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Time Use, Daily Activities, and Health-related Quality of Life of School-going Late Adolescents in Cork City and County: A Cross-sectional Study

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A thesis submitted to University College Cork for the degree of Doctor of Philosophy in the Department of Occupational Science and Occupational Therapy in the School of Clinical Therapies.

November 2014

Eithne Hunt

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List of Appendices

Please note: due to their large size, the appendices are in a separate volume with the exception of Appendix A which is also included in the main e-thesis.

Hunt, E. 2014. *Time use, daily activities, and health-related quality of life of school-going late adolescents in Cork city and county: A cross-sectional study*. PhD Thesis, University College Cork. https://cora.ucc.ie/handle/10468/1741

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Appendix A

PhD Outputs and Related Activities and Published Papers

PhD Related Activities (Updated November 2014)

Publications

Hunt, E. & McKay, E. A. (2012). Using population-level time use datasets to advance knowledge on human activity, participation, and health. *British Journal of Occupational Therapy, 75(10),* 478-480. **[Impact Factor 2013: .897]**

Hunt, E., McKay, E.A., Fitzgerald, A.P., & Perry, I.J. (2014). Time use and daily activities of late adolescents in contemporary Ireland. *Journal of Occupational Science,* 21(1), 42-64. **[Impact Factor: N/A]**

Hunt, E., & McKay, E.A. (2014). A scoping review of time use research in occupational therapy and occupational science. *Scandinavian Journal of Occupational Therapy,* Aug 19:1-12. [Epub ahead of print] **[Impact Factor 2013: 1.125]**

Hunt, E., McKay, E.A., Dahly, D., Fitzgerald, A.P., & Perry, I.J. (2014). 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***,** Nov 15, Early online. **[Impact Factor 2013: 2.864]**

Hunt, E., & McKay, E.A. (In print). What can be learned from adolescent time diary research. *Journal of Adolescent Health*. **[Impact Factor 2013: 2.748]**

Presentations

Hunt, E., McKay, E.A., Fitzgerald, A.P., & Perry, I.J. (2014, May). *Counting time: participation in daily activities and health-related quality of life of late adolescents in contemporary Ireland.* Paper presented at the Count Me In! Children and Youth Occupations Conference, London, UK.

Hunt, E., McKay, E.A., Fitzgerald, A.P., & Perry, I.J. (2014, March). *Participation in daily activities and health-related quality of life of late adolescents in contemporary Ireland.* Seminar presented at the Department of Epidemiology, UCC Cork, Ireland.

Hunt, E., McKay, E.A., Fitzgerald, A.P., & Perry, I.J. (2013, September). *Time use and daily activities of late adolescents in contemporary Ireland.* Paper presented at the UCC/Occupational Science Europe Conference Occupation: Awakening to the Everyday Cork, Ireland.

Hunt, E., & McKay, E.A. (2012, June). *Time use research in occupational science and occupational therapy: challenges and opportunities*. Paper presented at the 36th College of Occupational Therapists Annual Conference Glasgow, Scotland.

Hunt, E., McKay, E.A. & Perry, I. (2012, June). *Perspectives on adolescent time use and wellbeing*. Paper presented at the 36th College of Occupational Therapists Annual Conference Glasgow, Scotland.

Hunt, E., McKay, E.A. & Perry, I. (2011, August). *Measuring and mapping adolescent time use & well-being – an occupational perspective*. Paper presented at the 33rd International Association of Time Use Research Conference Oxford, UK.

Hunt, E. (2008, April). *Time for life - time use, participation in daily occupation and wellbeing of adolescents in contemporary Ireland*. Paper presented at the Association of Occupational Therapists of Ireland Conference Kilkenny, Ireland.

Hunt, E., Ryan, S., & Perry, I. (2008, February). *Health-related quality of life and participation in daily activities among Irish young people – a pilot study*. Paper presented at the Researching Children's Worlds Conference Galway, Ireland.

Hunt, E., Ryan, S. & Perry, I. (2007, October). *Time use, participation in daily occupations and well-being of adolescents in contemporary Ireland – a pilot study*. Paper presented at the International Association of Time Use Research conference Washington DC, U.S.A.

Hunt, E. Ryan, S. & Perry, I. (2006, November). *Participation in daily occupations and well-being of Irish adolescents.* Poster presentation at the UCC College of Medicine and Health 2nd Annual Interdisciplinary Conference Cork, Ireland.

Hunt, E. (2005, October). *Developing knowledge on adolescent participation in occupation in contemporary Ireland.* Paper presented at the Society for the Study of Occupation: USA symposium Washington DC, USA.

PhD Related Conferences Attended [in addition to the above]

International Association of Time Use Research conference, Washington DC, U.S.A. 17 – 19 October 2007

International Association of Time Use Research conference, Copenhagen, Denmark 16 – 18 August 2006

PhD Related Courses Taken

1. Children's Research Network for Ireland and Northern Ireland Summer School- Quantitative methodologies in Policy and Practice for Child Health and Well-being Dublin, 28-30 September 2011

2. UCC Scientific Training for Enhanced Postgraduate Study (STEPS) module 15-17 December 2010

3. Turbocharge your Writing Workshop 14 December 2010

4. University of Essex Summer School: Time Use Data Collection and Analysis 31 July – 4 August 2006

PhD Related Funding

1. **2014:** UCC College of Medicine and Health travel bursary to attend the Count Me IN! Conference in London

2. **2011:** Children's Research Network for Ireland and Northern Ireland Summer School Quantitative methodologies in policies and practice for child health and wellbeing Bursary: Registration, travel and accommodation

3. **2008:** Health Research Board Summer Student Scholarship, paid for an undergraduate student to work with me for six weeks to code the parental occupation data in my study, and perform other tasks.

4. **2008:** Office of the Minister for Children/Health Research Board. Travel bursary to present at the Researching Children's Worlds Conference, Galway, February 2008.

5. **2007:** International Association of Time Use Research Andrew Harvey Scholarship

Consultancy

February 2013	Asked to contribute to the consultation on the diary design for the age 14 cohort in the UK Millennium Cohort Study
December 2010	Consulted by the ESRI on the design of Growing Up in Ireland diary for 13 year old cohort

Using Population-level Time Use Datasets to Advance Knowledge on Human Activity, Participation and Health

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Abstract

Time use is of enduring interest to occupational therapists and occupational scientists. However, occupational researchers have yet to exploit the full potential of large population level time use datasets. We present a brief overview of the historical development and current activities within time use research internationally. Whilst acknowledging the challenging nature of this type of research, we explore some of the opportunities offered by the secondary analysis of large time use datasets for occupational therapy and occupational science researchers who seek to advance knowledge of human activity, participation and health.

Introduction

In 2003, Farnworth asked whether time use was occupational therapy's core business or someone else's, while more recently Pemberton and Cox (2011) ask 'what happened to the time?' A conference hosted by the *International Association of Time Use Research (IATUR)* at the University of Oxford gave the opportunity to reflect on these questions. The authors were amongst the conference delegates, from a range of disciplines, who were urged to consider how they could mine large population datasets to measure and map human activities.

A Concern for Time

In considering humans as temporal beings and patterns of time use in daily life in particular, contemporary scholars (Farnworth 2003, Christiansen 2007) acknowledge the influential ideas of Adolph Meyer, the American psychiatrist who, in his seminal address to the National Society for the Promotion of Occupational Therapy, called for 'the awakening to a full meaning of time as the biggest wonder and asset of our lives' (1922 p. 642). He asserted that it is the use we make of ourselves, our doing in time, that 'gives the ultimate stamp to our every organ' (p. 641). The founders of occupational science similarly positioned a 'concern for time' as central to understanding human occupational behaviour, with consideration required of 'how a person occupies time, how satisfied she or he is with the use of time, and how well time use supports values and goals' (Yerxa et al 1990 p. 8). Despite this enduring interest, we believe that occupational researchers have yet to fully realize the potential that time use research using existing population datasets offers the profession.

International Research

While the use of time budgets or time use surveys can be traced to the end of the nineteenth century, most scholars identify the defining contribution of Hungarian sociologist Alexander Szalai in the coordinated gathering of time use data. In 1965, under the auspices of the United Nations Educational, Scientific and Cultural Organisation (UNESCO), he supervised the parallel collection of time use data from nine European countries, Peru, Russia and the USA, using commonly agreed methods of sampling, interviewing, coding and data processing (Szalai 1972).

Most developing and developed countries now collect time use data as part of national statistical accounting activities. Researchers on the Multinational Time Use Study at the University of Oxford work to harmonise large-scale multinational time use datasets conducted between the 1960s and 2010. They maintain a comprehensive database of over 60 time use surveys from 25 countries,, including population studies conducted by government statistical agencies in the UK, Canada, USA and Australia and smaller scale time use studies by independent researchers.

Within Europe, Eurostat has worked with national statistical agencies to match the collection of time use data amongst member states. The Harmonised European Time Use Surveys (HETUS) guidelines (Eurostat 2009) provide detailed information on the design, collection and analysis of time use data. The HETUS database now contains comparable data from fifteen European states. Pre-prepared tables are available on the website, showing mean time spent on main and secondary activities and participation rates for main activities during an average day, by sex and country. Researchers can generate statistical tables illustrating and comparing everyday life activities for people within and across Europe.

The inclusion of time use components within larger scale representative surveys allows for detailed studies of the diverse influences on time use at points in time, and in the case of longitudinal studies, across lifetimes and generations of individuals and families. For example, the mission of the longitudinal US Panel Study of Income Dynamics (PSID, Institute for Social Research, 2012) is to examine socioeconomics and health across the generations of families who participate in the survey. The Child Development Supplement (CDS) of the PSID consists of two waves of data collection (1997 and 2002/2003), bringing together an array of information on the health, development and

education of young people to complement the existing socio-demographic information on their family unit. Both datasets are available for researchers and analysts free of charge. In 2009, the PSID gathered supplemental information on disability, time use and well-being from a sub-group of older couples in the main PSID sample. The preliminary research file is now available and is likely to be of significant interest to researchers, policy makers and service providers who seek to understand the lives of older people.

Research in Occupational Science and Occupational Therapy

A scoping review of empirical time use research published in occupational science and occupational therapy journals (Hunt et al, 2011) found that, of the 44 studies that met the inclusion criteria, only four studies employed secondary analysis of nationally representative datasets while a further six studies compared the findings from primary research with findings from population datasets Evidently, the secondary analysis of population time use datasets is underutilised within occupational science and occupational therapy research.

Opportunities

Hunt et al (2011) found limited research testing the assumption underpinning occupational therapy that time use is related to overall well-being and quality of life. Using time use datasets would allow occupational researchers to respond to the central question posed by Yerxa (2005 p. 111), 'how do work, rest, play and the quotidian occupations, including their patterns in time, contribute to human happiness and satisfaction?'

Population datasets offer advantages for researchers interested in addressing such questions. In most cases, these datasets are available at no cost. Access is typically granted on application and acceptance of user terms and conditions. User manuals, training videos and technical papers are often available. Up to date bibliographies are maintained and dataset users can link with other researchers, electronically or in person, at seminars or conferences. This opens up valuable opportunities for interdisciplinary and cross-national research collaborations.

The free access to data obviously reduces the time and cost of participant recruitment and data collection, entry and coding. Furthermore, with research governance requirements often resulting in protracted and time consuming ethics procedures

(Whitehead et al 2011), secondary analysis of existing datasets incurs no such costs or delays. Indeed, funding agencies are required to provide value for money and many now favour research proposals that utilise existing datasets. For example in the Republic of Ireland, the Office of the Minister for Children and Youth Affairs 2011/2012 scholarship programme plans to award at least one of its scholarships to applicants whose research utilises the longitudinal Growing Up in Ireland (GUI, http://www.growingup.ie, 06.02.12) data. The wide use of such datasets makes the renewal of funding for the primary research much more likely and as a result, offers a mutual benefit for primary and secondary researchers alike.

While there are advantages to using existing datasets, prospective researchers are obliged to consider the theoretical and methodological issues pertaining to time use data collection and analysis (Pentland & Harvey 1999). These include theoretical matters such as: how time is perceived and experienced differently across cultures and how activities can usefully and meaningfully be categorised. Occupational therapists and occupational scientists are well placed to sensitively consider these complex topics (for example Whalley Hammell 2009). Methodological considerations include sampling, instrument design, data coding and data quality. The number of days for which time diaries were collected and whether seasonal variation in activity participation was accounted for are sampling examples. Dataset users must understand the design of the diary instrument, for example if it was a pre-coded light or 'own word' heavy diary format, how long the time interval was, if multiple simultaneous activities were captured and the extent to which contextual information was collected. Issues such as these ultimately determine the direction that analysis will take.

Challenges

One limitation of many population datasets is their frequently cross-sectional nature, making inferences about causal relationships impossible. However, longitudinal datasets offer exciting opportunities for more in depth analysis of time use in the bioecological [Process-Person-Context-Time] context (Bronfenbrenner & Morris, 1998).

Diary studies are vulnerable to issues of recall. Therefore, prospective researchers should consider the quality measures that were in place to enhance the accuracy and completeness of the dataset. Short duration (e.g. going to the bathroom), personal (e.g. sexual) and illegal (e.g. drug use) activities are often underreported so not all datasets

will provide insight into all aspects of daily activity participation, while minority groups within the population may not be adequately represented in the sampling frame.

Secondary analysis of population datasets requires significant statistical knowledge. Pre-registration occupational therapy programmes should equip students with the statistical knowledge to understand and conduct basic analyses of time use datasets. For more in-depth studies, teams of researchers should include statisticians who have the requisite knowledge and expertise to perform the analyses and interpret the results.

Occupational scientists and occupational therapists may assert that time use research that captures information about daily activities lacks necessary information about the meaning of the occupation. However, like Farnworth (2004), we argue that such time use research makes an important and valid contribution to knowledge development on the form and function of human occupation at a population level within and across cultures, complementing qualitative research that illuminates the meaning of occupation. As Pierce (2001 p.144) stated 'occupational therapists require sophisticated understandings of both the cultural repertoire of typical activities for persons of different ages and backgrounds and the complex nature of the personally constructed and fully contexted occupational experiences'.

Conclusion

Notwithstanding the challenges inherent in using time use datasets, we believe that occupational scientists and occupational therapists have much to gain from secondary analyses of existing time use datasets. Furthermore, we believe that scholars who understand the complex relationship between daily activities and health have much to offer the interdisciplinary field of time use research. Ultimately, we believe that time use is everyone's business....

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Time Use and Daily Activities of Late Adolescents in Contemporary Ireland

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Abstract

An occupational perspective of public health embraces a holistic view of the lifestyles of groups of people and how lifestyles influence health (Hocking, 2011). Adolescents, as a defined population group, are being positioned at the centre of global health practice, in the belief that investment in the well-being of young people yields a return for the whole of society into the future. Despite the fact that Ireland has the youngest population in Europe, little is known about the occupational nature and lifestyles of late adolescents in contemporary Ireland and how they spend their time. This cross-sectional study examined the time use of Irish late adolescents during weekdays and weekends, and how time use differed by two key determinants of health, gender and social class. A time diary survey was conducted with a representative sample of school-going adolescents. Seven hundred and thirty one young people participated (52%; mean age boys 16.10 years; mean age girls 15.91 years). Non-parametric analyses of participation rates and time spent in activities across the day revealed the gendered nature of adolescent time use, particularly at weekends. Social class differences were less evident. This study contributes a unique occupational perspective on the time use of 'well' late adolescents in contemporary Ireland.

Keywords: Young people, Time use, Time diary, Daily occupations

Young people make up almost half of the world's seven billion population and have been described as "a new global power reshaping the world" (United Nations Population Fund, 2011, p. 9). Perhaps it is not surprising then that "unprecedented momentum is gathering to put adolescents into the centre of global health practice" (The Lancet, 2012, p. 1561) and to consider the role of adolescence as a foundation for future health for individuals and societies. Indeed, it is argued that "how nations harness the contribution of their adolescents and young adults will determine their futures, in terms of economic success and quality of life" (Resnick, Catalono, Sawyer, Viner, & Patton, 2012, p. 1565). However, Currie et al. (2012) stated that young people are often neglected as a population group in health statistics, with scant attention paid to inequalities related to age, gender and socioeconomic status among adolescents. Reflecting these contemporary understandings, researchers, policy makers and health providers working in the field of adolescent health are urged to embrace holistic and ecological perspectives rather than disease specific and deficit models, advance cross-cultural research that gathers comprehensive data on health and behaviour, and invest in evidence-based practice that targets non-communicable diseases in particular, across age, gender, social class and country of residence subgroups (Blum, Bastos, Kabiru, & Le, 2012; Currie et al., 2012; Kreipe, 2011; Sawyer et al., 2012; The Lancet, 2012; United Nations Children's Fund/UNICEF, 2012; Viner et al., 2012). Furthermore, Sawyer et al. (2012) encouraged researchers to explicitly describe the developmental stage within adolescence to which their studies relate. They defined the age period 15-19 years as "late adolescence" (p. 1632).

Adolescent Time Use

No doubt influenced by these imperatives, time use is now increasingly being recognised as a determinant and indicator of adolescent well-being internationally (Ben-Arieh & Ofir, 2002; Brooker & Hyman, 2010; Rees, Goswani, & Bradshaw, 2010; Zuzanek, 2005). Short (2005) argued that in order to put all parts of young people's lives into context, it is necessary to see how they fill their days. There is a significant body of international and multidisciplinary literature on diverse aspects of adolescent time use in its "divided form" (Wilcock, 2007, p. 5) including, for example, sleep (Matricciani, Olds, & Petkov, 2012), physical activity (Copperman & Bhat, 2007), sedentary behaviours (Babey, Hastert, & Wolstein, 2013) and leisure activities (Biddle, Marshall, Gorely, & Cameron, 2009). A review of this literature is beyond the scope of

this paper. However, there is growing recognition of the need to consider time spent in multiple activity domains and the overall activity pattern, rather than on discrete activities (Feldman Farb & Matjasko, 2012; Ferrar, Chang, Li, & Olds, 2013; Hagell, Peck, Zarrett, Gimenez-Nadal, & Symonds, 2012). This is not surprising given that "time devoted to one domain of activity takes on full meaning only when viewed in terms of its functional relation to time spent in other domains" (Shanahan & Flaherty, 2001, p. 386).

Occupational Science

This focus on activities and occupations across the day is a central concern for the discipline of occupational science, with occupation defined as "chunks of culturally and personally meaningful activity in which humans engage that can be named in the lexicon of our culture" (Clark et al., 1991, p. 301). Specifically occupational scientists seek to advance understanding of "how the form, function and meaning of daily activities influence health and well-being" (Larson & Zemke, 2003, p. 80).

In 2001, Pierce argued that the terms occupation and activity were two distinct and valuable concepts requiring differentiation to support more sophisticated research in occupational science and occupational therapy. Drawing on Pierce's (2001) definitions, Farnworth (2004) further argued that activity is a more appropriate concept to use in population level time use research rather than occupation, which relates to time use at the individual level. Clark (2006) advocated the careful use of language that "travels well in interdisciplinary contexts to describe the relationship of occupation to health" (p. 176). Accordingly, consistent with the time use literature, the term activity is used in this paper to describe what the participants do with their time.

Eminent Canadian economist and time use researcher Andrew Harvey (1998), in his editorial in the *Journal of Occupational Science*, wrote "at the heart of understanding people as occupational beings is understanding what they do minute by minute, day by day" (p. 2). How daily occupations, including their patterns in time, contribute to human happiness, life satisfaction, quality of life and health remains a major question confronting societies (Yerxa, 1993, 2005). Further exploration is needed of "the apparent health or illness outcomes of contemporary lifestyles from an occupational perspective" (Wilcock, 2007, p. 3-4), defined by Njelesani, Tang, Jonsson, and

Polatajko (2012) as "a way of looking at or thinking about human doing" (p. 8). An occupational perspective of public health embraces a holistic view of the lifestyles of groups and how their lifestyles maintain or undermine health (Hocking, 2011). By bringing this occupational perspective to public health and health promotion initiatives, and the understanding of occupation and health at individual and population levels, occupational therapists and occupational scientists can contribute to the development of occupationally healthy public policy (Wilcock & Hocking, 2004). Occupational scientists and therapists are beginning to use time use research to explore key population health issues such as unemployment (Scanlan, Bundy, & Matthews, 2011), childhood obesity (Orban, Ellegård, Thorngren-Jerneck, & Erlandsson, 2012; Ziviani, Desha, Poulsen, & Whiteford, 2010) and enduring mental illness (Desha, Nicholson, & Ziviani, 2011; Eklund, Erlandsson, & Leufstadius, 2010), in some cases leading to the development of occupation-based interventions (Edgelow & Krupa, 2011). In addition to examining health issues for at-risk groups, occupational scientists also examine the daily lives of different age groups within the 'well' population including children (Lynch, 2009) and older people (Chilvers, Corr, & Singlehurst, 2010; King & Hunt, 2010), although studies of 'well' adolescents are absent. There remains an identified need for studies of population differences and an examination of occupational patterns across 24 hour cycles (Pierce, 2012). Furthermore, "detailed investigations are necessary to gain a better understanding of occupational engagement for individuals from diverse communities, cultures and in varying geographical locations" (Ziviani et al., 2010, p. 440).

Youth in Ireland

In 2011, Ireland had the highest percentage of children and young people in the European Union (EU), with 25% compared with the EU-27 average of 19% (Department of Children and Youth Affairs, 2012). The health of Irish young people has been the subject of increasing public, professional and political attention in recent years. Resources such as the *State of the Nation's Children* (Department of Children and Youth Affairs, 2012) and the *Health Behaviour in School-Aged Children* study (Currie et al., 2012) gathered important data on aspects of children's lives and health and risk behaviours, for example, on drug and alcohol use, physical activity, screen time and nutrition, in some cases making comparisons with available international data (Currie et al., 2012; United Nations Children's Fund/UNICEF, 2012, 2013). Such surveys

typically use stylised estimates of time use in specific activities. However, just as Hagell et al. (2012) observed in the United Kingdom, research on "the patterning of the whole day not just a few discretionary hours" (p. 71) is less extensive. As a result, little is known about the occupational nature of late adolescents in contemporary Ireland and the rounds of daily activities in which they engage. Time use data are being collected from Irish 9 and 13 year olds as part of the national longitudinal survey *Growing Up in Ireland* (Department of Children and Youth Affairs, 2011a). To date, no time use surveys have been conducted with older Irish adolescents aged 15 to 19 years. This purpose of this study therefore is to bridge this gap by gathering time use information on this large section of the Irish population.

Influences on Adolescent Time Use

In keeping with contemporary research policy and practice (Department of Children and Youth Affairs, 2011b; Greene et al., 2010), many time use researchers have recognised the range of contexts and relationships that influence the daily lives of children and young people and shape how their time is used (Ferrar, Chang, et al., 2013; Lynch, 2009; Regan & Heary, 2013). Of these, Shanahan and Flaherty (2001) drew particular attention to the potential constraints and opportunities to adolescent time use associated with gender and social class.

Gender

A review of selected literature demonstrated evidence in support of Robinson and Godbey's (1999) assertion that "gender differences in adolescent time use tend to follow traditional patterns" (p. 210). Through an analysis of national time use surveys from 1980 to 2001, Zuzanek (2005) compared time diary data of Canadian adolescents with that of adolescents in nine other developed industrial societies, namely Australia, Belgium, Finland, France, Germany, Netherlands, Norway, United Kingdom and the United States. Although the reported data were not disaggregated by gender, the author commented on a number of gender differences evident across countries with boys watching more television, engaging in more sports and outdoor activities, and playing more computer/video games, while girls spent more time in grooming, homework, domestic activities, reading, and hobbies. The author noted an apparent "narrowing of

the digital gap between genders" (p. 406), in part due to the increasing use of the Internet amongst boys and girls alike.

Also in Canada, Hilbrecht, Zuzanek, and Mannell (2008) collected time diary data from a non-random, stratified sample of school-going adolescents (n = 2,154) to explore time use patterns in early and late adolescence, and in particular to examine gender differences in time spent on total workload, personal needs and free time. Total workload on schooldays was almost identical for girls and boys, while a significant gender gap was found on Sundays, with a disproportionately heavy domestic workload for girls. On school days and weekends, girls spent significantly more time on personal care than boys. Gender differences were again noted in the amount of free time during weekdays and weekends, with girls having less discretionary time than boys.

Through a descriptive analysis of data from French national time use surveys, Chenu and Lesnard (2005) explored whether gender inequalities in adolescent time use narrowed between 1986 (n = 559) and 1998 (n = 1,198). While they found weekday time use to be relatively gender-neutral, weekend or out of school time was strongly gendered, with girls spending more time in personal care and work related (school related, domestic duties and paid work) activities and boys having more free time. Boys spent more time in sports, playing games and going to the cinema, while girls read more. However, the authors did not test for statistically significant gender differences, relying more on presentations of descriptive accounts of time use by gender. Similarly, Blanke and Cornelißen (2005) found no clear evidence of greater gender symmetry in German adolescents' time use from 1991 (n = 962) to 2001 (n = 1024), considering weekdays and weekends together.

Wight, Price, Bianchi, and Hunt (2009) used data from the nationally representative 2003-2005 American Time Use Survey to describe the time use of 15 – 17 year olds (n = 2033) in 22 different activities on school and non-school days. Although gender differences were not the specific focus of their study, stereotypical differences were noted, with girls spending more time in housework, caregiving and studying. While the authors did not comment on gender differences on weekdays compared with weekends, a review of the time use tables suggests that differences were present across a range of activities.

A challenge to Chenu and Lesnard's (2005) opinion regarding the suggested gender-neutral nature of weekday time use came from Olds, Wake, Patton, Ridley, Waters, Williams, and Hesketh's (2009) findings. In their study of the school-day time use of 6,024 Australian adolescents (mean age 13 years), collected using the computer administered Multimedia Activity Recall for Children and Adolescents (MARCA) (Ridley, Olds, & Hill, 2006), they found that at all ages, boys spent significantly more time in physical activity, organised sport, watching TV and playing videogames, while girls spent more time shopping, doing chores, playing with pets and using their phones. Supporting Zuzanek's (2005) assertion of the narrowing of the digital divide, no differences in computer time were found in the Australian study.

More recently, Ferrar, Olds, and Walters (2012) examined 24 MARCA time use recalls to explore gender specific time use patterns in Australian adolescents (n = 2,200, mean age 13 years). They found that boys spent significantly more time in screen-based and physical activities, while girls spent more time in grooming, using their phones, doing housework, walking, 'chilling out' and studying.

Building on the increasing popularity and use of cluster analysis in dietary research and other health behaviours (Buck & Frosini, 2012; Newby & Tucker, 2004), Ferrar, Olds, and Maher (2012) applied this method in their recent examination of Australian adolescents' (n = 1,853, 9-16 years) multi-dimensional time use. Distinct gender specific time use clusters emerged, namely *social tasker*, *techno-active* and *techno-studious* for boys and *social screenie*, *quiet active* and *techno-studious* for girls. In New Zealand, Ferrar, Olds, Maher, and Maddison (2013) used the same method in their study of time use clusters of adolescents (n = 679, 10-16 years). Different activity patterns characterised the three girls' clusters (*social sporty*, *screenie tasker* and *super studious*) and three boys' clusters (*techno-active*, *quiet movers* and *social studious*). The authors draw attention to the *techno-active* cluster in particular as this is frequently identified as a male cluster, characterised by high physical activity and high screen time participation. While the clusters were gender specific, one similarity was noted with the presence of one cognitively based cluster for both girls (*super studious*) and boys (*social studious*). Both these studies utilised the MARCA as a data collection instrument.

From this brief review, there does appear to be support, as Ferrar, Olds, and Walters (2012) concluded, to uphold common stereotypical beliefs about gender differences in adolescent time use.

Social Class

Social class, defined by Krieger, Williams, and Moss (1997) as "social groups arising from interdependent economic relationships" (p. 344), is amongst the strongest known predictors of health (Solar & Irwin, 2010). While social class gradients are consistently reported in child and adult health, Starfield, Riley, Witt and Robertson (2002) noted that there is debate about the existence of social gradients in late childhood and adolescence, perhaps due to "conceptualisation, measurement, choice of health outcomes, and differences in social context" (p. 360). However, they did find evidence of social class gradients in some indicators of adolescent health. In their later review, Hanson and Chen (2007) found that, while lower socio-economic status was associated with greater cigarette smoking, poorer diets, and less physical activity amongst adolescents, these associations were not as robust as those found in adulthood.

Some researchers have examined social class and time use generally (Chatzitheochari & Arber, 2012), as opposed to specific health and risk behaviours, albeit with an adult population in the main. McLaren, Godley, and MacNairn (2009) considered time use data a starting point for a holistic exploration of class and lifestyle, arguing the benefit of taking a broader view of lifestyle and daily routines in research on the social drivers of health outcomes. The limited adolescent time use literature that does include data on social class appears to show inconsistent results. For example, in their exploration of parents' occupational status amongst adolescents from six different activity clusters, Bartko and Eccles (2003) found only one significant difference, namely that parents of adolescents in the 'school-focused' cluster had significantly higher reported occupational status than adolescents in the 'uninvolved' cluster. Furthermore, Wight et al. (2009) found that family income correlated positively with adolescents' paid work, homework, computer use and time eating with parents, but was negatively correlated with sleep. Looking specifically at health-related time use patterns captured with the MARCA, Ferrar, Olds, Maher, and Gomersall (2012) reported consistent time use differences amongst Australian children and adolescents (n = 2,200; 9-16 years) from the four different household income groups represented in their sample. Participants

from higher income families spent significantly more time reading, doing homework, playing instruments, playing sports and considerably less time watching television and playing videogames.

Conversely, socioeconomic background did not appear to influence time use patterns in the studies by Shanahan and Flaherty (2001) and Ferrar et al. (2013). Zick (2010) observed virtually no effect of total family income in her multivariate analysis of how socioeconomic and other familial factors influence adolescent time allocation. She did note that this may be a result of measurement error inherent in data of this nature. Currie, Molcho, Boyce, Holstein, Torsheim and Richter (2008) similarly considered the conceptual and methodological issues in measuring adolescent socio-economic status, arguing that it is a complex, multidimensional construct.

That said, Currie et al. (2012) argued that the evidence base around age, gender and socioeconomic inequalities in young people's health and well-being must continue to develop. Furthermore, Viner et al. (2012), in their detailed exploration of adolescence and the social determinants of health, called for further research and interventions that improve adolescents' daily lives with family, friends and in school, that address risk and protective factors in the social environment at a population level and focus on factors that are protective across various health outcomes.

Methodology

Aims

In response to these calls, this study sought to explore and describe the lives and lifestyles of well late adolescents in contemporary Ireland through an examination of their daily time use, by addressing the following research questions:

1. How do Irish late adolescents allocate their time to multiple activities during the week and at the weekend?
2. Does time use differ by gender?
3. Does time use differ by social class?

Methods

Sample

This cross-sectional study was designed in keeping with existing international studies of adolescent time use which focused on term-time time use of late adolescents aged 15 to 19 years in full time education who were living at home (Zuzanek & Mannell, 2005). A two-stage stratified sampling strategy was employed. Firstly, second level schools were randomly selected, with probability proportionate to size, from the governmental schools' register for the designated region. Reflecting the distribution of schools in the sampling frame, the sample was stratified by school type (male, female and mixed) and location (city and county). Twenty-eight schools (76%) agreed to participate. Thereafter, students from the first two of the three senior cycle years were invited to participate (n=1,413). Final year students were not included as informal consultation with school principals had indicated that accessing this cohort in their final State examination year would be problematic. Seven hundred and thirty one students consented, yielding a response rate of 52%.

Measures

According to Harvey and Pentland (1999) "time use methodology can provide a window on actual lifestyles, thereby permitting a rich, objective and replicable basis on which to make empirical judgements" (p. 3). Indeed, in Wilcock's (2007) opinion, such methodologies are "arguably the most established research techniques to explore important aspects of human occupation" (p.7). There are a range of recognised methods of measuring time use including direct observation, stylised survey questions, experience sampling method (ESM), time stamped/spot observations and time diaries (National Research Council, 2000). The United Nations (2013) Task Force on Time Use Surveys favoured the time diary method, arguing that the resultant data are more accurate and detailed than the alternatives. Eurostat (2009) and the United Nations (2005, 2013) presented detailed guidelines for the design, implementation and analysis of time diary surveys. Robinson and Godbey (1999) conducted a brief review of reliability and validity studies within time use research and concluded that there is a "considerable degree of assurance about the generalizability of time-diary data" (p. 77). More recently, Phipps and Vernon (2009) referenced similar studies supporting the use of time diaries to yield quality data in a cost effective manner. In their detailed review of child and adolescent time use research internationally, Larson and Verma (1999) found the most frequently used method to be the 24-hour time diary. They gave more credibility to findings of time-diary studies (along with ESM and spot observations) over stylised time use estimates, because of their proven accuracy. Similarly, Ben-Arieh

and Ofir (2002) recommended time-diaries over other methodologies in time use research with children and adolescents.

In the present study, time use was measured using an adapted version of the diary instrument developed by the Irish Economic and Social Research Institute (ESRI) in their 2005 survey of Irish adults' time use (n=1,023) (McGinnity, Russell, Williams, & Blackwell, 2005). The diary contained a relatively short but comprehensive list of 26 pre-coded activities (see Table 1). In consultation with the ESRI and an advisory group of young people, the pre-coded list of activities was revised to ensure age appropriateness, resulting in a pre-coded diary format with six main activity categories comprising thirty one individual activities (see Table 2). The activities listed were largely in keeping with those used in adolescent time use surveys internationally (Zuzanek & Mannell, 2005). Participants were asked to record their main activity for each block of 15 minutes of the designated day. Optional secondary activities could also be recorded. Participants completed one diary for a weekday and one diary for a weekend day, along with a number of demographic questions and the KIDSCREEN-52 health related quality of life instrument (Ravens-Sieberer et al., 2005). The KIDSCREEN-52 was developed across Europe as a self-report measure applicable for healthy and chronically ill children and adolescents (aged 8-18 years). It assesses 10 dimensions of health related quality of life, namely physical well-being, psychological well-being, moods and emotions, self-perception, autonomy, parent relations and home life, social support and peers, school environment, social acceptance and financial resources. Each diary took approximately 15 minutes to complete, and could be filled in at intervals throughout the diary day, or retrospectively after the designated diary day.

Insert Tables 1 and 2 about here

Procedures

Ethical approval was granted by the University College Cork Research Ethics Committee of the Cork Teaching Hospitals (reference number: ECM 4 (a) 10/10/06). School principals gave consent and provided the name of a liaison staff member. Each school was asked to identify one class group from each of the two designated years. The researcher met with all the students in each class group and provided written and verbal information for students and written information for parents. Both students and parents were required to complete the consent form. On receipt of signed consent forms, the researcher met with the students to provide instructions for completion of the

questionnaire. Students had the opportunity to complete a sample diary and ask any questions arising. Thereafter, the class was assigned a designated weekday and weekend day to complete their diaries. Diary days were designated by the researcher with the aim of being as close as possible in time to the day of initial diary distribution, in order to maximise accurate recall of activities. Participants were provided with special stickers to use as memory aides and were also encouraged to put reminders in their mobile phones and school journals. When the designated diary days had passed, the liaison staff member prompted participants to check their diaries for accuracy and completeness. Participants then sealed their completed diaries in individual envelopes to ensure privacy. All study recruitment and data collection was conducted by the first author.

Data analysis

To maximise data quality, all data entry was completed by the first author. An independent data entry check was conducted by a research assistant on a random selection of 10% of the questionnaires. Negligible errors were noted (0.002%). Thereafter, frequencies were calculated for all variables. Any errors that were observed were corrected by referring to the original hard copy questionnaire.

Participants' descriptions of their parents' work were coded in accordance with the coding system used by the Central Statistics Office (2011) in the most recent census of the Irish population, resulting in a seven item social class scale ranging from 'professional workers' (highest) to 'unskilled' and 'all others gainfully employed and unknown' (lowest). For the present study, social classes were further collapsed into three categories: social class one (higher), social class two (lower) and social class three ('gainfully occupied and unknown' were used where no precise allocation was possible).

From the dataset, 20 weekday diaries and 20 weekend diaries were excluded from the analyses as there was more than 4 hours time with no recorded activities. This was the quality measure used by McGinnity et al. (2005) in their time use study with Irish adults. Consistent with the definition of a school day set out in the Comparative Study of Adolescent Time Use project (Zuzanek & Mannell, 2005), a further 13 weekday diaries were excluded as there was less than 60 minutes recorded at school on the designated diary day. Thus, there were 698 usable weekday diaries (male = 334, female = 364) and 711 usable weekend diaries (male = 331, female = 380).

Ideally in time use studies, weekdays are equally represented across the sample (United Nations, 2013). For procedural reasons, it was not possible to designate diary days in this way as the day of diary distribution was determined by the school and class group timetable and availability. While each weekday was represented, the days were not equally balanced across the week or across boys and girls. Therefore, when generating time use totals, gender specific probability weights were applied to ensure that each day of the week (Monday to Friday) was represented equally. Weekend data were not weighted as the distribution of Saturdays and Sundays was approximately equal across the sample. According to the United Nations (2005), "most standard statistical reports on time use present tables on time spent in main activities; in addition separate tables for secondary activities may also be prepared" (p. 143). Taking precedence from the *Time Use in Ireland 2005 Survey Report* (McGinnity et al., 2005) and other international adolescent time use studies (Zuzanek & Mannell, 2005), this paper focuses on an analysis of primary or main occupations only.

Suggested outputs from time use surveys include the average time spent per person per day across the whole population, the percentage of the population who performed the activity on his/her diary day (participation rate) and the average time spent in the activity by those people who performed it (United Nations, 2013). While the latter two outputs are the focus of most of the attention in this paper, a snapshot of average time spent by the whole population in the six main activity categories is provided to set the scene. For this, in keeping with custom and practice in time use reports, time use is presented with means (and medians) to allow for ease of comparison with other studies. In the weekday data, Personal Needs, School and Study and Leisure and Free Time activities were normally distributed. Thus, t-tests and ANOVA were used to test for differences by gender and social class respectively. This was the case also in the weekend data for Personal Needs and Leisure and Free Time activities. As all the other main activity category data were skewed, non-parametric tests were used (Mann-Whitney *U*-test and Kruskal-Wallis test for gender and social class respectively).

With regard to the more detailed analysis of the 31 individual activities, Pearson's chi-squared test was used to examine gender and social class differences in participation. Time use data were largely skewed thus median and quartiles (first, third) are reported. Gender and social class differences in median time use were examined using the Mann-

Whitney *U*-test and Kruskal-Wallis test respectively (Machin, Campbell, & Walters, 2007). Because these non-parametric tests do not support the use of probability weights, unweighted data were used in the examination of gender and social class differences in weekday time use. Alpha was set at .05 for all the tests in this study. Because of the large number of tests, Bonferroni correction was applied when determining statistical significance (Machin, Campbell, & Walters). Unadjusted p-values are reported but those that remain significant after applying the Bonferroni correction are highlighted in bold and with an asterisk. Analysis was conducted using SPSS version 20.0 (IBM, 2011) and Stata release 12 (StataCorp., 2011).

Results

Participants are profiled in Table 3. Boys' ages ranged from 15 to 18 years (mean 16.10 years) and girls' ages ranged from 14 to 18 (mean 15.91 years). The higher social class group was significantly larger than the other two groups for both boys (70%) and girls (60.8%).

Insert Table 3 about here

Average time use across the whole population

Table 4 provides an overview of average time spent by the whole population in the six main activity categories on weekdays and weekends, by gender. On weekdays, boys spent 623 minutes or 44% of their day in Personal Needs. One-third of the day (461 minutes) was spent in School and Study related activities. Negligible time was spent in Paid Work, Household Duties or Voluntary & Religious Activities. The remainder of the day was spent on Leisure and Free Time Activities (322 minutes, 22%). Girls spent marginally longer in Personal Needs activities (637, 44%). School and Study activities accounted for the same amount of time as for boys, while Leisure and Free Time Activities represented 21% of the day (300 minutes). Although the actual times were very small, girls did spend significantly longer than boys on Household Duties during the week.

The weekend data show that both boys and girls spend longer in Personal Needs at weekends. For both genders, weekend days were characterised largely by Personal Needs activities (boys 679 minutes / 47% and girls 710 minutes / 49%) and Leisure and

Free Time Activities (boys 608 minutes / 42% and girls 545 minutes / 38%). Girls spent significantly longer in Personal Care and Household Duties, while boys spent longer in Leisure and Free Time Activities.

Insert Table 4 about here

Table 5 provides an overview of average time spent by the whole population in the six main activity categories on weekdays and weekends, by social class.

Insert Table 5 about here

From Tables 4 and 5, it is clear that, at this level of aggregation, some gender differences are apparent in weekday and weekend time use. There were no statistically significant differences in the time use of boys and girls across the three social groups on weekdays or weekends. The percentage of the population who performed the activity on his or her diary day (participation rate) and the average time spent in the activity by those people who performed the activity, by gender and social class are now examined in greater detail for weekdays and weekends.

Weekday participation rates and time use by gender and social class

Participation rates varied significantly for different activities on weekdays, for boys and girls alike, from 1% participation in Shopping for Pleasure to 100% for Sleep (Table 7). As expected, almost all participants recorded some time in Personal Needs activities (Sleeping, Personal Care, Eating) and School Related Activities. Outside of these activities, 82% of boys spent some time Watching TV/DVDs, 60% spent time doing Homework at home, 59% spent time Hanging around with Friends and 57% spent some time Using the Computer/Internet. Eighty-two percent of girls reported time spent Watching TV/DVDs, 66% recorded time on Homework and 56% recorded time spent Hanging around with Friends.

Insert Table 6 about here

Significant gender differences in participation rates were found in four of the 31 pre-coded activities listed in the diary. More girls than boys recorded participation in Socialising with family (p = .000), Talking/texting on a mobile phone (p = .000) and

Reading (p = .000), while more boys than girls reported Using the Computer/Internet (p = .000). In terms of actual time use, girls spent significantly longer in Personal Care (p = .000) while boys spent more time Sleeping (p = .000), Using the Computer/Internet (p = .001) and Resting/relaxing (p = .002).

Weekday participation rates did not vary significantly by social class, apart from participation in Hobbies which was recorded by 26% in the higher social class, 12% in the lower social class and 17% in the unknown social class group (p = .002) (table not shown). There were no statistically significant differences in median time use across social class groups for any of the thirty one activities.

Weekend participation rates and time use by gender and social class

As with the weekday data, participation rates varied significantly for different activities during the weekend, for boys and girls alike, from 2% participation in Voluntary Activities to 100% for Sleep. Beyond Personal Needs activities, which understandably are recorded by close to 100% of participants, the activities with highest participation rates for boys were Watching TV/DVDs (80%), Using Computer/Internet (62%) and Hanging around with Friends (52%) while for girls, they were Watching TV/DVDs (80%), Hanging around with Friends (53%) and Socialising with family (50%).

Insert Table7 about here

Significant gender differences were noted in participation rates in 10 of 31 pre-coded activities. More girls than boys reported spending time in Personal Care activities (p = .02); Homework (p = .001); Housework (p = .000); Socialising with family (p = .000); Talking/texting on a mobile phone (p = .000); Shopping for pleasure (p = .000) and Reading (p = .001). More boys than girls recorded time in Physical activity (p = .000), Computer/Internet use (p = .000) and in Hobbies (p = .000).

With regard to median time spent in the activity amongst those who reported doing the activity on the diary day, gender differences were found in five activities. Girls spent more time in Personal Care (p = .000) and Religious Activities (p = .03) than boys, while boys spent more time in Physical activity (p = .000); Computer/Internet use (p = .004) and Watching TV/DVDs (p = .000).

Social class differences in weekend time use are almost non-existent within this study (table not shown), with the following exceptions. A significant difference in participation rates was found with two activities. Thirty percent in the lower social class group participated in Paid Employment compared with 19% and 13% in the higher and unknown social class groups, respectively (p = .002). Forty-three percent of participants in the higher social class group recorded some time in Travel, compared with 32% and 20% for the lower social class and unknown social class groups respectively (p = .001). In terms of actual time spent, one difference was noted: those in the lower social class group reported less time spent in Eating/drinking (p = .003).

Discussion

The findings of this study provide evidence for the gendered nature of Irish late adolescents' time use, particularly at weekends, while social class differences did not emerge as clearly.

Time use across the whole population

The findings in relation to the distribution of time across the six main activity categories (Personal Needs including Sleep; School and Study; Paid Work; Household Tasks; Voluntary and Religious activities; and Leisure and Free Time activities) are largely in keeping with Zuzanek's (2005) cross-national comparisons of adolescent time use, lending further support to his statement that "adolescent time use in developed industrialised societies shows many common trends and lifestyle similarities" (p. 397). However, despite the very different geographical contexts included in this comparative study, it is likely that the comparable study designs (with their focus on the time use of adolescents in full time education) contribute strongly to the similar findings. More diverse studies of adolescents outside the school system and in less economically developed countries would allow for the presence, or otherwise, of the suggested globalised patterns of adolescent time use to be further examined.

Chenu and Lesnard (2005) described the homogenising effect of full-time schooling. Similarly, the examination of the distribution of time across the six broad activity categories in the present study suggests a largely gender neutral use of time during the week, with a statistically significant gender difference evident in only one of the six categories, namely Household duties. However, Hagell et al. (2012) noted that while time diary research traditionally reports time use collapsed into groups of related

activities, ‘there is a constant tension between wanting to retain the detail of the data, and needing to group variables for summary purposes’ (p. 64). This study’s findings also support this observation as analyses at the level of individual activities reveal a greater degree of gender difference in adolescent time use during weekdays and even more so at weekends.

The influence of gender on participation rates and time spent in individual activities

More girls than boys reported time spent in Personal Care at the weekend, and girls spent longer in Personal Care activities on weekdays and weekends, mirroring the findings of Hilbrecht et al. (2008) in Canada and Ferrar, Olds, and Walters (2012) in Australia. There is a high value placed on women’s physical appearance in contemporary Western society. As a result, attention to image and personal care are part of the feminine gender schema (Hilbrecht et al., 2008). The findings of the present study suggest that these cultural norms appear to be equally influential in an Irish context.

Another stereotypical gender difference widely reported in the international literature relates to household duties (Blanke & Cornelißen, 2005; Zuzanek, 2005). Statistically significant differences in time in Household duties were found averaged across the whole population in the present study, with girls spending longer in such activities both on weekdays and weekends. At weekends, more girls than boys reported spending time on Household duties. However, amongst those who reported some time in this activity, no significant gender differences were found in actual time spent.

At weekends more boys than girls reported spending time in Physical Activity and amongst those who participated, boys spent longer being physically active, a long established pattern widely reported in the literature (Chenu & Lesnard, 2005; Csikszentmihalyi & Larson, 1984; Currie et al., 2012, Ferrar, Olds, & Walters, 2012; Zuzanek, 2005). Other Irish studies have also reported gender differences in physical activity. The Irish *State of the Nation’s Children* (Department of Children and Youth Affairs, 2012) reported that 53.2% of boys aged 15 to 17 participated in physical activity for at least 60 minutes on more than 4 days per week, compared with 28.9% of girls. These findings may reflect differences both in expectation and opportunity for boys and girls. According to Chalabaev, Sarrazin, Fontayne, Boiche, and Clement-Guillotin (2013), while biological factors may in part explain sex differences in participation in sport and exercise, sex stereotypes and gender roles exerted a greater

influence. Currie et al. (2012) also suggested that opportunities for participation in moderate to vigorous physical activity may be more biased in favour of boys and may account for the fact that boys continue to be significantly more physically active than girls in most countries.

The findings in the present study mirror the international trend of differences in computer/Internet use amongst boys and girls (Ferrar, Olds, & Walters, 2012; McCauley Ohannessian, 2009). On weekdays and at weekends, more boys than girls spent time Using the Computer/Internet and spent longer engaged in this activity. The use of a person-centred rather than an activity-centred analytic approach (Bartko & Eccles, 2003) may illuminate whether these patterns relating to physical activity and screen time co-occur in the same group of boys, like the male *techno-active* profile, as identified by Ferrar, Olds and Maher (2012) and Ferrar et al. (2013).

Socialising with family and using their mobile phones for texting and talking featured strongly in the daily lives of girls but less so for boys. Currie et al.'s (2012) claim that "boys' social networks are based on activities, with higher levels of physical activities and sports, while girls' networks and friendships are based on personal communication" (p. 211) may account for this difference. At weekdays and weekends, Spending time with friends was equally important to boys and girls, accounting for 60 minutes of time for both genders during the week and between 180 and 210 minutes at weekends. Currie et al. (2012) also found high levels of friendships in their study of Irish 15 year olds. However they did find that significantly more girls (91%) than boys (88%) had three or more close friends of the same gender. The time spent with friends for both genders is not surprising given the special role that peer groups have in adolescence (Coleman, 2011). However, it is interesting to note that large proportions of young people did not report spending time with friends on weekdays or weekends. Given that Currie et al. (2012) believed that "developing positive peer relationships and friendships is crucial in helping adolescents deal with developmental tasks such as forming identity, developing social skills and self-esteem and establishing autonomy" (p. 7), this finding warrants attention.

Significantly more girls than boys recorded time spent Reading during weekdays and weekends. This result is consistent with other Irish data which describe notable gender differences in the numbers of 15 year olds who report reading as one of their favourite

hobbies (Department of Children and Youth Affairs, 2012). Furthermore, the finding that more girls than boys reported spending time in Homework at the weekend may support the presence of a cognitively based *super studious* activity profile, as reported by Ferrar et al. (2013). Taken together, this detailed examination of participation rates and time spent in activities across the day provides further evidence for the gendered nature of adolescent time use, particularly at weekends.

The influence of social class on participation rates and time spent in activities

The influence of social class on time use was less apparent in the findings. Only three statistically significant differences across the three social groups were found in the participation data, namely participation in Hobbies (weekdays), and Paid Employment and Travel (weekends). No differences in weekday time spent in activities were found, while at weekends one difference emerged in time spent in Eating/drinking. As noted earlier, the influence of social class on adolescent time use is mixed in the literature. It is possible that by collapsing the seven social class groups into three, some potential social class differences were hidden. Moreover, the three social groups were not equally represented in this study. Perhaps, as Currie et al. (2012) suggested, the use of a range of indicators of socio-economic status rather than a single measure of social class may have shed more light on the impact of socio-economic factors on time use.

Limitations and Contribution

There were a number of methodological limitations in the present study. A response rate of 52% was achieved with no subsequent weighting for non-response, introducing the possibility of non-response bias. However, according to Phipps and Vernon (2009), relevant studies in this areas show little evidence of bias due to non-response.

As this was the first time use survey to be conducted with late adolescents in Ireland, some of the study design was guided by the experience and expertise of McGinnity et al. (2005), who conducted the first (and only) time use survey with Irish adults. They found the location and co-presence questions in their survey to have very low response rates and on that basis they advised that these not be included as separate diary sections in future light diary studies. Again similar to McGinnity et al., and as is customary in time use reports (United Nations, 2005), the initial analyses focus on main activities only. However, as optional secondary activities could be recorded by participants, in the future the data can be examined to explore the complex nature of simultaneous

activities, or *enfolded occupations* as described in the occupational science literature (Bateson, 1996). A simultaneous activity that features strongly in the time use of adolescents in the present day is the use of smart phones. When the data collection in the present study took place in late 2007, such technologies were largely unavailable. Therefore the data do not reflect the widespread penetration of mobile technologies in the lives of today's adolescents (Rideout, Foehr, & Roberts, 2010). Furthermore, the diary instrument did not distinguish between Computer/Internet use for gaming or social networking, two activities reported in more recent literature as significantly gendered. In 2007, the global phenomenon of social networking did not exist in the mainstream society or youth culture, whereas between March 2012 and March 2013 alone, Facebook® (2013) reported an increase of 26%, or 665 million daily users, clear evidence of the challenging nature of conducting research in a "constantly changing virtual world" (Subrahmanyam & Greenfield, 2008, p. 417). More data on this important topic is needed. Moreover, the dissemination of results from such research needs to happen much more quickly to allow for contemporaneous interpretation of findings.

Data collection took place between September and December 2007. Therefore, potential seasonal variations (e.g. weather, hours of daylight, study and exam commitments across the academic year) in time use were not accounted for. However, accounting for seasonal variation needed to be balanced with maximising access to the study population. Gaining research access to schools in the second term was predicted to be more challenging, as there tended to be more breaks with mid-term and Easter holidays and impending end of year exams. For that reason, it was decided to collect data in the first half of the academic year only.

Time diaries rely on recall of participation in occupations which is a potential source of error (Hunt & McKay, 2012). Short duration activities e.g. going to the bathroom or snacking can be underreported. The data on participation in main activities reflect this underreporting with a small percentage of young people not recording time spent in personal care or eating activities. It is possible that some of these activities were reported as secondary activities e.g. eating.

Despite these limitations, this study makes an important contribution to knowledge development within the discipline of occupational science and on adolescent lifestyles.

It complements and builds on existing work by focusing on a well population and examining time use "in the round" (Hagell et al., 2012, p. 71) across 24 hours rather than on discrete activities in isolation, based on diary data rather than stylised estimates. The study was designed in keeping with the parameters agreed by those involved in the Comparative Study of Adolescent Time Use (Zuzanek & Mannell, 2005), thus making cross-cultural comparisons possible and contributing, for the first time, an Irish perspective to the growing international body of knowledge on adolescent time use, health and well-being. By examining gender and social class influences on adolescent time use, it was recognised that adolescents are not a homogenous cohort (World Health Organization, 2011).

This research contributes important and valid information on the "form" or "observable aspects" (Larson E. & Zemke, 2003, p. 80) of occupation in the lives of Irish adolescents at a population level, generating insights into the "cultural repertoire of typical activities" in contemporary Ireland (Pierce, 2001, p. 144), thus complementing qualitative research that illuminates the meaning of occupation at an individual level. It paves the way for the next phase of analysis which will use latent class analysis to examine multi-dimensional patterns of time use, paying particular attention to the profiles of occupational participation of those adolescents who report high health related quality of life on the KIDSCREEN-52. This is a recognised "critical gap" in occupational science research (Pierce, 2012, p. 302). Similarly, within adolescent time use research, little work has been done to explore the relationship between time use and subjective well-being or health related quality of life (Ferrar, Chang, et al., 2013; Glorieux, Stevens, & Vandeweyer, 2005).

Conclusion and Future Research

This study gathered, for the first time in Ireland, time diary data from a representative sample of well late adolescents. Reflecting an occupational perspective, this research was "inclusive of the minute but from the perspective of the whole picture" (Wilcock, 2007, p. 5). The detailed examination of participation rates and time spent in occupations across the day provides evidence for the gendered nature of adolescent time use, particularly at weekends. Established international trends are mirrored in the findings with stereotypical gender role differences in physical activity, household tasks,

personal care, computer/Internet use and reading. Social class differences were less evident.

This level one descriptive research (Pierce, 2012) provides a solid foundation for level two and three research into person centred patterns of time use and how such patterns relate to health related quality of life. Furthermore, cross-cultural analysis of Irish late adolescents' time use is now possible. According to Soupourmas (2005), "understanding how young people spend their time… is crucial for the formulation of appropriate and effective policies and interventions aimed at improving the health and wellbeing of young people" (p. 586). The findings of this study suggest that such policies and interventions need to be gender specific. With the knowledge gained from this and subsequent studies, Irish adolescents can be educated and supported to engage in a daily round of occupations that enhance their health, meet their needs and enable them to balance the demands of a 21st century lifestyle.

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Table 1: Pre-coded List of Activity Categories and Individual Activities – Adults (McGinnity et al., 2005)

Activity Category	Activity
Personal care/Resting	Sleeping
	Resting/Relaxing
	Personal care
	Eating/Drinking/Having a meal
Travel	Travel
Paid employment or study	Paid employment
	Study, education
	Breaks from work or study
Housework and other household tasks	Cooking
	Cleaning
	House repairs
Shopping and appointments	Shopping, messages/Errands & appointments
Caring for others	Childcare
	Playing and Talking with Children
	Caring for adults
Voluntary and Religious Activity	Voluntary activity
	Religious activity
Socialising and going out	Spending time/Chatting with family, friends, neighbours
	Phoning/Texting family, friends, neighbours
	Eating out/Going to the pub
	Going out
Sports and leisure	Playing sports, exercise and outdoor activity
	Computer/Internet for personal use
	Hobbies and other leisure activities
TV, radio, reading	Watching TV
	Reading or listening to music

Table 2: Pre-coded List of Activity Categories and Individual Activities Used in this Study – Adolescents

Activity Category	Activity
Personal needs	Sleeping
	Personal care
	Eating/Drinking/Having a meal
School and study	Attending class and Class/School related activities
	Eating/Drinking at school
	Doing homework/ Studying at school
	Travelling to and from school
	Doing homework/Studying at home
Paid work	Paid employment
	Travelling to and from work
	Breaks from work
Housework and other household tasks	Doing housework
	Shopping, errands and appointments
	Caring for others
Voluntary and religious activities	Voluntary activities
	Religious activities
Leisure and free time activities	Extracurricular activities
	Hanging around with friends, boyfriend, girlfriend
	Socialising with family
	Talking on the phone, Texting
	Going out
	Shopping for pleasure
	Attending cinema/Theatre/Concerts
	Playing sports, exercise & physical activity
	Computer/Internet
	Hobbies/Other leisure activities
	Watching TV etc
	Listening to radio or music
	Reading
	Travelling outside of work/school
	Resting/Relaxing

Table 3: Demographic Characteristics of Sample

	Male	Female
n (%)	343 (46.9)	388 (53.1)
Average age in years (SD)	16.10 (.756)	15.91 (.730)
Social class n (%)		
Higher	238 (70)	234 (60.8)
Lower	78 (22.9)	127(33)
Unknown	24 (7.1)	24 (6.2)

Table 4: Average Time and Proportion of the Day Spent in Main Activity Categories on Weekdays and Weekends by all Participants by Gender

	Weekdays					Weekends				
	Male (n=334)		Female (n=364)			Male (n=331)		Female (n=380)		
	Time	%	Time	%	***p***	Time	%	Time	%	***p***
Personal needs incl. sleep	623 (630)	44	637 (645)	44	.31	679 (690)	47	710 (720)	49	**.000***
School & study	461 (450)	32	460 (450)	32	.37	30 (0)	2.08	41 (0)	2.84	.002
Paid work	14 (0)	.90	14 (0)	.90	.49	75 (0)	5.20	86 (0)	5.97	.31
Household duties	9 (0)	.62	15 (0)	1	**.003***	28 (0)	1.9	36 (0)	2.5	**.000***
Voluntary & religious activities	3 (0)	.20	4 (0)	.27	.81	14 (0)	.97	13 (0)	.90	.99
Leisure & free time activities	322 (315)	22	300 (300)	21	.17	608 (630)	42	545 (555)	38	**.000***

Note. Time in shown as mean (median), plus percentage of the day. Data include those who spent no time in the occupation. Testing for difference in unweighted mean/median time use using t-test or Mann-Whitney *U* test, as appropriate. p = 0.05. Unadjusted p-values reported. ***** Remains significant after adjusting for multiple testing.

Table 5: Average Time and Proportion of the Day in Main Activity Categories on Weekdays and Weekends by all Participants by Social Class

	Weekdays							Weekends						
	SC1		SC2		SC3			SC1		SC2		SC3		
	Time	%	Time	%	Time	%	*p*	Time	%	Time	%	Time	%	*p*
Personal needs incl. sleep	630 (645)	44	638 (630)	44	598 (630)	42	.55	697 (705)	48	692 (705)	48	714 (705)	50	.80
School & study	466 (450)	32	451 (450)	61	450 (450)	31	.24	36 (0)	3	37 (0)	3	31 (0)	2	.95
Paid work	13 (0)	.90	18 (0)	1	15 (0)	1	.71	71 (0)	5	107 (0)	7	44 (0)	3	.05
Household duties	9 (0)	.62	16 (0)	1	17 (0)	1	.60	30 (0)	2	34 (0)	2	44 (0)	3	.92
Voluntary & religious activities	4 (0)	.27	3 (0)	.20	0.5 (0)	.03	.90	15 (0)	1	11 (0)	.70	13 (0)	.90	.77
Leisure & free time activities	311 (300)	22	301 (300)	21	355 (360)	25	.21	585 (600)	41	548 (555)	38	567 (555)	39	.37

Note. Time in shown as mean (median), plus percentage of the day. Data include those who spent no time in the activity. Testing for difference in unweighted mean/median time use using ANOVA or Kruskal-Wallis test, as appropriate. p = 0.05. Unadjusted p-values reported. * Remains significant after adjusting for multiple testing.

Table 6: Difference in Numbers who Report Some Time in the Activity and Difference in Time (minutes per day) Spent in each Activity on Weekdays by Gender

Activity Category	Activity	Percentage Reporting some Time in the Activity			Time Use (Minutes) of those Reporting some Time in Activity		
		Male n (%)	Female n (%)	*p*	Male	Female	*p*
Personal needs	Sleeping	334 (100)	364 (100)	1.0	495 (450, 525)	480 (450, 525)	**.000***
	Personal care	326 (98)	359 (99)	.48	30 (15, 45)	60(30, 75)	**.000***
	Eating / Drinking / Having a meal	323 (97)	349 (96)	.56	45 (30, 75)	45 (30, 75)	.31
School & study	Attending class / School-related activities	334 (100)	364 (100)	1.0	345 (330, 360)	345 (330, 360)	.95
	Eating / Drinking at school	303 (91)	339 (92)	.86	60 (30, 60)	60 (45, 60)	.27
	Doing homework / Studying at school	101 (28)	72 (21)	.04	45 (30, 90)	45 (15, 120)	.27
	Travelling to and from School	318 (96)	346 (97)	.70	45 (30, 60)	45 (30, 75)	.28
	Doing homework / Studying at home	213 (60)	245 (66)	.17	75 (45, 120)	75 (45, 105)	.57
Paid work	Paid employment	22 (8)	28 (7)	.79	-	-	-
	Travelling to and from work	15 (4)	19 (5)	.85	-	-	-
	Breaks from work	4 (1)	3 (.3)	.12	-	-	-
Household tasks	Doing housework	69 (20)	90 (24)	.36	30 (15, 45)	30 (15, 30)	.42
	Shopping, errands & appointments	9 (3)	26 (7)	.04	-	-	-
	Caring for others	7 (3)	19 (4)	.38	-	-	-

Voluntary & religious activities	Voluntary	9 (3)	11 (4)	.35	-	-	-
	Religious	7 (3)	5 (2)	.48	-	-	-
Leisure & free time activities	Extracurricular activities	33 (9)	32 (9)	.83	-	-	-
	Hanging around with friends	190 (59)	204 (56)	.59	60 (30, 120)	60 (45, 135)	.34
	Socialising with family	78 (23)	128 (36)	**.000***	30 (15,60)	45 (30, 75)	.26
	Talking on the phone / Texting	73 (22)	155 (43)	**.000***	45 (30, 75)	45 (30, 75)	.25
	Going out	221 (6)	19 (7)	.83	-	-	-
	Shopping for pleasure	3 (1)	14 (4)	.03	-	-	-
	Attending Cinema / Theatre / Concerts	6 (2)	7 (2)	.71	-	-	-
	Playing Sports, Exercise & Physical Activity	99 (30)	83 (22)	.04	75 (45, 105)	60 (45, 105)	.19
	Computer / Internet	185 (57)	162 (43)	**.000***	60 (45, 120)	60 (30, 90)	**.001***
	Hobbies / Other leisure activities	78 (23)	74 (20)	.42	60 (30, 105)	45 (30, 75)	.83
	Watching TV, DVDs etc	269 (82)	302 (82)	.99	90 (60,150)	75 (45, 120)	.02
	Listening to radio or music	80 (26)	106 (28)	.55	30 (15, 45)	30 (30, 45)	.97
	Reading	49 (15)	97 (27)	**.000***	30 (30, 60)	30 (15, 60)	.62
	Travelling outside of work / school	51 (16)	60 (15)	.79	45 (30, 60)	45 (15, 60)	.95
	Resting / Relaxing	120 (35)	150 (41)	.13	45 (30, 60)	30 (15, 60)	**.002***

Note. Dash denotes data not reported as number of cases less than 10. Time use shown as median (Q1, Q3). Testing for difference in unweighted median time use using Mann-Whitney *U*-test. p = 0.05. Unadjusted p-values reported. * Remains significant after adjusting for multiple testing.

Table 7: Difference in Numbers Reporting Some Time in the Activity and Difference in Time (Minutes per Day) Spent in Each Activity at Weekend by Gender

Activity Category	Activity	Percentage Reporting some Time in the Activity			Time Use (Minutes) of those Reporting some Time in Activity		
		Male n (%)	Female n (%)	*p*	Male	Female	*p*
Personal needs	Sleeping	331 (100)	380 (100)	1.0	585 (495, 660)	600 (514, 660)	.17
	Personal care	300 (91)	363 (96)	**.02***	30 (30, 60)	60 (45, 90)	**.000***
	Eating / Drinking / Having a meal	310 (94)	367 (97)	.10	60 (45, 90)	60 (45, 90)	.09
School & study	Doing homework / Studying at home	95 (29)	157 (41)	**.001***	75 (45, 150)	90 (45, 120)	.59
Paid work	Paid employment	66 (20)	87 (23)	.39	338 (236, 409)	315 (240, 405)	.73
	Travelling to and from work	41 (12)	70 (18)	.04	30 (30, 60)	30 (30, 45)	.29
	Breaks from work	27 (8)	42 (11)	.29	-	-	-
Household tasks	Doing housework	84 (25)	150 (40)	**.000***	45 (30, 60)	45 (30, 75)	.58
	Shopping, errands & appointments	36 (11)	42 (11)	1.0	60 (30, 90)	60 (30, 105)	.85
	Caring for others	12 (4)	31 (8)	.02	-	-	-
Voluntary & religious activities	Voluntary occupations	7 (2)	13 (3)	.41	-	-	-
	Religious activities	65 (20)	66 (17)	.50	45 (30, 60)	60 (45, 60)	**.03***
Leisure & free time occupations	Extracurricular activities	16 (5)	21 (6)	.81	-	-	-
	Hanging around with friends	173 (52)	200 (53)	.98	180 (105, 315)	210 (120, 330)	.17
	Socialising with family	115 (35)	188 (50)	**.000***	60 (30, 75)	60 (30, 105)	.96
	Talking on the phone / Texting	89 (27)	170 (45)	**.000***	45 (30, 75)	45 (30, 90)	.38

Going out	73 (22)	83 (22)	1.0	150 (60, 315)	120 (60, 270)	.20
Shopping for pleasure	28 (9)	77 (20)	**.000***	-	-	-
Attending cinema / theatre / concerts	28 (9)	44 (12)	.21	-	-	-
Playing sports, exercise & physical activity	137 (41)	102 (27)	**.000***	105 (60, 150)	60 (45, 120)	**.000***
Computer / Internet	204 (62)	172 (45)	**.000***	90 (45, 165)	60 (45, 105)	**.004***
Hobbies / other leisure activities	102 (31)	71 (19)	**.000***	75 (45, 180)	60 (30, 120)	.06
Watching TV, DVD etc	265 (80)	302 (80)	.92	135 (90, 225)	105 (60, 165)	**.000***
Listening to radio or music	89 (27)	110 (29)	.60	45 (30, 75)	45 (30, 60)	.31
Reading	65 (20)	117 (31)	**.001***	60 (30, 90)	45 (30, 75)	.85
Travelling outside of work / School	128 (39)	146 (38)	1.0	60 (30, 135)	60 (30, 105)	.26
Resting / Relaxing	139 (42)	172 (45)	.42	45 (30, 75)	45 (30, 60)	.33

Note. Dash denotes data not reported as number of cases less than 10. Time use shown as median (Q1, Q3). Testing for difference in median time use using Mann Whitney *U*-test. p = 0.05. Unadjusted p-values reported. ***** Remains significant after adjusting for multiple testing. School & Study activities not applicable at weekends other than 'Doing homework / Studying at home'.

A Scoping Review of Time Use Research in Occupational Therapy and Occupational Science

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Abstract

Background: Time use is a defining interest within occupational therapy and occupational science. This is evident through the range of contributions to the disciplinary knowledge base. Indeed it has been suggested that time use methods are amongst the most established research techniques used to explore aspects of human occupation. However the extent and nature of such activity in occupational therapy and occupational science has not been examined to date. *Aim:* This study sought to map the extent and nature of time use research in occupational therapy and occupational science journals and the extent to which studies explored the relationship between time use and health. *Method:* A scoping review method was used. *Results:* Sixty-one studies were included. Scandinavian countries contributed the most number of studies (n=16, 26%). While time use diaries were used most frequently (n=30, 49%) occupational therapists and occupational scientists have developed a range of data collection instruments. Forty-nine studies (80%) focused on time use in clinical or defined population sub-groups. Ten studies (16%) included an empirical examination of the relationship between time use and health. *Conclusion:* Future research should examine time use and health amongst well populations across the lifespan and in different parts of the world.

Key words: *everyday activities, health, literature review, time diary*

Introduction

Time use is a defining interest in the fields of occupational therapy and occupational science. Adolph Meyer [(1), p. 642], widely considered the 'father of occupational therapy' [(2), p.44] called for 'the awakening to a full meaning of time as the biggest wonder and asset of our lives'. Kielhofner revisited the work of Meyer and Meyer's contemporary Eleanor Clarke Slagle and credited them with one of occupational therapy's core propositions that 'in the richness of man's daily routines and his purposeful use of time, there was both health maintaining and health regenerating potential' [(3), p. 236]. To this day occupational therapists are passionate in their belief that the things people do in their everyday lives are the foundation of health and well-being (4).

In the first publication from the discipline of occupational science Yerxa et al. [(5), p. 8]) similarly positioned a 'concern for time' as central to understanding human occupational behaviour, with consideration required of 'how a person occupies time, how satisfied she or he is with the use of time and how well time use supports values and goals'. Yerxa [(6), p. 3] further argued that occupational science sought to address a major question confronting societies – 'what is the relationship between human engagement in a daily round of activity (such as work, play, rest, and sleep) and the quality of life people experience including their healthfulness'. Eminent Canadian economist and time use researcher Andrew Harvey [(7), p. 2] asserted that what people do minute-by-minute day-by-day is at the heart of understanding them as occupational beings. Wilcock (8) recently commented on the goodness of fit between the interdisciplinary field of time use research and occupational science, remembering a key meeting of time use researchers (including Andrew Harvey) interested in exploring time use, health, and well-being that took place in Canada in 1993 as the interdisciplinary potential of occupational science grew.

In 2003 Australian occupational therapist Louise Farnworth (9) renewed attention on occupational therapy's association with time use. She explored the related concepts of time use, tempo, and temporality and questioned whether such topics are the core business of occupational therapy or of other professions. The central and enduring importance of time use in occupational therapy and occupational science is evident through the broad and sustained range of outputs and contributions to the knowledge base (see Table I). While the information in this table did not emanate from the scoping review process, it provides a useful background to contextualise this review.

[Insert Table I about here]

Wilcock (44) suggested that time use methods are amongst the most established research techniques used in exploring important aspects of human occupation. However, to date, the extent and nature of such research activity in occupational therapy and occupational science has not been examined. Therefore the purpose of this study is to map the extent and nature of time use research in occupational therapy and occupational science. A secondary aim is to examine the extent to which the included studies explored the relationship between time use and health. In this regard, Yerxa's [(45), p. 412] definition of health is employed. She described health not as the absence of pathology, but as a 'positive, dynamic state of 'well-beingness', reflecting adaptability, a good quality of life and satisfaction in one's own activities'.

Method

A scoping review method was used to map the relevant literature. According to Rumrill, Fitzgerald, and Merchant [(46), p. 399) 'many medical and social science fields have witnessed the emergence of scoping literature reviews as an alternative to traditional literature review methods'. The Cochrane Public Health Group [(47), p. 147] described scoping reviews as 'a useful and increasingly popular way to collect and organize important background information and develop a picture of the existing evidence base'. Unlike traditional systematic reviews, scoping studies do not seek to assess the quality of evidence, synthesise evidence or aggregate findings from different studies (48). However scoping reviews are particularly useful when an area is complex or has not been reviewed comprehensively before, where many different study designs are employed (48), when there is a high volume of published work (46), and in younger disciplines when the lack of randomized controlled trials makes it difficult to undertake systematic reviews (49). Moreover scoping reviews are more time and cost effective than full systematic reviews. Scoping review methodology is growing in popularity in occupational therapy (50) and has been used to examine interventions for chronic diseases (51), immigration and its impact on daily occupations (52), occupational and self identity after a brain injury (53), occupational engagement of older adults with low vision (54), and ecological sustainability (55).

Arksey and O' Malley (48) published the first methodological framework for conducting scoping reviews. They outlined five steps to guide researchers through the process: identifying the research question, identifying relevant studies, study selection,

data charting and finally, collating, summarizing and reporting the results. Levac, Colquoun, and O' Brien (49) noted some challenges and limitations with Arksey and O' Malley's framework. They argued that the purpose of scoping studies can lack clarity, that the study selection process is iterative rather than linear and that the analytical method of charting data is poorly defined. Furthermore they acknowledged the ongoing debate regarding the need or otherwise for quality assessment of included studies particularly given the large number of studies often included in scoping reviews. Importantly they highlighted how the breadth and comprehensiveness of the scoping process needed to be balanced with feasibility. Arksey and O' Malley's (48) five steps are outlined below.

Identifying the research question(s)

This review seeks to address the following two questions:

1. What is the extent and nature of time use research in occupational therapy and occupational science? Specifically research trends, gaps in evidence, and methodological issues are examined.
2. To what extent do the identified studies examine the relationship between time use and health? Specifically the review examines whether the studies empirically explored the relationship between time use and health using psychometrically tested instruments.

Identifying relevant studies

The following databases were searched: CINAHL, EMBASE, PsycINFO, Medline, Proquest, OTDBase, PubMed, with the keywords: Activity pattern, time, diary, time use, time budget, yesterday diary, time studies, time utilization, daily activities, time allocation and MeSH terms: time factors, time perceptions, time, occupational therapy, time and motion studies, time management. Boolean operators and truncation were used.

Study selection

The review period was from when the first occupational science publication emerged in 1990 to June 2011 in the first instance. The review was then updated to March 2014. Studies were selected using the inclusion and exclusion criteria detailed in Table II.

[Insert Table II about here]

Data charting

The data charting form captured information relating to the author(s) and year of publication; geographical location of the study; study participants; sample size; if data was collected across 24 hours of the day; whether the study employed primary or secondary data analysis; the data collection method and analysis system used; the extent to which the studies addressed the varied methodological issues associated with time use research and whether the study empirically explored the relationship between time use and health using psychometrically tested instruments.

Collating, summarizing and reporting the results

Numerical analyses of the extent, nature, and distribution of the studies included in the review were conducted (48) and the results were mapped in tables and charts. Non-numeric findings (e.g., the methodological issues associated with time use research) were synthesised and these results are presented in narrative form.

Results

Sixty-one studies published between 1990 and 2014 met the inclusion criteria for this review. Figure I illustrates the number of publications in each year of the review period.

[Insert Figure I about here]

The number of studies has generally increased with a peak of seven studies in 2010. Of the regions represented in the review, Scandinavian authors contributed the most studies (n=16, 26%) followed by USA, Canada, and Australia (Table III). The most frequently studied population was people with enduring mental illness followed by other clinical groups, defined population sub-groups, and finally 'well' populations across the lifespan (Table IV). The vast majority of studies (n=50, 82%) were small/medium scale primary research projects with sample sizes ranging from one to 731. An additional seven (11%) studies related their findings (empirically or descriptively) with population-level time use datasets. Secondary analysis of representative population-level time use datasets was employed in 5 (7%) studies. Almost half of the studies (n=30, 49%) used time diaries as data collection instruments. In 10 of these cases the time diary was a modified version of that used in the respective national time use surveys in Australia, Canada, Ireland, Japan, and Sweden. Table V presents the data collection methods used in the included studies.

[Insert Table III, IV and V about here]

Forty-eight studies (79%) captured data across the 24 hours of the day, with three of these studies only reporting selected activities in the featured publication. Six studies (9%) captured data from early morning to late at night. These studies generally used the original Occupational Questionnaire (38) which records time use from 5am – 12midnight. Five studies (8%) employed daytime momentary observations while the remaining two studies focused on time use during a school day and working day respectively. The studies captured data from various combinations of single weekdays; a weekday and a weekend day; 'typical' days; and full weeks; or single days recorded at intervals of a few weeks or pre and post an intervention.

A range of data coding approaches was noted. In the majority of studies the researcher(s) coded the activities recorded by the respondents. Coding schemes were derived from discipline specific sources such as the American Occupational Therapy Association (AOTA) *Uniform Terminology* (113), the AOTA (114) *Practice Framework* and the Canadian Association of Occupational Therapists *Guidelines for Client Centred Practice* (115). One study referred to the terminology of the World Health Organisation (116) *International Classification of Functioning, Disability and Health*. Twenty studies (33%) used modified versions of coding schemes developed for use in national time use surveys in Australia, Canada, Ireland, the UK, and the USA as well as harmonised European coding systems (117). A small proportion of studies used a pre-coded diary where respondents recorded what they were doing by picking one of a number of listed activities largely representative of the diary day. The Occupational Questionnaire requires respondents to record their activities in their own words and also assign one of four codes to each listed activity. Additionally several authors used previous research to guide their data coding. Instrument specific coding systems and analysis software were used where applicable e.g., the Daily Life software (118) used by time-geographers. Although some of the coding schemes and software have up to 600 individual activity codes, the number of codes reported across all studies ranged from three to 79 and in some cases included the use of sub-categories. Finally some researchers combined their time use data with interview transcripts and used qualitative methods in their analyses.

Ten studies (16%) included empirical examinations of the relationship between time use and health using generic instruments with established reliability and validity. The measures used were the Short Form 36 (in full or part) (119), the Swedish version

of the Manchester Short Assessment of Quality of Life (120), the Göteborg Quality of Life Scale (121), the Life Satisfaction Index-Z (122), the Self-esteem scale (123), the Sense of Coherence scale (124), the Mastery instrument (125), the Life satisfaction measure (126), overall perceived health (127) and the Satisfaction with Life Scale (128).

The majority of studies (n=46, 75%) included some consideration of the methodological issues present in time use research. These included using quality measures such as explicit training and procedures to maximise accuracy and consistency in data collection and coding; having a defined cut-off for the amount of 'missing time' in a diary day; and the examination of extreme values/outliers. The psychometric properties of instruments were generally reported when applicable. Furthermore many studies assessed the validity of their data by asking respondents to rate how well the diary day represented an average day. In some cases supplemental interviews were used to enhance diary quality. A smaller number of studies addressed one or more specific time use research issues, such as seasonal variation in time use, the potentially high level of variability in time use across days of the week undermining the idea of a 'typical day', the potential underreporting of simultaneous and short duration activities, the challenge of classifying activities, the time lapse between the designated diary day and diary completion, the error associated with retrospective recall of activities, and the possible social desirability bias when doing so.

Discussion

This is the first scoping review of time use research in occupational therapy and occupational science. Evidently time use is of enduring interest to occupational therapists and occupational scientists. The number of publications has generally grown in the time period. Indeed the decision to focus only on discipline specific occupational therapy and occupational science journals means that the increasing numbers of occupational time use researchers who are publishing to a wider audience in a broad range of interdisciplinary journals was not captured (129-133). Taken together there is evidence to suggest that occupational therapists and occupational scientists are making an important contribution to the field of time use research.

The geographical distribution of the included studies may reflect the parameters of the scoping review which included studies written in English only. It may also reflect the Western perspective that dominates the occupational therapy and occupational science literature (134). This is an important consideration in time use research when

there are such variations in the perception and meaning of time across cultures (135, 136). There is some evidence of culturally sensitive explorations of unique time perceptions for Maori (137) and Aboriginal (138) peoples by occupational therapists and occupational scientists. The findings of this scoping review suggest that further time use research is required 'to gain a better understanding of occupational engagement for individuals from diverse communities, cultures and in varying geographical locations' [(139), p. 440).

This study provides evidence in support of Wilcock's [(44), p. 3] claim that there is a 'propensity for studies that are small scale, individually based, and have significance or relevance to the practice of current day occupational therapy such as disability, care-giving and ageing'. Over half of the included studies involved clinical populations with modest sample sizes. Approximately 20% (n=12) of the studies examined the time use of 'well' populations, with eight of the 12 focusing on the time use of older people. Without doubt the focus on older people is warranted as the World Health Organisation (140) projects the number of people aged 65 or older will grow from an estimated 524 million in 2010 to nearly 1.5 billion in 2050, with most of the increase in developing countries. As a result they call for coordinated research to discover the most cost-effective ways to maintain healthy lifestyles and everyday functioning in countries at different stages of economic development and with varying resources. However given that there is also growing international recognition of the need for targeted, holistic, age-appropriate preventive and clinical services for all young people, not just those who are at risk or experiencing difficulties (141-143), occupational researchers are encouraged to advance this agenda and prioritise studies on the lives of well children and young people as Hunt et al. (105) and Lynch (107) have done.

Secondary analysis of representative population-level time use datasets was employed in only five (7%) of the studies in this review. Evidently occupational researchers have yet to fully realize the potential of large population-level datasets, some of which now include data on time use and well-being (24). Pierce (144) called for large pattern predictive research on population differences in occupation and occupational patterns across 24-hour cycles, requiring methods and instruments that are better fit to the study of large samples. Indeed there are increasing calls for the strengthening of population and public health perspectives in occupational therapy and occupational science research, policy, and practice (139, 145-149). Wilcock (8, 150-153)

and Hocking (4) have been key proponents in this regard. Hocking [(4), p. 34] argued that ‘occupational therapists need to look beyond providing good quality intervention for individuals who have already acquired a health condition’ and extend their thinking to ‘practice that influences groups, organisations, communities – the whole of society’ (p. 37). Moll, Gewurtz, Krupa, and Law (148) believed that the benefits associated with occupation should be promoted in the realm of public health, as well as how occupation can be a risk factor for ill-health. Similarly in her editorial in the recent edition of the *Journal of Occupational Science*, devoted in its entirety to occupation for population health, Wicks [(154), p. 2] encouraged occupational scientists’ ‘quest to understand how occupation has positive and negative implications for health at the personal, local, and global levels’.

Ten studies (16%) were indentified that included an empirical examination of the relationship between time use and subjective well-being. Some studies did collect health and well-being data but did not examine their relationship with time use (108) while others examined related concepts such as occupational balance and health related variables (57). Arguably then Yerxa’s (6, 155) question of how daily occupations including their patterns in time contribute to human happiness, life satisfaction, quality of life, and health requires further empirical attention. Law, Steinwender, and Leclair (156) found little empirical evidence in the occupational therapy literature to support the belief that there is a relationship between occupation, health, and well-being. More recently Pierce [(144), p. 302] claimed that the lack of research on the relationship of occupation to health and quality of life is a ‘critical gap’ in occupational science research. Wilcock [(44), p. 3-4] has called for further exploration of ‘the apparent health or illness outcomes of contemporary lifestyles from an occupational perspective’. Such explorations need to include quantitative and qualitative studies to grasp actual relationships between occupation and health at the population level (157). Crucially longitudinal research is required that may identify causal pathways in the relationship between time use and health (156).

A significant number of the included studies used discipline specific coding schemes to guide their analyses. Wilcock (8) suggested recently that the use of discipline specific terminology by all those who seek to ‘describe or study particular aspects of all that people do across the wake-sleep continuum from birth to death’ has restricted knowledge development. For example, the term occupation is ‘not currently in the lexicon of public health’ [(148), p. 115]. Clark [(158), p. 176] advocated the careful use of language that ‘travels well in interdisciplinary contexts to describe the

relationship of occupation to health'. Farnworth (28) argued that activity is a more appropriate concept to use in population-level time use research rather than occupation which relates to time use at the individual level. Occupational researchers may wish to consider using generic activity coding schemes such as that contained in the recently released United Nations (159) *Guidelines for Harmonising Time Use Surveys*. In this way time use research can contribute important and valid information on the 'form' or 'observable aspects' [(160), p. 80] of occupation at a population level. Alternative approaches to categorising occupation have also been used developed that reflect 'the complexity of human occupation from a time and doing perspective [(15), p.16] by exploring main, hidden and unexpected occupations, as well as sleep, which is considered a building block in the patterns of daily occupation.

According to Pentland and Harvey [(135), p. 264], 'in order that time use research be maximally useful across disciplines, investigators have a responsibility to consider and consult various theoretical and methodological aspects'. While it was reassuring to find that the majority of the studies in this review were sensitive to issues of reliability, validity, and trustworthiness, specific time use research methodological considerations received less attention. Many excellent resources are available to assist occupational researchers in conducting high quality time use research (27, 159).

Finally, as Michelson [(161), p. 103] stated, 'the whole is greater than the sum of its parts' particularly given the zero-sum nature of time 'in which there is only a fixed amount of time to be distributed and traded off among necessary and desired activities' (p. 18). The reporting of aggregate-level statistics and major time allocation estimates does not allow for the full richness of time use data to be utilized (135). Unique patterns that are not represented by the aggregate-level average may be identified by person-centred rather than more traditional variable-centred approaches (162). While such methods are increasingly popular in contemporary research on lifestyles and health behaviours (163-167), none of the studies in our review used these empirical cluster or latent class analytic strategies. [An interesting study by Andersson, Eklund, Sundh, Thundal, and Spak (168) did employ cluster analytic techniques in the analysis of women's patterns of everyday occupations and alcohol consumption but did not meet the inclusion criteria for this review.] Seven studies (11%) in this review used person-centred time-geographic methods (39), capturing activity patterns as a multidimensional unit with outputs in the form of graphs that illustrate the complexity of 'everyday patterns of doing' [(15), p. 16)].

Limitations

As with all research this study has a number of limitations. The review was limited to studies of time use to the exclusion of studies of tempo and temporality of which there are many. Indeed these topics could be the focus of future scoping reviews. While many of the included studies reported affective states or states of mind associated with time use and perceived competence, value, and enjoyment in relation to time use, only those studies that examined time use and health using generic instruments with established psychometric properties were considered. While the two authors consulted throughout this scoping review process resource limitations prohibited the independent review of each of the full articles. As is the norm in scoping reviews (48) the findings from these studies were not synthesised. Therefore a review focusing exclusively on these studies would be an important contribution to the knowledge base. In addition the present review excluded studies that explored the meaning of time use. However as Pierce [(169), p.144) stated 'occupational therapists require sophisticated understandings of both the cultural repertoire of typical activities for persons of different ages and backgrounds and the complex nature of the personally constructed and fully contexted occupational experiences', thus necessitating both quantitative and qualitative approaches as advocated by Frank (157).

Conclusion

This scoping review extends the existing literature by mapping for the first time the extent and nature of time use research in occupational therapy and occupational science journals and the extent to which studies have explored the relationship between time use and health. Sixty-one studies were identified. Evidently time use is of enduring interest to occupational therapists and occupational scientists. Studies from Scandinavia, North America, and Australia predominate. While time use diaries were used most frequently occupational therapists and occupational scientists have developed a range of time use data collection instruments. Forty-nine studies (80%) focused on time use in clinical or defined population sub-groups. A detailed evaluation and synthesis of the evidence emanating from the small number of studies (n=10, 16%) that empirically examined time use and health is warranted. Moreover occupational therapists and occupational scientists should consider more large-scale, quantitative research into the time use and health of well populations across the life span at local and global levels. In so doing they will be able to further strengthen the core business of occupational therapy of creating health in everyday patterns of doing (15) and answer Yerxa's (6, 155) central

question of how work, rest, play, and the quotidian occupations including their patterns in time contribute to human happiness, health, and quality of life.

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Table I. Selected outputs that illustrate the central and enduring importance of time use in occupational therapy and occupational science

Selected Output	
Conceptual models relating to time use	Temporal Adaptation [3] Value and Meaning in Occupations (ValMO) Model [10) Synthesis of Child, Occupational Performance and Environment in Time (SCOPE-IT) Model [11]
Selected keynote lectures on time use and everyday occupations	Law [12] Farnworth [9] Christiansen [13] Zemke [14] Erlandsson [15]
Literature reviews on aspects of time use	Desha & Ziviani [16] Eklund, Leufstadius, & Bejerholm [17] Barclay et al. [18] Pemberton & Cox [19]
Overviews of time use methodologies	Farnworth et al. [20] Holsti & Barr [21] Ziviani et al. [23] Daunhauer & Bundy-Fazioli [23] Hunt & McKay [24]
Journal of Occupational Science Dialogue on Terminology	Farnworth & Fossey [25]
Online international discussion 'Occupational Patterns in Time and Space'	International Society for Occupational Science [26]
Selected books and book chapters	Pentland, Harvey, Lawton, & McColl [27] Farnworth [28] Ziviani, Desha, & Rodger [29] Harvey & Singleton [30] Harvey & Pentland [31]
Instruments	Activity Configuration [32] Activity in Context and Time [33] Caregiver's Activity and Recording of Events Inventory [34] Profiles of Occupational Engagement in Schizophrenia [35] Modified Occupational Questionnaire [36] Mother's Time Use Questionnaire [37] Occupational Questionnaire [38] Time geography [39] Time and Space Use Inventory [40]
Time use interventions	Action Over Inertia Programme [41] Redesigning Daily Occupations (ReDO) Programme [42] Lighter Living (LiLi) Programme [43]

Table II. Scoping review study inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
1990 – 2014	Not tempo or temporality
Data collected on a broad range of daily activities, not discrete activities in isolation	Not studies of meaning of time use
Human time use	Not time use relating to service delivery, student supervison or the development of assessment tools
English	Not theoretical or methodological papers
Published in peer reviewed occupational therapy and occupational science journals	Not book chapters / theses

Table III. Geographical location of studies

Geographical Location	Study Reference Number	n (%)
Scandinavia	[43, 56-70]	16 (26)
United States of America (USA)	[40, 71-80]	11 (18)
Canada	[41, 81-90]	11 (18)
Australia	[91-100]	10 (16)
United Kingdom (UK)	[101-104]	4 (6)
Ireland	[105-107]	3 (5)
Middle East	[37, 108, 109]	3 (5)
Asia	[110-112]	3 (5)

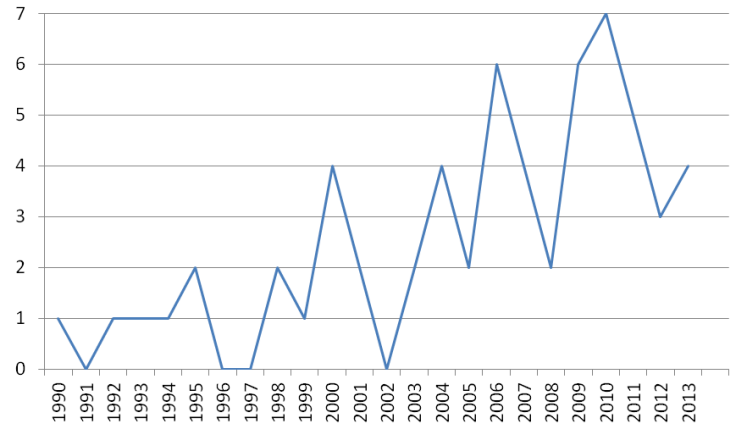
Table IV. Study Populations

			n (%)
Clinical Population	Clinical Diagnosis – Enduring Mental Illness	e.g., schizophrenia	17 (28)
	Clinical Diagnosis - Other	e.g., rheumatoid arthritis, cancer, CVA, traumatic brain injury, spinal cord injury, pain, HIV, binge eating disorder, diabetes, cerebral palsy, obesity, Alzheimer's Disease, environmental sensitivity, low vision, obese children	16 (26)
Defined population sub-groups	Adults	e.g., unemployed people, survivors of terrorist attacks, survivors of domestic abuse, mothers of children with/without disabilities, older adults attending community OT, parents of obese children, working married mothers, employed adults, OT/PT students	11 (18)
	Children / Adolescents	e.g., gifted students, young offenders, children in orphanages, teen mothers, children at risk of conduct problems,	5 (8)
Well Population	'Well' older adults		8 (13)
	'Well' general adult population		2 (3)
	'Well' adolescents		1 (2)
	'Well' typically developing children		1 (2)

Table V. Data collection instruments

Instrument	n (%)
Time diaries	30 (49%)
Activity Configuration/Occupational Questionnaire/Modified Occupational Questionnaire	11 (18)
Time geographic method	7 (11)
Experience Sampling Method	3 (5)
Mother's Time Use Questionnaire	2 (3)
Caregiver's Activity and Recording of Events Inventory	2 (3)
Spot observations/Behavioural mapping	2 (3)
Profile of Occupational Engagement in People with Schizophrenia [POES]	2 (3)
Time and Space Use Inventory	1 (2)
Activity in Context and Time [ACT]	1 (2)

Figure I. Number of publications in the review period 1990 – 2013.



Note. 2014 is not included in this chart as the review period extended only to the first three months of the year.

A Person-centred Analysis of the Time Use, Daily Activities and Health-related Quality of Life of Irish School-going Late Adolescents

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Abstract

Purpose: The health, well-being and quality of life of the world's 1.2 billion adolescents are global priorities. A focus on their patterns or profiles of time-use and how these relate to health-related quality of life (HRQoL) may help to enhance their well-being and address the increasing burden of non-communicable diseases in adulthood. This study sought to establish whether distinct profiles of adolescent 24-hour time-use exist and to examine the relationship of any identified profiles to self-reported HRQoL. *Method:* This cross-sectional study gathered data from a random sample of 731 adolescents (response rate 52%) from 28 schools (response rate 76%) across Cork city and county. A person-centred approach, latent profile analysis (LPA), was used to examine adolescent 24-hour time-use and relate the identified profiles to HRQoL. *Results:* Three male profiles emerged, namely *productive, high leisure* and *all-rounder*. Two female profiles, *higher study/lower leisure* and *moderate study/higher leisure*, were identified. The quantitative and qualitative differences in male and female profiles support the gendered nature of adolescent time-use. No unifying trends emerged in the analysis of probable responses in the HRQoL domains across profiles. Females in the *moderate study/higher leisure* group were twice as likely to have above average global HRQoL. *Conclusion:* Distinct time-use profiles can be identified among adolescents but their relationship with HRQoL is complex. Rich mixed-method research is required to illuminate our understanding of how quantities and qualities of time-use shape lifestyle patterns and how these can enhance the HRQoL of adolescents in the 21st century.

Key words: *time diary, finite mixture models, young people, well-being, health*

Background

There are now 1.2 billion adolescents (aged 10 - 19 years) in the world [1]. While the last 50 years has seen significant improvements in child health, the same gains have not been recorded for adolescents [2]. Consequently, their health and well-being is now a global priority [1, 3]. Recent policies call for increased attention to non-communicable causes of disease burden and lifestyle risk factors in adolescence [4], not least because important determinants of health and well-being are imbedded in young people's daily behavior, as reflected in their time-use [5, 6]. Indeed, how one lives out one's daily life is closely connected with health and quality of life [7-9]. Given that, time-use studies make an ideal contribution to the evaluation of well-being and quality of life [10-13].

To date, most studies of young people's lifestyles and time-use have tended to focus on a small number of discrete activities in isolation [14, 15]. However, it cannot be assumed that healthy levels of one activity are indicative of an overall healthy lifestyle [16]. Indeed, the finite nature of time requires trade-offs or substitutions among necessary and desired activities [17-19]. For example, although it is hypothesised that screen time displaces physical activity [20, 21], high levels of physical activity and sedentary behaviour can coexist [16, 22]. Therefore, macroscopic views are increasingly favoured in research on lifestyles and health with social scientists focusing more on overall patterns of daily activities [23, 24]. Such *person-centred* views are growing in popularity in research on adolescent lifestyles too [16, 25-33]. The person-centred approach seeks to understand the person as a functioning or organised whole rather than a summation of variables [34]. In fact, with this approach, the variable values are of no importance in themselves. Rather, they are meaningful only as parts of a configuration [34]. Importantly, person-centred analyses of adolescent time-use can more effectively capture the interconnectedness of activity choices and portray the complexity of activity participation typical of many young people's lives [35], and the impact on their health, well-being and quality of life [36].

Capturing the complexity of adolescent activity requires not just person-centred analytical methods but also the collection of data on all the activities performed by an individual in a 24-hour cycle, as these are the building blocks that create an overall lifestyle or pattern of time-use [37]. As a result, those concerned with adolescents' health have been urged to pay attention to these "...overall patterns of daily life, including sleep, eating habits, mass media consumption, extra-curricular activities, and

relationships with parents and peers". [5, p. 413]. However, there is a lack of such person-centred studies of adolescent 24-hour time-use [22], with a few exceptions [38-40].

The inclusion of positive outcome variables has recently been identified as one of the important requirements of quantitative developmental research [41]. One such variable is health-related quality of life (HRQoL). Indeed, there is growing consensus that the creation of a complete picture of young people's health and well-being requires an assessment of HRQoL outcomes [42]. No doubt reflecting this and contemporary perspectives that endorse an ecological view of the determinants of adolescent health and well-being [1, 43], and that honour young people's subjective perspectives of their own well-being and quality of life [44, 45], studies examining the relationship between HRQoL and discrete time-use behaviours in adolescents are increasing. More time in physical activity and longer sleeping hours have been found to be associated with better HRQoL, while high levels of recreational screen time are associated with poorer HRQoL [46-52]. However, these variable-centred studies do not take the previously described time-use trade-offs or displacements into account. In fact, the relationship between adolescent overall time-use patterns and HRQoL has not been examined to date (Hunt & McKay, 2014, under review).

With that in mind, we aimed to establish whether distinct patterns, or profiles, of adolescent 24-hour time-use exist in a cross-sectional sample of Irish late adolescents and to examine the relationship of any identified profiles to self-reported HRQoL.

Methods

Sample and Participant Selection

In 2007, we recruited a cross-sectional, random sample of adolescents aged 15 - 19 years in full-time education who were living at home (consistent with previous international studies [53]) in County Cork, Ireland. Second-level schools were randomly selected, from the governmental schools' register, with probability of selection proportionate to enrolment. School principals were asked to provide consent and 28 of 37 selected schools (76%) agreed to participate. Each school then identified one class

group from the two designated years[1] resulting in 1413 students being invited to participate. The first author provided written and verbal information for students and written information for parents. Students and parents were required to complete the consent/assent form. Consent/assent was obtained for 731 students (52%) who were subsequently enrolled in the study.

Measures

Time-use

Time-use was measured using a pre-coded 24-hour diary with six main activity categories comprising 31 individual activities. The time diary is the most frequently used data collection method in child and adolescent time-use research [14, 19]. Although there is an acknowledged lack of information about the quality of time-use data captured by the different methods [54], the time diary method is considered to have acceptable reliability and validity [55, 56] and is the method recommended by the United Nations Economic Commission for Europe (UNECE) Task Force on Time-use Surveys [11].

The diary in the present study was adapted from that used by the Irish Economic and Social Research Institute (ESRI) in their 2005 survey of Irish adults' time-use [57]. The activity categories were in keeping with those used in adolescent time-use surveys internationally [53]. Participants were asked to record their main (primary) activity for each block of 15 minutes of the designated day. Participants completed one diary for a weekday and one diary for a weekend day. The focus of this study was the time-use of participants measured during the school year.

The six main activity categories were Personal Care, School/Study, Paid Work, Housework, Voluntary/Religious Activity, and Leisure. Personal Care was disaggregated into Sleep and Self-Care, as the association between sleep and HRQoL has been the focus of increased attention in recent years [52]. School/Study was also disaggregated into two distinct categories given the significance of homework and study in the lives of adolescents [58, 59]. Similar to previous studies [51, 60, 61] we

[1] The Irish second-level school system comprises a 3-year junior cycle and a 3-year senior cycle. The first year of senior cycle is typically referred to as Transition Year, while the second year of senior cycle is referred to as Fifth Year. Sixth (final) year students were not included as informal consultation with school principals had indicated that accessing this cohort in their final State examination year would be problematic.

computed weekly time in these eight activity categories by multiplying weekday time by 5 and adding to weekend time-use totals that were multiplied by 2.

Health-related quality of life

HRQoL was measured using the 52-item KIDSCREEN questionnaire [62]. This instrument was developed across Europe as a self-report measure applicable for healthy and chronically ill children and adolescents (aged from 8 - 18 years) and assesses 10 domains of HRQoL, namely "physical well-being", "psychological well-being", "moods and emotions", "self-perception", "autonomy", "parent relations and home life", "social support and peers", "school environment", "social acceptance" and "financial resources". Psychometric testing has shown the KIDSCREEN to be a reliable, valid, and sensitive measure [63]. A global HRQoL score (the KIDSCREEN-10 Index) was also generated from 10 items of the KIDSCREEN-52 [64]. The KIDSCREEN-10 Index has also demonstrated good psychometric properties [65]. Cronbach's alphas for the present study were .95 (KIDSCREEN-52) and .86 (KIDSCREEN-10 Index). The KIDSCREEN instruments have been validated for children and adolescents in Ireland and Irish norm reference data are available [66]. Using the KIDSCREEN Group Europe's [67] scoring guidelines and software, Rasch scores were computed for each of the 10 KIDSCREEN-52 domains and the KIDSCREEN-10 Index. These were transformed into T-values with a mean of 50 and a standard deviation of 10; with higher scores indicating better HRQoL [68]. The HRQoL data were not normally distributed. Therefore, as recommended [67], scores within a range of plus / minus half a standard deviation of the mean were categorised as average. Scores below or above those thresholds were categorised as below average or above average, respectively.

Procedures

The first author met the participants to provide instructions for completion of the survey instrument. They completed a sample diary and could ask any questions arising. Thereafter, the class was assigned a weekday and weekend day to complete their diaries. Diary days were designated by the first author with the aim of being as close as possible in time to the day of initial diary distribution, in order to maximise accurate recall of activities. Participants were provided with special stickers to use as memory aides and were also encouraged to put reminders in their mobile phones and school journals. When the designated diary days had passed, a liaison teacher prompted

participants to check their diaries for accuracy and completeness. Diaries were then sealed in individual envelopes by participants to ensure privacy prior to collection by the liaison teacher.

Statistical Analysis

We aimed to identify holistic patterns, or profiles, of time spent across eight activity categories measured by the time-use diaries, and then relate any identified profiles to HRQoL. To identify time-use profiles, we used finite mixture models to model the observed multivariate distribution of weekly time-use in the eight activity categories as a function of a single, multinomial latent profile variable. Clustering of individuals was accomplished through the assumption that the time-use variables were independent, conditional on profile membership. These models thus maximise within profile homogeneity and between profile heterogeneity in the observed indicators [69] and are often referred to as latent class or latent profile models, depending on whether the indicator variables are measured categorically or continuously.

The eight observed weekly time-use variables were all continous in nature. However, four of the variables were strongly skewed and/or had a preponderance of zeros. Consequently, to simplify model estimation, we categorised each of these variables (i.e., Study, Paid Work, Housework, and Voluntary/Religious Activity) into zero/some/more time by splitting the non-zero time at the median. Weekly minutes in the remaining four time-use categories (i.e., Sleep, Self-Care, School, and Leisure) were entered as continuous variables. To aid model estimation, the continuous scores were rescaled by dividing by 100. The multivariate probability distribution for the eight variables is thus represented by 16 parameters: two thresholds for each of the 3-level categorical variables and a mean and variance for each continuous variable.

We investigated the plausibility of models specifying one to six latent profiles, thus comparing a single profile solution to a series of more complex models. For each model all 16 parameters were freely estimated within each specified profile (one to six). Separate analyses were conducted for males and females given the significant gender differences in time-use found in this sample [70] and others [71].

Relative fit indices (Akaike Information Criterion [AIC], the Bayesian Information Criterion [BIC] and the sample size-adjusted Bayesian Information Criterion [aBIC] and statistical tests were examined to determine optimal model fit. The Lo-Mendell-Rubin adjusted likelihood ratio test (LMRT) and the parametric bootstrapped likelihood ratio test (BLRT) were examined as statistical indicators of the number of profiles that best fitted the data. Finally the entropy criterion was considered. Entropy is an index that determines the accuracy of classifying people into their respective profiles, with higher values (i.e., closer to 1.0) indicating better discrimination between profiles. No one method for comparing models with differing numbers of latent profiles is widely accepted as best [72]. Indeed, in practice it is likely that there will be more than one "best" model identified across the different indices [72]. Taking precedence from Herman et al. [73] and Arbeit et al. [74] we examined all these indices but gave special weight to the BIC and BLRT as these have been found to be most accurate in determining the appropriate number of profiles [75].

Profile membership is probabilistic rather than deterministic [76]. Recent advances in statistical methods take this into account and allow for improved estimation of the relationship between latent profiles and auxiliary variables (covariates or distal outcomes) while all the time maintaining the uncertainty in profile membership [77]. Using these latest statistical methods [78, 79] the relationship between 24-hour time-use and HRQoL was examined. As the age range of the sample was well specified as the developmental stage of late adolescence [2] we did not stratify or otherwise adjust the model for age. In our previous analyses we adjusted for the unequal distribution of weekdays across the sample. However, we found that HRQoL did not differ by day of the week therefore we did not adjust for day of the week in the model. For the same reason we did not add social class as a covariate to the model.

Because of the large number of tests, a Bonferroni corrected *p*-value of .005 was applied when determining the statistical significance of the scores from the 10 domains of the KIDSCREEN-52 [80]. A *p*-value of .05 was used in the case of the KIDSCREEN-10 Index. All analyses were conducted using Mplus version 7.11 [81].

Results

Twenty weekday diaries and 20 weekend diaries were excluded as there was more than four hours time with no recorded activities. This was the quality measure used by McGinnity et al. [57] in their time-use study with Irish adults. Consistent with previous

studies [53], a further 13 weekday diaries were removed as there was less than 60 minutes recorded at school on the designated diary day. Thus the included diaries were of high quality with less than 0.005% of unspecified time recorded. Twenty-five KIDSCREEN questionnaires were incomplete. There was some overlap in the low quality diaries and incomplete KIDSCREEN questionnaires. In total, 64 questionnaires (9%) were excluded from the analyses. Therefore the LPA was performed on a sample of 311 males and 356 females. Mean age for males was 16.13 years and mean age for females was 15.91 years. Participants are profiled in Table 1.

A 3-profile solution was chosen for the males and a 2-profile solution for the females, based on lower BIC values, a BLRT with $p < 0.05$, and the interpretability of the solutions. Figures 1a and 1b show the fit indices for one to six solutions. Results of an LPA include two sets of parameters: probabilities of latent profile membership and the within-profile parameters for indicator variables. Interpretation of the latent profiles is based on these indicator parameter estimates [69]. Table 2 provides the model-estimated, profile-specific item response probabilities for categorical indicator variables by gender. Table 3a provides the estimated mean weekly minutes and standard deviations of the continuous variables for all males, all females and for each gender-specific profile, while Table 3b presents this data as daily time (hours:minutes) to aid interpretation.

The three male profiles separated into two larger groups and one smaller group. Profile one, which we labelled the *productive* group, accounted for 40% of males. They were more likely to spend more time in Study (58%), some/more time in Paid Work (53%), some/more time in Housework (47%), and less time in Leisure (3hr:26min). We labelled profile two (14%) as the *high leisure* group who had a higher probability of spending no time in Study (61%), Paid Work (94%) or Housework (75%); below average time in Sleep (7hr:55min), Self-Care (1hr:12min), School (4hr:56min); and higher than average time in Leisure (7hr:17min). The third profile (46%), which we labelled as *all-rounder*, was characterised by near average time in Sleep (8hr:37min), Self-Care (1hr:38min), School (5hr:15min), and slightly above average Leisure (5hr:38min). This group was likely to spend some time in Study (53%) and some/more time in Housework (47%).

The two female profiles had broadly similar time-use in Self-Care, School, Paid Work and Voluntary/Religious activity. The profiles separated around Sleep, Study, Leisure,

and to a lesser extent Housework. Profile one (74%) was characterised by marginally more time in Sleep (8hr:42min) and a greater likelihood of time in Housework (63%), considerably more chance of time in Study (85%) and less time in Leisure (3hr:44min), thus we labelled this group *higher study/lower leisure*. The second profile (26%), labelled *moderate study/higher leisure*, had less time in Sleep (7hr:44min), a moderate chance of spending time in Study (61%) and higher than average time in Leisure (5hr:22min). These profiles are presented in Table 4.

While taking into account the uncertainty in profile membership [77], we examined the relationship between latent profiles and HRQoL as a distal outcome using equality tests of probabilities across profiles (Table 5). Although three significant differences emerged across the male profiles, namely in the "financial resources" domain (p = .02), "social support and peers" domain (p = .02) and "school environment" domain (p = .04), these did not remain significant post Bonferroni-correction. For the females, there were three statistically significant differences in probabilities across classes, in "physical well-being" (p = .05), "autonomy" (p = .005), and global HRQoL (p = .02), with the latter two remaining significant post correction.

We then examined the likelihood of above average HRQoL across each of the profiles (Table 6). For the males, relative to the *all-rounder* group, those in the *high leisure* group had a higher chance of above average scores in "financial resources" (p = .05) while those in the *productive* group a higher chance of above average scores in "social support and peers" (p = .04). For the females, relative to the *moderate study/higher leisure profile*, the *higher study/lower leisure* group were significantly less likely to score above average in "physical well-being" (p = .05), "autonomy" (p = .01) and global HRQoL (p = .006) and more likely to score above average for "financial resources" (p = .03). Only the female global HRQoL score remained significant post Bonferroni-correction.

Discussion

We used a model-based, person-centred approach to examine adolescent 24-hour time-use and related the identified profiles to HRQoL. We successfully identified distinct male and female profiles based on the amount of time spent in eight categories of activity. We named the male profiles *productive* (40%), *high leisure* (14%) and *all-rounder* (46%) and the female profiles *higher study/lower leisure* (74%) and *moderate study/higher leisure* (26%) (Table 4).

The three male profiles identified through the LPA are similar to three of the six/seven classes identified by Shanahan and Flaherty [40] in their study of American adolescents. They found that the majority of their participants fell into the *active workers* or *active non-workers* clusters, with the latter similar in description to the *all-rounder* profile of the present study. A smaller *high leisure* cluster also emerged from Shanahan and Flaherty's [40] analysis, in which males were over-represented, in the two younger adolescent age cohorts at least. Ferrar et al. [22] questioned whether the commonalities they observed in adolescent time-use clusters, found despite substantial between-study differences, may reflect globalisation across the developed world; characteristic adolescent behaviour patterns that exist independent of geography or culture; or may be an artefact of the instruments used that measure similar behaviours.

In their systematic review Ferrar et al. [22] found that, of the six studies that conducted gender-specific clustering, different cluster patterns amongst males and females were noted in five cases. Our findings are in keeping with this trend. While there were few dramatic differences between males and females (for example the very high proportion of males in 2/3 profiles not engaged in paid work), there was no profile clearly shared by the sexes. This result further evidences the gendered nature of adolescent time-use [5, 70] and the need for gender-specific interventions to support the health and well-being of young people [82, 83].

Few statistically significant associations between time-use profiles and HRQoL emerged. The equality tests of probabilities across profiles (Table 5) clearly convey the complex relationship between time-use profiles and HRQoL for this group of young people. No unifying trends emerged. To illustrate with one of many possible examples, those in the male *high leisure* group had the highest probability for below average scores in "physical well-being" (41%), "psychological well-being" (42%), "parent relations and home life" (47%), "social support and peers" (54%), "school environment" (48%), "social acceptance" (44%) but the highest probability of the highest scores in "autonomy" (35%), "financial resources" (42%). Females in the *moderate study/lower leisure* profile had significantly higher "autonomy" scores. Looking more closely at the likelihood of above average HRQoL across profiles (Table 6), females in the *moderate study/higher leisure* group were more than twice as likely to have the above average global HRQoL compared to the *higher study/lower leisure* profile, a highly significant difference. Although not statistically significant, across the three male profiles, those in the *all-rounder* group had the highest probability of above

average global HRQoL. Our results point to the complexities of creating health in everyday patterns of doing [9]. We are inclined to interpret our findings with caution given the number of potential associations examined, the cross-sectional nature of the data and the challenge of endogeneity or residual confounding in research on adolescent development [84]. Nonetheless, those associations that were statistically significant provide some tentative support to the association, for females, between overall HRQoL and a more balanced lifestyle, defined by Matuska and Christianen [85, p. 11] as "a satisfying pattern of daily activity that is healthful, meaningful, and sustainable to an individual within the context of his or her current life circumstances". Håkansson, Dahlin-Ivanoff, and Sonn [86] posited that well-being is the outcome of balance in everyday life with such balance derived from respecting one's own values, needs, and resources; employing strategies to manage everyday life; and having a harmonious repertoire of personally meaningful daily activities. Perhaps, as Zuzanek [87, p. 220] suggested, the "middle ground" does indeed present "the most rewarding and helpful way to a life of ease and pleasure".

We recognise several limitations in the present study. Due to the cross-sectional nature of these data, the causal relationship between profile membership and HRQoL is uncertain. A response rate of 52% was achieved with no subsequent weighting for non-response, introducing the possibility of non-response bias. However, relevant studies in this areas show little evidence of bias due to non-response [55]. We have no information about those who chose not to participate in this study. We examined the HRQoL of the 64 excluded questionnaires and found only one difference between the two groups across the 11 HRQoL domains that remained significant after adjustment for multiple testing ("school environment", $p = .003$). Accounting for all 24 hours of a day is believed to reduce the potential for social desirability bias and recall errors associated with self-report data [88].

As Patnode et al. [89] noted, a different method of categorizing time-use could have resulted in a somewhat different latent profile structure. As they reported "while dichotomizing variables is an approach that is commonly applied in latent class methods and may help in the communication and application of findings there may be some loss of sensitivity that results from categorizing the data in this way" (p. 465). Furthermore, the extent of prior aggregation of time-use indicator variables influences the resultant

profiles. Although Ferrar et al.'s [22] review demonstrated that up to 18 cluster inputs had been used successfully, we encountered difficulties with model non-identification with 19 indicator variables. This potentially resulted in the lack of identification of some frequently observed time-use profiles, particularly those characterised by time spent in physical activity or screen time. Finally, an issue acknowledged in the methodological literature [90] but notably absent in empirical studies is the compositional nature of time-use data (i.e., the total time spent in activities across the day is constrained at 24-hours) [91]. While the use of log-ratio transformations [92] can be helpful, this is less so with time-use data given the preponderance of zeros. De Leeuw et al. [90] presented a latent time-budget model but this was based on data gathered from random spot observations rather than diaries and does not appear to have been utilised greatly since its publication nearly 25 years ago.

Notwithstanding these limitations, the present study reflects contemporary perspectives in adolescent health policy and research that favour strengths-based and population health approaches in understanding the lives of young people and that prioritise their self-report of health and well-being [45, 93-95]. We successfully identified distinct profiles of adolescent time-use and found some differences in HRQoL across profiles. This study thus extended the literature in a number of ways. In line with current best practice [2, 96], we focused on the defined quinary age band of late adolescence (15 - 19 years). We adopted a person-centred rather than a variable-centred approach to analysing time-use. Finite mixture models, such as LPA, use statistical probability-based models to detect latent categorical subgroups [72]. Model selection in mixture models is therefore less subjective than with algorithmic approaches as both relative fit indices and statistical tests are provided to determine which model solution fits the data better [72]. Furthermore, when using person-centred analyses, it is important to remember that individuals are not statically assigned to profiles for once and for all. Rather, as Magnusson [97, p. 17] stated, "the boundaries of many clusters are fuzzy and permeable" and a person may move from one profile to another over time. With that in mind latent profile analysis was chosen as it retains the probabilistic feature of person-centred analysis more explicitly. This more accurately reflects the complex and ever-changing lifestyles of adolescents [98]. Data were collected on adolescents' overall time-use using diary data as recommended by the UNECE [11]. Finally we used the latest statistical methods to examine the relationship between 24-hour time-use and HRQoL [77].

Our findings provide further evidence of the complexity of relationships between time-use profiles and HRQoL in adolescence. This is not surprising as the evaluation of adolescents' time allocation is recognised as only "one small piece of a much more complex inquiry" [99, p. 163]. Furthermore, it has been said that youth development is "not readily reducible to variables" [41, p. 1014]. Our results point to the need for a mix of variable-centred, person-centred and qualitative research [31, 82, 100, 101], to create a more complete picture of the many systems that comprise the complex "disorderly world" [98, p. 317] of today's adolescents. In addition, the quantitative and qualitative differences in male and female profiles support the gendered nature of adolescent time-use. Our data thus reinforce the need for health promotion and disease prevention strategies to be tailored differently for males and females [70, 82, 83]. Finally, adolescent health policies increasingly call for cross-sectoral and multi-modal interventions that address multiple risk and positive health behaviours [1, 3]. Altering overall behaviour patterns rather than behaviours in isolation may lead to greater intervention success [16, 29, 102-105]. Identifying different time-use patterns amongst adolescents, and their determinants and outcomes, may thus enable the development of tailored interventions [22, 39]. Adolescents need to be educated and supported to engage in a daily round of activities that enhance their health, meet their needs, and enable them to balance the demands of a 21st century lifestyle.

Conclusion

The health, well-being, and quality of life of the world's 1.2 billion adolescents are global priorities. A focus on their profiles of time-use and how these relate to HRQoL is necessary to enhance their well-being and address the increasing burden of non-communicable diseases. We used a model-based, person-centred approach to examine adolescent 24-hour time-use and related the identified profiles to HRQoL. We successfully identified distinct male and female profiles based on the amount of time spent in eight categories of activity. The quantitative and qualitative differences in male and female profiles support the gendered nature of adolescent time-use. No unifying trends emerged in the analysis of HRQoL domains across profiles, reinforcing the complex nature of HRQoL for this group of young people. Rich mixed-method research is required to illuminate our understanding of how quantities and qualities of time-use shape lifestyle patterns and how these can enhance the HRQoL of adolescents in the 21st century.

Ethical Standards

Ethical approval was granted by the University College Cork Research Ethics Committee of the Cork Teaching Hospitals. Therefore this study has been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments. All participants provided written consent/assent.

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Table 1

Demographic Characteristics of Sample (N = 667)

		Male n (%)	Female n (%)
		311 (47)	356 (53)
Age (years)		16.13	15.91
School Year	Transition Year	119 (38)	169 (48)
	Fifth Year	192 (62)	187 (52)
School Location	City	63 (20)	110 (31)
	County	248 (80)	246 (69)
Family Context	Two Parents	273 (88)	309 (87)
	One Parent	32 (10)	38 (11)
	Guardian/Not completed	6 (2)	9 (2)
Social Class	Higher Social Class	179 (58)	166 (47)
	Middle Social Class	90 (29)	122 (34)
	Lower Social Class	22 (7)	43 (12)
	Unknown/Not completed	20 (6)	25 (7)
Nationality	Irish	293 (94)	329 (92)
	Other	18 (6)	27 (8)

Table 2

Model-Estimated, Profile-Specific Item Response Probabilities (%) for Categorical Indicator Variables by Gender (N = 667)

Activity Category	Time	Males (n=311)			Females (n=356)	
		Productive (40%)	High Leisure (14%)	All-Rounder (46%)	Higher Study /Lower Leisure (74%)	Moderate Study / Higher Leisure (26%)
Study	No time	15	61	13	15	39
	Some time	27	33	53	35	52
	More time	58	07	34	50	09
Paid Work	No time	47	94	96	69	76
	Some time	25	03	04	16	10
	More time	28	03	00	15	14
Housework	No time	53	75	53	37	46
	Some time	26	05	28	33	22
	More time	21	20	20	30	33
Voluntary & Religious Activity	No time	77	87	70	73	87
	Some time	12	10	17	11	04
	More time	11	04	14	16	09

Note. Probabilities may not equal 100% due to rounding. Activities categorised into zero/some/more time by splitting the non-zero time at the median.

Table 3a

Estimated Mean (Standard Deviation) Weekly Minutes for Continous Indicator Variables by Latent Profile by Gender (N = 667)

Activity Category	Males (n=311)				Females (n=356)		
	All Males	**Productive (40%)**	**High Leisure (14%)**	**All-Rounder (46%)**	**All Females**	**Higher Study /Lower Leisure (74%)**	**Moderate Study / Higher Leisure (26%)**
Sleep	**3585 (475)**	3636 (438)	3324 (605)	3618 (434)	**3551 (493)**	3656 (374)	3251 (641)
Self Care	**668 (265)**	702 (303)	505 (204)	688 (224)	**789 (264)**	795 (268)	772 (250)
School	**2216 (293)**	2278 (252)	2069 (551)	2206 (176)	**2225 (289)**	2198 (316)	2301 (168)
Leisure	**2090 (775)**	1440 (427)	3062 (866)	2364 (440)	**1745 (670)**	1566 (504)	2254 (805)

Note. Weekly time in activity categories calculated by multiplying weekday time by 5 and adding to weekend time-use totals that were multiplied by 2.

Table 3b

Estimated Mean Daily Time (Hours:Minutes) for Continous Indicator Variables by Latent Profile by Gender (N = 667)

Activity Category	Males (n=311)				Females (n=356)		
	All Males	**Productive (40%)**	**High Leisure (14%)**	**All-Rounder (46%)**	**All Females**	**Higher Study /Lower Leisure (74%)**	**Moderate Study / Higher Leisure (26%)**
Sleep	**8:32**	8:39	7:55	8:37	**8:27**	8:42	7:44
Self Care	**1:35**	1:40	1:12	1:38	**1:53**	1:54	1:50
School	**5:17**	5:25	4:56	5:15	**5:18**	5:14	5:29
Leisure	**4:59**	3:26	7:17	5:38	**4:09**	3:44	5:22

Table 4

Descriptions of Male and Female Time Use Profiles (N = 667)

Gender	Time Use Profile (%)	Description
Male (n=311)	Productive (40%)	More likely to spend more time in Study (58%), some/more time in Paid Work (53%), some/more time in Housework (47%), and less time in Leisure (3hr:26min).
	High Leisure (14%)	Higher probability of spending no time in Study (61%), Paid Work (94%) or Housework (75%); below average time in Sleep (7hr:55min), Self-Care (1hr:12min), School (4hr:56min); and higher than average time in Leisure (7hr:17min).
	All-Rounder (46%)	Near average time in Sleep (8hr:37min), Self-Care (1hr:38min), School (5hr:15min), and slightly above average Leisure (5hr:38min). Likely to spend some time in Study (53%) and some/more time in Housework (47%).
Female (n=356)	Higher Study / Lower Leisure (74%)	Marginally more time in Sleep (8hr:42min) and a greater likelihood of time in Housework (63%), considerably more chance of time in Study (85%) and less time in Leisure (3hr:44min),
	Moderate Study / Higher Leisure (26%)	Less time in Sleep (7hr:44min), a moderate chance of spending time in Study (61%) and higher than average time in Leisure (5hr:22min).

Table 5

Distribution of Conditional Probabilities (%) and Equality Tests of Probabilities Across Profiles for the KIDCREEN-52 and KIDSCREEN-10 by Gender (N = 667)

		Male (n=311)				Female (n=356)		
		Productive (40%)	High Leisure (14%)	All-Rounder (46%)	*p*	Higher Study/ Lower Leisure (74%)	Moderate Study/ Lower Leisure (26%)	*p*
KIDSCREEN-52 Domains	**Physical Well-being**				.56			**.05**
	Below Average	31	41	25		36	16	
	Average	49	35	49		45	48	
	Above Average	20	25	26		20	36	
	Psychological Well-being				.63			.08
	Below Average	32	42	26		37	20	
	Average	36	29	40		28	43	
	Above Average	32	29	34		35	37	
	Moods & Emotions				.65			.37
	Below Average	31	36	23		31	22	
	Average	45	38	45		48	45	
	Above Average	24	26	32		20	33	
	Self Perception				.98			.83
	Below Average	35	37	36		24	35	
	Average	45	38	43		46	40	
	Above Average	21	24	21		30	25	
	Autonomy				.09			**.005***
	Below Average	42	31	18		34	16	
	Average	33	34	50		48	46	
	Above Average	25	35	32		18	39	
	Parent Relations & Home Life				.24			.55
	Below Average	30	47	28		35	38	
	Average	54	33	55		39	29	
	Above Average	15	20	18		26	33	
	Financial Resources				**.02**			.07
	Below Average	22	37	32		30	39	
	Average	39	21	45		33	47	
	Above Average	39	42	23		37	14	
	Social Support & Peers				**.02**			.37
	Below Average	26	54	22		37	32	
	Average	45	35	55		29	43	
	Above Average	29	10	29		34	25	
	School Environment				**.04**			.12
	Below Average	28	48	12		34	34	
	Average	51	34	55		42	27	
	Above Average	21	18	33		24	39	
	Social Acceptance				.68			.57
	Below Average	40	44	33		29	36	
	Average	23	29	32		21	29	
	Above Average	37	27	35		50	35	
KIDSCREEN-10 Index	**Global HRQoL**				.28			**.02***
	Below Average	34	45	25		38	24	
	Average	39	38	40		44	37	
	Above Average	27	17	34		18	39	

Note. Probabilities may not equal 100% due to rounding. * Remains significant after adjusting for multiple testing.

Table 6

Item-Response Probabilities (%) for Above Average HRQoL and Tests of Equality of Probabilities Across the Profiles (N = 667)

		Male (n=311)					Female (n=356)		
		Productive (40%)	**High Leisure (14%)**	**All-Rounder (46%)** [reference]	**Overall Level of Significance** (*p*-value)	**Individual Level of Significance** *(p-value)*	**Higher Study/ Lower Leisure (74%)**	**Moderate Study/ Higher Leisure (26%)** [reference]	**Overall Level of Significance** (*p*-value)
KIDSCREEN-52 Domains	Physical Well-being	20	25	26	.79		20	36	**.05**
	Psychological Well-being	32	29	34	.90		35	37	.90
	Moods & Emotions	24	26	32	.53		20	33	.20
	Self Perception	21	25	21	.91		29	27	.84
	Autonomy	24	34	33	.59		18	40	**.01**
	Parent Relations & Home Life	15	21	18	.80		26	33	.45
	Financial Resources	39	43	23	**.05**	Productive vs. All-Rounder p = .03	37	14	**.03**
	Social Support & Peers	29	10	23	**.04**	Productive vs. High Leisure p = .01	34	24	.42
	School Environment	21	19	32	.19		24	39	.09
	Social Acceptance	27	27	35	.65		50	35	.32
KIDSCREEN-10 Index	Global HRQoL	27	17	34	.15		18	40	**.006***

Note. * Remains significant after adjusting for multiple testing.

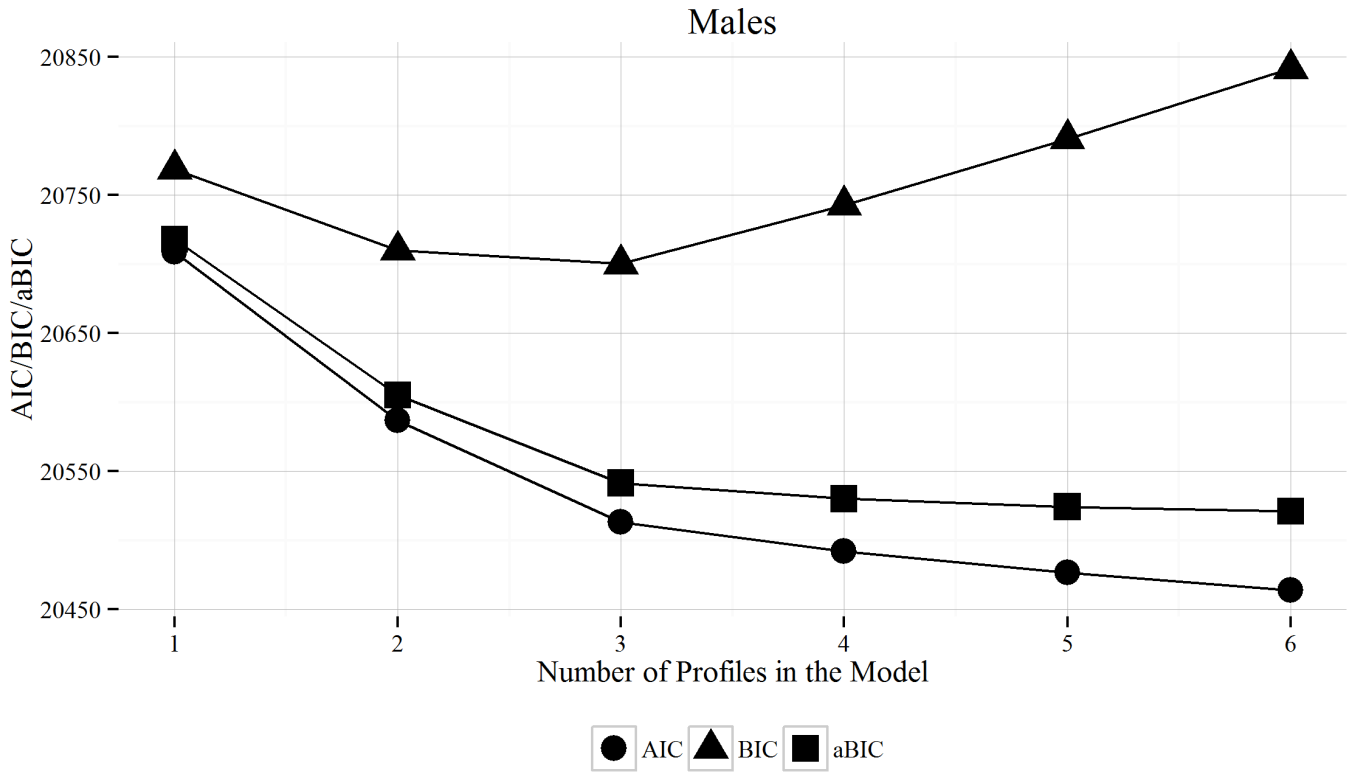


Figure 1a. Model fit indices for 1 to 6 profiles (Males)

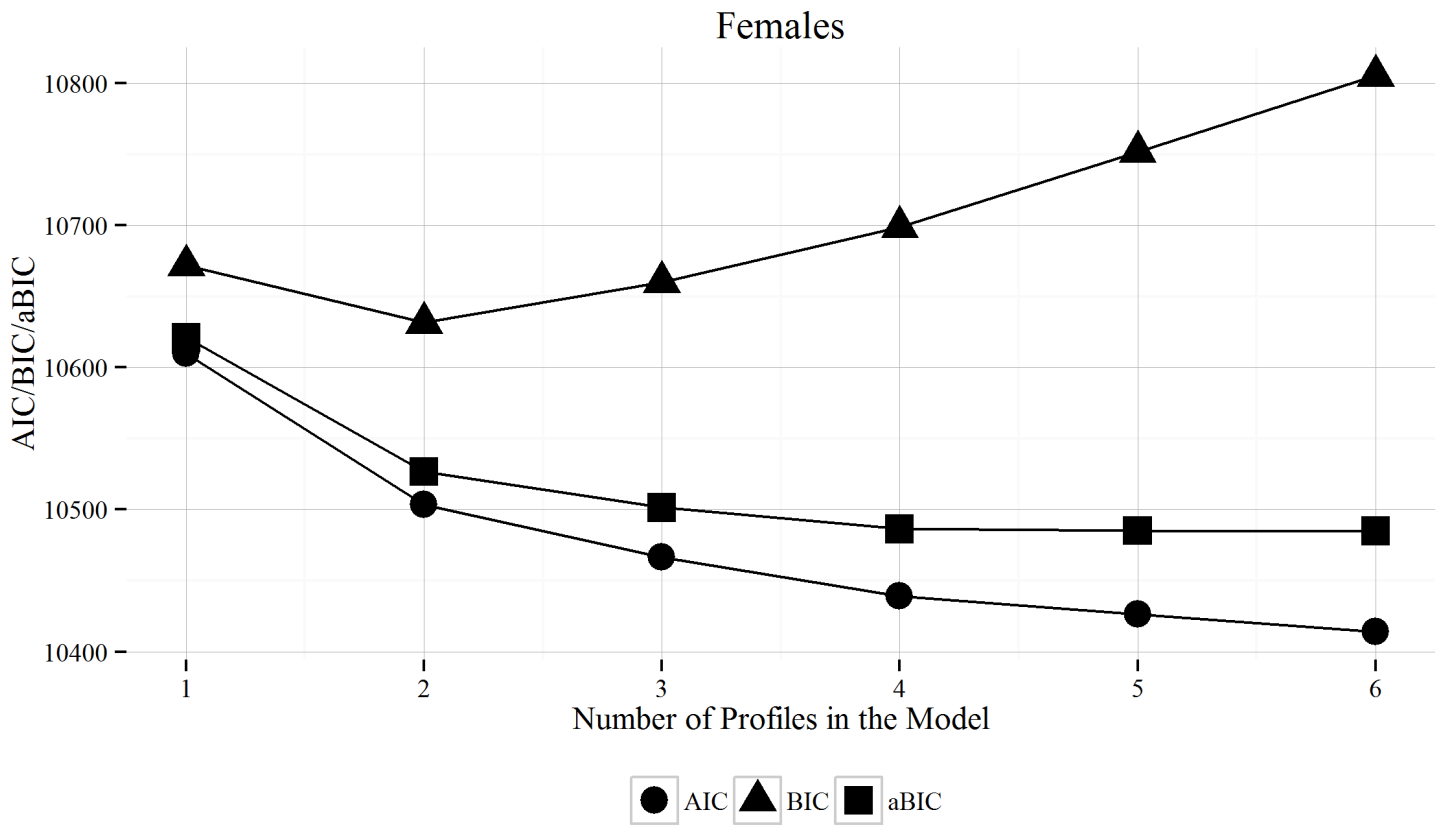


Figure 1b. Model fit indices for 1-6 profiles (Females)

What Can Be Learned from Adolescent Time Diary Research

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Abstract

Purpose: Time-use is increasingly being recognised as a determinant and indicator of adolescent well-being internationally. Three existing literature reviews of time-use research with children and adolescents have identified time-use diaries as the preferred data collection method. Furthermore, they have encouraged researchers to examine multidimensional patterns of overall time-use in large sample whole child populations in order to better understand the health, well-being, and quality of life of children and young people. However, these three existing reviews differ in the time frames covered; the age ranges targeted; the categories of time-use examined; and the time-use data collection and analysis methods used. This study aimed to map the extent and nature of time diary studies with well adolescents (aged 10 – 19 years) and the use of person-centred data analysis of overall time-use as a multidimensional unit. Finally it explores whether and how the included studies analysed the relationship between time-use and health, well-being, and quality of life.

Method: A scoping review method was employed using Arksey and O'Malley's (2005) 5-step framework.

Results: Thirty-three studies met the inclusion criteria. The majority of studies were secondary analyses of cross-sectional population-level time-use or lifestyle survey data. One third of studies (n=11) captured data representing 24 hours of the day. Two studies (6%) used person-centred analyses while six studies (18%) empirically examined time-use in relation to health and well-being. No studies examined adolescent 24-hour time-use and quality of life. ***Conclusion:*** Adolescent time-use researchers are encouraged to be explicit in identifying the stage of adolescence to which their studies relate; capture 24-hour time-use data; analyse overall activity patterns as multidimensional units using person-centred methods; and use robust reliable, valid, sensitive, and age-appropriate instruments to empirically examine time-use and health, well-being, and quality of life. Through this, healthy patterns of everyday activity for adolescents can be illuminated.

Key words: *literature review, time-use, young people, teenager*

Introduction

Around 1 in 6 persons in the world (approximately 1.2 billion people) is an adolescent aged 10 to 19 years [1]. In the last 50 years, their health has improved to a lesser extent than that of younger children [2]. In the United States (US) too, adolescent health has seen little improvement [3]. In fact, worsening mental health outcomes have been noted in the US [4] and internationally [5-7]. Consequently, the health and well-being of adolescents is now a global priority [1, 8]. There is growing international recognition of the need for targeted, holistic, multi-modal, age-appropriate preventive and clinical services for all young people, not just those who are at risk or experiencing difficulties [6, 9, 10]. There is now an emphasis on wellness rather than the prevention of poor health [11] and on "lives not just risk factors" [12, p. S126]. The promotion of healthy lifestyles amongst adolescents is particularly important [13, 14] to prevent the accelerating burden of non-communicable diseases in adulthood [15].

Time-use methodology can provide an important window onto lifestyles [16]. Recognised methods of measuring time-use include direct observation, stylized estimates (i.e., survey questions that ask people to estimate the total time they spend undertaking various activities in a specified time period), experience sampling method (ESM), time stamped/spot observations, and time diaries [17]. Basic time diaries show how people allocate their time in sequences of activities across a designated time period, usually 24 hours. Additionally, data can be collected on simultaneous activities, location, co-presence (i.e., who respondents are with) and affective states such as enjoyment, stress or boredom [18], thus enabling researchers to examine the complex, reciprocal relationships between quantities and qualities of time use, activity contexts, and health outcomes.

The time diary method is deemed best as the resultant data are more accurate and detailed than the alternatives [19, 20]. For example, although Csizszentmihalyi and Larson [21] pioneered ESM with adolescents, this method lacks detail on the total time spent over a day and the nature of activity sequences therein [19]. Furthermore, accounting for all 24 hours of a day is believed to enhance data quality by reducing the potential for reporting errors and social desirability bias among young people [22].
Detailed guidelines for the design, implementation, and analysis of time diary surveys are available [19, 23-25]. Time-use data can be collected retrospectively using a self-completed or interview-administered 'yesterday diary' (i.e., a recall diary that records the previous day's activities) or prospectively with a 'tomorrow diary' (i.e., a diary that

is left with respondents to complete over the course of a designated day in the near future) [25]. Some reports suggest that 'tomorrow diary' data are of marginally higher quality than data from 'yesterday diaries', but the difference is relatively small and may not warrant the significant difference in cost [25]. While the use of 24-hour self-complete 'tomorrow diaries' is considered best practice, given the reasonably similar estimates produced by 'yesterday' and 'tomorrow diaries', it is expected that researchers and national statistical agencies choose an approach that best meets their needs [19]. So-called 'light' diaries use pre-classified lists of activities from which respondents select the activities they were doing. Full-scale diaries require respondents to describe what they were doing in their own words [25]. These responses are then coded *post-hoc* with reference to detailed classification systems (e.g., US Bureau of Labor Statistics [26] American Time-use Survey coding scheme). With both diary formats, classification systems can be flat (i.e., a simple list of activities) or hierarchical with individual activities aggregated into broader activity categories [19]. While there is no single approved international standard classification of activities for time-use surveys [19], adolescent time-use researchers commonly use six aggregate time-use categories, namely personal needs (including sleep), school-related time, work for pay, domestic work, voluntary and religious activities, and free time [27].

Most developing and developed countries now collect time-use data as part of national statistical accounting activities [28]. Since 1990, 69 countries worldwide have conducted a time-use survey [19]. The Multinational Time-use Study at the University of Oxford in the United Kingdom (UK) [29] now includes 18 time-use datasets with diaries from young people, ranging in age from 3 - 17 years, from Europe, the US, and Israel. Additionally, countries such as Australia [30], the US [31], and Ireland [32] collect longitudinal time diary data from young people. In 2015 the UK Millennium Cohort Study [33] will collect time diary data from British 14-year-olds.

Adolescent health professionals have used time diary data to examine diverse aspects of adolescent lifestyles, for example, participation in out-of school activities [34]; sports participation [35]; part-time employment [36]; sleep [37] and electronic media use [38]. Furthermore, studies of adolescent time-use and positive indicators of health and quality of life are emerging [38-40], no doubt reflecting contemporary perspectives that endorse an ecological view of the determinants of adolescent health and well-being [1, 41] and that honour young people's subjective perspectives of their own well-being and quality of life [42, 43]. Indeed, Wallander et al. [44, p. 583] suggested that quality of life could

represent the “ultimate standard” against which to judge the impact of the varied conditions children encounter in their daily lives and society’s efforts to nurture their development. How one lives out one’s daily life is closely connected with quality of life [45]. Given that, time-use studies make an ideal contribution to the evaluation of quality of life [46].

Most studies of young people’s time-use tend to focus on a small number of discrete activities in isolation [47, 48]. However, we need to see how adolescents fill the rest of their days to contextualise these results [49], calling attention to their “...overall patterns of daily life, including sleep, eating habits, mass media consumption, extra-curricular activities, and relationships with parents and peers” [50, p. 413]. Thus *all* the activities performed by an individual in a 24-hour cycle are seen as the building blocks that create an overall pattern of time-use [51]. Moreover, the finite nature of time requires trade-offs among necessary and desired activities [52]. These tradeoffs are referred to as isotemporal substitutions [53] or activity displacements [54]. For example, it is hypothesised that screen time displaces physical activity [55, 56]. However, high levels of physical activity can coexist with high levels of sedentary behaviour [57, 58]. Therefore, unique patterns that are not represented by the aggregate-level average may be identified by person-centred rather than more traditional variable-centred approaches [59, 60]. The person-centred approach seeks to understand the person as a functioning or organised whole rather than a summation of variables [61]. Person-centred methods are growing in popularity in research on adolescent lifestyles [58, 62-65]. Importantly, person-centred analyses of adolescent time-use can more effectively portray the complexity of activity participation typical of many young people’s lives [35] and the impact on their health, well-being and quality of life [66].

To date, how young people fill their days has been the focus of three literature reviews in the last 25 years. Developmental psychologists Larson and Verma [54] conducted a widely cited review of studies of the time-use of children and adolescents aged 5 - 18 years from around the world. They examined studies that employed a variety of data collection methods to explore time spent in four aggregate categories of daily activity namely, school, paid work, housework, and leisure. Personal care, including sleep, was not included as the authors argued that these activities varied comparatively little across populations. Fifty-eight studies published between 1973 and 1999 were included in the review. The most frequently used data collection method was found to be the 24-hour time diary. The authors gave more credibility to findings of time diary studies (along

with ESM and spot observations) over stylised time-use estimates because of their high degree of accuracy.

Three years later, social workers Ben-Arieh and Ofir [47] published their review of the time-use of young people aged 0 - 18 years. Studies published between 1980 and 1999 that examined a range of activities across the day rather than discrete activities in isolation (e.g., television viewing) were included. Twenty-two studies met the inclusion criteria. Concluding their review, Ben-Arieh and Ofir [47] recommended that 24-hour diaries be used in time-use research with children and adolescents; that the focus should be on overall patterns of activity across the day; and that such studies should target the "whole child population" [p. 238] rather than smaller scale studies involving specific populations.

The third review focused exclusively on adolescent overall time-use patterns. Ferrar, Chang, Li, and Olds [57] identified 19 studies published in the last 10 years that used person-centred cluster analytic techniques to empirically describe adolescent time-use patterns, measured by a variety of methods including study specific stylised time-use estimates or established tools such as the *Self-Administered Physical Activity Checklist* [67]. Only one study used a 24-hour activity recall, the computer administered *Multimedia Activity Recall for Children and Adolescents* (MARCA) [68]. The included studies related to young people between the ages of 9 and 18 years and had a minimum of two time-use variables as cluster analysis inputs.

Clearly, the three reviews differ in the time frames covered; the age ranges targeted; the aggregate categories of time-use examined and the time-use data collection and analysis methods used. Furthermore, neither of the first two reviews sought to quantify whether or how the included studies explicitly addressed time-use and health, well-being, and quality of life. While not a primary focus of their review Ferrar, Chang, Li and Olds [57] did note that, with the exception of weight status, few health-related variables were included as correlates in the adolescent time-use cluster studies they reviewed.

The present scoping review thus extends the literature in a number of ways. It focuses on time-use studies with well adolescents aged 10 - 19 years rather than studies involving both children and adolescents. Given that time diaries are considered the most robust method of time-use data collection [19], only studies that employed time diaries to capture data across multiple aggregate categories of daily activity are included. Furthermore, it examines the extent to which such overall patterns of activity were

analysed as a multidimensional unit using person-centred analytic strategies. Finally, this review explores whether and how the included studies analysed the relationship between time-use and health, well-being, and quality of life. Both objective measures of health, such as weight status and physical fitness, and subjective positive indicators of well-being and quality of life [42, 69] are considered.

Method

A scoping review method was used to map the relevant literature. Scoping reviews are recognised as a useful way to explore the breadth of research available at a point in time in the development of evidence within a particular area; to illuminate the most common research approaches employed in the area of interest; to identify gaps in the literature; and to determine if a full systematic review is warranted [70-72]. Scoping reviews do not examine the evidence for a specific intervention [73]. Furthermore, unlike traditional systematic reviews, scoping studies do not seek to assess the quality of evidence, synthesise evidence or aggregate findings from different studies. However, scoping reviews are particularly useful when the field of interest is complex and spread across multiple disciplines; when many different study designs are employed; and when the lack of randomized controlled trials makes it difficult to undertake systematic reviews [70, 73]; as is the case in adolescent time diary research presently. In addition, scoping reviews are more time and cost effective than full systematic reviews [72]. For these reasons, a scoping review method was chosen over the more traditional systematic review method. Examples of recent scoping reviews in the field of adolescent health are presented in Table 1.

Arksey and O'Malley [70] published the original 5-step methodological framework for conducting scoping reviews. These steps are outlined below as they relate to the present scoping review.

Step one: Identifying the research question(s)

Specifically, this review sought to address the following three questions:

1. What is the extent and nature of time diary studies with well adolescents?
2. To what extent are person-centred analyses used?
3. Whether and how the identified studies examined the relationship between time-use and health, well-being and quality of life?

Step two: Identifying relevant studies

Nine databases were searched: CINAHL, EMBASE, PsycINFO, Medline, Proquest, OTDBase, PubMed, SCOPUS and Science Direct. The following keywords (singly and in combination) and phrases were used: adolescent time-use, time-use, time, time diary, time budget, daily activities, daily time-use, young people, young person, diary, time-use, time budget, yesterday diary, time studies, time utilization, daily activities, and time allocation. Truncation (i.e., the retrieval of all words with the same stem but with variant endings) was employed as follows: lifestyle*, child*, youth*, teen*, teenage*, adolescen*, as were the MeSH terms: time factors, time perceptions, time, time and motion studies, and time management. Boolean operators were used and the reference lists of key articles were reviewed.

Step three: Study selection

The review period was from 1990 to June 2011 in the first instance. The review was then updated to March 2014. Studies were selected using the inclusion and exclusion criteria detailed in Table 2.

Step four: Data charting

The data charting form captured information relating to the author(s) and year of publication; study design; the geographical location of the study; study population; sample size; the diary administration method; the number of aggregate activity categories[1] and individual activities recorded; whether the study used variable-centred or person-centred analyses; and whether the study explored the relationship between time-use and objective indicators of health or subjective health, well-being, and quality of life.

Step five: Collating, summarizing and reporting the results

Numerical analyses of the extent and nature of the studies included in the review were conducted [70] and the results are mapped in tables and figures or reported in the text. Non-numeric findings were synthesised and are presented in narrative form.

Results

Thirty-three studies published between 1990 and 2014 met the inclusion criteria for this review (These are listed alphabetically by year of publication in the Appendix). Twenty-

[1] Based on the classification traditionally used in time diary surveys and that used by Zuzanek and Mannell [27] in the CATUS project, daily activities were considered broadly representative of a 24-hour day if six aggregate time-use categories were addressed, namely personal needs (including sleep), school-related time, work for pay, domestic work, voluntary and religious activities, and free time.

nine were cross-sectional studies and four were analyses of longitudinal data. Table 3 shows the geographical distribution of the included studies. The USA and mainland Europe ranked the highest with seven studies each. In the latter case, six of the seven studies were part of a multinational adolescent time-use research project, the Comparative Study of Adolescent Time-use (CATUS) [27].

The majority of studies (n=29, 88%) were secondary analyses of existing datasets, such as national time-use datasets (n=17, 52%) or other national lifestyle datasets (n=12, 36%) that afforded large representative samples. The remaining four (12%) were smaller studies that gathered new data from small to medium size samples. Diary data collection methods included self-report paper diaries (n=17, 52%), the MARCA (n=6, 18%) and telephone or face-to-face interview administered diaries (n=10, 30%).

As evidenced in the data charting form (Appendix A) the age periods to which the studies related varied significantly. For example, some studies focused on 5 - 18 year olds while others examined time-use among 9 - 16 year olds. Those studies that were part of the CATUS project [27] primarily focused on 15 - 19 year olds.

Eleven studies (33%) captured data across six aggregate activity categories while twelve studies (36%) did so across five aggregate activity categories. Five studies each presented data across four and three aggregate activity categories. The number of individual activity codes that were used in the studies ranged from eight to 365.

Thirty-one (94%) of the studies involved variable-centred analyses of time-use. Gender differences in time-use were the focus of enquiry in six of these studies (19%). The second most common focus was changes in time-use over time (n=4, 13%). Other topics included social inequalities in time-use; daily activities and stress; time-use and travel; time-use and maternal employment; cross-national differences in time-use; and the transition to adulthood.

Two studies (6%) used person-centred analytic techniques. Ferrar, Olds, and Maher [82] used cluster analysis in their examination of Australian adolescents' (n=1,853, 9 - 16 years) multi-dimensional time-use as captured by the MARCA. Distinct sex specific time-use clusters emerged, namely *social tasker*, *techno-active,* and *techno-studious* for males and *social screenie, quiet active,* and *techno-studious* for females. Cluster associations with socio-demographic, anthropometric, health, and dietary variables were analysed. Ferrar, Olds, Maher, and Maddison [83] also used cluster analysis in their

examination of New Zealand adolescents' (n=679, 10 - 16 years) multi-dimensional time-use. Different activity patterns characterised the three female clusters (*social sporty, screenie tasker* and *super studious*) and three male clusters (*techno-active, quiet movers* and *social studious*). Weight status, diet, and ethnicity were examined as cluster correlates.

Nine studies (27%) examined time-use and objective indicators of health (Table 4). In some cases multiple indicators were used in a single study. The most frequently used indicator was weight status or body mass index (BMI). Six studies (18%) used non-standardised questions relating to subjective experiences of time pressure, boredom, happiness, satisfaction with time-use, physical fitness, and well-being. However, only two of these studies empirically examined time-use in relation to these subjective states. No studies examined adolescent 24-hour time-use and quality of life.

Discussion

The purpose of this scoping review was to map the extent and nature of time diary studies with well adolescents; to determine the extent to which person-centred analyses were used; and to explore whether and how the identified studies examined the relationship between time-use and health, well-being, and quality of life.

Extent and nature of adolescent time diary studies

Thirty-three studies met the inclusion criteria for this scoping review. The majority of studies were cross-sectional in design, thus no causal inferences can be drawn. However, there are some examples of time-use studies using longitudinal data. Copperman and Bhat [84] and Forshee, Anderson, and Storey [85] analysed time-use data from the Child Development Supplement of the longitudinal American Panel Study of Income Dynamics [31]. Longitudinal time-use studies in particular offer exciting opportunities to understand the lives and worlds of young people and unpack some of the complexities of causation and endogeneity [86] characteristic of studies of adolescent development [87]. As advocated by Larson and Verma [54] repeated studies of adolescent time-use would allow for an assessment of macro-level changes on young people's lifestyles.

The studies identified in this review are diverse in their focus of enquiry, geographical locations, and target populations. The majority of studies involved secondary analyses of existing population-level datasets. This is positive as large-scale samples of the well "whole child population" are examined [47, p. 238]. The extent of diversity in target age

ranges is a less positive finding of this review. The significant differences in age ranges make it very difficult to make comparisons across studies. Moreover, wide age bands in studies of young people may hide rich information specific to narrower developmental stages [13] and compound research and development in knowledge and service delivery in adolescent health [2, 3]. Researchers are encouraged to explicitly describe the developmental stage within adolescence to which their studies relate [2, 3, 6] by using quinary or five-year age bands, namely early adolescence (10 - 14 years), late adolescence (15 - 19 years), and young adulthood (20 - 24 years). The World Health Organisation (WHO) [88] has also recognised the need for age-specific data on young people and has made age disaggregation a standard feature of its data analysis.

The studies in this review date from 1990 to 2014, with computer administered modes of data collection naturally more evident in the last ten years. Advances in technology offer exciting opportunities to collect rich objective data on 24-hour time-use and health behaviours including physical activity and sleep [89, 90]. Given that accelerometry apps and global positioning systems (GPS) are generally available on mobile phones nowadays, future time-use surveys should capitalise on these technologies to enhance the depth and breadth of activity and location data. Indeed, such tools are more likely to appeal to current generations of young people who are more proficient users of technology and media [91], thus potentially yielding higher response rates and more accurate data. The considerable financial burden of data coding would also be largely eliminated. Naturally, the privacy issues associated with this use of technology require sensitive consideration [92].

Web-based or computer administered time-use surveys also enable faster data analysis and dissemination of findings, thus enabling contemporaneous interpretation of findings [93]. As data collection in Hunt, McKay, Fitzgerald, and Perry's study [93] took place in late 2007, the data do not reflect the widespread penetration of mobile technologies in the lives of today's adolescents [91]. Furthermore the diary instrument did not distinguish between Computer/Internet use for gaming or social networking. In 2007, the global phenomenon of social networking did not exist in the mainstream society or youth culture whereas, between March 2012 and March 2013 alone, Facebook® [94] reported an increase of 26%, or 665 million daily users, clear evidence of the challenging nature of conducting research in a "constantly changing virtual world" [95, p. 417]. This is a particularly important issue given that the daily lived experience of young people internationally confronts them with "more complex worlds, with more

contractions and challenges" than before [96, p. 1013]. The impact of technology on adolescent health requires further study [41].

Mirroring the findings of Ben-Arieh and Ofir [47] and Hagell et al. [48], a minority of studies (33%) captured data across six aggregate activity categories, broadly representing 24 hours of the day. As a result, knowledge of children's lives, activities, and time-use is incomplete [47].

Variable-centred or person-centred analyses

In addition to these calls for data collection from across the whole day, there is growing recognition of the need to analyse activity patterns as multidimensional units, that is, the overall activity pattern rather than discrete activities in isolation [48, 57, 97, 98]. This is not surprising given that "time devoted to one domain of activity takes on full meaning only when viewed in terms of its functional relation to time spent in other domains" [99, p. 386]. The relationship between lifestyles (which are largely defined by daily activities) and health and well-being is now being considered from a more macroscopic viewpoint with interest in overall patterns of daily activities [100-102]. While person-centred methods are becoming increasingly popular in research on adolescent lifestyles, these studies tend to examine discrete behaviours (e.g., physical activity, sedentary behaviour) rather than 24-hour time-use and are often based on stylised estimates of time-use rather than diary data. For example, in Ferrar, Chang, et al.'s study [57], only one of the 19 studies used data from across the 24 hours of the day as cluster inputs. The current scoping review identified only two studies (6%) that used person-centred analyses of 24-hour time-use data. Given that "the whole picture has information beyond what is contained in the separate parts" [103, p. 11], this is a significant gap in the knowledge base.

Studies of time-use and health, well-being and quality of life

Nine studies (27%) examined time-use and objective indicators of health, most frequently weight status or BMI. This is not surprising given the widespread concerns about overweight and obesity amongst children and adolescents [1, 104, 105]. The WHO [106] and governments internationally [107-110] have targeted the unhealthy physical activity behaviours of children and adolescents as a key priority to address the increasing prevalence and burden of overweight, obesity, and other non-communicable diseases. Taking a different approach to exploring time-use and objective indicators of health, by drawing where possible on national guidelines such as those from the US

National Sleep Foundation and the American Academy of Pediatricians (relating to screen time), Wight, Price, Bianchi, and Hunt [111] constructed objective measures of time-use relevant to adolescents (n=2,033, 15 - 17 year olds) well-being, such as sleep, eating, schoolwork, and television viewing, using data from the nationally representative 2003 - 2005 American Time-use Survey. Six studies examined time-use and subjective health and well-being. Non-standardised questions relating to subjective experiences of time pressure, boredom, happiness, satisfaction with time-use, physical fitness, and well-being have been used [49, 112-114], although time-use was not examined in relation to these subjective states. Although two studies attempted such analyses, using Dutch [115] and Belgian [116] time-use data, these showed only weak results and were limited by the fact that the time-use and well-being data were drawn from separate datasets [115] and used a single health indicator [116]. Moreover, residual confounding [117] may have lead to biased associations.

Thus, this review highlights the limited empirical research that has examined time-use in relation to health, well-being, and quality of life. This echoes the finding of Ferrar, Chang, Li and Olds [57] who noted that health-related variables were largely unexplored as cluster correlates with the notable exception of weight status associations which were reported in six of the 19 studies. Furthermore, these findings support Glorieux et al.'s belief [116, p. 505] that "the questionnaires accompanying time-diaries are not well suited to link activity patterns of adolescents with more sophisticated indicators of health and well-being". This review identified no evidence of the use of standardised, generic, cross-cultural instruments for the subjective measurement of positive health and well-being. This is at odds with current perspectives in adolescent health that favour strengths-based approaches to understanding the lives of young people and that prioritise their self-report of health and well-being [43, 69, 118-122]. Although quality of life is recognised as an important component in the measurement of well-being [123] no studies were identified that examined adolescent 24-hour time-use and quality of life. Reliable, valid, sensitive, and age-appropriate instruments need to be used to robustly examine time-use and health, well-being, and quality of life amongst adolescents. The inclusion of modules on self-reported well-being generally [124] and child positive well-being and quality of life indicators particularly [125] in large time-use surveys will illuminate our understanding of the bidirectional and interactive processes that occur within and between nested environmental spheres [86] and inform adolescent policy development and service provision targeting increased positive behaviours, relationships, and competencies. Therefore, the inclusion of time-use

components within larger scale representative surveys allows adolescent health researchers conduct detailed studies of the diverse influences on time-use at points in time, and in the case of longitudinal studies, across lifetimes and generations of individuals and families [28]. Research is needed on how 'the quantities and qualities of experiences in different activities act in combination' to affect adolescent development, health, well-being and quality of life [126, p. 163].

Arksey and O'Malley's [70] framework is not without its limitations, most notably the potential for lack of rigor in data charting and the absence of quality assessment of included studies [73]. However, it is generally accepted that the breadth and comprehensiveness of the scoping process needs to be balanced with feasibility [73]. Although the two authors did consult each other throughout the scoping review process, resource limitations prohibited the independent review of each of the articles. Therefore, it is possible that some bias may have been introduced. However, the rigorous application of the study inclusion and exclusion criteria minimised this risk.

Summary and Implications

This scoping review mapped the extent and nature of time diary studies with well adolescents. Thirty-three studies met the inclusion criteria. The majority of studies were secondary analyses of cross-sectional population-level time-use or lifestyle survey data. One-third of studies (n=11) captured data representing 24 hours of the day. Two studies (6%) used person-centred analyses while six studies (18%) examined time-use and health and well-being. None of the reviewed studies examined adolescent 24-hour time-use and quality of life. Individually and collectively, adolescents need to be educated and supported to create health through their everyday patterns of doing [127]. By engaging in a daily round of activities that enhances their health, well-being, and quality of life adolescents can flourish and fulfil their potential for a life of quality in the 21st century. To that end, adolescent health researchers are encouraged to consider the secondary analysis of population-level time-use datasets, in particular those that include modules on well-being [28, 124]. Furthermore, adolescent time-use researchers are encouraged to identify the stage of adolescence to which their studies relate; capture 24-hour time-use data; analyse overall activity patterns as multidimensional units using person-centred methods; and use robust, reliable, valid, sensitive, and age-appropriate instruments to empirically examine time-use in relation to health, well-being, and quality of life.

Implications and Contribution (Summary Statement)

Analysing adolescent 24-hour time diaries and standardised health, well-being, and quality of life data using person-centred methods can illuminate healthy patterns of everyday activity. By engaging in such patterns of daily activities, adolescents can enhance their health and well-being, flourish and fulfil their potential for a life of quality.

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Table 1

Recent Examples of Scoping Reviews in the Field of Adolescent Health

Topic	Author [Reference Number]
Models of transitional care for young people with complex health needs	Watson, Parr, Joyce, et al. [74]
The effect of the environment on participation of young people with disabilities	Anaby, Hand, Bradley, et al. [75]
Life quality and health in adolescents with epilepsy	Thomson, Fayed, Sedarous, Ronen [76]
Behavioural treatment recommendations in clinical practice guidelines for children with attention-deficit/hyperactivity disorder	Vallerand, Kalenchuk, McLennan [77]
Anthropometric measurements in Canadian children	Patton, McPherson [78]
Conceptual frameworks and core clinical practices around working with adolescents	Sawyer, Ambresin, Bennett, Patton [79]
Neurogenerative change following traumatic brain injury	Keightley, Sinopoli, Davis [80]
Obesity and overweight in Bangladeshi children and adolescents	Rahman, Islam, Alam [81]

Table 2

Scoping Review Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
1990 – 2014	Not primarily focused on children (e.g., 0-13 years)
Empirical data on a broad range of daily activities / multiple activity domains (3 or more aggregate activity categories)	Not clinical populations (e.g., teenagers with cerebral palsy)
Adolescent age range: 10-19 years	Not discrete activities in isolation (e.g., watching television)
Well adolescents	Not theoretical or methodological papers or literature reviews
Time diaries as data collection instrument	Not book chapters / theses / grey literature
Findings reported as actual time spent in activities	Not time use converted into metabolic equivalents (METS) or energy expenditure
Human time use	
Published in English in peer-reviewed journals	

Table 3

Geographical Distribution of Included Studies

Region	n (%)
USA	7 (21)
Mainland Europe	7 (21)
Australia	6 (18)
UK	3 (9)
Multi-region	3 (9)
Canada	2 (6)
New Zealand	1 (3)
Taiwan	1 (3)
Indonesia	1 (3)
South Africa	1 (3)
Ireland	1 (3)

Note. Percentages do not total to 100 due to rounding.

Table 4

Objective Indicators of Health in Adolescent Time Diary Studies

Objective Indicator	n (%)
Weight status or body mass index (BMI)	5 (15)
Accelerometry / pedometry	2 (6)
Physical activity intensity levels and metabolic equivalents (METS)	2 (6)
Diet	2 (6)
Health Index (presence of health conditions)	1 (3)
Salivary cortisol	1 (3)

Appendix

Scoping Review of Adolescent Time Diary Research Data Charting (N=33)

Author & Reference Number	Study Design	Study Location	Study Population	Sample Size	Secondary Dataset (if applicable)	Time Use Diary Administration Method	Primary Focus of the Study	Number of Activity Categories	Number of Activities	Relationship with objective health indicators health examined empirically	Relationship between time use and self-rated health & wellbeing examined empirically	Variable centred (VC) or person centred (PC) analyses
Hunt, McKay, Fitzgerald & Perry [93]	Cross-sectional	Ireland	15-19 years	731	n/a	Self report paper diary	Gender and social class differences in time use	6	31	No	No	VC
Ferrar, Olds, & Maher [82]	Secondary analysis of cross-sectional national survey data	Australia	9-16 years	1853	National Children's Nutrition and Physical Activity Survey	Multimedia Activity Recall for Children and Adolescents (MARCA)	Time use clusters and correlate-cluster profiles	5	17	Weight status Pedometer steps Diet Health Index (presence or absence of medical conditions)	No	PC (cluster analysis)
Ferrar, Olds, Maher, & Maddison [83]	Secondary analysis of cross-sectional national survey data	New Zealand	10-16 years	679	National Survey of Children and Young People's Physical Activity and Dietary Behaviours	MARCA	Time use clusters and associations with weight status, diet and ethnicity	5	17	Weight status Diet Accelerometry	No	PC (cluster analysis)
Roydhouse, Allman-Farinelli, McGeechan, & Olds [128]	Secondary analysis of cross-sectional national survey data	Australia	12-16 years	1532	National Children's Nutrition and Physical Activity Survey	MARCA	Active and low energy behaviour	3	39	MET	No	VC (principal component analysis)
Ferrar, Olds, Maher, & Gomersall [129]	Secondary analysis of cross-sectional national survey data	Australia	9-16 years	2071	National Children's Nutrition and Physical Activity Survey	MARCA	Social inequalities in health-related use of time	3	39	No	No	VC

Author & Reference Number	Study Design	Study Location	Study Population	Sample Size	Secondary Dataset (if applicable)	Time Use Diary Administration Method	Primary Focus of the Study	Number of Activity Categories	Number of Activities	Relationship with objective health indicators health examined empirically	Relationship between time use and self-rated health & wellbeing examined empirically	Variable centred (VC) or person centred (PC) analyses
Ferrar, Olds, & Walters [130]	Secondary analysis of cross-sectional national survey data	Australia	9-12; 13-16	2200	National Children's Nutrition and Physical Activity Survey	MARCA	Gender differences	3	39	No	No	VC
McHale, Blocklin, Walter, Davis, Almeida, & Klein [131]	Cross-sectional	USA	10-18 years	28	n/a	Telephone administered interview diary, Daily Inventory of Stressful Events – Youth Version	Daily activities and stress	4	9	Salivary cortisol	No	VC
Olds, Ferrar, Gomersall, Maher, & Walters [132]	Secondary analysis of cross-sectional national survey data	Australia	9-16 year olds		National Children's Nutrition and Physical Activity Survey	MARCA	Time use trade-offs	3	39	Weight status	No	VC
Zick [133]	Secondary analysis of two cross-sectional datasets	USA	15-17 years	1977-1978: 471 2003-2005: 562	Family Time Use Survey American Time Use Survey	Computer Administered Telephone Interview (CATI)	Changes in time use over time	5	19-400 activity codes	No	No	VC
Forshee, Anderson, & Storey [85]	Secondary analysis of longitudinal national survey data	USA	5-18 years	1459	Child Development Supplement (2003) of the US Panel Study of Income Dynamics	CATI	Family characteristics, time use and BMI	5	8 activities	BMI	No	VC
Mullan [134]	Secondary analysis of cross-sectional national survey data	UK	8-13 years 14-18 years	2104	UK Time Use Survey 2000-2001	Self report paper diary	Time use and maternal employment	4	Not reported	No	No	VC

Author & Reference Number	Study Design	Study Location	Study Population	Sample Size	Secondary Dataset (if applicable)	Time Use Diary Administration Method	Primary Focus of the Study	Number of Activity Categories	Number of Activities	Relationship with objective health indicators health examined empirically	Relationship between time use and self-rated health & wellbeing examined empirically	Variable centred (VC) or person centred (PC) analyses
Österbacka & Zick [135]	Secondary analysis of cross-sectional national survey data	Finland USA (multiregion)	15-19 years	1712	Finnish Time Use Survey 2000 American Time Use Survey 2003	CATI	Transition to adulthood in two countries	5	12	No	No	VC
Wight, Price, Bianchi, & Hunt [111]	Secondary analysis of cross-sectional national survey data	USA	15-17 years	2033	American Time Use Survey 2003	CATI	Time use with a focus on activities that may affect well-being	5	22	Sleep duration and TV viewing analysed with reference to national health guidelines.	No	VC
Hilbrecht, Zuzanek, & Mannell [114]	Cross-sectional	Canada	12-14 years 15-19 years	2154	Ontario Adolescent Time Use Study 2001-2003	Self report paper diary	Time use, time pressure and gendered behaviour	6	20	No	Feelings of time pressure measured but not examined in relation to time use.	VC
Lloyd, Grant, & Ritchie [136]	Cross-sectional	Pakistan Nicaragua Kenya India South Africa (multiregion)	12-14 years 15-16 years 17-19 years 20-21 years	Not reported	National time use datasets	Face-to-face interview administered diary	Gender differences in time use in 5 countries and implications of school enrolment	4	Not reported	No	No	VC
Copperman & Bhat [84]	Secondary analysis of longitudinal national survey data	USA	5-18 years	1970	Child Development Supplement of the US Panel Study of Income Dynamics	CATI	Activity travel patterns	5	365 activity codes	No	No	VC
Hsin [137]	Secondary analysis of longitudinal survey	Central Java, Indonesia	8-18	2928	Worker and Iron Status Evaluation	Face-to-face interview administered diary	Gender differences	4	16	No	No	VC
Sleap, Elliott, Paisi, & Reed [138]	Cross-sectional	UK	9-15 years		n/a	Self report paper diary	Lifestyles of affluent young people, physical activity	3	21	Self reported intensity levels of physical activity.	No	VC

Author & Reference Number	Study Design	Study Location	Study Population	Sample Size	Secondary Dataset (if applicable)	Time Use Diary Administration Method	Primary Focus of the Study	Number of Activity Categories	Number of Activities	Relationship with objective health indicators health examined empirically	Relationship between time use and self-rated health & wellbeing examined empirically	Variable centred (VC) or person centred (PC) analyses
Blanke & Cornelißen [139]	Secondary analysis of cross-sectional national survey data	Germany	15-19 years	1986	German Time Use Surveys 1991/1992 and 2001/2002	Self report paper diary	Gender differences	5	200+ activities	No	No	VC
Chenu & Lesnard [140]	Secondary analysis of cross-sectional national survey data	France	15-19 years	1757	French Time Use Surveys 1986 and 1998	Self report paper diary	Changes in time use over time	6	19	No	No	VC
Glorieux, Stevens & Vandeweyer [116]	Secondary analysis of cross-sectional national survey data	Belgium	12-15 years 16-19 years	750	Belgian Time Use Survey 1999	Self report paper diary	Time use and well-being	6	22	No	Yes One question on self assessed health Time use of those who rated their health as 'very good' was compared with those who rated their health as 'good' to 'very poor'	VC
Hilbrecht & Zuzanek [112]	Cross-sectional	Canada	12-19 years	2113	Ontario Adolescent Time Use Study 2001-2003	Self report paper diary	Time use, eating habits and obesity	6	Not reported	BMI	Self-rated health and physically fitness Perceived future health prospects Emotional well-being Time pressure But none of the above analysed in relation to time use	VC
Huysmans , Zeijl & van den Broek [115]	Cross-sectional	The Netherlands	15-18 years	81-250 4705	Dutch Time Use Survey 1980-2000 (5 surveys) Dutch National Survey of Students	Self report paper diary	Leisure and well-being	4	Not reported	No	Social and emotional well-being correlates drawn from a different dataset	VC

Author & Reference Number	Study Design	Study Location	Study Population	Sample Size	Secondary Dataset (if applicable)	Time Use Diary Administration Method	Primary Focus of the Study	Number of Activity Categories	Number of Activities	Relationship with objective health indicators health examined empirically	Relationship between time use and self-rated health & wellbeing examined empirically	Variable centred (VC) or person centred (PC) analyses
Pääkkönen [141]	Cross-sectional	Finland	10-18 years	Not reported	Finnish Time Use Surveys 1987-1988 and 1999-2000	Self report paper diary	Changes in time use over time	5	20	No	No	VC
Short [49]	Cross-sectional	UK	15-19 years	566	UK Time Use Survey 2000-2001	Self report paper diary	Time use, health and well-being	6	25	No	Time pressure Self rated health (single item) But the above were not analysed in relation to time use	VC
Soupourmas [142]	Cross-sectional	Australia	15-19 years	Not reported	Australian Time Use Surveys 1992 and 1997	Self report paper diary	Work, rest and leisure	6	25	No	No	VC
Vaage [113]	Cross-sectional	Norway	12-15 years 16-19 years	357 (year 2000) 238 in 1990; 160 in 2000	Norwegian Time Use Surveys 1990 and 2000	Self report paper diary	Changes in time use over time	6	23	No	Felt stressed during the day But the above not analysed in relation to time use	VC
Vernon [143]	Cross-sectional	USA	15-19 years	1356	AmericanTime Use Surveys 2003 and 2004	CATI	Contexts of adolescent development	6	24	No	No	VC
Wittenberg [144]	Cross-sectional	South Africa	12-20 years	3923	South African Time Use Survey 2000	Face-to-face interview administered diary	Lives of school-going young people	6	29	No	No	VC
Zuzanek [50]	Cross-sectional	Canada and 9 other developed industrial societies (multiregion)	15-19 years	4019	National time use surveys and Ontario Adolescent Time Use Study 2001-2003	Self report paper diary	Comparisons of time use and well-being amongst 10 countries	6	23	No	No	VC

Author & Reference Number	Study Design	Study Location	Study Population	Sample Size	Secondary Dataset (if applicable)	Time Use Diary Administration Method	Primary Focus of the Study	Number of Activity Categories	Number of Activities	Relationship with objective health indicators health examined empirically	Relationship between time use and self-rated health & wellbeing examined empirically	Variable centred (VC) or person centred (PC) analyses
Kao & Kellegrew [145]	Cross-sectional	Taiwan	13-14 years	18	7 day time diary	Self report paper diary	Gifted children, time use and self-concept	5	13	No	Multidimensional Self-Concept Scale	VC
Macek [146]	Cross-sectional	Czech Republic	13-18 years	257	Euronet Pilot Study	Self report paper diary	General focus on time use	5	17	No	No	VC
Mauldin & Meeks [147]	Secondary analysis of longitudinal national survey data	USA	3-17 years (grouped into 5 age categories)	492	1981 Time Use Longitudinal Panel Study	Self report paper diary	Gender differences	5	26	No	No	No

Note. *Studies listed in alphabetical order by year of publication. Number in square brackets corresponds to number in reference list.*

Appendix B

Appendix B

Scoping Review of Adolescent Time Diary Research Data Charting (N=33)

Author & Year	Study Design	Study Location	Study Population	Sample Size	Secondary Dataset (if applicable)	Time Use Diary Administration Method	Primary Focus of the Study	Number of Activity Categories	Number of Activities	Relationship with objective health indicators health examined empirically	Relationship between time use and self-rated health & wellbeing examined empirically	Variable centred (VC) or person centred (PC) analyses
Hunt, McKay, Fitzgerald & Perry (2014)	Cross-sectional	Ireland	15-19 years	731	n/a	Self report paper diary	Gender and social class differences in time use	6	31	No	No	VC
Ferrar, Olds, & Maher (2013)	Secondary analysis of cross-sectional national survey data	Australia	9-16 years	1853	National Children's Nutrition and Physical Activity Survey	Multimedia Activity Recall for Children and Adolescents (MARCA)	Time use clusters and correlate-cluster profiles	5	17	Weight status Pedometer steps Diet Health Index (presence or absence of medical conditions)	No	PC (cluster analysis)
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Ferrar, Olds, Maher, & Gomersall (2012)	Secondary analysis of cross-sectional national survey data	Australia	9-16 years	2071	National Children's Nutrition and Physical Activity Survey	MARCA	Social inequalities in health-related use of time	3	39	No	No	VC

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Short (2005)	Cross-sectional	UK	15-19 years	566	UK Time Use Survey 2000-2001	Self report paper diary	Time use, health and well-being	6	25	No	Time pressure Self rated health (single item) But the above were not analysed in relation to time use	VC
Soupourmas (2005)	Cross-sectional	Australia	15-19 years	Not reported	Australian Time Use Surveys 1992 and 1997	Self report paper diary	Work, rest and leisure	6	25	No	No	VC
Vaage (2005)	Cross-sectional	Norway	12-15 years 16-19 years	357 (year 2000) 238 in 1990; 160 in 2000	Norwegian Time Use Surveys 1990 and 2000	Self report paper diary	Changes in time use over time	6	23	No	Felt stressed during the day But the above not analysed in relation to time use	VC
Vernon (2005)	Cross-sectional	USA	15-19 years	1356	AmericanTime Use Surveys 2003 and 2004	CATI	Contexts of adolescent development	6	24	No	No	VC
Wittenberg (2005)	Cross-sectional	South Africa	12-20 years	3923	South African Time Use Survey 2000	Face-to-face interview administered diary	Lives of school-going young people	6	29	No	No	VC
Zuzanek (2005)	Cross-sectional	Canada and 9 other developed industrial societies (multiregion)	15-19 years	4019	National time use surveys and Ontario Adolescent Time Use Study 2001-2003	Self report paper diary	Comparisons of time use and well-being amongst 10 countries	6	23	No	No	VC

Author & Year	Study Design	Study Location	Study Population	Sample Size	Secondary Dataset (if applicable)	Time Use Diary Administration Method	Primary Focus of the Study	Number of Activity Categories	Number of Activities	Relationship with objective health indicators health examined empirically	Relationship between time use and self-rated health & wellbeing examined empirically	Variable centred (VC) or person centred (PC) analyses
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Macek (1996)	Cross-sectional	Czech Republic	13-18 years	257	Euronet Pilot Study	Self report paper diary	General focus on time use	5	17	No	No	VC
Mauldin & Meeks (1990)	Secondary analysis of longitudinal national survey data	USA	3-17 years (grouped into 5 age categories)	492	1981 Time Use Longitudinal Panel Study	Self report paper diary	Gender differences	5	26	No	No	No

Note. *Studies listed in alphabetical order by year of publication.*

Appendix C

RESEARCH PROJECT on

YOUNG PEOPLE'S TIME USE AND WELL-BEING

Eithne Hunt
Department of Occupational Therapy,
University College Cork



Early Feedback

February 2008

Further Information

If you would like any more information about this research project, please contact Eithne Hunt at the Department of Occupational Therapy, UCC [021-4901531 / e.hunt@ucc.ie].

About This Research Project

- This study was designed to gather important information on how young people in Cork city and county spend their time and the relationship with their health and wellbeing.
- 1413 Transition Year and Fifth Year students from 28 Cork city and county schools were invited to participate in this study.
- 1049 students agreed to complete the survey and were present on the day that the questionnaire was handed out. This is 74% of all the students who were invited to be involved.
- 890 questionnaires were returned. This is 85% of the people who took a questionnaire.
- The school visits took place between September and December 2007.

Thank You

Thank you very much to all the principals, teachers and parents for supporting this research project.

Even bigger thanks go to all the students who took the time to fill in the questionnaires so carefully and honestly. Your participation really did count.

Some Students' Comments

Many students wrote positive comments about the questionnaire. Some wrote that it helped them have a better idea of how they spend their time and whether or not they were happy with this. Some wrote that they didn't realise how much time they spent watching TV, for example.

A number of students wrote that they felt there was not enough for young people to do around where they live.

Some students wrote that it can be difficult to find time for everything – school and study, sports and friends and perhaps part time jobs. A number of students wrote that they had to give up sports activities to make time for study.

Some students wrote that they were very happy with their lives. Others wrote that daily life can be stressful at times, trying to cope with different activities and demands, and sometimes having to cope with difficulties with family and friends; health problems or the death of loved ones.

Want More Information or Support?

For lots of useful information on young peoples' health and lifestyles, visit www.spunout.ie or www.youth.ie

'Headsup' is a free text information service for young people on all mobile phone networks. By texting 'Headsup' to 50424, you can receive, direct to your mobile, up-to-date and accurate contact numbers for organisations that will provide support and practical advice 24-hours a day.

Everyone goes through difficult times at different stages in their lives. If you are going through a difficult time at the moment, it's good to talk to your family and friends. If you would find it easier to talk to someone else, there are lots of contact numbers on the websites listed above.

Don't forget, if you need to talk to someone at anytime of the day or night, you can freephone Childline on 1800 666 666.

What Happens Now?

All of the school visits are now complete. Over the next few months, I will be putting the questionnaire responses into the computer and looking at the results. I will send a summary of the results to your school as soon as I can. This will probably be sometime in the school year 2008-2009.

Thank you again for making this research project possible! ☺

Eithne Hunt

Appendix D

RESEARCH PROJECT ON YOUNG PEOPLE'S TIME-USE AND WELL-BEING

INFORMATION FOR STUDENTS on ADVISORY GROUP

You are being asked to participate in a research project. In order to decide whether or not you want to be a part of this research project, you should understand enough about its risks and benefits to make an informed judgement. This process is known as informed consent. This consent form gives detailed information about the research study, which will be discussed with you. Once you understand the study, you will be asked to sign a form if you wish to participate.

About The Person Who Is Doing This Research Project

Eithne Hunt qualified as an Occupational Therapist in Trinity College Dublin in 1997. She worked for six years with young people with mental health difficulties, in Dublin and Cork. In 2003 she took up a lecturing job in University College Cork where she now lectures first year Occupational Therapy students about the relationship between daily occupations and health and well-being.

In January 2006, she registered as a part time PhD student at UCC. In her research, she is combining her interest in promoting the health and wellbeing of young people, and learning more about how young people spend their time in daily occupations. Her supervisors are Professor Susan Ryan, Department of Occupational Therapy, UCC and Professor Ivan Perry, Department of Epidemiology and Public Health, UCC.

About This Research Project

The aim of this project is to examine Irish young people's time use and participation in daily occupations, and the relationship with their health and wellbeing. Adolescent time use has been examined by researchers internationally since the 1980's. In 2005, a time use study of Irish adults was carried out. Up to now, there have been no studies like this carried out with Irish adolescents.

The first part of this project will be a survey of adolescents' time use and well-being. This will give a lot of interesting information. For the second part of the project, Eithne will invite some groups of young people to discuss some of the findings and give their opinions and thoughts about them. This is important because young people are the experts on their own lives.

However, before Eithne carries out the survey and discussion groups, she wants to set up a group of young people who will advise her about different aspects of her research project, for example to review the design and wording of information leaflets / questionnaires to make sure they are suitable and appealing for people your age. The government has a policy that young people should be involved in matters that affect them, such as research projects.

Permission

The Clinical Research Ethics Committee of the Cork Teaching Hospitals has approved this study. Your School Principal has also given permission to set up an advisory group in your school.

What You Will Be Asked To Do If You Decide To Be Involved

There will be about 8-10 people of your age in the advisory group. There will be about four meetings over the school year, probably lasting 40-60 minutes. The timing, duration and venue for the meetings will be agreed with school staff and group participants.

With your permission, Eithne will audiotape the group discussion. She will then type up what was said, without identifying any names or information about particular students. These typed notes of the discussions will be available to the group members.

Some Possible Good Things and Not So Good Things About This Study

Overall, this project will give important information on the daily lives of adolescents in Ireland, and their health and well-being. This will be helpful for people who are involved in the lives of people your age, including your parents and school-teachers. It will be interesting for people involved in improving services for young people, including people in health and education services, and people in government. It should also be interesting for you!

Sometimes talking in a group when people have different views and opinions can be difficult. It is important to know that there are no right or wrong opinions - all opinions are welcome. Eithne has worked with groups of young people for ten years and will make sure that everyone in the group is treated fairly and with respect.

Voluntary Participation

Participation in the discussion groups is entirely voluntary. It is your free choice. If you decide not to participate, or if you withdraw, you will not be penalised in any way. Your participation is much appreciated.

Confidentiality

Some quotes or sections of the discussion will be used in the final research report. Your name or any identifying information about you will not be used at any time in writing or talking about this project. The information gathered in this project will be included in a written report that will be stored in the library at University College Cork. Eithne may write or talk about this project for educational purposes but will always show confidentiality and respect for you.

Further Information

If you have any questions concerning this research, please feel free to contact Eithne Hunt, who will do her best to answer your questions. You can also contact the Clinical Research Ethics Committee of the Cork Teaching Hospitals, Lancaster Hall, 6 Little Hanover Street, Cork [Tel: (021) 4901901].

Thank you very much for taking the time to read this information. I hope you will consider being part of this new and exciting research project.

Eithne Hunt,
Department of Occupational Therapy,
Brookfield Health Sciences Complex,
University College Cork,
College Road,
Cork.
Tel: (021) 4901531
Email: e.hunt@ucc.ie



5th October 2006

Dear Parent,

I am an occupational therapist with a clinical background in child and adolescent mental health. In May 2003, I joined the Department of Occupational Therapy at UCC, where I currently lecture on and coordinate the first year of the four-year undergraduate programme.

In January 2006, I registered as a part time PhD student. My supervisors are Professor Susan Ryan, Occupational Therapy and Professor Ivan Perry, Epidemiology and Public Health. For my research I am interested in building on my previous research and clinical work with adolescents. I am planning to conduct a study of Cork school-going adolescents' [Transition and Fifth Year] time use and the relationship with health and well-being. There is much published work on this subject internationally but no information available in Ireland. My ultimate aim is to develop an occupation-based healthy lifestyle module for delivery in the senior cycle Social and Personal Health Education [SPHE] programme. The information gained as part of the PhD study will lay the foundation for this I hope. My research study has been granted ethical approval by the UCC Clinical Research Ethics Committee of the Cork Teaching Hospitals.

An important component of the overall study is the establishment of an advisory group of young people with whom I will consult at various stages throughout the study. This is in keeping with the National Children's Office [2005] policy document *'Young Voices – Guidelines on how to involve Children and Young People in Your Work'*, which emphasises participation of young people in issues that affect them. [Please refer to the blue handout attached for detailed information on the advisory group.] In recognition of [redacted] status as a Health Promoting School, and given its commitment to Social and Personal Health Education, I approached the school in May 2006 to explore whether the school would consider being a host site for the advisory group. I am delighted that [redacted] [Principal], [redacted] [SPHE Coordinator] and [redacted] [Transition Year Coordinator] have lent their permission and support to this advisory group.

Yesterday, I met with all Transition Year Students to discuss the proposed advisory group and to invite volunteer participants. Many students volunteered and ten names were drawn at random. Your son / daughter was selected in this way. In order to proceed, it is important to share information about the advisory group with you and secure your written consent, along with that of your child. **We would like to invite you to attend a brief meeting to share this information and answer any questions you may have. The proposed meeting date and time is**

_____ at the school.

Thank you very much for taking the time to read this letter. We hope you will be able to attend and look forward to meeting you. If you require any information or clarification prior to the meeting, please don't hesitate to contact me at 021-4901531 or e.hunt@ucc.ie, or the school staff.

Yours sincerely,

_____

Eithne Hunt

RESEARCH PROJECT ON YOUNG PEOPLE'S TIME USE AND WELL-BEING

INFORMATION FOR PARENTS on ADVISORY GROUP

Your son / daughter is being asked to participate in a research project. In order to decide whether or not you want him / her be a part of this research project, you should understand enough about its risks and benefits to make an informed judgement. This process is known as informed consent. This consent form gives detailed information about the research study, which will be discussed with you. Once you understand the study, you will be asked to sign a form if you wish for your son / daughter to participate. He / she will also be required to give written consent.

About The Researcher

Eithne Hunt qualified as an Occupational Therapist in Trinity College Dublin in 1997. She worked for six years with young people with mental health difficulties, in Dublin and Cork. In 2003 she took up a lecturing job in University College Cork where she now coordinates and lectures on the first year undergraduate Occupational Therapy programme which focuses on the relationship between daily occupations and health.

In January 2006, she registered as a part time PhD student at UCC. In her research, she is combining her interest in promoting the health and wellbeing of young people, and learning more about how young people spend their time in daily occupations. Her supervisors are Professor Susan Ryan, Department of Occupational Therapy, UCC and Professor Ivan Perry, Department of Epidemiology and Public Health, UCC.

About This Research Project

The aim of this doctoral project is to examine Irish young people's time use and participation in daily occupations, and the relationship with their health and wellbeing. Adolescent time use has been examined by researchers internationally since the 1980's. In 2005, a time use study of Irish adults was carried out. Up to now, there have been no such studies conducted with Irish adolescents.

In the first phase of the study, a diary of a weekday and weekend will be used to gather time use information, along with a questionnaire to measure health and well-being. In the second phase, discussion groups will be conducted with young people to explore their views on the data that have emerged from phase one.

As part of the study, it is planned to establish an advisory group of young people with whom the researcher can consult at various stages throughout the study. This is in keeping with the National Children's Office [2005] policy document *'Young Voices – Guidelines on how to involve Children and Young People in Your Work'*, which emphasises participation of young people in issues that affect them. It is envisaged that this group may best suit Transition Year students, with 8-10 student volunteers being sought. The number of meetings, timing and venue will all be agreed with the staff and students involved. Approximately four meetings over a given academic year are likely to take place, each lasting in the region of 40-60 minutes.

Permission

The Clinical Research Ethics Committee of the Cork Teaching Hospitals has approved this study. The School Principal has given permission to host the advisory group in your child's school.

What Advisory Group Participants Will Be Required To Do

Participants will advise the researcher on different aspects of her research project, for example reviewing the design and wording of information leaflets / questionnaires to make sure they are suitable and appealing for people their own age.

With permission, the researcher will audiotape the group discussion. She will then type up what was said, without identifying any names or information about particular students. These typed notes of the discussions will be available to the group members.

Potential Benefits and Risks

This study will be the first of its kind to be conducted in Ireland and will provide important information on the daily lives of Irish adolescents, and their health and well-being. It will contribute to the growing international body of knowledge on adolescent time use, health and wellbeing. It will have significance for policy makers and providers in health and education, and for the recipients and consumers of these services - the large number of young people in Irish society. With this knowledge, adolescents can be educated and supported to engage in a daily round of occupations that enhance their health, meet their needs and enable them to balance the demands of a 21st century lifestyle.

The establishment of the advisory group is seen as a particularly important component of this research project. It honours young people as experts in their own right and will give them a voice in matters that affect them.

Group discussions may give rise to negative group interactions. The establishment of clear group guidelines will help to minimise this. Additionally, the researcher has ten years direct experience of facilitating groups with young people and will be able to draw on this expertise in moderating the group discussions.

Voluntary Participation

Participation in this project is entirely voluntary. A decision not to participate, or a subsequent withdrawal from the project will not be penalised in any way.

Confidentiality

Some quotes or sections of the discussion will be used in the final research report. Your child's name or any identifying information about your child will not be used at any time in writing or talking about this project. The information gathered in this project will be included in a written report that will be stored in the library at University College Cork. The researcher may write or talk about this project for educational purposes but will always show confidentiality and respect for participants.

Further Information

If you have any questions concerning this research, please feel free to contact Eithne Hunt at the number below. You can also contact the Clinical Research Ethics Committee of the Cork Teaching Hospitals, Lancaster Hall, 6 Little Hanover Street, Cork [Tel: (021) 4901901].

Thank you very much for taking the time to read this information. I hope you and your child will consider being part of this new and exciting research project.

Eithne Hunt,
Department of Occupational Therapy,
Brookfield Health Sciences Complex,
University College Cork,
College Road,
Cork.
Tel: (021) 4901531
Email: e.hunt@ucc.ie

RESEARCH PROJECT ON YOUNG PEOPLE'S TIME USE AND WELL-BEING

PARENT AND STUDENT CONSENT TO PARTICIPATE IN ADVISORY GROUP

1. This research project has been explained to me as fully as possible.
2. I have been given a copy of written information about this project.
3. I have had the opportunity to ask questions about any and all aspects of the project.
4. I am aware that my participation is voluntary and that I may withdraw from the project at any time, without any negative consequences.
5. I am aware that my decision not to participate or to withdraw will not restrict my access to educational services normally available to me.
6. I understand that I will receive a copy of this consent form for my records and that a copy will be given to my school.
7. I consent to the group discussions being audiotaped. I understand that some quotes or sections of the discussion will be used in the final research report but no names or identifying information will be included.
8. Confidentiality of all records and information concerning my involvement in this project will be maintained in an appropriate manner.
9. I understand that the information gathered in this study will form the basis for a written thesis that will be stored in the library at University College Cork.
10. I understand that the researcher may write or talk about this study for educational purposes but will always show confidentiality and respect for me.
11. I understand that if I have any questions concerning this research, I can contact Eithne Hunt [e.hunt@ucc.ie / 021-4901531]. If I have further queries concerning my rights in connection with the research, I can contact the Clinical Research Ethics Committee of the Cork Teaching Hospitals, Lancaster Hall, 6 Little Hanover Street, Cork.

I, the undersigned, hereby consent to my child's participation in the above project.

Signature of Parent or Guardian:

Witnessed by:

Date:

I, the undersigned, hereby consent to participate in the above project.

Signature of Student Participant:

Witnessed by:

Date:

Appendix E

ucc
University College Cork



Certificate of Participation

This certificate has been awarded to

_____

in recognition of participation in the Advisory Group for the

Survey on Young People's Time Use and Well-being

Researcher

March 2007

ucc
University College Cork



Certificate of Participation

This certificate has been awarded to

_____

in recognition of participation in the

Survey on Young People's Time Use and Well-being

_____
Researcher

December 2007

Appendix F

UCC
Tel: +353-21-490 1901
Fax: +353-21-490 1919

Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland

COISTE EITICE UM THAIGHDE CLINICIÚIL
Clinical Research Ethics Committee

Lancaster Hall,
6 Little Hanover Street,
Cork,
Ireland.

Our Ref: ECM 4 (a) 10/10/06

20th September 2006

Ms Eithne Hunt
College Lecturer
Room G24
Brookfield Health Sciences Complex
University College Cork
College Road
Cork

Re: Daily occupations, time use and subjective well-being of Irish adolescents.

Dear Ms Hunt

Chairman's approval is granted to carry out the above study at the following site:

- Selected second level schools in Cork

The Chairman approved the following documents:

- Protocol
- Appendix 1 - Advisory group parent information, student information and consent Form
- Appendix 2 - Survey parent information, student information and consent form
- Appendix 3 - Discussion group parent information, student information and consent form
- Appendix 4 - Draft diary instrument, and supplemental questions
- Appendix 5 - KIDSCREEN-52 Instrument
- Appendix 6 - Sample of Growing Up in Australia Diary

We note the following Co-investigators will be involved:

- Professor Susan Ryan
- Professor Ivan Perry

Yours sincerely

Dr Michael Hyland
Chairman
Clinical Research Ethics Committee
of the Cork Teaching Hospitals

Appendix G



19th May 2006

[redacted]

Dear [redacted],

I was speaking on the phone during the week with [redacted], SPHE Regional Development Officer, who gave your name to me. She mentioned the strong commitment to SPHE within your school.

I am an occupational therapist with a clinical background in child and adolescent mental health. On qualifying from Trinity College Dublin in 1997, I worked in St. John of God Hospital in Dublin for four years before moving to a senior Occupational Therapy post in the Southern Health Board Child and Adolescent Psychiatry service. In May 2003, I joined the new Department of Occupational Therapy at UCC, where I currently lecture on and coordinate the first year of the four-year undergraduate programme.

In January of this year, I registered as a part time PhD student. My supervisors are Professor Susan Ryan, Occupational Therapy and Professor Ivan Perry, Epidemiology and Public Health. For my research I am interested in building on my previous research and clinical work with adolescents. I am planning to conduct a study of Cork and Kerry school-going adolescents' [Transition and Fifth Year] time use and the relationship with health and well-being. There is much published work on this subject internationally but no information available in Ireland. My ultimate aim is to develop an occupation-based healthy lifestyle module for delivery in the senior cycle Social and Personal Health Education programme. The information gained as part of the PhD study will lay the foundation for this I hope.

In the first phase of the study, I plan to use a time diary of a weekday and weekend to gather the time use information. I have permission to use the KIDSCREEN instrument to measure subjective well-being. The KIDSCREEN instruments are a family of generic quality of life measures that have been designed and normed for children and adolescents aged between 8 to 18 years. It was developed simultaneously in several European countries, including Ireland, taking children's concepts of health and well-being into consideration. In the second phase, I plan to conduct focus groups with young people to explore their views on the data that have emerged from phase one. I plan to apply for ethical approval for the study at the end of the Summer and hope to pilot in Autumn 2006 and gather phase one data in Spring 2007.

.../...

.../...

As part of the study, I am keen to establish an advisory group of young people with whom I can consult at various stages throughout the study. This is in keeping with the National Children's Office [2005] policy document *'Young Voices – Guidelines on how to involve Children and Young People in Your Work'*, which emphasises participation of young people in issues that affect them. I envisage that this group may best suit Transition Year students, with 8-10 student volunteers being invited to give a commitment of one year. The number of meetings, timing and venue will all be agreed with the staff and students involved. I envisage 3-5 lunchtime meetings over a given academic year. Guidelines will be drawn up regarding the advisory group and student and parental consent will be sought.

Given the strong commitment to Social and Personal Health Education in your school, I wondered if your school would consider being the host site for the advisory group? I understand that this is a very busy time in the school calendar but I wanted to make initial contact with you to put forward the idea before the Summer holidays. I am on leave from today until 15th June 2006. When I get back, I would be delighted to speak with you in person to discuss in more detail and answer any queries you may have.

Thank you for taking to time to read this letter.

Yours sincerely,

Eithne Hunt, MSc., PgDipStat., BSc.(Hons.)OT
College Lecturer

Tel.: 021-4901531
Email: e.hunt@ucc.ie

Appendix H

Appendix H


COUNTING ON YOU
10
Please remember to fill in your diary!

Appendix I



1st May 2007

[redacted],
Principal.
[redacted]

Dear [redacted],

Thank you very much to you and your colleagues [redacted] and [redacted] for facilitating me in convening an advisory group of students from Transition Year at [redacted] for the purpose of my PhD research. It was a great pleasure working with the students this year. They are very confidant, articulate and outgoing young people. The students each received a certificate of participation in acknowledgement of their valuable contribution. [redacted] and [redacted] could not have been more helpful. I have written to them in person to thank them also.

If I can ever be of any assistance to the school, please do not hesitate to contact me. My number at work is 021-4901531.

Yours sincerely,

Eithne Hunt, MSc., PgDipStat., BSc.(Hons.)OT
College Lecturer

Tel.: 021-4901531
Email: e.hunt@ucc.ie

Appendix J



25th September 2007

Dear [redacted],

Thank you very much for your telephone call on 18th September 2007.

As agreed, I will be at your school on Tuesday 2nd October 2007 at 2.30pm to meet [redacted] and the students in [redacted].

I will distribute information and consent forms to the students. This takes about **5-10 minutes per class group. Class teachers are asked to collect the completed consent forms from the students the following day.**

I will return on Wednesday 10th October 2007 at 10.40am to distribute the questionnaire to [redacted] and 11.55am to distribute the questionnaire to [redacted].

On that day, I will go through instructions for completing the questionnaire and students will fill in some practice diary pages. I will then distribute the proper questionnaire and students will complete part of it in class. They complete the remainder in their own time and bring in to school for collection. **This visit takes about 35-40 minutes per class group.**

It is requested that the class teacher remains in the classroom during both visits as this helps to ensure that students give their maximum attention.

I will phone the school a few days before each visit to re-confirm.

Thank you once again for your valued support and assistance. I look forward to visiting your school. If you need to contact me in the meantime my telephone numbers are 021 4901531 / 087 6766442 and email is e.hunt@ucc.ie.

Yours sincerely,

Eithne Hunt, MSc., PgDipStat., BSc.(Hons.)OT

cc. [redacted]

Questionnaires due back:



Teacher: Class:

RESEARCH PROJECT ON YOUNG PEOPLE'S TIME USE AND WELL-BEING

FINAL STEPS

Your students are completing diaries for the following days:

	Diary Day 1	Diary Day 2
Transition Year		
Fifth Year		

- If possible, [and if applicable] this Friday, please remind your students to fill in their weekend diary.
- If possible, please take a moment with your class on the collection day to ask them to check that they have completed all parts of the questionnaire.
- Students can then place their questionnaire in the envelope provided.
- I will collect the questionnaires from the school office at the following time: _____

Thank you very much for all your invaluable help with this research project.

Eithne Hunt



Dear

Thank you very much for facilitating this research project on young people's time use and wellbeing.

As agreed with you and your colleagues, I will be at the school at the times indicated below to distribute the questionnaire.

Transition Year: _____
Fifth Year: _____

I would be grateful if you could ensure that all students who wish to be involved have **returned a completed consent form**.

On that day, I will go through instructions for completing the questionnaire and students will fill in some practice diary pages. I will then distribute the proper questionnaire and students will complete part of it in class. They complete the remainder in their own time on their designated weekend diary day.

As discussed, this visit will take **one class period with Transition Year group** and **one class period with the Fifth Year group**.

It is requested that the class teacher remains in the classroom for this time as this helps to ensure that students give their maximum attention.

Please do not hesitate to contact me if you require any further information. My telephone number is 021-4901531.

I look forward to my next visit to your school.

Yours sincerely,

_____
Eithne Hunt

Survey of Adolescent Time Use and Wellbeing



School:			
Class:			
Teacher Name:			
	Day	Date	Time
Distribute Information and Consent Forms			
Collection of Consent Forms			
Distribute Instructions and Diary Questionnaires			
Diary Day One			
Diary Day Two			
Check/ Collect Completed Diary Questionnaires			

If you have any queries at any time, please do not hesitate to contact Eithne at 021 4901531 or e.hunt@ucc.ie.
THANK YOU

Appendix K

SURVEY OF ADOLESCENT TIME USE AND WELLBEING

Time Use and Wellbeing



In 2005, the Irish Economic and Social Research Institute conducted the first ever survey of how Irish adults spend their time.

Unlike most developed countries throughout the world, Ireland does not have information on how young people spend their time.

Health promoting and health compromising behaviours initiated during adolescence often continue throughout the life-course, making this a critical period for integration and investment.

Important determinants of adolescents' health and wellbeing are embedded in young people's daily behaviour, as reflected in their time use.

About the Study

- This study will gather important information on how young people in Cork city and county spend their time and the relationship with their health and wellbeing.
- The project is being supervised by Professor Susan Ryan [Occupational Therapy, UCC] and Professor Ivan Perry [Epidemiology and Public Health, UCC].
- The study has received ethical approval from the UCC Clinical Research Ethics Committee of the Cork Teaching Hospitals.
- A random sample of schools in Cork city and county will be invited to participate.
- One Transition Year class and one 5th Year class from each school is being sought.
- Parent and student written consent are required.
- Participants will be required to keep a diary of a prescribed weekday and weekend day, and also complete a questionnaire on their health and wellbeing.
- Each diary takes about 15 minutes to complete.
- Diaries are completed at intervals throughout the day.
- A sample size in the region of 1000 students is required.
- It is hoped that data collection will take place during term time in Autumn 2007.

What young people from Cork have said about this study

'will help people understand where adolescents are coming from and what they do with their time'

'will benefit young people in the future... inform government about how we spend time.. help plan facilities..'

'lets the government know how adolescents feel under pressure with exams and extr activities'

About the Researcher

Eithne Hunt studied Occupational Therapy at Trinity College Dublin and worked in the area of adolescer mental health in hospital-based and community services in Dublin and Cork for six years. She no lectures in Occupational Therapy at UCC. For her PhD, she is combining her clinical background and h interest in understanding the relationship between daily activities and wellbeing.

If you would like more information about this study, Eithne will be delighted to speak with you. She ca be contacted at 021 4901531 / e.hunt@ucc.ie - **THANK YOU**

Appendix L

SURVEY OF ADOLESCENT TIME USE AND WELL-BEING

What young people from Cork have said about this study

"It will help people understand where adolescents are coming from and what they do with their time"

"It will benefit young people in the future ... inform government about how we spend time ... help plan facilities"

"It lets the government know how adolescents feel under pressure with exams and extra activities"

"I thought it was fun to do"



For office use only

SchID:	
SchLoc:	
Schtype:	
SchYear:	
StudID:	

C O N F I D E N T I A L

- Thank you for participating in this study. This study will gather important information on how young people in Cork city and county spend their time and the relationship with their health and well-being.
- In this questionnaire booklet, you will find your diaries, along with some questions about you, and your health and well-being. Each diary should take about 15 minutes to fill out – you can fill it out now and then during your diary days.
- Instructions for how to complete each part of this booklet are provided at the beginning of each section.
- Please take a few moments to read these instructions carefully before starting to fill in your answers.
- The information you give will be kept private by the researcher.
- Remember, please complete all parts of the questionnaire booklet as best you can.

Thank you very much!

If you have any questions, you can contact Eithne Hunt at 021 490 1531, e.hunt@ucc.ie

ABOUT YOU

1 **Are you**

Male ☐ Female ☐

2 **How old are you?** ☐

3 **What year are you in at school?** Please tick one box

Transition Year ☐ Fifth year ☐

4 **What is your nationality?** Irish ☐ British ☐ Polish ☐ Nigerian ☐

Other, please specify_____

5 **If you live at home, with whom do you live?** Please tick all that apply

Mother ☐ Step mother ☐ Brother(s) ☐ Guardian ☐

Father ☐ Step father ☐ Sister(s) ☐ Other _____

ABOUT YOU (continued)

6 **Do you have your own bedroom?** Yes ☐ No ☐

7 **How many TVs are in your family home?** ☐

8 **How many personal computers [including laptops] are in your family home?** ☐

9 **Do you have a TV in your bedroom?** Yes ☐ No ☐

10 **Do you have a personal computer in your bedroom?** Yes ☐ No ☐

11 **Do you get pocket money each week?** Yes ☐ No ☐

If yes, how much € _____

12 **What is the current employment status of (a) your father and (b) your mother?**
Please tick one box for mother and one box for father.

	(a) Father	(b) Mother
At work (full-time)	☐	☐
At work (part-time)	☐	☐
Unemployed	☐	☐
Retired	☐	☐
Full-time in home duties	☐	☐
Parent not present/deceased	☐	☐

Other (please specify) _____

13 **Please describe your parents' jobs in the spaces below**
Please describe exactly what they do: e.g. bank manager, teacher, factory worker, nurse, not in paid employment, unemployed, don't know etc.

Father: _____

Mother: _____

ABOUT YOU (continued)

14 Do you currently have a part-time paid job outside school hours?
Please count any work you do for pay, no matter how irregular it might be. A part-time job means any job for pay (including babysitting, working in a shop, pub or restaurant, working in a factory and so on).

Yes ☐ No ☐

[If no, please continue to page 5.]

15 How many hours per week do you usually work (a) during the week and (b) at the weekends

If you have more than one job, please give the total number of hours you work.

(a) During the week _____ hours per week

(b) At weekends _____ hours per week

16 What kind of work were you involved in during these times?
Please tick one box

- ☐ Large shop or supermarket
- ☐ Petrol station
- ☐ Small shop
- ☐ Pub / off-licence
- ☐ Restaurant / fast food
- ☐ Factory
- ☐ Baby-sitting

Other, please describe _____

17 How much do you usually get paid into your hand per week on the weeks when you work?

€ _____

18 Do you pay TAX or PRSI on your part-time earnings?
Please tick one box

- ☐ Yes
- ☐ No
- ☐ Don't know

DIARY INSTRUCTIONS

In the next section of this booklet, you will see a sample diary page and two blank diaries. The two blank diaries are exactly the same – please use one for your weekday diary and the other for your weekend day diary.

Remember to fill in your diaries on the set days given to you and your classmates.

To fill in each diary

The aim of each diary is to show what you were doing for each 15 minutes in the day in question. Please take it with you and fill it out now and then during the day.

The diary starts at 4am, and continues for a full 24 hours.

- A number of activities are listed down the side of the page. The timeslots are listed across the top of the page. Starting at 4am, look down through the list of activities and identify the one you are doing for each time slot.
- We are particularly interested in your main activity during each 15 minute period. For each main activity, mark what you were doing with a tick ✓ in each time slot.
- If you were doing two things at the same time, put a star ✱ in the second activity time slot.
- If you were doing more than two things, decide which two activities demanded most attention. **Please only record a maximum of two activities [one main and one second] in each time slot.**
- If you make a mistake, please just cross it out or erase it.
- Sometimes it is difficult to decide which category an activity falls into. If this is the case, tick the box that comes closest to what you were doing.
- **Please make sure that you have some activity ticked for every 15 minutes.**
- **When you have finished the diary at the end of each day, please answer the short questions about that diary day.**

Take a few minutes now to look at the sample diary on the next page.

SAMPLE DIARY PAGE

At 8pm, this girl has a shower which takes nearly 30 minutes so she ticks the two timeslots for personal care from 8.00 – 8.30pm. She then watches TV for an hour with her family until 9.30pm. This is her main activity so she ticks these four timeslots. But at the same time she was also texting a friend so she puts a star in the timeslot for 'talking on the phone, texting'. From 9.30 – 10.30pm she listens to some music in her bedroom so there are four ticks in these timeslots. She then reads [main activity = ✓] and sends some more texts [second activity = ✱] until 10.45pm. She goes to the toilet and brushes her teeth and is asleep by 11pm.

Activity Group	Activity Code		EVENING																	
			8:00 pm				9:00 pm				10:00 pm				11:00 pm					
			15	30	45		15	30	45		15	30	45		15	30	45			
PERSONAL NEEDS	1	SLEEPING													✓	✓	✓	✓		
	2	PERSONAL CARE e.g. washing, dressing, toilet	✓	✓									✓							
	3	EATING / DRINKING / HAVING A MEAL																		
SCHOOL AND STUDY	4	ATTENDING CLASS AND CLASS / SCHOOL RELATED ACTIVITIES e.g. talks, canteen duty etc.																		
	5	EATING / DRINKING AT SCHOOL																		
	6	DOING HOMEWORK / STUDYING AT SCHOOL																		
	7	TRAVELLING TO AND FROM SCHOOL																		
	8	DOING HOMEWORK / STUDYING AT HOME																		
PAID WORK	9	PAID EMPLOYMENT including overtime and work from home. Excluding lunch and other breaks																		
	10	TRAVELLING TO AND FROM WORK																		
	11	BREAKS FROM WORK including teabreaks and lunch etc.																		
HOUSEWORK AND OTHER HOUSEHOLD TASKS	12	DOING HOUSEWORK e.g. washing dishes, tidying bedroom etc																		
	13	SHOPPING, ERRANDS & APPOINTMENTS getting messages, hairdressers, visiting doctor, including travel to and from shops / appointments																		
	14	CARING FOR OTHERS children or elderly person at home or elsewhere																		
VOLUNTARY AND RELIGIOUS ACTIVITY	15	VOLUNTARY ACTIVITY for a charitable organisation, sports club or other organisation including meetings & informal helping outside the home																		
	16	RELIGIOUS ACTIVITY Attending religious services, prayer																		
LEISURE AND FREE TIME ACTIVITIES	17	EXTRACURRICULAR ACTIVITIES any after-school club or activity																		
	18	HANGING AROUND WITH FRIENDS, BOYFRIEND / GIRLFRIEND																		
	19	SOCIALISING WITH FAMILY at home or elsewhere																		
	20	TALKING ON PHONE, TEXTING			✱	✱	✱	✱					✱							
	21	GOING OUT including going to cafes, bars, restaurants, nightclubs																		
	22	SHOPPING FOR PLEASURE																		
	23	ATTENDING CINEMA / THEATRE / CONCERTS																		
	24	PLAYING SPORTS, EXERCISE & PHYSICAL ACTIVITY e.g. playing football, walking the dog, skateboarding																		
	25	COMPUTER / INTERNET for personal use, including games console, surfing the net, email, BeBo / My Space, shopping online																		
	26	HOBBIES / OTHER LEISURE ACTIVITIES e.g. music lessons / playing instruments, crafts, other games																		
	27	WATCHING TV and videos / DVDs			✓	✓	✓	✓												
	28	LISTENING to radio or music							✓	✓	✓	✓								
	29	READING books, magazines or newspapers											✓							
	30	TRAVELLING outside of work / school																		
	31	RESTING / RELAXING doing nothing, 'time out'																		

Please record the date for **THIS** diary day.

Day:

[day / month / year]

DIARY 1

Activity Group	Activity Code		EARLY MORNING															
			4:00 am				5:00 am				6:00 am				7:00 am			
			15	30	45		15	30	45		15	30	45		15	30	45	
PERSONAL NEEDS	1	SLEEPING																
	2	PERSONAL CARE e.g. washing, dressing, toilet																
	3	EATING / DRINKING / HAVING A MEAL																
SCHOOL AND STUDY	4	ATTENDING CLASS AND CLASS / SCHOOL RELATED ACTIVITIES e.g. talks, canteen duty etc.																
	5	EATING / DRINKING AT SCHOOL																
	6	DOING HOMEWORK / STUDYING AT SCHOOL																
	7	TRAVELLING TO AND FROM SCHOOL																
	8	DOING HOMEWORK / STUDYING AT HOME																
PAID WORK	9	PAID EMPLOYMENT including overtime and work from home. Excluding lunch and other breaks																
	10	TRAVELLING TO AND FROM WORK																
	11	BREAKS FROM WORK including teabreaks and lunch etc.																
HOUSEWORK AND OTHER HOUSEHOLD TASKS	12	DOING HOUSEWORK e.g. washing dishes, tidying bedroom etc																
	13	SHOPPING, ERRANDS & APPOINTMENTS getting messages, hairdressers, visiting doctor, including travel to and from shops / appointments																
	14	CARING FOR OTHERS children or elderly person at home or elsewhere																
VOLUNTARY AND RELIGIOUS ACTIVITY	15	VOLUNTARY ACTIVITY for a charitable organisation, sports club or other organisation including meetings & informal helping outside the home																
	16	RELIGIOUS ACTIVITY Attending religious services, prayer																
LEISURE AND FREE TIME ACTIVITIES	17	EXTRACURRICULAR ACTIVITIES any after-school club or activity																
	18	HANGING AROUND WITH FRIENDS, BOYFRIEND / GIRLFRIEND																
	19	SOCIALISING WITH FAMILY at home or elsewhere																
	20	TALKING ON PHONE, TEXTING																
	21	GOING OUT including going to cafes, bars, restaurants, nightclubs																
	22	SHOPPING FOR PLEASURE																
	23	ATTENDING CINEMA / THEATRE / CONCERTS																
	24	PLAYING SPORTS, EXERCISE & PHYSICAL ACTIVITY e.g. playing football, walking the dog, skateboarding																
	25	COMPUTER / INTERNET for personal use, including games console, surfing the net, email, BeBo / My Space, shopping online																
	26	HOBBIES / OTHER LEISURE ACTIVITIES e.g. music lessons / playing instruments, crafts, other games																
	27	WATCHING TV and videos / DVDs																
	28	LISTENING to radio or music																
	29	READING books, magazines or newspapers																
	30	TRAVELLING outside of work / school																
	31	RESTING / RELAXING doing nothing, 'time out'																

DIARY 1

MID-MORNING

8:00 am				9:00 am				10:00 am				11:00 am					Activity Code
	15	30	45		15	30	45		15	30	45		15	30	45		
																SLEEPING	1
																PERSONAL CARE e.g. washing, dressing, toilet	2
																EATING / DRINKING / HAVING A MEAL	3
																ATTENDING CLASS AND CLASS / SCHOOL RELATED ACTIVITIES e.g. talks, canteen duty etc.	4
																EATING / DRINKING AT SCHOOL	5
																DOING HOMEWORK / STUDYING AT SCHOOL	6
																TRAVELLING TO AND FROM SCHOOL	7
																DOING HOMEWORK / STUDYING AT HOME	8
																PAID EMPLOYMENT including overtime and work from home. Excluding lunch and other breaks	9
																TRAVELLING TO AND FROM WORK	10
																BREAKS FROM WORK including teabreaks and lunch etc.	11
																DOING HOUSEWORK washing dishes, tidying bedroom etc	12
																SHOPPING, ERRANDS & APPOINTMENTS getting messages, hairdressers, visiting doctor, including travel to and from shops/appointments	13
																CARING FOR OTHERS children or elderly person at home or elsewhere	14
																VOLUNTARY ACTIVITY for a charitable organisation, sports club or other organisation including meetings & informal helping outside the home	15
																RELIGIOUS ACTIVITY Attending religious services, prayer	16
																EXTRACURRICULAR ACTIVITIES any after-school club or activity	17
																HANGING AROUND WITH FRIENDS, BOYFRIEND / GIRLFRIEND	18
																SOCIALISING WITH FAMILY at home or elsewhere	19
																TALKING ON PHONE, TEXTING	20
																GOING OUT including going to cafes, bars, restaurants, nightclubs	21
																SHOPPING FOR PLEASURE	22
																ATTENDING CINEMA / THEATRE / CONCERTS	23
																PLAYING SPORTS, EXERCISE & PHYSICAL ACTIVITY e.g. playing football, walking the dog, skateboarding	24
																COMPUTER / INTERNET for personal use, including games console, surfing the net, email, BeBo / My Space, shopping online	25
																HOBBIES / OTHER LEISURE ACTIVITIES e.g. music lessons / playing instruments, crafts, other games	26
																WATCHING TV and videos/DVDs	27
																LISTENING to radio or music	28
																READING books, magazines or newspapers	29
																TRAVELLING outside of work / school	30
																RESTING / RELAXING doing nothing, 'time out'	31

DIARY 1

Activity Group	Activity Code		AFTERNOON															
			12:00 pm				1:00 pm				2:00 pm				3:00 pm			
			15	30	45		15	30	45		15	30	45		15	30	45	
PERSONAL NEEDS	1	SLEEPING																
	2	PERSONAL CARE e.g. washing, dressing, toilet																
	3	EATING / DRINKING / HAVING A MEAL																
SCHOOL AND STUDY	4	ATTENDING CLASS AND CLASS / SCHOOL RELATED ACTIVITIES e.g. talks, canteen duty etc.																
	5	EATING / DRINKING AT SCHOOL																
	6	DOING HOMEWORK / STUDYING AT SCHOOL																
	7	TRAVELLING TO AND FROM SCHOOL																
	8	DOING HOMEWORK / STUDYING AT HOME																
PAID WORK	9	PAID EMPLOYMENT including overtime and work from home. Excluding lunch and other breaks																
	10	TRAVELLING TO AND FROM WORK																
	11	BREAKS FROM WORK including teabreaks and lunch etc.																
HOUSEWORK AND OTHER HOUSEHOLD TASKS	12	DOING HOUSEWORK e.g. washing dishes, tidying bedroom etc																
	13	SHOPPING, ERRANDS & APPOINTMENTS getting messages, hairdressers, visiting doctor, including travel to and from shops / appointments																
	14	CARING FOR OTHERS children or elderly person at home or elsewhere																
VOLUNTARY AND RELIGIOUS ACTIVITY	15	VOLUNTARY ACTIVITY for a charitable organisation, sports club or other organisation including meetings & informal helping outside the home																
	16	RELIGIOUS ACTIVITY Attending religious services, prayer																
LEISURE AND FREE TIME ACTIVITIES	17	EXTRACURRICULAR ACTIVITIES any after-school club or activity																
	18	HANGING AROUND WITH FRIENDS, BOYFRIEND / GIRLFRIEND																
	19	SOCIALISING WITH FAMILY at home or elsewhere																
	20	TALKING ON PHONE, TEXTING																
	21	GOING OUT including going to cafes, bars, restaurants, nightclubs																
	22	SHOPPING FOR PLEASURE																
	23	ATTENDING CINEMA / THEATRE / CONCERTS																
	24	PLAYING SPORTS, EXERCISE & PHYSICAL ACTIVITY e.g. playing football, walking the dog, skateboarding																
	25	COMPUTER / INTERNET for personal use, including games console, surfing the net, email, BeBo / My Space, shopping online																
	26	HOBBIES / OTHER LEISURE ACTIVITIES e.g. music lessons / playing instruments, crafts, other games																
	27	WATCHING TV and videos / DVDs																
	28	LISTENING to radio or music																
	29	READING books, magazines or newspapers																
	30	TRAVELLING outside of work / school																
	31	RESTING / RELAXING doing nothing, 'time out'																

DIARY 1

EARLY EVENING

4:00 pm				5:00 pm				6:00 pm				7:00 pm					Activity Code
15	30	45		15	30	45		15	30	45		15	30	45			
																SLEEPING	1
																PERSONAL CARE e.g. washing, dressing, toilet	2
																EATING / DRINKING / HAVING A MEAL	3
																ATTENDING CLASS AND CLASS / SCHOOL RELATED ACTIVITIES e.g. talks, canteen duty etc.	4
																EATING / DRINKING AT SCHOOL	5
																DOING HOMEWORK / STUDYING AT SCHOOL	6
																TRAVELLING TO AND FROM SCHOOL	7
																DOING HOMEWORK / STUDYING AT HOME	8
																PAID EMPLOYMENT including overtime and work from home. Excluding lunch and other breaks	9
																TRAVELLING TO AND FROM WORK	10
																BREAKS FROM WORK including teabreaks and lunch etc.	11
																DOING HOUSEWORK washing dishes, tidying bedroom etc	12
																SHOPPING, ERRANDS & APPOINTMENTS getting messages, hairdressers, visiting doctor, including travel to and from shops/appointments	13
																CARING FOR OTHERS children or elderly person at home or elsewhere	14
																VOLUNTARY ACTIVITY for a charitable organisation, sports club or other organisation including meetings & informal helping outside the home	15
																RELIGIOUS ACTIVITY Attending religious services, prayer	16
																EXTRACURRICULAR ACTIVITIES any after-school club or activity	17
																HANGING AROUND WITH FRIENDS, BOYFRIEND / GIRLFRIEND	18
																SOCIALISING WITH FAMILY at home or elsewhere	19
																TALKING ON PHONE, TEXTING	20
																GOING OUT including going to cafes, bars, restaurants, nightclubs	21
																SHOPPING FOR PLEASURE	22
																ATTENDING CINEMA / THEATRE / CONCERTS	23
																PLAYING SPORTS, EXERCISE & PHYSICAL ACTIVITY e.g. playing football, walking the dog, skateboarding	24
																COMPUTER / INTERNET for personal use, including games console, surfing the net, email, BeBo / My Space, shopping online	25
																HOBBIES / OTHER LEISURE ACTIVITIES e.g. music lessons / playing instruments, crafts, other games	26
																WATCHING TV and videos/DVDs	27
																LISTENING to radio or music	28
																READING books, magazines or newspapers	29
																TRAVELLING outside of work / school	30
																RESTING / RELAXING doing nothing, 'time out'	31

DIARY 1

Activity Group	Activity Code		EVENING															
			8:00 pm				9:00 pm				10:00 pm				11:00 pm			
			15	30	45		15	30	45		15	30	45		15	30	45	
PERSONAL NEEDS	1	SLEEPING																
	2	PERSONAL CARE e.g. washing, dressing, toilet																
	3	EATING / DRINKING / HAVING A MEAL																
SCHOOL AND STUDY	4	ATTENDING CLASS AND CLASS / SCHOOL RELATED ACTIVITIES e.g. talks, canteen duty etc.																
	5	EATING / DRINKING AT SCHOOL																
	6	DOING HOMEWORK / STUDYING AT SCHOOL																
	7	TRAVELLING TO AND FROM SCHOOL																
	8	DOING HOMEWORK / STUDYING AT HOME																
PAID WORK	9	PAID EMPLOYMENT including overtime and work from home. Excluding lunch and other breaks																
	10	TRAVELLING TO AND FROM WORK																
	11	BREAKS FROM WORK including teabreaks and lunch etc.																
HOUSEWORK AND OTHER HOUSEHOLD TASKS	12	DOING HOUSEWORK e.g. washing dishes, tidying bedroom etc																
	13	SHOPPING, ERRANDS & APPOINTMENTS getting messages, hairdressers, visiting doctor, including travel to and from shops / appointments																
	14	CARING FOR OTHERS children or elderly person at home or elsewhere																
VOLUNTARY AND RELIGIOUS ACTIVITY	15	VOLUNTARY ACTIVITY for a charitable organisation, sports club or other organisation including meetings & informal helping outside the home																
	16	RELIGIOUS ACTIVITY Attending religious services, prayer																
LEISURE AND FREE TIME ACTIVITIES	17	EXTRACURRICULAR ACTIVITIES any after-school club or activity																
	18	HANGING AROUND WITH FRIENDS, BOYFRIEND / GIRLFRIEND																
	19	SOCIALISING WITH FAMILY at home or elsewhere																
	20	TALKING ON PHONE, TEXTING																
	21	GOING OUT including going to cafes, bars, restaurants, nightclubs																
	22	SHOPPING FOR PLEASURE																
	23	ATTENDING CINEMA / THEATRE / CONCERTS																
	24	PLAYING SPORTS, EXERCISE & PHYSICAL ACTIVITY e.g. playing football, walking the dog, skateboarding																
	25	COMPUTER / INTERNET for personal use, including games console, surfing the net, email, BeBo / My Space, shopping online																
	26	HOBBIES / OTHER LEISURE ACTIVITIES e.g. music lessons / playing instruments, crafts, other games																
	27	WATCHING TV and videos / DVDs																
	28	LISTENING to radio or music																
	29	READING books, magazines or newspapers																
	30	TRAVELLING outside of work / school																
	31	RESTING / RELAXING doing nothing, 'time out'																

DIARY 1

NIGHT																	Activity Code
12:00 am	15	30	45	1:00 am	15	30	45	2:00 am	15	30	45	3:00 am	15	30	45		
																SLEEPING	**1**
																PERSONAL CARE e.g. washing, dressing, toilet	**2**
																EATING / DRINKING / HAVING A MEAL	**3**
																ATTENDING CLASS AND CLASS / SCHOOL RELATED ACTIVITIES e.g. talks, canteen duty etc.	**4**
																EATING / DRINKING AT SCHOOL	**5**
																DOING HOMEWORK / STUDYING AT SCHOOL	**6**
																TRAVELLING TO AND FROM SCHOOL	**7**
																DOING HOMEWORK / STUDYING AT HOME	**8**
																PAID EMPLOYMENT including overtime and work from home. Excluding lunch and other breaks	**9**
																TRAVELLING TO AND FROM WORK	**10**
																BREAKS FROM WORK including teabreaks and lunch etc.	**11**
																DOING HOUSEWORK washing dishes, tidying bedroom etc	**12**
																SHOPPING, ERRANDS & APPOINTMENTS getting messages, hairdressers, visiting doctor, including travel to and from shops/appointments	**13**
																CARING FOR OTHERS children or elderly person at home or elsewhere	**14**
																VOLUNTARY ACTIVITY for a charitable organisation, sports club or other organisation including meetings & informal helping outside the home	**15**
																RELIGIOUS ACTIVITY Attending religious services, prayer	**16**
																EXTRACURRICULAR ACTIVITIES any after-school club or activity	**17**
																HANGING AROUND WITH FRIENDS, BOYFRIEND / GIRLFRIEND	**18**
																SOCIALISING WITH FAMILY at home or elsewhere	**19**
																TALKING ON PHONE, TEXTING	**20**
																GOING OUT including going to cafes, bars, restaurants, nightclubs	**21**
																SHOPPING FOR PLEASURE	**22**
																ATTENDING CINEMA / THEATRE / CONCERTS	**23**
																PLAYING SPORTS, EXERCISE & PHYSICAL ACTIVITY e.g. playing football, walking the dog, skateboarding	**24**
																COMPUTER / INTERNET for personal use, including games console, surfing the net, email, BeBo / My Space, shopping online	**25**
																HOBBIES / OTHER LEISURE ACTIVITIES e.g. music lessons / playing instruments, crafts, other games	**26**
																WATCHING TV and videos/DVDs	**27**
																LISTENING to radio or music	**28**
																READING books, magazines or newspapers	**29**
																TRAVELLING outside of work / school	**30**
																RESTING / RELAXING doing nothing, ‘time out’	**31**

ABOUT YOUR DIARY DAY

Please answer these questions about **THIS** diary day.

1 **How long did it take you to fill in this diary?** Please tick one box

- ☐ Less than 10 minutes
- ☐ Between 10 and 20 minutes
- ☐ Between 20 and 30 minutes
- ☐ More than 30 minutes

2 **When did you fill in this diary?** Please tick one box

- ☐ Now and then during the diary day
- ☐ At the end of the diary day
- ☐ The day after the diary day
- ☐ At a later time

3 **Was this diary day unusual in any way?** (e.g. you or a family member was sick; school holiday; you were travelling etc.) If yes, in what way was it unusual?

☐ No ☐ Yes, please describe

_____

_____

_____

_____

4 **Did you have any problems filling out the diary / questionnaire?**

☐ No ☐ Yes, please describe

_____

_____

_____

_____

5 **Were there any activities which you feel were not covered in the list?**

☐ No ☐ Yes, please describe.

_____

_____

_____

_____

Please record the date for **THIS** diary day.

Day:

[day / month / year]

DIARY 2

Activity Group	Activity Code		EARLY MORNING															
			4:00 am				5:00 am				6:00 am				7:00 am			
			15	30	45		15	30	45		15	30	45		15	30	45	
PERSONAL NEEDS	1	SLEEPING																
	2	PERSONAL CARE e.g. washing, dressing, toilet																
	3	EATING / DRINKING / HAVING A MEAL																
SCHOOL AND STUDY	4	ATTENDING CLASS AND CLASS / SCHOOL RELATED ACTIVITIES e.g. talks, canteen duty etc.																
	5	EATING / DRINKING AT SCHOOL																
	6	DOING HOMEWORK / STUDYING AT SCHOOL																
	7	TRAVELLING TO AND FROM SCHOOL																
	8	DOING HOMEWORK / STUDYING AT HOME																
PAID WORK	9	PAID EMPLOYMENT including overtime and work from home. Excluding lunch and other breaks																
	10	TRAVELLING TO AND FROM WORK																
	11	BREAKS FROM WORK including teabreaks and lunch etc.																
HOUSEWORK AND OTHER HOUSEHOLD TASKS	12	DOING HOUSEWORK e.g. washing dishes, tidying bedroom etc																
	13	SHOPPING, ERRANDS & APPOINTMENTS getting messages, hairdressers, visiting doctor, including travel to and from shops / appointments																
	14	CARING FOR OTHERS children or elderly person at home or elsewhere																
VOLUNTARY AND RELIGIOUS ACTIVITY	15	VOLUNTARY ACTIVITY for a charitable organisation, sports club or other organisation including meetings & informal helping outside the home																
	16	RELIGIOUS ACTIVITY Attending religious services, prayer																
LEISURE AND FREE TIME ACTIVITIES	17	EXTRACURRICULAR ACTIVITIES any after-school club or activity																
	18	HANGING AROUND WITH FRIENDS, BOYFRIEND / GIRLFRIEND																
	19	SOCIALISING WITH FAMILY at home or elsewhere																
	20	TALKING ON PHONE, TEXTING																
	21	GOING OUT including going to cafes, bars, restaurants, nightclubs																
	22	SHOPPING FOR PLEASURE																
	23	ATTENDING CINEMA / THEATRE / CONCERTS																
	24	PLAYING SPORTS, EXERCISE & PHYSICAL ACTIVITY e.g. playing football, walking the dog, skateboarding																
	25	COMPUTER / INTERNET for personal use, including games console, surfing the net, email, BeBo / My Space, shopping online																
	26	HOBBIES / OTHER LEISURE ACTIVITIES e.g. music lessons / playing instruments, crafts, other games																
	27	WATCHING TV and videos / DVDs																
	28	LISTENING to radio or music																
	29	READING books, magazines or newspapers																
	30	TRAVELLING outside of work / school																
	31	RESTING / RELAXING doing nothing, 'time out'																

DIARY 2

MID-MORNING

8:00 am 15 30 45 | 9:00 am 15 30 45 | 10:00 am 15 30 45 | 11:00 am 15 30 45

	Activity Code
SLEEPING	1
PERSONAL CARE e.g. washing, dressing, toilet	2
EATING / DRINKING / HAVING A MEAL	3
ATTENDING CLASS AND CLASS / SCHOOL RELATED ACTIVITIES e.g. talks, canteen duty etc.	4
EATING / DRINKING AT SCHOOL	5
DOING HOMEWORK / STUDYING AT SCHOOL	6
TRAVELLING TO AND FROM SCHOOL	7
DOING HOMEWORK / STUDYING AT HOME	8
PAID EMPLOYMENT including overtime and work from home. Excluding lunch and other breaks	9
TRAVELLING TO AND FROM WORK	10
BREAKS FROM WORK including teabreaks and lunch etc.	11
DOING HOUSEWORK washing dishes, tidying bedroom etc	12
SHOPPING, ERRANDS & APPOINTMENTS getting messages, hairdressers, visiting doctor, including travel to and from shops/appointments	13
CARING FOR OTHERS children or elderly person at home or elsewhere	14
VOLUNTARY ACTIVITY for a charitable organisation, sports club or other organisation including meetings & informal helping outside the home	15
RELIGIOUS ACTIVITY Attending religious services, prayer	16
EXTRACURRICULAR ACTIVITIES any after-school club or activity	17
HANGING AROUND WITH FRIENDS, BOYFRIEND / GIRLFRIEND	18
SOCIALISING WITH FAMILY at home or elsewhere	19
TALKING ON PHONE, TEXTING	20
GOING OUT including going to cafes, bars, restaurants, nightclubs	21
SHOPPING FOR PLEASURE	22
ATTENDING CINEMA / THEATRE / CONCERTS	23
PLAYING SPORTS, EXERCISE & PHYSICAL ACTIVITY e.g. playing football, walking the dog, skateboarding	24
COMPUTER / INTERNET for personal use, including games console, surfing the net, email, BeBo / My Space, shopping online	25
HOBBIES / OTHER LEISURE ACTIVITIES e.g. music lessons / playing instruments, crafts, other games	26
WATCHING TV and videos/DVDs	27
LISTENING to radio or music	28
READING books, magazines or newspapers	29
TRAVELLING outside of work / school	30
RESTING / RELAXING doing nothing, 'time out'	31

DIARY 2

Activity Group	Activity Code		AFTERNOON															
			12:00 pm				1:00 pm				2:00 pm				3:00 pm			
			15	30	45		15	30	45		15	30	45		15	30	45	
PERSONAL NEEDS	1	SLEEPING																
	2	PERSONAL CARE e.g. washing, dressing, toilet																
	3	EATING / DRINKING / HAVING A MEAL																
SCHOOL AND STUDY	4	ATTENDING CLASS AND CLASS / SCHOOL RELATED ACTIVITIES e.g. talks, canteen duty etc.																
	5	EATING / DRINKING AT SCHOOL																
	6	DOING HOMEWORK / STUDYING AT SCHOOL																
	7	TRAVELLING TO AND FROM SCHOOL																
	8	DOING HOMEWORK / STUDYING AT HOME																
PAID WORK	9	PAID EMPLOYMENT including overtime and work from home. Excluding lunch and other breaks																
	10	TRAVELLING TO AND FROM WORK																
	11	BREAKS FROM WORK including teabreaks and lunch etc.																
HOUSEWORK AND OTHER HOUSEHOLD TASKS	12	DOING HOUSEWORK e.g. washing dishes, tidying bedroom etc																
	13	SHOPPING, ERRANDS & APPOINTMENTS getting messages, hairdressers, visiting doctor, including travel to and from shops / appointments																
	14	CARING FOR OTHERS children or elderly person at home or elsewhere																
VOLUNTARY AND RELIGIOUS ACTIVITY	15	VOLUNTARY ACTIVITY for a charitable organisation, sports club or other organisation including meetings & informal helping outside the home																
	16	RELIGIOUS ACTIVITY Attending religious services, prayer																
LEISURE AND FREE TIME ACTIVITIES	17	EXTRACURRICULAR ACTIVITIES any after-school club or activity																
	18	HANGING AROUND WITH FRIENDS, BOYFRIEND / GIRLFRIEND																
	19	SOCIALISING WITH FAMILY at home or elsewhere																
	20	TALKING ON PHONE, TEXTING																
	21	GOING OUT including going to cafes, bars, restaurants, nightclubs																
	22	SHOPPING FOR PLEASURE																
	23	ATTENDING CINEMA / THEATRE / CONCERTS																
	24	PLAYING SPORTS, EXERCISE & PHYSICAL ACTIVITY e.g. playing football, walking the dog, skateboarding																
	25	COMPUTER / INTERNET for personal use, including games console, surfing the net, email, BeBo / My Space, shopping online																
	26	HOBBIES / OTHER LEISURE ACTIVITIES e.g. music lessons / playing instruments, crafts, other games																
	27	WATCHING TV and videos / DVDs																
	28	LISTENING to radio or music																
	29	READING books, magazines or newspapers																
	30	TRAVELLING outside of work / school																
	31	RESTING / RELAXING doing nothing, 'time out'																

DIARY 2

EARLY EVENING

4:00 pm				5:00 pm				6:00 pm				7:00 pm					Activity Code
	15	30	45		15	30	45		15	30	45		15	30	45		
																SLEEPING	1
																PERSONAL CARE e.g. washing, dressing, toilet	2
																EATING / DRINKING / HAVING A MEAL	3
																ATTENDING CLASS AND CLASS / SCHOOL RELATED ACTIVITIES e.g. talks, canteen duty etc.	4
																EATING / DRINKING AT SCHOOL	5
																DOING HOMEWORK / STUDYING AT SCHOOL	6
																TRAVELLING TO AND FROM SCHOOL	7
																DOING HOMEWORK / STUDYING AT HOME	8
																PAID EMPLOYMENT including overtime and work from home. Excluding lunch and other breaks	9
																TRAVELLING TO AND FROM WORK	10
																BREAKS FROM WORK including teabreaks and lunch etc.	11
																DOING HOUSEWORK washing dishes, tidying bedroom etc	12
																SHOPPING, ERRANDS & APPOINTMENTS getting messages, hairdressers, visiting doctor, including travel to and from shops/appointments	13
																CARING FOR OTHERS children or elderly person at home or elsewhere	14
																VOLUNTARY ACTIVITY for a charitable organisation, sports club or other organisation including meetings & informal helping outside the home	15
																RELIGIOUS ACTIVITY Attending religious services, prayer	16
																EXTRACURRICULAR ACTIVITIES any after-school club or activity	17
																HANGING AROUND WITH FRIENDS, BOYFRIEND / GIRLFRIEND	18
																SOCIALISING WITH FAMILY at home or elsewhere	19
																TALKING ON PHONE, TEXTING	20
																GOING OUT including going to cafes, bars, restaurants, nightclubs	21
																SHOPPING FOR PLEASURE	22
																ATTENDING CINEMA / THEATRE / CONCERTS	23
																PLAYING SPORTS, EXERCISE & PHYSICAL ACTIVITY e.g. playing football, walking the dog, skateboarding	24
																COMPUTER / INTERNET for personal use, including games console, surfing the net, email, BeBo / My Space, shopping online	25
																HOBBIES / OTHER LEISURE ACTIVITIES e.g. music lessons / playing instruments, crafts, other games	26
																WATCHING TV and videos/DVDs	27
																LISTENING to radio or music	28
																READING books, magazines or newspapers	29
																TRAVELLING outside of work / school	30
																RESTING / RELAXING doing nothing, 'time out'	31

DIARY 2

Activity Group	Activity Code		EVENING																	
			8:00 pm				9:00 pm				10:00 pm				11:00 pm					
			15	30	45		15	30	45		15	30	45		15	30	45			
PERSONAL NEEDS	1	SLEEPING																		
	2	PERSONAL CARE e.g. washing, dressing, toilet																		
	3	EATING / DRINKING / HAVING A MEAL																		
SCHOOL AND STUDY	4	ATTENDING CLASS AND CLASS / SCHOOL RELATED ACTIVITIES e.g. talks, canteen duty etc.																		
	5	EATING / DRINKING AT SCHOOL																		
	6	DOING HOMEWORK / STUDYING AT SCHOOL																		
	7	TRAVELLING TO AND FROM SCHOOL																		
	8	DOING HOMEWORK / STUDYING AT HOME																		
PAID WORK	9	PAID EMPLOYMENT including overtime and work from home. Excluding lunch and other breaks																		
	10	TRAVELLING TO AND FROM WORK																		
	11	BREAKS FROM WORK including teabreaks and lunch etc.																		
HOUSEWORK AND OTHER HOUSEHOLD TASKS	12	DOING HOUSEWORK e.g. washing dishes, tidying bedroom etc																		
	13	SHOPPING, ERRANDS & APPOINTMENTS getting messages, hairdressers, visiting doctor, including travel to and from shops / appointments																		
	14	CARING FOR OTHERS children or elderly person at home or elsewhere																		
VOLUNTARY AND RELIGIOUS ACTIVITY	15	VOLUNTARY ACTIVITY for a charitable organisation, sports club or other organisation including meetings & informal helping outside the home																		
	16	RELIGIOUS ACTIVITY Attending religious services, prayer																		
LEISURE AND FREE TIME ACTIVITIES	17	EXTRACURRICULAR ACTIVITIES any after-school club or activity																		
	18	HANGING AROUND WITH FRIENDS, BOYFRIEND / GIRLFRIEND																		
	19	SOCIALISING WITH FAMILY at home or elsewhere																		
	20	TALKING ON PHONE, TEXTING																		
	21	GOING OUT including going to cafes, bars, restaurants, nightclubs																		
	22	SHOPPING FOR PLEASURE																		
	23	ATTENDING CINEMA / THEATRE / CONCERTS																		
	24	PLAYING SPORTS, EXERCISE & PHYSICAL ACTIVITY e.g. playing football, walking the dog, skateboarding																		
	25	COMPUTER / INTERNET for personal use, including games console, surfing the net, email, BeBo / My Space, shopping online																		
	26	HOBBIES / OTHER LEISURE ACTIVITIES e.g. music lessons / playing instruments, crafts, other games																		
	27	WATCHING TV and videos / DVDs																		
	28	LISTENING to radio or music																		
	29	READING books, magazines or newspapers																		
	30	TRAVELLING outside of work / school																		
	31	RESTING / RELAXING doing nothing, 'time out'																		

DIARY 2

NIGHT

12:00 am	15	30	45	1:00 am	15	30	45	2:00 am	15	30	45	3:00 am	15	30	45		Activity Code
																SLEEPING	1
																PERSONAL CARE e.g. washing, dressing, toilet	2
																EATING / DRINKING / HAVING A MEAL	3
																ATTENDING CLASS AND CLASS / SCHOOL RELATED ACTIVITIES e.g. talks, canteen duty etc.	4
																EATING / DRINKING AT SCHOOL	5
																DOING HOMEWORK / STUDYING AT SCHOOL	6
																TRAVELLING TO AND FROM SCHOOL	7
																DOING HOMEWORK / STUDYING AT HOME	8
																PAID EMPLOYMENT including overtime and work from home. Excluding lunch and other breaks	9
																TRAVELLING TO AND FROM WORK	10
																BREAKS FROM WORK including teabreaks and lunch etc.	11
																DOING HOUSEWORK washing dishes, tidying bedroom etc	12
																SHOPPING, ERRANDS & APPOINTMENTS getting messages, hairdressers, visiting doctor, including travel to and from shops/appointments	13
																CARING FOR OTHERS children or elderly person at home or elsewhere	14
																VOLUNTARY ACTIVITY for a charitable organisation, sports club or other organisation including meetings & informal helping outside the home	15
																RELIGIOUS ACTIVITY Attending religious services, prayer	16
																EXTRACURRICULAR ACTIVITIES any after-school club or activity	17
																HANGING AROUND WITH FRIENDS, BOYFRIEND / GIRLFRIEND	18
																SOCIALISING WITH FAMILY at home or elsewhere	19
																TALKING ON PHONE, TEXTING	20
																GOING OUT including going to cafes, bars, restaurants, nightclubs	21
																SHOPPING FOR PLEASURE	22
																ATTENDING CINEMA / THEATRE / CONCERTS	23
																PLAYING SPORTS, EXERCISE & PHYSICAL ACTIVITY e.g. playing football, walking the dog, skateboarding	24
																COMPUTER / INTERNET for personal use, including games console, surfing the net, email, BeBo / My Space, shopping online	25
																HOBBIES / OTHER LEISURE ACTIVITIES e.g. music lessons / playing instruments, crafts, other games	26
																WATCHING TV and videos/DVDs	27
																LISTENING to radio or music	28
																READING books, magazines or newspapers	29
																TRAVELLING outside of work / school	30
																RESTING / RELAXING doing nothing, 'time out'	31

DIARY 2

ABOUT YOUR DIARY DAY

Please answer these questions about **THIS** diary day.

1 **How long did it take you to fill in this diary?** Please tick one box

- ☐ Less than 10 minutes
- ☐ Between 10 and 20 minutes
- ☐ Between 20 and 30 minutes
- ☐ More than 30 minutes

2 **When did you fill in this diary?** Please tick one box

- ☐ Now and then during the diary day
- ☐ At the end of the diary day
- ☐ The day after the diary day
- ☐ At a later time

3 **Was this diary day unusual in any way?** (e.g. you or a family member was sick; school holiday; you were travelling etc.) If yes, in what way was it unusual?

☐ No ☐ Yes, please describe

_____

_____

_____

_____

4 **Did you have any problems filling out the diary / questionnaire?**

☐ No ☐ Yes, please describe

_____

_____

_____

_____

5 **Were there any activities which you feel were not covered in the list?**

☐ No ☐ Yes, please describe.

_____

_____

_____

_____

Thank you very much for filling out this questionnaire. This is an anonymous questionnaire so you cannot be identified from the answers you give. Some of the questions you answered were about bullying and feelings of loneliness or sadness. These experiences can be a part of life for lots of people, of any age. Occasionally a small number of people might feel a bit upset by these questions. In most cases, these feelings of upset are a normal part of life and usually pass quite quickly. If you feel upset by these questions, you are encouraged to talk to your family, friends or a teacher in school who can offer support and help. If you wish, you can also contact the researcher at e.hunt@ucc.ie or 021 490 1531, who will provide information about other support services.

HAVE YOUR SAY

If you wish, you are welcome to use this space to write down your thoughts and reflections on your own time use and well-being.

CHECKLIST

Please go through the diary once again and check the following:

- ☐ Have you answered the questions about you, your family and part-time work at the beginning of the booklet?
- ☐ Have you completed both your diaries and checked that there are no empty time slots in your diaries?
- ☐ Have you answered the other questions about your diary day?
- ☐ Have you filled in all the questions about your health and well-being in the KIDSCREEN section?
- ☐ Don't forget to bring your booklet to school for collection.

Thank you very much for taking part in this research!



Appendix M



9th May 2007

Dear [redacted],

I am a full time lecturer and part time PhD student in the Department of Occupational Therapy at UCC. I am writing to invite your school to be involved in my PhD survey in the academic year 2007/2008. Your school was selected at random from the Department of Education and Science schools list for Cork.

This research will examine time use and well-being of a sample of around 1000 Transition Year and Fifth Year students in Cork city and county. This study will provide important information about such issues as part-time work amongst young people, leisure activities, lifestyles and health. The Clinical Research Ethics Committee of the Cork Teaching Hospitals has approved this study, which will be conducted in accordance with best ethical practice.

I understand from detailed discussions with some Principals and teachers that it is often most convenient to carry out surveys in schools as early as possible in the academic year. With that in mind, I am contacting you now, with a view to being able to conduct the survey as soon as possible after the Summer holidays, should you agree to be involved.

I have attached detailed information about this study. In summary, one Transition Year class and one Fifth Year class from your school will be invited to participate. Participating schools will be asked to give approximately one hour of time in total over a 2-3 week period. In this time, I would come to the school and meet with staff and students to explain about the study and distribute consent forms. Approximately one week later, I would return and distribute questionnaires to students who wish to participate. Students then complete the diary questionnaires in their own time and bring back to school for collection on an agreed date.

Contd.

In return, I would be happy to offer one hour to your school to give a presentation on Occupational Therapy as a career or to provide an educational session on lifestyles and health.

I know that this is a very busy time in school as you prepare for State and end of year exams. You may wish to pass this information on to the Transition Year Coordinator or Fifth Year Head Teacher. I have attached an additional two copies of this information in case you wish to pass it to your colleagues.

I will follow this letter with a telephone call next week. I will be delighted to answer any questions you may have either over the phone or in person. If you wish to contact me in the meantime, my telephone number is 021-4901531 and email is e.hunt@ucc.ie

Thank you very much for taking the time to read this letter. I hope that you, your colleagues and students will be in a position to be involved in this research project.

Yours sincerely,

Eithne Hunt, MSc., PgDipStat., BSc.(Hons.)OT

INFORMATION FOR PRINCIPALS / TEACHERS

About The Researcher

Eithne Hunt is a full-time lecturer in Department of Occupational Therapy at University College Cork [UCC], where she works mainly with first year Occupational Therapy students. She herself qualified as an Occupational Therapist in Trinity College Dublin in 1997. She worked for six years with young people with emotional and mental health difficulties, in Dublin and Cork before moving to UCC in 2003.

In January 2006, Eithne registered as a part time PhD student at UCC. In her research, she is combining her interest in promoting the health and wellbeing of young people, and learning more about how young people spend their time in daily occupations. Her supervisors are Professor Gill Chard, Department of Occupational Therapy, UCC and Professor Ivan Perry, Department of Epidemiology and Public Health, UCC.

About This Research Project

The aim of this doctoral project is to examine Irish young people's time use and participation in daily occupations, and the relationship with their health and wellbeing. Adolescent time use has been examined by researchers internationally since the 1980's. In 2005, a time use study of Irish adults was carried out. Up to now, there have been no such studies conducted with Irish adolescents.

A pilot study took place in Spring 2007 in two schools. In the main survey, 1000 Transition Year and Fifth year students from a random selection of 25 Cork city and county schools will be invited to participate in this study.

Permission

The Clinical Research Ethics Committee of the Cork Teaching Hospitals has approved this study. Once a school gives agrees to be involved in this study, individual student and parent consent is sought.

Voluntary Participation

Participation in this project is entirely voluntary. A decision not to participate, or a subsequent withdrawal from the project will not be penalised in any way.

Confidentiality

The name of the student participant or the school, or any identifying information will not be used at any time in writing or talking about this project. The information gathered in this project will be included in a written report that will be stored in the library at University College Cork. The researcher may write or talk about this project for educational purposes but will always show confidentiality and respect for participants.

Procedures for Conducting the Research in Schools

Once a school agrees to be involved in this study, the Principal will be asked to nominate a contact staff member. The researcher will meet this staff member to discuss the procedures. In essence, participating schools will be asked to give approximately one hour of time in total over a 2-3 week period. The school will nominate one Transition Year class and one Fifth Year class to participate. Eithne will come to the school and meet with staff and students to explain about the study and distribute consent forms. A number of days later, Eithne will return and distribute questionnaires to students who wish to participate. Students then complete the diary questionnaires in their own time and bring back to school for collection on an agreed date.

What Student Participants Will Be Required To Do

Participants will be given a booklet of questions to answer. The first part of the booklet contains general questions on age, year at school, part-time work etc. The next part contains the diaries. Participants will be asked to record their activities throughout the day from a list contained in the diary booklet. [A sample diary page is attached.] There will be one diary to fill out on a weekday and one diary to fill out on a weekend day. Each diary will take about 10 minutes to complete and it can be completed at different times during the diary days. There are also some general questions about filling out the diary.

The second part of the booklet contains a health and well-being questionnaire called KIDSCREEN. This questionnaire includes questions on important aspects of young people's lives, including physical activities and health; moods and feelings about self; pocket money; relationships with family and friends; and school and free

time activities. This should take about 10 minutes to fill in. Finally, at the back of the questionnaire booklet, there is a space to write any comments or thoughts about the questionnaire or the project in general.

Potential Research Project Outcomes

This study will be the first of its kind to be conducted in Ireland and will provide important information on the daily lives of Irish adolescents, and their health and well-being. Irish governmental policy calls for young people to be directly involved in matters that affect them. Guided by this policy, a group of 10 Transition Year Students from a Cork school worked with Eithne on the design of the questionnaire for this study, to try to make sure that it was appealing and geared towards the interests of young people. These students said that it helped them to figure out what they do with their time. They hoped that this study will help people to better understand where adolescents are coming from. They also realised that they all do different things with their time and stated their belief that everybody's interests have to be catered for. They hoped that this study will benefit young people in the future as it can inform the government about how young people spend their time, and help the government plan facilities. Also, after this study is completed Eithne wants to use some of the information to put together an educational programme for young people on lifestyles and health.

Further Information

If you have any questions concerning this research, please feel free to contact Eithne Hunt at the number below.

Thank you very much for taking the time to read this information.

Eithne Hunt **Date**

Contact Details:
Department of Occupational Therapy,
Brookfield Health Sciences Complex,
University College Cork, College Road,
Cork.
Tel: (021) 4901531
Email: e.hunt@ucc.ie



18th June 2007

Dear [redacted],

I refer to my earlier letter of 9th May 2007 and subsequent telephone call in which your school was invited to be involved in my PhD survey in the next academic year, 2007/2008. Your school was selected at random from the Department of Education and Science schools list for Cork.

I would be very grateful if you might be in a position to consider being involved in this study when you are planning the coming academic year. I will follow this letter up with a telephone call at the end of August / early September. If in the meantime, if you wish to contact me, I will be delighted to answer any questions you may have either over the phone or in person. My telephone number is 021-4901531 and email is e.hunt@ucc.ie

A *summary* of the study is provided below and further, more detailed, information is attached. You may wish to pass this information on to the Transition Year Coordinator or Fifth Year Head Teacher. I have attached an additional two copies of this information in case you wish to pass it to your colleagues.

Thank you very much for taking the time to read this letter. I hope that you, your colleagues and students will be in a position to be involved in this research project.

I wish you a pleasant Summer.

Yours sincerely,

Eithne Hunt, MSc., PgDipStat., BSc.(Hons.)OT

Appendix N



RESEARCH PROJECT ON YOUNG PEOPLE'S TIME USE AND WELL-BEING

Please take a moment to complete this form.
Please tick the most appropriate box.

☐ YES – This school IS in a position to be involved

☐ NO – This school IS NOT in a position to be involved

☐ MAYBE – We would like further information before making a decision.

Thank you very much.

Please return this form in the envelope provided.

Eithne Hunt
Department of Occupational Therapy,
Brookfield Health Sciences Complex,
College Road,
Cork.

Appendix O

SAMPLE DIARY PAGE

At 8pm, this girl has a shower which takes nearly 30 minutes so she ticks the two timeslots for personal care from 8.00 – 8.30pm. She then watches TV for an hour with her family until 9.30pm. This is her main activity so she ticks these four timeslots. But at the same time she was also texting a friend so she puts a star in the timeslot for 'talking on the phone, texting'. From 9.30 – 10.30pm she listens to some music in her bedroom so there are four ticks in these timeslots. She then reads [main activity = ✓] and sends some more texts [second activity = *] until 10.45pm. She goes to the toilet and brushes her teeth and is asleep by 11pm.

Activity Group	Activity Code		EVENING																	
			8:00 pm				9:00 pm				10:00 pm				11:00 pm					
				15	30	45		15	30	45		15	30	45		15	30	45		
PERSONAL NEEDS	1	SLEEPING													✓	✓	✓	✓		
	2	PERSONAL CARE e.g. washing, dressing, toilet	✓	✓										✓						
	3	EATING / DRINKING / HAVING A MEAL																		
SCHOOL AND STUDY	4	ATTENDING CLASS AND CLASS / SCHOOL RELATED ACTIVITIES e.g. talks, canteen duty etc.																		
	5	EATING / DRINKING AT SCHOOL																		
	6	DOING HOMEWORK / STUDYING AT SCHOOL																		
	7	TRAVELLING TO AND FROM SCHOOL																		
	8	DOING HOMEWORK / STUDYING AT HOME																		
PAID WORK	9	PAID EMPLOYMENT including overtime and work from home. Excluding lunch and other breaks																		
	10	TRAVELLING TO AND FROM WORK																		
	11	BREAKS FROM WORK including teabreaks and lunch etc.																		
HOUSEWORK AND OTHER HOUSEHOLD TASKS	12	DOING HOUSEWORK e.g. washing dishes, tidying bedroom etc																		
	13	SHOPPING, ERRANDS & APPOINTMENTS getting messages, hairdressers, visiting doctor, including travel to and from shops / appointments																		
	14	CARING FOR OTHERS children or elderly person at home or elsewhere																		
VOLUNTARY AND RELIGIOUS ACTIVITY	15	VOLUNTARY ACTIVITY for a charitable organisation, sports club or other organisation including meetings & informal helping outside the home																		
	16	RELIGIOUS ACTIVITY Attending religious services, prayer																		
LEISURE AND FREE TIME ACTIVITIES	17	EXTRACURRICULAR ACTIVITIES any after-school club or activity																		
	18	HANGING AROUND WITH FRIENDS, BOYFRIEND / GIRLFRIEND																		
	19	SOCIALISING WITH FAMILY at home or elsewhere																		
	20	TALKING ON PHONE, TEXTING				*	*	*	*					*						
	21	GOING OUT including going to cafes, bars, restaurants, nightclubs																		
	22	SHOPPING FOR PLEASURE																		
	23	ATTENDING CINEMA / THEATRE / CONCERTS																		
	24	PLAYING SPORTS, EXERCISE & PHYSICAL ACTIVITY e.g. playing football, walking the dog, skateboarding																		
	25	COMPUTER / INTERNET for personal use, including games console, surfing the net, email, BeBo / My Space, shopping online																		
	26	HOBBIES / OTHER LEISURE ACTIVITIES e.g. music lessons / playing instruments, crafts, other games																		
	27	WATCHING TV and videos / DVDs				✓	✓	✓	✓											
	28	LISTENING to radio or music								✓	✓	✓	✓							
	29	READING books, magazines or newspapers												✓						
	30	TRAVELLING outside of work / school																		
	31	RESTING / RELAXING doing nothing, 'time out'																		

INFORMATION FOR STUDENTS

RESEARCH PROJECT ON YOUNG PEOPLE'S TIME USE AND WELL-BEING

You are being asked to participate in a research project. Please take a few moments to read through this information. When you have read this information, you will be asked to sign a form if you wish to participate. Your parent / guardian will also be required to sign the consent form. Thank you very much.

About This Research Project

- This study will gather important information on how young people in Cork city and county spend their time and the relationship with their health and wellbeing.
- 1000 Transition Year and Fifth Year students from a random selection of 25 Cork city and county schools will participate in this study.
- The Clinical Research Ethics Committee of the Cork Teaching Hospitals has approved this study. Your School Principal has also given permission to carry out this study in your school.

What You Will Be Asked To Do

If you choose to be involved in this project, you will be given a booklet of questions to answer.

The first part of the booklet asks general questions on age, year at school, part-time work etc. The next part contains the diaries. You will be asked to record your activities throughout the day from a list contained in the diary booklet. [A sample diary page is on the back of this page.] There is one diary to fill out on a weekday and one diary to fill out on a weekend day. Each diary will take about 15 minutes to complete.

The second part of the booklet contains a health and well-being questionnaire called KIDSCREEN that asks questions on important aspects of young people's lives, including physical activities and health; moods and feelings about self; pocket money; relationships with family and friends; and school and free time activities. This takes about 15 minutes to fill in.

Voluntary Participation

Participation in this project is entirely voluntary. It is your free choice. There is no problem if you decide to be involved and then change your mind later - you can withdraw at any time. If you decide not to participate, or if you withdraw, you will not be penalised in any way. Your participation is much appreciated.

Confidentiality

Your name or any identifying information about you or your school will not be used at any time in writing or talking about this project. You do not put your name anywhere on the questionnaire. The information gathered in this project will be included in a written report that will be stored in the library at University College Cork. Eithne may write or talk about this project for educational purposes but will always show confidentiality and respect for you.

Potential Research Outcomes

- This study is the first of its kind in Ireland and will provide important information on the daily lives of Irish young people, and their health and well-being.
- The students who helped with the design of the questionnaire said that it helped them to figure out what they do with their time. They hoped that this study will help people to better understand where adolescents are coming from and will help inform the government about how young people spend their time, and help the government plan facilities.
- It is hoped that the young people who fill out the questionnaire will enjoy doing it and will feel that they benefit from it. The KIDSCREEN questionnaire includes a small number of questions about bullying and feelings of loneliness or sadness, because these experiences can be a part of life for lots of people, of any age. If any student feels upset by these questions, he or she will be encouraged to talk to a teacher in school who can offer support and help.

About The Researcher

Eithne Hunt is a lecturer in Department of Occupational Therapy at University College Cork [UCC], where she works mainly with first year Occupational Therapy students. This research project is part of Eithne's PhD studies.

Further Information

If you have any questions concerning this research, please feel free to contact Eithne Hunt at the Department of Occupational Therapy, UCC [021-4901531 / e.hunt@ucc.ie].

Thank you very much for taking the time to read this information. I hope you will consider being part of this research project.

If you are happy to be involved in this study, please carefully read and sign the yellow consent form and bring in to class.

Your participation really counts!



INFORMATION FOR PARENTS

RESEARCH PROJECT ON YOUNG PEOPLE'S TIME USE AND WELL-BEING

Your son / daughter is being asked to participate in a research project. Please take a few moments to read through this information. When you have read this information, you will be asked to sign a form if you consent to your child participating. Your child will also be required to sign the consent form. Thank you very much.

About This Research Project

- This study will gather important information on how young people in Cork city and county spend their time and the relationship with their health and wellbeing.
- 1000 Transition Year and Fifth Year students from a random selection of 25 Cork city and county schools are participating in this study.
- The Clinical Research Ethics Committee of the Cork Teaching Hospitals has approved this study. The School Principal has also given permission to carry out this study in your child's school.

What You Will Be Asked To Do

If you and your son / daughter agree to be involved, he / she will be given a booklet of questions to answer.

The first part of the booklet asks general questions on age, year at school, part-time work etc. The next part contains the diaries. Your child will be asked to record his / her activities throughout the day from a list contained in the diary booklet. [A sample diary page is on the back of this page.] There is one diary to fill out on a weekday and one diary to fill out on a weekend day. Each diary will take about 15 minutes to complete.

The second part of the booklet contains a health and well-being questionnaire called KIDSCREEN that asks questions on important aspects of young people's lives, including physical activities and health; moods and feelings about self; pocket money; relationships with family and friends; and school and free time activities. This takes about 15 minutes to fill in.

Voluntary Participation

Participation in this project is entirely voluntary. A decision not to participate, or a subsequent withdrawal from the research will not be penalised in any way. Your child's participation is much appreciated.

Confidentiality

Your child's name or any identifying information will not be used at any time in writing or talking about this project. The information gathered in this project will be included in a written report that will be stored in the library at University College Cork. The researcher may write or talk about this project for educational purposes but will always show confidentiality and respect for participants.

Potential Research Outcomes

- This study is the first of its kind in Ireland and will provide important information on the daily lives of Irish young people, and their health and well-being.
- The students who helped with the design of the questionnaire said that it helped them to figure out what they do with their time. They hoped that this study will help people to better understand where adolescents are coming from and will help inform the government about how young people spend their time, and help the government plan facilities.
- It is hoped that the young people who fill out the questionnaire will enjoy doing it and will feel that they benefit from it. The KIDSCREEN questionnaire includes a small number of questions about bullying and feelings of loneliness or sadness, because these experiences can be a part of life for lots of people, of any age. If any student feels upset by these questions, he or she will be encouraged to talk to a teacher in school who can offer support and help.

About The Researcher

Eithne Hunt is a lecturer in Department of Occupational Therapy at University College Cork [UCC], where she works mainly with first year Occupational Therapy students. This research project is part of Eithne's PhD studies.

Further Information

If you have any questions concerning this research, please feel free to contact Eithne Hunt at the Department of Occupational Therapy, UCC [021-4901531 / e.hunt@ucc.ie].

Thank you very much for taking the time to read this information. I hope you and your child will consider being part of this research project.

<u>If you and your child are happy to be involved in this research, please carefully read and sign the yellow consent form. Please ask your child to also sign the form and bring in to class.</u>

Your child's participation really counts!



SAMPLE DIARY PAGE

At 8pm, this girl has a shower which takes nearly 30 minutes so she ticks the two timeslots for personal care from 8.00 – 8.30pm. She then watches TV for an hour with her family until 9.30pm. This is her main activity so she ticks these four timeslots. But at the same time she was also texting a friend so she puts a star in the timeslot for 'talking on the phone, texting'. From 9.30 – 10.30pm she listens to some music in her bedroom so there are four ticks in these timeslots. She then reads [main activity = ✓] and sends some more texts [second activity = *] until 10.45pm. She goes to the toilet and brushes her teeth and is asleep by 11pm.

Activity Group	Activity Code		EVENING															
			8:00 pm	15	30	45	9:00 pm	15	30	45	10:00 pm	15	30	45	11:00 pm	15	30	45
PERSONAL NEEDS	1	SLEEPING													✓	✓	✓	✓
	2	PERSONAL CARE e.g. washing, dressing, toilet	✓	✓										✓				
	3	EATING / DRINKING / HAVING A MEAL																
SCHOOL AND STUDY	4	ATTENDING CLASS AND CLASS / SCHOOL RELATED ACTIVITIES e.g. talks, canteen duty etc.																
	5	EATING / DRINKING AT SCHOOL																
	6	DOING HOMEWORK / STUDYING AT SCHOOL																
	7	TRAVELLING TO AND FROM SCHOOL																
	8	DOING HOMEWORK / STUDYING AT HOME																
PAID WORK	9	PAID EMPLOYMENT including overtime and work from home. Excluding lunch and other breaks																
	10	TRAVELLING TO AND FROM WORK																
	11	BREAKS FROM WORK including teabreaks and lunch etc.																
HOUSEWORK AND OTHER HOUSEHOLD TASKS	12	DOING HOUSEWORK e.g. washing dishes, tidying bedroom etc																
	13	SHOPPING, ERRANDS & APPOINTMENTS getting messages, hairdressers, visiting doctor, including travel to and from shops / appointments																
	14	CARING FOR OTHERS children or elderly person at home or elsewhere																
VOLUNTARY AND RELIGIOUS ACTIVITY	15	VOLUNTARY ACTIVITY for a charitable organisation, sports club or other organisation including meetings & informal helping outside the home																
	16	RELIGIOUS ACTIVITY Attending religious services, prayer																
LEISURE AND FREE TIME ACTIVITIES	17	EXTRACURRICULAR ACTIVITIES any after-school club or activity																
	18	HANGING AROUND WITH FRIENDS, BOYFRIEND / GIRLFRIEND																
	19	SOCIALISING WITH FAMILY at home or elsewhere																
	20	TALKING ON PHONE, TEXTING			*	*	*	*						*				
	21	GOING OUT including going to cafes, bars, restaurants, nightclubs																
	22	SHOPPING FOR PLEASURE																
	23	ATTENDING CINEMA / THEATRE / CONCERTS																
	24	PLAYING SPORTS, EXERCISE & PHYSICAL ACTIVITY e.g. playing football, walking the dog, skateboarding																
	25	COMPUTER / INTERNET for personal use, including games console, surfing the net, email, BeBo / My Space, shopping online																
	26	HOBBIES / OTHER LEISURE ACTIVITIES e.g. music lessons / playing instruments, crafts, other games																
	27	WATCHING TV and videos / DVDs			✓	✓	✓	✓										
	28	LISTENING to radio or music							✓	✓	✓	✓						
	29	READING books, magazines or newspapers											✓					
	30	TRAVELLING outside of work / school																
	31	RESTING / RELAXING doing nothing, 'time out'																

Appendix P

RESEARCH PROJECT ON YOUNG PEOPLE'S
TIME USE AND WELL-BEING

PARENT AND STUDENT CONSENT TO PARTICIPATE IN SURVEY

1. This research project has been explained to me as fully as possible.
2. I have been given a copy of written information about this project.
3. I have had the opportunity to ask questions about any and all aspects of the project.
4. I am aware that my participation is voluntary and that I may withdraw from the project at any time, without any negative consequences.
5. I am aware that my decision not to participate or to withdraw will not restrict my access to educational services normally available to me.
6. Confidentiality of records concerning my involvement in this project will be maintained in an appropriate manner.
7. I understand that the information gathered in this study will form the basis for a written thesis that will be stored in the library at University College Cork.
8. I understand that Eithne Hunt may write or talk about this study for educational purposes but will always show confidentiality and respect for me.
9. I understand that if I have any questions concerning this research, I can contact Eithne Hunt. If I have further queries concerning my rights in connection with the research, I can contact the Clinical Research Ethics Committee of the Cork Teaching Hospitals, Lancaster Hall, 6 Little Hanover Street, Cork.

I, the undersigned, hereby consent to my child's participation in the above-described project.

Signature of Parent or Guardian:

Date:

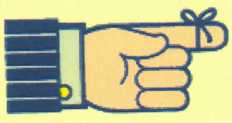
I, the undersigned, hereby consent to participate in the above-described project.

Name [BLOCK CAPITALS PLEASE]:

Signature of Student Participant:

Date:

Class Name / Number:



Remember! Please bring this form into class. Thank you.

Appendix Q



18th February 2008

Dear [redacted],

Thank you very much to you and your colleagues for facilitating my research project on adolescent time use and wellbeing over the last few weeks.

I am very grateful for your school's support and participation. It was a pleasure to visit your school and to work with your colleagues and students.

I have written separately to [redacted] and [redacted] to thank them for the time and effort they invested and I have also asked them to convey my sincere thanks to the students involved. I appreciate the time and commitment they gave to completing the questionnaire so thoroughly. Certificates of participation have been made available to the students.

I will be delighted to provide a summary of the main findings to your school when they become available. This is likely to be some time in the academic year 2008-2009.

If I can ever be of assistance to your school in the future, please do not hesitate to contact me.

Thank you once again for your valued support.

Yours sincerely,

Eithne Hunt, MSc., PgDipStat., BSc.(Hons.)OT



10th December 2007

Dear [redacted],

Thank you very much for facilitating my research project on adolescent time use and wellbeing over the last few weeks.

It was a pleasure to visit your school and to work with you and your students. I am very grateful for the time and effort you invested.

Please convey my sincere thanks to the students involved. I appreciate the time and commitment they gave to completing the questionnaire so thoroughly. I have enclosed Certificates of Participation that you may wish to make available to the students.

I will be delighted to provide a summary of the main findings to your school when they become available. This is likely to be some time in the academic year 2008-2009.

If I can ever be of assistance to your school in the future, please do not hesitate to contact me.

Thank you once again for your valued support.

Yours sincerely,

Eithne Hunt, MSc., PgDipStat., BSc.(Hons.)OT

Appendix R

Appendix R

Responses to Diary Quality Questions at the End of Each Diary

Table 34

When Diaries Were Completed by Gender

	Weekday Diary		Weekend Diary	
	Male n (%)	**Female** n (%)	**Male** n (%)	**Female** n (%)
Now and then during the diary day	143 (45)	149 (42)	71 (23)	88 (24)
At the end of the diary day	80 (25)	86 (24)	51 (16)	84 (22)
The day after the diary day	47 (15)	92 (26)	127 (40)	103 (28)
At a later time	24 (8)	14 (4)	59 (19)	88 (24)
Not completed	23 (7)	17 (5)	6 (2)	12 (3)

Table 35

Diary Day Unusual in Any Way

	Weekday Diary		Weekend Diary	
	Male n (%)	**Female** n (%)	**Male** n (%)	**Female** n (%)
No	251 (79)	273 (76)	224 (71)	269 (72)
Yes	44 (14)	65 (18)	84 (27)	90 (24)
Not completed	22 (7)	20 (6)	6 (2)	16 (4)

Table 36

Problems Filling In Diary

	Weekday Diary		Weekend Diary	
	Male n (%)	**Female** n (%)	**Male** n (%)	**Female** n (%)
No	286 (90)	319 (89)	298 (95)	344 (92)
Yes	9 (3)	21 (6)	10 (3)	17 (5)
Not completed	22 (7)	18 (5)	6 (2)	14 (3)

Table 37

Activities Not on the List

	Weekday Diary		Weekend Diary	
	Male n (%)	**Female** n (%)	**Male** n (%)	**Female** n (%)
No	268 (85)	306 (86)	275 (88)	321 (86)
Yes	24 (8)	34 (10)	31 (10)	38 (10)
Not completed	25 (8)	18 (5)	8 (3)	16 (4)

Appendix S

Appendix S

Comments from those who perceived a benefit from participating in the survey (n = 21)

Female, 16 years
"This is a really good survey, I learned a lot about myself by taking part in it. Thank you very much for helping me realise that I have a really good life. Good luck with getting what you want from all these surveys. Hope you have a safe and happy future!"

Male, 17 years
I feel that this questionnaire is a fantastic idea to help adults understand what adolescents do, it is a great experience to have taken part and the anonymity (I know this is incorrectly spelled) greatly adds to the honesty of the students."

Female, 15 years
"This diary helped me realise I actually spend a lot of time watching TV."

Male, 16 years
"This survey actually helped me as I have realised that I spend a lot of time dawdling and doing nothing worthwhile. Hopefully by realising this I will use my time efficiently now. More of these style of surveys should be done."

Male, 15 years
"This survey was great thanks!"

Female, 16 years
"I thought this was very good and worth-while."

Female, 16 years
"This questionnaire was very appropriate and fitted in well with my lifestyle! Thanks!"

Female, 16 years
"I really enjoyed doing this exercise. Best of luck with the results and outcome of survey."

Female, 17 years
"Despite what I've done on both diary entry days, I feel like the boxes I've ticked don't reflect the amount of effort that must be put into schoolwork and study. There's so much pressure on for exams, tests etc and I felt that this was un-portray able in this survey. It did however make me realise how I spent my time and I am very glad I took part. Hope all goes well."

Female, 16 years
"I think I need to try and get a bit more exercise and get a bit more time to myself – to just relax and have some "time-out". Thank you, good luck, bye."

Male, 16 years
"I think this is a good questionnaire but in the Physical Activities and health section ye forgot to mention or take to account long term injuries like broken leg, ankle etc but other than that small detail it is a extremely good survey and I compliment ye on your work."

Male, 16 years
"I think this is a good questionnaire to ask students how much they spend doing homework and going out with friends."

Female, 16 years
"I found this a great way of seeing how I am spending my time. It's easy and only takes a few minutes to fill out."

Female, 17 years
"I think doing this survey is a good idea because it shows that there is too much focus on school-work/homework/study and not enough focus on the well being of young people! For example – we don't have enough time for ourselves if we do our homework and study properly. Young people are also not getting enough sleep on school nights as schoolwork takes too long (especially maths). I'd love to have more time to play sports I was involved in last year/T.Y. year as they were really fun and beneficial to me but as I don't have much free time this year I have not been able to participate in these sports! I also like the way it's anonymous! Thank you."

Male, 17 years
"Made me think a lot about myself. By writing down my answers I have learned a lot more about myself."

Male, 17 years
"I believe that at times I try to juggle too many things whether it be school work, rugby, G.A.A. or work sometimes it is hard for free time as each require a lot of commitment. I however believe that I am healthy and fit and have the support of many friends and family around it."

Female,16 years
"Doing this survey made me think about how good my life is at the moment. I have realised that I am secure with the way look, I have great friends and even though I would like for my parents to be more understanding at times. Also I would love if there were more things for teenagers to do in their spare time."

Female, 16 years
I think I need to manage my time better because I work three times a week, train four or five times a week and I have to keep up with schoolwork too."

Female, 15 years
I think I am too busy, I do six hours of dancing a week, one class of drama, guitar and piano lessons as well as choir and rehearsals for three different shows one drama, one musical and one pantomime. I have just finished an opera. Doing so much extra-curricular activities however does not affect my schoolwork. I'd much rather be busy then bored because I think being busy broadens your capacity for life, even if it does mean I don't see some of my friends as often as I would like to. My diary would look extremely different if I had recorded my life during the week. But I think this survey is an excellent idea that will provide interesting and valuable information when analysed. Best of luck with your PhD."

Female,17 years

"I just realised exactly how much time I spend with my friends and boyfriend and how little I actually spend with my family."

Female, 15 years
After filling in the survey I was able to see what I had been doing and realised I watched T.V. way too much! Thanks for giving us the opportunity to fill out the survey, it was interesting and it made me think."

Appendix T



Measures of Daily Activity & Time Use

Kimberly Fisher, Jonathan Gershuny, Teresa Harms, and Oriel Sullivan

Centre for Time Use Research (CTUR)

University of Oxford

UNIVERSITY OF OXFORD



External consultation

- 11 expert replies
- 6 women, 5 men
- 3 from UK, 3 from USA, Australia, Belgium, Canada, Ireland & Norway
- all use time use data from young people, 10 have collected data, 6 work on resource provision

- Michael Bittman
- Ignace Glorieux
- Sandra Hofferth
- Eivind Hoffmann
- Eithne Hunt
- Karen Hurrell
- Sonia Livingstone
- Barbara Schneider
- Frank Stafford
- Megan Thomas
- Jiri Zuzanek

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