnston, M., Lamb, S. E., Dixon-Woods, M., McCulloch, P., Wyatt, J. C., Chan, A.-W. & Michie, S. (2014). 'Better reporting of interventions: template for intervention description and replication (TIDieR) checklist and guide'. *The British Medical Journal*, 348, doi:10.1136/bmj.g1687.

Holmbeck, G. N. (2002). 'A developmental perspective on adolecent health and illness: An intorduction to the special issues '. *Journal of Pediatric Pscyhology*, 27 (5), pp. 409-415. doi:10.1093/jpepsy/27.5.409.

Humphrey, N., Kalambouka, A., Wigelsworth, M., Lendrum, A., Deighton, J. & Wolpert, M. (2011). 'Measures of social and emotional skills for children and young people: A systematic review'. *Educational and Psychological Measurement*, 71 (4), pp. 617-637. doi:10.1177/0013164410382896.

Hunt, E. & McKay, E. (2012). 'Using population-level time use datasets to advance knowledge of human activity, participation and health'. *British Journal of Occupational Therapy*, 75 (10), pp. 478-480. doi:10.4276/030802212X13496921049789.

Hunt, E. & McKay, E. (2015a). 'A scoping review of time-use research in occupational therapy and occupational science'. *Scandinavian Journal of Occupational Therapy*, 22 (1), pp. 1-12. doi:10.3109/11038128.2014.934918.

Hunt, E. & McKay, E. (2015b). 'What can be learned from adolescent time diary research'. *Journal of Adolescent Health*, 56 (3), pp. 256-266. doi:10.1016/j.jadohealth.2014.11.007.

Hunt, E., McKay, E., Dahly, D. L., Fitzgerald, A. P. & Perry, I. J. (2015). 'A person-centred analysis of the time-use, daily activities and health-related quality of life of Irish school-going late adolescents'. *Quality of Life Research*, 24, pp. 1303-1315. doi:10.1007/s11136-014-0863-9.

Hunt, E., McKay, E., Fitzgerald, A. & Perry, I. (2014). 'Time use and daily activities of late adolescents in contemporary Ireland'. *The Journal of Occupational Science,* 21 (1), pp. 42-64. doi:10.1080/14427591.2013.867560.

Hunt, E., McKay, E. A., Dahly, D. L., Fitzgerald, A. P. & Perry, I. J. (2015). 'A person-centred analysis of the time-use, daily activities and health-related quality of life of Irish school-going late adolescents'.

Quality of Life Research: An International Journal of Quality of Life Aspects of Treatment, Care & Rehabilitation, 24 (6), pp. 1303-1315. doi:10.1007/s11136-014-0863-9.

Iwama, M. K., Thomson, N. A. & MacDonald, R. M. (2009). 'The Kawa model: The power of culturally responsive occupational therapy'. *Disability and Rehabilitation*, 31 (14), pp. 1125-1135. doi:10.1080/09638280902773711.

Jackson, J., Carlson, M., Mandel, D., Zemke, R. & Clark, F. (1998). 'Occupation in lifestyle redesign: The well elderly study occupational therapy program'. *American Journal of Occupational Therapy*, 52 (5), pp. 326-336. doi:10.5014/ajot.52.5.326.

Jaworska, N., Courtright, A. K., De Somma, E., MacQueen, G. M. & MacMaster, F. P. (2019). 'Aerobic exercise in depressed youth: A feasibility and clinical outcomes pilot'. *Early Intervention In psychiatry*, 13 (1), pp. 128-132. doi:10.1111/eip.12537.

Jaycox, L. H., Stein, B. D., Paddock, S., Miles, J. N., Chandra, A., Meredith, L. S., Tanielian, T., Hickey, S. & Burnam, M. A. (2009). 'Impact of teen depression on academic, social, and physical functioning'. *Pediatrics*, 124 (4), pp. 596-605. doi:10.1542/peds.2008-3348.

Johannessen, J. O., Larsen, T. K., Joa, I., Melle, I., Friis, S., Opjordsmoen, S., Rund, B. R., Simonsen, E., Vaglum, P. & McGlashan, T. H. (2005). 'Pathways to care for first-episode psychosis in an early detection healthcare sector: part of the Scandinavian TIPS study'. *British Journal of Psychiatry*, 48 (48), pp. 24-28. doi:10.1192/bjp.187.48.s24.

Kamberelis, G. & Dimitriadis, G. (2011). Focus groups: contingent articulations of pedagogy, polotics, and inquiry. *In:* Denzin, N. & Lincoln, Y. (eds.). *The SAGE Handbook of Qualitative Research.* London: SAGE.

Kantartzis, S. (2019). 'The Dr Elizabeth Casson Memorial Lecture 2019: shifting our focus. fostering the potential of occupation and occupational therapy in a complex world'. *British Journal of Occupational Therapy*, 82 (9), pp. 553-556. doi:10.1177%2F0308022619864893.

Keeney, S., Hasson, F. & McKenna, H. (2006). 'Consulting the oracle: ten lessons from using the Delphi technique in nursing research'. *Leading Global Nursing Research*, 53 (2), pp. 205-212. doi:10.1111/j.1365-2648.2006.03716.x.

Keeney, S., Hasson, F. & McKenna, H. P. (2001). 'A critical review of the Delphi technique as a research methodology for nursing'. *International Journal of Nursing Studies,* 38 (2), pp. 195-200. doi: 10.1016/S0020-7489(00)00044-4

Keles, B., McCrae, N. & Grealishm A. (2019). 'A systematic review: the influence of social media on depression, anxiety nd psychological distress in adolescents'. *International Journal of Adolescence and Youth*, 25 (1), pp.79-93. doi:10.1080/02673843.2019.1590851.

Kelly, P., Thomas, E., Doherty, A., Harms, T., Burke, Ó., Gershuny, J., & Foster, C. (2015). 'Developing a method to test the validity of 24 hour time use diaries using wearable cameras: A feasibility pilot'. *PLoS One*, 10 (12), pp. 1-15. doi:e0142198. doi:10.1371/journal.pone.0142198.

Kelly, Y., Zilanawala, A., Booker, C. & Sacker, A. (2018). 'Social media use and adolescent mental health: Findings from the UK millennium cohort study'. *EClinicalMedicine*, 6, pp. 59-68. doi:10.1016/j.eclinm.2018.12.005.

Kendall, E. & Maujean, A. (2015). 'Horse play: A brief psychological intervention for disengaged youths'. *Journal of Creativity in Mental Health*, 10 (1), pp. 46-61. doi:10.1080/15401383.2014.962720.

Kennedy, J. & Lynch, H. (2016). 'A shift from offline to online: Adolescence, the internet and social participation'. *Journal of Occupational Science*, 23 (2), pp. 156-167. doi:10.1080/14427591.2015.1117523.

Kessler, R., Amminger, P., Aguilar-Gaxiola, S., Alonso, J., Lee, S. & Usten, T. B. (2007). 'Age of onset of mental disorders: a review of recent literature.'. *Current Opinion Psychiatry*, 20 (4), pp. 359-364.

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R. & Walters, E. E. (2005). 'Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the national comorbidity survey replication'. *Archives of General Psychiatry*, 62 (6), pp. 593-602. doi:10.1001/archpsyc.62.6.593.

Kielhofner, G. (2009). *Conceptual Foundations of Occupational Therapy Practice.* Pennsylvania, United States, F.A. Davis Company.

Kieling, C., Baker-Henningham, H., Belfer, M., Conti, G., Ertem, I., Omigbodun, O., Rohde, L., Srinath, S., Ulkuer, N. & Rahman, A. (2011). 'Child and adolescent mental health worldwide: Evidence for action'. *The Lancet*, 378 (9801), pp. 1515-25. doi:10.1016/S0140-6736(11)60827-1.

Kirsh, B., Martin, L., Hultqvist, J., & Eklund, M. (2019). 'Occupational Therapy Intervention in mental health: A literature review in search of evidence'. *Occupational Therapy in Mental Health*, 35 (2), pp. 109-156. doi:10.1080/0164212X.2019.1588832.

Kitterød, R. H. (2001). 'Does the recording of parallel activities in time use diaries affect the way people report their main activities?'. *Social Indicators Research*, 56 (2), pp. 145–178. doi:10.1023/A:1012289811886.

Kitzinger, J. (1994). 'The methodology of focus groups: the importance of interaction between research participants'. *Sociology of Health and Illness*, 16 (1), pp. 103-121. doi:10.1111/1467-9566.ep11347023.

Kitzinger, J. (1995). 'Qualitative research: Introducing focus groups'. *The British Medical Journal*, 311, doi:10.1136/bmj.311.7000.299.

Klizas, S., Malinauskas, R., Karanauskiene, D., Senikiene, Z., & Kliziene, I. (2012). 'Changes in psychosocial adjustment of adolescent girls in the lessons of physical education'. *Medicina (Kaunas)*, 48 (9), pp. 465-71. doi:10.1023/A:1012289811886.

Koole, S., Schlinkert, C., Maldei, T. & Baumann, N. (2018). 'Becoming who you are: an intergrative review of self-determination theory and personailty systems interactions theory'. *Journal of Personality*, 87 (1), pp. 15-36. doi:10.1111/jopy.12380.

Kramer, J., Kielfhofner, G. & Smith, E. (2010). 'Validity evidence for the child occupational self assessment'. *The American Occupational Therapy Journal*, 64 (4), pp. 621-632.

Krause, K. R., Chung, S., Adewuya, A. O., Albano, A. M., Babins-Wagner, R., Birkinshaw, L., Brann, P., Creswell, C., Delaney, K., Falissard, B., Forrest, C. B., Hudson, J. L., Ishikawa, S.-I., Khatwani, M., Kieling, C., Krause, J., Malik, K., Martínez, V., Mughal, F., Ollendick, T. H., Ong, S. H., Patton, G. C., Ravens-Sieberer, U., Szatmari, P., Thomas, E., Walters, L., Young, B., Zhao, Y., & Wolpert, M. (2021). 'International consensus on a standard set of outcome measures for child and youth anxiety, depression, obsessive- compulsive disorder, and post-traumatic stress disorder'. *Lancet Psychiatry,* 8 (1), pp. 76-86. doi: 10.1016/S2215-0366(20)30356-4.

Krueger, A., Kahnenman, D., Fischler, C., Schkade, D., Schwarz, N. & Stone, A. (2009). 'Time use and subjective well-being in France and the U.S.'. *Social Indicators Research*, 93 (1), pp. 7-18. doi:154.59.124.76.

Kwan, B. & Rickwood, D. J. (2015). 'A systematic review of mental health outcome measures for young people aged 12 to 25 years'. *BMC Psychiatry*, 15 (279). doi:10.1186/s12888-015-0664-x.

Landis, J. R. & Koch, G. G. (1977). 'The measurement of observer agreement for categorical data'. *Biometrics*, 33 (1), pp. 159-174. doi: 10.2307/2529310.

Larsen, B. & Luna, B. (2018). 'Adolescence as a neurobiological critical period for the development of higher-order cognition'. *Neuroscience and Biobehavioral Reviews*, 94, pp. 179-195. doi.org/10.1016/j.neubiorev.2018.09.005

Larsen, T. K., Melle, I., Auestad, B., Friis, S., Haahr, U., Johannessen, J. O., Opjordsmoen, S., Rund, B. R., Simonsen, E., Vaglum, P., & McGlashan, T. (2006). 'Early detection of first-episode psychosis: the effect on 1-year outcome'. *Schizophrenia Bulletin*, 32 (4), pp. 758-64. doi: 10.1093/schbul/sbl005.

Larson., R. & Verma., S. (1999). 'How children and adolescents spend time across the world: Work, play and developmental opportunities'. *Psychological Bulletin*, 125 (6), pp. 701-736. doi:10.1037/0033-2909.125.6.701.

Lassi, Z. S., Salam, R. A., Das, J. K., Wazny, K. & Bhutta, Z. A. (2015). 'An unfinished agenda on adolescent health: Opportunities for interventions'. *Seminars in Perinatology*, 39 (5), pp. 353-260. doi:10.1053/j.semperi.2015.06.005.

Law, D. & Wolpert, M. (2014). 'Guide to using outcomes and feedback tools with children, young people and families. Available at: https://www.ucl.ac.uk/evidence-based-practice-unit/sites/evidence-based-practice-unit/files/pub_and_resources_resources_for_profs_guide_to-using.pdf (Accessed on: 14/03/2021).

Leufstadius, C., & Eklund, M. (2007). 'Time use among individuals with persistent mental illness: Identifying risk factors for inbalance in daily activities '. *Scandinavian Journal of Occupational Therapy*, 15, pp. 23-33. doi:10.1080/1138120701253428.

Levac, D., Colquhoun, H., & O'Brien, K. K. (2010). 'Scoping studies: advancing the methodology'. *Implementation Science*, 5 (69), pp. 1-9. doi:10.1186/1748-5908-5-69.

Lobo, F. (1999). 'The leisure and work occupations of young people: A review'. *Journal of Occuaptional Science*, 6 (1), pp. 27-33. doi:10.1080/14427591.1999.9686448.

Lund, C., Breen, A., Flisher, A. J., & Al., E. (2010). 'Poverty and common mental disorders in low and middle income countries: a systematic review'. *Social Science and Medicine*, 71 (3), pp. 517-28. doi:10.1016/j.socscimed.2010.04.027.

Lundh, L. G., Wangby-Lundh, M. & Bjarehed, J. (2008). 'Self reported emotional and behavioral problems in Swedish 14 to 15-year-old adolescents: A study with the self-report version of the Strengths and Difficulties Questionnaire'. *Scandinavian Journal of Psychology*, 49 (6) pp. 523–532. doi:10.1111/j.1467-9450.2008.00668.x.

MacIver, D., Morley, M., Forsyth, K., Bertram, N., Edwards, T., Heasman, D., Rennison, J., Rush, R., & Willis, S. (2016). 'A Rasch analysis of the model of human occupation screening tool single observation form (MOHOST-SOF) in mental health'. *British Journal of Occupational Therapy* 79 (1), pp. 49-56. doi: 10.1177/0308022615591173.

Mackrell, L., & Lavender, T. (2004). 'Peer relationships in adolescents experiencing a first episode of psychosis'. *Journal of Mental Health* 13 (5), pp. 467-479. doi: 10.1080/09638230400006775.

Maglio, J. & McKinstry, C. (2008). 'Occupational therapy and circus: Potential partners in enhancing the health and well-being of today's youth'. *Australian Occupational Therapy Journal*, 55 (4), pp. 287-290. doi:10.1111/j.1440-1630.2007.00713.x.

Marshall, M. & Rathbone, J. (2011). 'Early intervention for psychosis'. *Cochrane Database of Systematic Reviews.* Available at: https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD004718.pub3/epdf/abstract (Accessed on:14/03/2021).

Massaroli, A., Martini, J. G., Lino, M. M., Spenassato, D., & Massaroli, R. (2017). 'The Delphi method as a method as a methodological framework for research in nursing'. *Texto & Contexto - Enfermagem*, 26 (4), pp.1-9. doi:10.1590/0104-07072017001110017.

Matricciani, L., Bin, Y. S., Lallukka, T., Kronholm, E., Wake, M., Paquet, C., Dumuid, D., & Olds, T. (2018). 'Rethinking the sleep-health link'. *Sleep Health*, 4 (4), pp. 339-348. doi:10.1016/j.sleh.2018.05.004.

McCrae, N., Gettings, S. & Purssell, E. (2017). 'Social media and depressive symptoms in childhood and adolescence: A systematic review'. *Adolescent Research Review*, 2 (4), pp. 315-330. doi:10.1007/s40894-017-0053-4.

McCrory, E. J. & Viding, E. (2015). 'The theory of latent vulnerability: Reconceptualizing the link between childhood maltreatment and psychiatric disorder'. *Development and psychopathology*, 27 pp. 493-505. doi:10.1017/S0954579415000115.

McGinnity, F., Russell, H., Williams, J. & Blackwell, S. (2005). 'Time use in Ireland'. *Survey report*, Dublin: Economic and Social Research Institute. Available at: http://www.inis.gov.ie/en/JELR/Pages/Time-use-survey-report (Accessed: 14/03/2021).

McGorry, P. & Mei, C. (2018). 'Early intervention in youth mental health: progress and future directions'. *Evidenced Based Mental Health,* 21 (4), pp. 182-184. doi:10.1136/ebmental-2018-300060.

McGorry, P. & Van Os, J. (2013). 'Redeeming diagnosis in psychiatry: timing versus specificity'. *The Lancet*, 381 (9863), pp. 343-345. doi:10.1016/S0140-6736(12)61268-9.

McGorry, P. D., Hickie, I. B., Yung, A. R., Pantelis, C. & Jackson, H. J. (2006). 'Clinical staging of psychiatric disorders: a heuristic framework for choosing earlier, safer and more effective interventions'. *Australian and New Zealand Journal of Psychiatry*, 40 (8), pp. 616-622. doi:10.1111/j.1440-1614.2006.01860.x.

McGorry, P. D., Keshavan, M., Goldstone, S., Amminger, P., Allott, K., Berk, M., Lavoire, S., Pantelis, C., Yung, A. R., Wood, S. & Hickie, I. (2014). 'Biomarkers and clinical staging in psychiatry'. *World Psychiatry*, 13 (3), pp. 211-223. doi: 10.1002/wps.20144.

McGorry, P. D., Killackey, E. & Yung, A. (2013). 'Early intervention in psychosis: concepts, evidence and future directions'. *World Psychiartry* 7(3). doi:10.1002/j.2051-5545.2008.tb00182.x.

McManus, S., Bebbington, P., Jenkins, R., & Brugha, T. (2016). 'Executive summary: Mental health and wellbeing in England'. *In:* McManus, S., Bebbington, P., Jenkins, R., & Brugha, T. (eds.) *Mental health and wellbeing in England: Adult psychiatric morbidity urvey 2014.* Leeds: NHS Digital.

McPherson, S., Reese, C., & Wendler, M. C. (2018). 'Methodology update Delphi studies'. *Nursing Research*, 67 (5), pp. 404-410. doi:10.1097/NNR.0000000000000297.

Medical Research Council (2006). 'Developing and evaluating complex interventions: new guidance'. Medical Research Council. Available at: https://mrc.ukri.org/documents/pdf/complex-interventions-guidance/ (Accessed on:14/03/2021).

Mei, C., Fitzsimons, J., Allen, N., Alvarez-Jimenez, M., Amminger, G. P., Browne, V., Cannon, M., Davis, M., Dooley, B., Hickie, I., Iyer, S., Killackey, E., Malla, A., Manion, I., Mathias, S., Pennell, K., Purcell, R., Rickwood, D., Singh, S. P., Wood, S. J., Yung, A., & McGorry, P. D. (2020). 'Global research priorities for youth mental health '. *Early Intervention In psychiatry*, 14 (1), pp. 3-13. doi:10.1111/eip.12878.

Mei, C., McGorry, P. D., & Hickie, I. B. (2019). Clinical Staging and Its Potential to Enhance Mental Health Care. *In:* McGorry, P. D. & Hickie, I. B. (eds.) *Clinical Staging in Psychiatry: Making diagnosis work for research and treatment.* Cambridge: Cambridge University Press.

Melle, I., Johannessen, J. O., Friis, S., Haahr, U., Joa, I., Larsen, T. K., Opjordsmoen, S., Rund, B. R., Simonsen, E., Vaglum, P., & McGlashan, T. (2006). 'Early detection of the first episode of schizophrenia and suicidal behavior'. *American Journal of Psychiatry*, 163 (5), pp. 800-804. doi: 10.1176/ajp.2006.163.5.800.

Mellow, M. L., Dumuid, D., Thacker, J., & Dorrian, J. (2019). 'Building your best day for healthy brain againg-The neuroprotective effects of optimal time use'. *Maturitas*, 125 pp. 33-40. doi:10.1016/j.maturitas.2019.04.204.

Meltzer, H., Gatward, R., Goodman, R., & Ford, F. (2000). 'Mental health of children and adolescents in Great Britain'. London: The Stationery Office. Availble at: https://dawba.info/abstracts/B-CAMHS99_original_survey_report.pdf (Accessed on: 14/03/2021).

Mental Health Foundation (2018). *Children and Young people* [Online]. Available: https://www.mentalhealth.org.uk/a-to-z/c/children-and-young-people [Accessed 21 May 2018].

Meyer, A. (1922/1977). 'The philosophy of occupational therapy'. *American Journal of Occupational Therapy*, 31 (10), pp. 639-642.

Microscoft Corporation (2016). *Microsoft Excel*. Available at https://office.microsoft.com/excel.

Mieloo, C., Raat, H., Van Oort, F., Bevaart, F., Vogel, I., Donker, M. & Jansen, W. (2012). 'Validity and reliability of the strengths and difficulties questionnaire in 5-6 year olds: Differences by gender or parental education'. *PLoS One,* 7 (5) pp. 1-8. doi:10.1371/journal.pone.0036805.

Modabbernia, A., Haniri, D., Doucet, G., Reichenbergm, A., & Frangou, S. (2020). 'Multivariate patterns of brain-behaviour-environment associations in the adolescent brain and cognitive development study'. *Biological Psychiatry*, 89 (5), pp. 510-520. doi.10.1016/j.biopsych.2020.08.014.

Moilanen, T., Pietila, A.-M., Coffey, M. & Kangasniemi, M. (2018). 'Adolescents' health choices related rights, duties and responsibilities: An integrative review'. *Nursing Ethics*, 25 (4), pp. 418–435. doi:10.1177/0969733016654316.

Munn, Z., Peters, M. D. J., Stern, C., Tufanaru, C., McArthur, A. & Aromataris, E. (2018). 'Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach'. *BMC Medical Research Methodology*, 18 (143). doi:10.1186/s12874-018-0611-x.

Muris, P., Meesters, C. & Van Den Berg, F. (2003). 'The Strengths and Difficulties Questionnaire (SDQ): Further evidence for its reliability and validity in a community sample of Dutch children and adolescents'. *European Child and Adolescent Psychiatry*, 12, pp. 1-8. doi:10.1007/s00787-003-0298-2.

Murphy M.K., Black N., Lamping D.L., McKee C.M., Sanderson C.F.B., Askham J. & Al., E. (1998). 'Consensus development methods and their use in clinical guideline development'. *Health Technology Assessment*. Available at: http://www.testingtreatments.org/wp-content/uploads/2016/11/Murphy-et-al-1998-HTA-Consensus-development-methods.pdf (Accessed on:14/03/2021).

Nabkasorn, C., Miyai, N., Sootmongkol, A., Junprasert, S., Yamamoto, H., Arita, M. & Miyashita, K. (2006). 'Effects of physical exercise on depression, neuroendocrine stress hormones and physiological fitness in adolescent females with depressive symptoms'. *European Journal of Public Health*, 16 (2), pp. 179-84. doi:10.1093/eurpub/cki159.

Nagle, S., Cook, J. V. & Polatajko, H. J. (2002). 'I'm doing as much as I can: Occupational choices of persons with a severe and persistent mental illness'. *Journal of Occupational Science*, 9 (2), doi:10.1080/14427591.2002.9686495.

Navarro, D., Monstserrat, C., Malo, S., González, M., Casas, F. & Crous, G. (2017). 'Subjective well-being: what do adolescents say?'. *Child and family social work,* 22 (1), pp. 175-184. doi:10.1111/cfs.12215.

NHS Digital (2018) *Mental Health of Children and Young people in England 2017*. Available at:https://files.digital.nhs.uk/A6/EA7D58/MHCYP%202017%20Summary.pdf) (Accessed on 12/03/2021).

NHS Digital (2020) *Mental health of children and young people in England, 2020: Wave 1 follow up to the 2017 survey* Available at:https://digital.nhs.uk/data-and-information/publications/statistical/mental-health-of-children-and-young-people-in-england/2020-wave-1-follow-up).

Novak, I. & Honan, I. (2019). 'Effectiveness of paediatric occupational therapy for children with disabilities: A systematic review'. *Australian Occupational Therapy Journal*, 66 (3), pp. 258-273. doi:10.1111/1440-1630.12573.

O'Cathain, A., Croot, L., Duncan, E., Rousseau, N., Sworn, K., Turner, K. M., Yardley, L., & Hoddinott, P. (2019a). 'Guidance on how to develop complex interventions to improve health and healthcare'. *British Medical Journal Open*, 9, pp.1-9. doi:10.1136/bmjopen-2019-029954.

O'Cathain, A., Croot, L., Sworn, K., Duncan, E., Rousseau, N., Turner, K., Yardley, L., & Hoddinott, P. (2019b). 'Taxonomy of approaches to developing interventions to improve health: a systematic methods overview'. *Pilot and Feasibility Studies*, 5 (41). doi:10.1186/s40814-019-0425-6.

Orben, A., Dienlin, T., & Przybylski, A. K. (2019). 'Social media's enduring effect on adolescent satisfaction'. *Proceedings of the National Academy of Sciences of the USA*, 21 (116), pp. 10226-10228. doi:10.1073/pnas.1902058116.

Orben, A., Tomova, L. & Blakemore, S.-J. (2020). 'The effects of social deprivation on adolescent development and mental health'. *The Lancet Child & Adolescent Health*, 4 (8), pp. 624-640. doi:10.1016/S2352-4642(20)30186-3.

Ottaviani, F. (2018). 'Time in the development of indicators on sustainable wellbeing: A local experiment in developing alternative indicators'. *Social Indicators of Research*, 135, pp. 53-73. doi:10.1007/s11205-016-1489-9.

Oyanadel, C. & Buela-Casal, G. (2014). 'Time perception and psychopathology: Influence of time perspective on quality of life of severe mental illness'. *Actas Espanolas de Psiquiatria*, 42 (3), pp. 99-107. Available at: https://pubmed.ncbi.nlm.nih.gov/24844809/ (Accessed on: 12/03/21).

Parsonage, J. (2016). Early intervention with pscyhosis: the occuaptional therapists role. *In:* Clewes, J. & Kirkwood, R. (eds.) *Diverse rolews for occupational therapists.* Glasgow: M&K Publishing.

Parsonage, J., Naylor Lund, K., Dawes, H., Almoajil, H. & Eklund, M. (2020). 'An exploration of occupational choices in adolescence: A constructivist grounded theory study'. *Scandinavian Journal of Occupational Therapy*. doi:10.1080/11038128.2020.1839965.

Pascoe, M. C., Bailey, A. P., Craike, M., Carter, T., Patten, R., Stepto, N. K., & Parker, A. G. (2020). 'Exercise interventions for mental disorders in young people: a scoping review'. *BMJ Open Sport and Exercise Medicine*, 4 (6). doi:10.1136/bmjsem-2019-000678.

Patalay, P., Hayes, D., Deighton, J. & Wolpert, M. (2015). 'A comparison of paper and computer administered Strengths and Difficulties Questionnaire'. *Journal of Psychopathology and Behavioral Assessment,* 38, pp. 242-250. doi:10.1007%2Fs10862-015-9507-9.

Patalay, P., Hayes, D. & Wolpert, M. (2018). 'Assessing the readability of the self-reported Strengths and Difficulties Questionnaire'. *British Journal of Psychology Open*, 4 (2), pp. 55-57. doi:10.1192/bjo.2017.13.

Patel, V., Flisher, A. J., Hetrick, S. & McGorry, P. D. (2007). 'Mental health of young people: a global public-health challenge'. *The Lancet*, 369 (9569), pp. 1302-12. doi:10.1016/S0140-6736(07)60368-7.

Patel, V., Saxena, S., Lund, C., Thornicroft, G., Baingana, F., Bolton, P., Chisholm, D., Collins, P. Y., Cooper, J. L., Eaton, J., Herrman, H., Herzallah, M. M., Huang, Y., Jordans, M. J. D., Kleinman, A., Medina-Mora, M. E., Morgan, E., Niaz, U., Omigbodun, O., Prince, M., Rahman, A., Saraceno, B., Sarkar, B. K., De Silva, M., Singh, I., Stein, D. J., Sunkel, C., & Unützer, J. (2018). 'The Lancet Commission on global mental health and sustainable development'. *The Lancet*, 392 pp. 1553–98. doi:10.1016/S0140-6736(18)31612-X.

Patton, G. & Temmerman, M. (2016). 'Evidence and evidence gaps in adolescent health'. *Journal of Adolescence Health*, 59, pp. 1-3. doi: 10.1016/j.jadohealth.2016.08.001.

Patton, G. & Viner, R. (2007). 'Pubertal transitions in health'. *The Lancet*, 369 (9567), pp. 1130-1139. doi:10.1016/s0140-6736(07)60366-3.

Patton, G. C., Olsson, C. A., Skirbekk, V., Wlodek, M. E., Azzopardi, P. S., Stonawski, M., Rasmussen, B., M, Spry, E., Francis, K., Bhutta, Z. A., Kassebaum, N. J., Mokdad, A. H., Murray, C. J. L., Prentice, A. M., Reavley, N., Sheehan, P., Sweeny, K., Viner, R. M., & Sawyer, S. M. (2018). 'Adolescence and the next generation'. *Nature*, 554 (7693), pp. 458–66. doi:10.1038/nature25759.

Patton, G. C., Sawyer, S. M., Santelli, J. S., Ross, D. A., Afifi, R., Allen, N. B., Arora, M., Azzopardi, P., Baldwin, W., Bonell, C., Kakuma, R., Kennedy, E., Mahon, J., McGovern, T., Mokdad, A. H., Patel, V.,

Petroni, S., Reavley, N., Taiwo, K., Waldfogel, J., Wickremarathne, D., Barroso, C., Bhutta, Z., Fatusi, A. O., Mattoo, A., Diers, J., Fang, J., Ferguson, J., Ssewamala, F. & Viner, R. M. (2016). 'Our future: a Lancet commission on adolescent health and wellbeing'. *The Lancet*, 387 (10036), pp. 2423-2478. doi:10.1016/S0140-6736(16)00579-1.

Paulsson-Do, U., Edlund, B., Stenhammar, C. & Westerling, R. (2017). 'Psychosocial vulnerability underlying four common unhealthy behaviours in 15-16-year-old Swedish adolescents: a cross-sectional study'. *BMC Psychology*, 5 (1), pp. 39. doi:10.1186/s40359-017-0209-9.

Pearson, J., Hocking, C., Tokolahi, E., Vandal, A. C., & Kersten, P. (2018). 'Cluster-randomised controlled trial of an occupational therapy intervention for children aged 11–13 years, designed to increase participation to prevent symptoms of mental illness'. *Child & Adolescent Mental Health*, 23 (4), pp. 313-327. doi:10.1111/camh.12270.

Persson, D., Erlandsson, L.-K., Eklund, M. & Iwarsson, S. (2009). 'Value dimensions, meaning, and complexity in human occupation- a tentative structure for analysis'. *Scandinavian Journal of Occupational Therapy* 8(1), pp.7-18. doi:10.1080/1138120119727.

Peter, M. D. J., Godfrey, C., McInerney, P., Baldini Soares, C., Khalil, H. & Parker, D. (2017). 'Scoping reviews'. *In:* Ariomataris, E. & Munn, Z. (eds.) *Joanna Briggs Institute Review's Manual.* Adelaide, Australia: Joanna Briggs Institute.

Pfeifier, J. H. & Berkman, E. (2018). 'The development of self and identity in adolescence: Neural evidence and implications for a value-based choice perspective on motivated behavior'. *Child Development Perspectives*, 12 (3), pp. 158-164. doi:10.1111/cdep.12279.

Pham, M. T., Rajic, A., Grieg, J. D., Sargeant, J. M., Papadopoulous, A. & McEwan, S. A. (2014). 'A scoping review of scoping reviews: advancing the approach and enhancing the consistency'. *Research Synthesis Methods*, 5 (4), pp. 371-385. doi:10.1002/jrsm.1123.

Philipp, J., Zeiler, M., Waldherr, K., Truttmann, S., Dür, W., Karwautz, A. F. K., & Wagner, G. (2018). 'Prevalence of emotional and behavioral problems and subthreshold psychiatric disorders in Austrian adolescents and the need for prevention'. *Social Psychiatry and Psychiatric Epidemiology*, 53 (12), pp. 1325-1337. doi:10.1007/s00127-018-1586-y.

Phipps, P. A. & Vernon, M. K. (2009). 24 hours: An overview of the recall diary method and data quality in the American time use survey. *In:* Belli, R. F., Stafford, F. P., & Alwin, D. F. (eds.) *Calendar and time diary methods in life course research.* Los Angeles, CA: Sage.

Pojednic, R., Peabody, S., Carson, S., Kennedy, M., Bevans, K., & Phillips, E. M. (2016). 'The effect of before school physical activity on child development: A study protocol to evaluate the Build Our Kids Success (BOKS) Program'. *Contemporary Clinical Trials*, 49, pp. 103-8. doi:10.1016/j.cct.2016.06.009.

Powell, C. (2003). 'The Delphi technique: myths and realities'. *Journal of Advanced Nursing*, 41 (4), pp. 376-382. doi: 10.1046/j.1365-2648.2003.02537.x.

Powell, H. L. 2017. *An exploration of young people's experience of transition into sixth form.* Cardiff University. Available at: http://orca.cf.ac.uk/100678/18/2017powelldedpsy2.pdf (Accessed at: 14/01/2021).

Powrie, B., Copley, J., Turpin, M., Ziviani, J., & Kolehaminen, N. (2019). 'The meaning of leisure to children and young people with significant physcial disabilities: Implicaions for optimising participation'. *British Journal of Occupational Therapy*, 83 (2), pp. 67-77. doi:10.1177/0308022619879077.

Pozuelo, J. R. & Kilford, E. J. (2021). 'Adolescent health series: Adolescent neurocognitive development in Western and Sub-Saharan African contexts'. *Tropical Medicine International Health*, 00, pp. 1-12. doi:DOI: 10.1111/tmi.13656.

Primeau, L. A. (1998). 'Orchestration of work and play within families'. *American Journal of Occupational Therapy*, 52 (3), pp. 188-195. doi:10.5014/ajot.52.3.188.

Przepiorka, A. M. & Blachnio, A. P. (2017). 'The Relationships between personality traits and leisure time activities: development of the Leisure Time Activity Questionnaire (LTAQ)'. *Neuropsychiatry*, 7 (6), pp. 1035-1046. doi:10.4172/Neuropsychiatry.1000313.

Purcell, R., Goldstone, S., Moran, J., Albiston, D., Edwards, J., Pennell, K. & McGorry, P. (2011). 'Toward a twenty-first century approach to youth mental health care: Some Australian initiatives'. *International Journal of Mental Health*, 40 (2), pp. 72-87. doi:10.2753/IMH0020-7411400204.

Qualtrix (2005). *Qualtrix XM.* Available at: https://www.qualtrics.com

Radez, J., Reardon, T., Creswell, C., Lawrence, P., Evoke-Burton, G. & Waite, P. (2020). 'Why do children and adolescents (not) seek and access professional help for their mental health problems? a systematic review of quantitative and qualitative studies'. *European Child Adolescent Psychiatry*, 30, pp. 183-211. doi:10.1007/s00787-019-01469-4.

Rajapakse, T., Garcia-Rosales, A., Weerawardene, S., Cotton, S. & Fraser, R. (2011). 'Themes of delusions and hallucinations in first epsiode psychosis'. *Early Intervention In psychiatry*, 5 (3), pp. 254-258. doi:10.1111/j.1751-7893.2011.00281.x.

Ranka, J. & Chapparo, C. (1997). *Definition of terms* [Online]. Sydney, Australia: Occupational Performance Network:. Available: www.occupationalperformance.com/definitions [Accessed 06/02/2020].

Read, H., Roush, S. & Downing, D. (2018). 'Early Intervention in mental health for adolescents and young adults: A systematic review'. *American Journal of Occupational Therapy*, 72 (5), doi:10.5014/ajot.2018.033118.

Reardon, T., Harvey, K., Baranowska, M., O'Brien, D., Smith, L. & Creswell, C. (2017). 'What do parents perceive are the barriers and facilitators to accessing psychological treatment for mental health problems in children and adolescents? A systematic review of qualitative and quantitative studies'. *European Child Adolescent Psychiatry*, 26, pp. 623-647. doi:10.1007/s00787-016-0930-6.

Rebar, A. L., Stanton Robert., Geard, D., Short, C., Duncan, M. J. & Vandelanotte, C. (2015). 'A meta-meta-analysis of the effect of physical activity on depression and anxiety in non-clinical adult populations'. *Health Psychology Review*, 9 (3), pp. 366-378. doi:10.1080/17437199.2015.1022901.

Rebeiro, K. L. (2001). 'Enabling occupation: the importance of an affirming environment'. *Canadian Journal of Occupational Therapy*, 68 (2), pp. 80-9. doi:10.1177/000841740106800204.

Rebeiro, K. L., & Polgar, J. M. (1999). 'Enabling occupational performance and optimal experience in therapy'. *Canadian Journal of Occupational Therapy.*

Richards, J., Foster, C., Townsend, N., & Bauman, A. (2014). 'Physical fitness and mental health impact of a sport-for-development intervention in a post-conflict setting: randomised controlled trial nested within an observational study of adolescents in Gulu, Uganda'. *BMC Public Health*, 14 , pp. 619. doi:10.1186/1471-2458-14-619.

Ritchie, S. D., Wabano, M. J., Russell, K., Enosse, L. & Young, N. L. (2014). 'Promoting resilience and wellbeing through an outdoor intervention designed for Aboriginal adolescents'. *Rural & Remote Health*, 14 (1), pp. 1-19.

Roberts, R. E., Roberts, C. R. & Duong, H. T. (2008). 'Chronic insomnia and its negative consequences for health and functioning of adolescents: a 12-month prospective study'. *Journal of Adolescent Health*, 42 (3), pp. 294-302. doi:10.1016/j.jadohealth.2007.09.016.

Roberts, R. E., Roberts, C. R. & Duong, H. T. (2009). 'Sleepless in adolescence: Prospective data on sleep deprivation, health and functioning'. *Journal of Adolescence*, 32 (5), pp. 1045-1057. doi:10.1016/j.adolescence.2009.03.007.

Robinson, D., Woerner, M., McMeniman, M., Mendelowitz. & Bilder, R. M. (2004). 'Symptomatic and functional revovery from a first spisode of schizophrenia or schizoaffective disorder'. *The American Journal of Psychiatry*, 161 (3), pp. 473-479. doi:10.1176/appi.ajp.161.3.473.

Rosen, L. D., Whaling, K., Rab, S., Carrier, L. M. & Cheever, N. A. (2013). 'Is Facebook creating ''iDisorders''? The link between clinical symptoms of psychiatric disorders and technology use,

attitudes and anxiety'. *Computers in Human Behavior*, 29 (3) pp. 1243-1254. doi:10.1016/j.chb.2012.11.012.

Rourke, K. & Wilson, C. J. (2017). 'How adolescents perceive that community-based exercise improves their well-being'. *Australasian Psychiatry*, 25 (5), pp. 456-459. doi:10.1177/1039856217726718.

Ruiter, R. a. C., Crutzen, R. & Kok, G. (2018). 'Core processes for developing theory and evidence-based interventions'. doi:10.31234/osf.io/j4ftz.

Ryan, R. M. & Decci, E. L. (2000). 'Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being'. *American Psychologist*, 55 (1), pp. 68-78. doi:10.1037110003-066X.55.1.68

Sadler, K., Vizard, T., Ford, T., Marcheselli, F., Pearce, N., Mandalia, D., Davis, J., Brodie, E., Forbes, N., Goodman, A., Goodman, R. & McManus, S. (2018). 'Mental health of children and young people in England, 2017: Summary of key findings'. *Mental health of children and young people in England, 2017.* Leeds: NHS Digital

Sampasa-Kanyinga, H., Colman, I., Goldfield, G. S., Janssen, I., Wang, J., Podinic, I., Tremblay, M. S., Saunders, T. J., Sampson, M., & Chaput, J.-P. (2020). 'Combinations of physical activity, sedentary time, and sleep duration and their associations with depressive symptoms and other mental health problems in children and adolescents: a systematic review'. *International Journal of Behavioral Nutrition and Physical Activity*, 17 (72), doi:10.1186/s12966-020-00976-x.

Sashidharan, S. P. & Gul, M. (2020). 'Ethnicity and mental health: a new beginning'. *The Lancet*, Psychiatry, 7, pp. 381-382. doi:10.1016/S2215-0366(19)30514-0.

Sawyer, S. M., Afifi, R. A., Bearinger, L. H., Blakemore, S.-J., Dick, B., Ezeh, A. C., & Patton, G. C. (2012). 'Adolescence: a foundation for future health'. *The Lancet*, 379 (9826), pp. 1630-1640. doi:10.1016/S0140-6736(12)60072-5.

Sawyer, S. M., Azzopardi, P. S., Wickremarathne, D. & Patton, G. C. (2018). 'The age of adolescence'. *The Lancet,* 2(3), pp. 223-228. doi:10.1016/S2352-4642(18)30022-1.

Scalzo, K., Forwell, S. J. & Suto, M. J. (2016). 'An integrative review exploring transition following an unexpected health-related trauma'. *Journal of Occupational Science*, 23 (4), pp. 464-483. doi:10.1080/14427591.2016.1223742.

Schardt, C., Adams, M. B., Owens, T., Keitz, S. & Fontelo, P. (2007). 'Utilization of the PICO framework to improve searching PubMed for clinical questions'. *BMC Medical Informatics and Decision Making*, 7 (16). doi:10.1186/1472-6947-7-16.

Schell, L., Cotton, S. & Luxmoore, M. (2012). 'Outdoor adventure for young people with a mental illness'. *Early Intervention In psychiatry*, 6 (4), pp. 407-414. doi:10.1111/j.1751-7893.2011.00326.x.

Schwan, K. J., Fallon, B., & Milne, B. (2018). '"The one thing that actually helps": Art creation as a self-care and health-promoting practice amongst youth experiencing homelessness'. *Children and Youth Services Review*, 93, pp. 355-364. doi:10.1016/j.childyouth.2018.08.002.

Scottish Government (2021) *COVID-19: Children, young people and families December 2020 Evidence Summary*. Available at:https://www.gov.scot/publications/covid-19-children-young-people-families-december-2020-evidence-summary/).

Sekhon, M., Cartwright, M., & Francis, J. J. (2017). 'Acceptability of healthcare interventions: an overview of reviews and development of a theoretical framework'. *BMC Health Services Research,* 17(1), pp.88. doi:10.1186/s12913-017-2031-8.

Shikako-Thomas, K., Shevell, M., Lach, L., Law, M., Schmitz, N., Poulin, C., Majnemer, A., & Group, Q. (2015). 'Are you doing what you want to do? Leisure preferences of adolescents with cerebral palsy'. *Developmental Neurorehabilitation,* 18 (4), pp. 1751-8431. doi:10.3109/17518423.2013.794166.

Snippe, E., Simons, C. J. P., Hartmann. Jessica. A., Menne-Lothmann, C., Kramer, I., Booij, S. H., Viechtbauer, W., Delespaul, P., Myin-Germeys, I. & Wichers, M. (2016). 'Change in daily life behaviors and depression: Within-person and between-person associations'. *Health Psychology*, 35 (5), pp. 433-441. doi:10.1037/hea0000312.

Sokol, J. T. (2009). 'Identity development throughout the lifetime: an examination of Eriksonian theory'. *Graduate Journal of Counseling Psychology*, 1 (2). Available at: http://epublications.marquette.edu/gjcp/vol1/iss2/14 (Accessed on 14/03/2020).

Sonnenberg, B., Riediger, M., Wrzuz, C., & Wagner, G. (2012). 'Measuring time use in surveys-Concordance of survey and experience sampling measures'. *Social Science Research*, 41(5), pp. 1037-1052. doi:10.1016/j.ssresearch.2012.03.013.

Sossa, J. W. Z., Halal, W. & Hernandez Zarta, R. (2019). 'Delphi method: analysis of rounds, stakeholder and statistical indicators'. *Foresight*, 21 (5), pp. 525-544. doi:10.1108/FS-11-2018-0095.

Spear, L. (2010). *The behavioural neuroscience of adolescence,* London, W. W. Norton & Company.

Steurer, J. (2011). 'The Delphi method: an efficient procedure to generate knowledge'. *Skeletal Radiol*, 40 pp. 959-961. doi:10.1007/s00256-011-1145-z.

Taff, S., Anmin-Arsala, T., Carson, N., Deangelis, T., Fitzcharles, D., Grajo, L., Giggins, D., McLaughline Gray, J., Nardella, M., Stoll, M. & Harvison, N. (2017). 'Philosophical base of occupational therapy'. *American Journal of Occupational Therapy*, 71 (2), doi:10.5014/ajot.2017.716S06.

Tarokh, L., Saletin, J. M. & Carskadon, M. A. (2006). 'Sleep in adolescence: physiology, cognition and mental health'. *Neuroscience Biobehavioral Reviews*, 70 (2), pp. 182-188. doi:10.1016/j.neubiorev.2016.08.008.

Taylor, R. R. (2017). *Kielhofner's model of human occupation: theory and application,* Baltimore, Baltimore: Lippincott Williams & Wilkins.

Teddlie, C. & Tashakkori, A. (2009). *Foundation of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioural sciences*, SAGE publications.

Thabet, A. A., Vostanis, P. & Karim, K. (2005). 'Group crisis intervention for children during ongoing war conflict'. *European Child Adolescent Psychiatry*, 14 (5), pp. 262-9. doi:10.1007/s00787-005-0466-7.

The United Kingdom Statistics Authority Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/650547/SFR28_2017_Main_Text.pdf).

The World Medical Association. (2011). 'World medical association declaration of Helsinki. ethical principles for medical research involving human subjects'. *Bulletin of the World Health Organization* 79, pp. 373-374.

Tilling, K., Sterne, J., Brookes, S., & Peters, T. (2005). Features and designs of randomised control trials and Non-randomised experimental designs. *In:* Bowling, A. & Ebrahim, S. (eds.) *Handbook of Health Research Methods Investigation, Measurement and Analysis.* Open University Press.

Tirlea, L., Truby, H. & Haines, T. P. (2016). 'Pragmatic, randomized controlled trials of the girls on the go! Program to improve self-esteem in girls'. *American Journal of Health Promotion*, 30 (4), pp. 231-41. doi:10.1177/0890117116639572.

Tololahi, E., Vandal, A., Kersten, P., Pearson, J., & Hocking, C. (2018). 'Cluster-randomised controlled trial of an occupational therapy intervention for children aged 11–13 years, designed to increase participation to prevent symptoms of mental illness'. *Adolecent Mental Health,* 23 (4), pp. 313-327. doi:10.1111/camh.12270.

Townsend, E. A., Beagan, B., Kumas-Tan, Z., Versnel, J., Iwama, M., Landry, J., Stewart, D. & Brown, J. (2007). Ch. 4, Enabling: Occupational Therapy's core competency. *In:* Townsend, E. A., Polatajko, H. J.

& Caot (eds.) *Enabling occupation II: advancing an Occupational Therapy vision for health, well-being and justice through occupation. (*2nd ed). Ottawa: Canadian Association of Occupational Therapists.

Trautmann, S., Rehm, J., & Wittchen, H. U. (2016). 'The economic costs of mental disorders: Do our societies react appropriately to the burden of mental disorders?'. *EMBO Reports*, 17 (9), pp. 1245-1249. doi:10.15252/embr.201642951.

Tremblay, M. S., Carson, V., Chaput, J. P., Connor Gorber, S., Dinh, T., Duggan, M., Faulkner, G., Gray, C. E., Gruber, R., Janson, K., Janssen, I., Katzmarzyk, P. T., Kho, M. E., Latimer-Cheung, A. E., Leblanc, C., Okely, A. Y. D., Olds, T., Pate, R. R., Phillips, A., Poitras, V. J., Rodenburg, S., Sampson, M., Saunders, T. J., Stone, J. A., Stratton, G., Weiss, S. K., & Zehr, L. (2016). 'Canadian 24-hour movement guidelines for children and youth: an integration of physical activity, sedentary behaviour, and sleep. '. *Applied Physiology Nutrition and Metabolism*, 41 (6), pp. 311–27. doi:10.1139/apnm-2016-0151.

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., Lewin, S., Godfrey, C. M., MacDonald, M. T., Langlois, E. V., Soares-Weiser, K., Moriarty, J., Clifford, T., Tuncalp, **O. Z.** & Straus, S. E. (2018). 'PRISMA Extension for scoping reviews (PRISMA-ScR): Checklist and explanation'. *American College of Physicians*, 169 (7), pp. 467-473. doi:10.7326/M18-0850.

Van Vliet, K. J., Foskett, A. J., Williams, J. L., Singhal, A., Dolcos, F. & Vohra, S. (2017). 'Impact of a mindfulness-based stress reduction program from the perspective of adolescents with serious mental health concerns'. *Child & Adolescent Mental Health*, 22 (1), pp. 16-22. doi:10.1111/camh.12170.

Vancampfort, D., Stubbs, B., Mugisha, J., Firth, J., Van Damme, T., Smith, L. & Koyanagi, A. (2019). 'Leisure-time sedentary behavior and suicide attempt among 126,392 adolescents in 43 countries'. *Journal of Affective Disorders*, 250, pp. 346-353. doi:10.1016/j.jad.2019.03.053.

Vigo, D., Thornicroft, G. & Atun., R. (2016). 'Estimating the true global burden of mental illness'. *Lancet Psychiatry*, 3 (2), pp. 171-178. doi:10.1016/S2215-0366(15)00505-2.

Vilaysack, B., Cordier, R., Doma, K. & Chen, Y.-W. (2016). 'Capturing everyday experiences of typically developing children aged five to seven years: A feasibility study of experience sampling methodology'. *Australian Occupational Therapy Journal,* 63 (6). pp. 424-433. doi:10.1111/1440-1630.12336.

Viner, R. M., Ozer, E. M., Denny, S., Marmot, M., Resnick, M., Fatusi, A. & Candace, C. (2012). 'Adolescence and the social determinants of health'. *The Lancet*, 379 (9826), pp. 1641-1652. doi: 10.1016/S0140-6736(12)60149-4

Vines, A. I., Ward, J. B., Cordoba, E. & Black, K. Z. (2017). 'Perceived racial/ethnic discrimination and mental health: A review and future directions for social epidemiology'. *Currernt Epidemiology Reports*, 4, pp. 156-165. doi:10.1007/s40471-017-0106-z.

Vos, T., Barber, R., Bell, B., Bertozzi-Villa, A., Biryukov, S., Bolliger, I. & Murray, C. (2013). 'Global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990–2013: A systematic analysis for the global burden of disease study'. *The Lancet*, 386 (9995), pp. 743–800. doi:10.1016/S0140-6736(15)60692-4.

Vugteveen, J., De Bildt, A., Theunissen, M., Reijneveld, M. & Timmerman, M. (2019). 'Validity aspects of the Strengths and Difficulties Questionnaire (SDQ) adolescent self-report and parent-report versions among Dutch adolescents'. *Assessment,* 28 (2), pp. 601-616. doi:10.1177/1073191119858416.

Waaktaar, T., Christie, H. J., Borge, A. I. & Torgersen, S. (2004). 'Building youths' resilience within a psychiatric outpatient setting: results from a pilot clinical intervention project'. *Psychology Reports*, 94 (1), pp. 363-70. doi:10.2466/pr0.94.1.363-370.

Wagman, P., Håkansson, C. & Jonsson, H. (2015). 'Occupational balance: A scoping review of current research and identified knowledge gaps'. *Journal of Occupational Science* 22 (2), pp.160-169. doi:10.1080/14427591.2014.986512.

Wahid, S. S., Ottmana, K., Hudhud, R., Gautam, K., Fisher, H. L., Kieling, C., Mondellif, Valeria., & Kohrt, B. A. (2021). 'Identifying risk factors and detection strategies for adolescent depression in diverse global settings: A Delphi consensus study'. *Journal of Affective Disorders*, 279, pp. 66-74. doi:10.1016/j.jad.2020.09.098.

Wegner, M., Amatriain-Fernández, S., Kaulitzky Andrea., Murillo-Rodriguez, E., Machado, S. & Budde, H. (2020). 'Systematic review of meta-analyses: Exercise effects on depression in children and adolescents'. *Frontiers in Psychiatry*, 11 (81). doi:10.3389/fpsyt.2020.00081.

Wheatley, C., Wassenaar, T., Salvan, P., Beale, N., Nichols, T., Dawes, H., & Johansen-Berg, H. (2020). 'Associations between fitness, physical activity and mental health in a community sample of young British adolescents: baseline data from the Fit to Study trial'. *BMJ Open Sport and Exercise Medicine,* 6 (1). doi:10.1136/bmjsem-2020-000819.

Widmark, E. & Fristedt, S. (2019). 'Occupation according to adolescents: Daily occupations categorized based on adolescents' experiences'. *Journal of Occupational Science*, 26 (4), pp. 470-483. doi:10.1080/14427591.2018.1546609.

Wigelsworth, M., Humphrey, N., Kalambouka, A. & Lendrum, A. (2010). 'A review of key issues in the measurement of children's social and emotional skills'. *Educational Psychology in Practice,* 26 (2), pp. 173-186. doi:10.1080/02667361003768526.

Wight, D., Wimbush, E., Jepson, R. & Doi, L. (2015). 'Six steps in quality intervention development (6SQuID)'. *Journal of Epidemiology and Community Health*, pp. 1-6. doi:10.1136/jech-2015-205952.

Wilcock, A. A. (1998). 'Reflections on doing, being and becoming'. *Canadian Journal of Occupational Therapy,* 46 (1), pp.1-11. doi: 10.1046/j.1440-1630.1999.00174.x.

Williams, I., Vaisey, A., Patton, G. & Sanci, L. (2020). 'The effectiveness, feasibility and scalability of the school platform in adolescent mental healthcare'. *Current Opinion in Psychiatry,* 33 (4), pp. 391-396. doi:10.1097/YCO.0000000000000619.

Williams, J. R., Masuda, Y. J. & Tallis, H. (2016). 'A measure whose time has come: formalizing time poverty'. *Social Indicators Research*, 128, pp. 265-283. doi:10.1007/s11205-015-1029-z.

Wiseman, J. O., Davis, J. A. & Polatajko, H. J. (2005). 'Occupational development: Towards an understanding of children's doing'. *Journal of Occuaptional Science*, 12 (1), pp. 26-35. doi:10.1080/14427591.2005.9686545.

Wolpert, M., Cheng, H. & Deighton, J. (2015). 'Measurement Issues: Review of four patient reported outcome measures: SDQ, RCADS, C/ORSand GBO – their strengths and limitations for clinical use and service evaluation'. *Child and Adolescent Mental Health*, 20 (1), pp. 63-70. doi:10.1111/camh.12065.

Wolpert, M., Zamperoni, V., Napoleone, E., Patalay., P., Jacob, J., Fokkema, M., Promberger, M., Costa Da Silva, L., Patel, M. & Edbrooke-Childs, J. (2020). 'Predicting mental health improvement and deterioration in a large community sample of 11- to 13-year-olds'. *European Child and Adolescent Psychiatry*, 29, pp. 167-178. doi:10.1007/s00787-019-01334-4.

Wong, M., Olds, T., Gold, L., Lycett, K., Dumuid, D., Muller, J., Mensah, F. K., Burgner, D., Carlin, J. B., Edwards, B., Dwyer, T., Azzopardi, P. & Wake, M. (2018). 'Time-use patterns and health-related quality of life in adolescents'. *Pediatrics*, 140 (1). doi:10.1542/peds.2016-3656.

Wong, S. R. & Fisher, G. (2015). 'Compairing and using occupational focused models'. *Occupational Therapy in Health Care,* 29 (3), pp. 297-315. doi:10.3109/07380577.2015.1010130.

World Federation of Occupational Therapists (2012). 'About occupational therapy'. Available at: https://wfot.org/about/about-occupational-therapy (Accessed on:7/02/2020).

World Health Organisation (2013). 'Mental health action plan 2013-2020'. *World Health Organisation.* Available at: https://www.who.int/publications/i/item/9789241506021 (Accessed on: 14/03/2021).

World Health Organisation (2018a). *Adolescent mental health* [Online]. Available at: https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health [Accessed on: 03/05/2019].

World Health Organisation (2018b). *Mental health: strengthening our responce* [Online]. Available: http://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response [Accessed 18/02/2020].

World Health Organization (2001). *International classification of functioning, disability and health.* [Online]. Geneva, Switzerland: World Health Organisation. Available at: https://www.who.int/classifications/icf/en/ [Accessed on: 10/20/2020].

World Health Organisation (2002). *Towards a Common Language for Functioning, Disability and Health: The International Classificationof Functioning, Disability and Health*. Available at:https://www.who.int/classifications/icf/icfbeginnersguide.pdf (Accessed on: 7/01/2021).

Wright, R., & Sugarman, L. (2009). *Occupational therapy and life course development: a workbook for professional practice,* Singapore, Wiley-Blackwell.

Wright, V. R., Price, J., Bianchi, S. M., & Hunt, B. R. (2009). 'The time use of teenagers'. *Social Science Research,* 38 (4), pp. 792-809. doi:10.1016/j.ssresearch.2009.05.009.

Wu, X. Y., Kirk, S. F. L., Ohinmaa, A. & Veugelers, P. J. (2017). 'The importance of health behaviours in childhood for the development of internalizing disorders during adolescence'. *BMC Psychol*, 5 (1), pp. 38. doi:10.1186/s40359-017-0208-x.

Wunderink, L., Sytema, S., Nienhuis, F. J., & Wiersma, D. (2009). 'Clinical recovery in first-episode psychosis'. *Schizophrenia Bulletin*, 35 (2), pp. 362-368. doi:10.1093/schbul/sbn143.

Wunram, H. L., Hamacher, S., Hellmich, M., Volk, M., Janicke, F., Reinhard, F., Bloch, W., Zimmer, P., Graf, C., Schonau, E., Lehmkuhl, G., Bender, S. & Fricke, O. (2018). 'Whole body vibration added to treatment as usual is effective in adolescents with depression: a partly randomized, three-armed clinical trial in inpatients'. *European Child Adolescent Psychiatry*, 27 (5), pp. 645-662. doi:10.1007/s00787-017-1071-2.

Xiao, Y. & Watson, M. (2017). 'Guidance on conducting a systematic literature review'. *Journal of Planning Education and research*, 39 (1), pp. 1-19. doi:10.1177/0739456X17723971.

Yao, S., Zhang, C., Zhu, X., Jing, X., McWhinnie, C. M. & Abela, J. R. Z. (2009). 'Measuring adolescent psychopathology: Psychometric properties of the self-report Strengths and Difficulties Questionnaire in a sample of Chinese adolescents'. *Journal of Adolescent Health*, 45 (1). pp. 55-62. doi:10.1016/j.adohealth.2008.11.006.

Yerxa, E. J. (2000). 'Occupational science: a renaissance of service to humankind through knowledge'. *Occupational Therapy International*, 7 (2) pp. 87-98.

Youth in Mind. 2001. *SDQ frequency distribution for American 15-17 year olds* [Online]. Normative SDQ Data from the USA: Youth in Mind. Available at: https://www.sdqinfo.org/norms/USNorm6.pdf [Accessed on: 25/01/2020 2020].

Youth in Mind. 2016. *Scoring the Strengths & Difficulties Questionnaire for age 4-17 or 18+* [Online]. Available at: file:///C:/Users/17002703/Downloads/SDQ_English(UK)_4-17scoring.pdf [Accessed on: 11/03/21].

Zuzanek, J. (2009a). 'Students' study time and their homework problem'. *Social Indicators Research*, 93, pp. 111-115. doi:10.1007/s11205-008-9411-8.

Zuzanek, J. & Zuzanek, T. (2015). 'Of happiness and of despair, is there a measure? time use and subjective well-being'. *Journal of Happiness Studies*, 16, pp. 839-856. doi:10.1007/s10902-014-9536-1.