Growing up in Australia’s Child Health CheckPoint

2015 Student Projects

The Centre for Community Child Health
The Royal Children’s Hospital, Melbourne
The Murdoch Childrens Research Institute

www.lsac-childhealthcheckpoint.org.au
Introduction

Dear student,

We are delighted you are considering undertaking a project within Growing Up in Australia’s Child Health CheckPoint.

The Child Health CheckPoint offers new researchers involvement in Australia’s premier national children’s study. This booklet summarises some projects available for commencement in 2015 – many more are possible, depending on the student’s interests. We offer projects to students with funding stipends, e.g. via APA, university or international scholarships.

All PhD students contribute actively to data collection and management relevant to their project. For all projects in 2015, the candidate will be contributing to the implementation of the suite of measures in the Child Health CheckPoint in collaboration with the study team, and conducting quantitative analyses of the study data to address the study objectives. If you are interested or would like to find out more about the project, please email lsac.childhealthcheckpoint@mcri.edu.au.

Our supervisors are themselves top researchers spanning multiple disciplines, including:

- Community child health
- Epidemiology
- Biostatistics
- IT
- Epigenetics
- Biobanking & biomarkers
- Health economics
- Health-related quality of life
- Use of time
- Mental health
- Respiratory health
- Cardiovascular health
- Obesity
- Inflammation & infection
- Physical activity and fitness
- Eye health
- Dental health
- Hearing
- Bone health

For more information about Growing Up in Australia’s Child Health CheckPoint: www.lsac-childhealthcheckpoint.org.au
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The Longitudinal Study of Australian Children (LSAC), also known as Growing up in Australia, is Australia’s largest and only nationally-representative children’s longitudinal study. It is funded by the Australian Government, and governed by three Government agencies: The Department of Social Services (DSS), Australian Institute of Family Studies (AIFS) and Australian Bureau of Statistics (ABS).

The study was designed in 2002 to provide ‘a strong evidence base for policy development and service delivery on a wide range of issues relating to children’s development’. LSAC recruited two nationally-representative cohorts in 2004: the birth (‘B’) cohort aged 3-19 months, and the kindergarten (‘K’) cohort aged 4-5 years (not included in the Child Health Check-Point). In a two-stage clustered sampling design, 10% of all Australian postcodes were randomly selected, stratified by state and urban/rural. 5,107 infants were recruited (64% uptake), with 90%, 86%, 83% and 80% retained to Waves 2, 3, 4 and 5 respectively. The main method of data collection is a biennial home interview, supplemented with questionnaires (children, parents, teachers), time diaries, limited direct assessments and data linkage to a number of national administrative data sets. There is a broad focus including health and development, education, family and parenting characteristics and socioeconomic environment.

LSAC has ongoing funding and is already highly productive with over 200 peer-reviewed papers and 22 government reports.
Non-communicable diseases - diseases of slow progression and long duration, not directly transmitted by infection - comprise a ‘public health emergency in slow motion’ whose seeds are sown in childhood. They have related determinants and often cluster in individuals and families. Family, social and environmental experiences all interact with the child’s innate biology to create shared modifiable pathways (such as chronic inflammation) to multiple diseases.

The Child Health CheckPoint is a one-off addition to the unique national resource of the Longitudinal Study of Australian Children (LSAC, also known as Growing Up in Australia). Followed since infancy, the 4000 LSAC 11-12 year olds are invited to attend a purpose-built assessment centre as it travels around Australia in 2015. Each child and their accompanying parent undertake multiple state-of-the-art measurements (summarised below) during a busy 3½ hour session that is designed to be interesting, educational, exhilarating and useful to the participants as they learn about their health.

The resulting digital and biological resource will be housed at the Murdoch Childrens Research Institute. As its data are progressively extracted, they will be released for the use of all researchers, with the linked longitudinal LSAC dataset, via the Australian Institute of Family Studies. The project team welcomes students from multiple disciplines in both creating and using this unique dataset.

The Child Health CheckPoint targets multiple Australian health priorities. It will show how biology, environment and psychology ‘get under the skin’ during childhood via physiological adaptations that ultimately lead to the major causes of death and morbidity. Its findings will inform public health and service strategies that lessen the foreseeable burden of non-communicable diseases.
About the Murdoch Childrens Research Institute

The Murdoch Childrens Research Institute (MCRI) is based at the Royal Children’s Hospital, Melbourne. As the largest child health research institute in Australia, we are well positioned to make major discoveries to improve child health. With over 70 large research teams, we have the critical mass needed in modern day research to solve problems more rapidly.

At MCRI we work with our campus partners The Royal Children’s Hospital and the University of Melbourne’s Department of Paediatrics to improve the health and wellbeing of children.

www.lsac-childhealthcheckpoint.org.au
PhD Project 1:

**Emerging social disparities in cardio-respiratory health by age 11-12 years**

**Supervisors:** Dr Fiona Mensah, Professor Melissa Wake, Dr Susan Clifford

**Duration:** 3 years

**Aims/objectives:** The Child Health CheckPoint study will provide a comprehensive snapshot of physiological functioning and adaptations at age 11-12. Using these data the objectives of the PhD will be to:

- Examine patterns of cardio-respiratory health relating to family socioeconomic position and area based deprivation, mapping the extent and steepness of social gradients across a range of physiological measures.

- Explore clustering between the measures of cardiovascular and respiratory health and identify children with high risk profiles for future cardiovascular and respiratory disease.

- Examine social gradients in risk profiles for future cardiovascular and respiratory disease.

Cardiovascular and chronic lower respiratory diseases are among Australia’s leading causes of death. Both disease areas are characterised by marked social gradients, and morbidity and mortality that should be avoidable. Patterns of childhood disparities in cardiovascular and respiratory health are not well delineated, and how early-life socioeconomic circumstances might influence these disparities is unclear. These key evidence gaps are due to limited childhood physiological data from population studies exploring antecedents of adult disease.

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The Longitudinal Study of Australian Children (LSAC) is a rich data resource providing a platform to examine child health and development. It is funded by the Australian government to collect data in 8 biennial waves from 2004 to 2018. Collecting a wealth of information from parents, teachers and the children themselves, LSAC is Australia’s largest and only nationally-representative children’s longitudinal study, delineating children’s social, economic, physical and cultural environment and early pathways in health, learning and development.

We will undertake an additional physical health and biomarkers module, the “Child Health CheckPoint” at age 11-12 years in the younger of the two LSAC sub-cohorts, the B (Baby) cohort. In this we will implement a suite of state-of-the-art measures and collection of biomarkers that has not previously been feasible in large scale child health studies. These will comprehensively measure cardiovascular, respiratory and other aspects of physical health and enrich the value of the existing study data. Collection of this suite of measures will advance the interface between social science and biomedical research by enabling an extensive investigation of the physiological and psychosocial pathways influencing children’s health.

Dr Fiona Mensah; Fiona.mensah@mcri.edu.au
**PhD Project 2:**

The relationship between patterns and types of physical activity and sedentary behaviour, and fitness and fatness in 11-12 year old children.

**Supervisors:** Prof Tim Olds, Alex Rowlands, Prof Melissa Wake

**Duration:** 3 years

**Project aims/objective:** The objectives of this PhD will be to:

- examine the associations between patterns and types of physical activity (PA), adjusted for the overall amount of physical activity, and fitness and fatness in children; and

- examine the associations between patterns and types of sedentary behaviour (SB), adjusted for the overall amount of sedentary behaviour, and fitness and fatness in children.

There are established associations between the amounts of PA and SB children accumulate and their cardiorespiratory fitness and fatness. However, little is known about associations between characteristics of PA and SB affect fitness and fatness. These characteristics include:

- **Patterns of accumulation:** Does it matter whether children accumulate physical activity on one or two days, as opposed to most days of the week? Within one day, does it make any difference whether they accumulate PA and/or SB in a few long bouts or in many short bouts?

- **Types of PA and SB:** Does it matter whether children accumulate PA in the form of organised sport, active play, or active transport, if the amount of PA (total minutes and overall energy expenditure) is the same? Does it make any difference if children’s SB is in the form of watching TV or reading and studying?

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The Longitudinal Study of Australian Children (LSAC) is Australia’s largest longitudinal study of children. A research team, funded by the National Health and Medical Research Council, is undertaking an additional physical health and biomarkers module as part of LSAC, the “Child Health CheckPoint”, at age 11-12 years, in late 2014-2015. Among the measurements in this module are comprehensive use-of-time recalls, 7-day 24-hour accelerometer data, submaximal fitness tests and anthropometric measures of body fat using bioelectrical impedance analysis. These data can be used to address the study question.

Prof Tim Olds; tim.olds@unisa.edu.au
PhD Project 3:

Use of time and health-related quality of life in children

Supervisors: Prof Tim Olds, Prof Melissa Wake
Duration: 3 years
Project aims/objective: The objective of this PhD will be to examine the associations between how children use their time and their health-related quality of life (HRQoL).

HRQoL goes beyond direct measures of population health, such as life expectancy, and focuses on the impact health status has on quality of life, positive emotions and well-being. Previous studies have shown that fatness and household income are associated with children’s HRQoL, as are some aspects of time use such as physical activity (PA; positive) and screen time (negative). Some studies suggest that sleep may also be important. Little is known about other aspects of use of time such as chores, social interactions and school-related activities. Furthermore, socio-demographic factors such as socio-economic status, family structure and weight status can affect both use of time and HRQoL, making it hard to disentangle which factors are really important.

The Longitudinal Study of Australian Children (LSAC) is Australia’s largest longitudinal study of children. A research team, funded by the National Health and Medical Research Council, is undertaking an additional physical health and biomarkers module as part of LSAC, the “Child Health CheckPoint”, at age 11-12 years, in late 2014-2015. This module offers a unique opportunity to explore the relationships between use of time and HRQoL. The main wave of LSAC has child HRQoL and extensive socio-demographic data. Among the measurements in this new module are comprehensive use-of-time recalls, 7-day 24-hour accelerometer data, and parent HRQoL data. These data can be used to address the study question.

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PhD Project 4:

Physical activity, aerobic fitness and lung function

Supervisors: A/Prof Sarath Ranganathan; Dr Liam Welsh

Duration: 3 years

Aims/objectives: Among adults, regular physical activity is associated with a lower risk of overweight and obesity, hypertension, cardiovascular disease and diabetes. Moreover, there is a well-established positive association between physical activity and aerobic fitness in adults. However, the relationship between physical activity and aerobic fitness is less definitive in children and adolescents with a number of studies showing only weak to moderate associations.

Since many paediatric studies have only used self-reporting methods to assess physical activity it has been postulated that physical activity may not have been accurately assessed and in fact significantly underestimated. However, more recent investigations employing objective methods such as heart rate monitoring and accelerometry have also returned conflicting outcomes. This has given rise to several other explanations including i) the possibility that children generally have a high level of aerobic fitness and physical activity, leaving other factors such as age, gender and lung function to explain individual variations in aerobic fitness, ii) the intensity and duration of habitual physical activity in children is insufficient to bring about significant changes in aerobic fitness, iii) aerobic fitness is largely genetically determined, and iv) there is only a weak relationship between fitness and physical activity in children.

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While debate continues on the nature of the relationship between activity and fitness in children and adolescents, regular physical activity has consistently been associated with a number of health benefits including improved ventilatory capacity, lowered serum cholesterol, lower blood lipids, and lowered risk for cardiovascular disease. Conversely, low levels of exercise have been associated with an increased prevalence of overweight and obesity, increased serum cholesterol, increased lipid profile and blood pressure.

Given the aforementioned health outcomes and the suggestion that exercise behaviour in childhood tracks into adolescence and adulthood, a better description of the relationships between habitual physical activity and aerobic fitness is clearly required. Moreover, the specific influences that lung function, age and gender has on these relationships also needs elucidation.

In this study we will evaluate the association between lung function, aerobic fitness, body composition and measures of physical activity. Lung function in pre-pubertal children is determined in utero or soon after birth. We hypothesise that lung function is associated with fat-free mass and physical activity. These data will inform future studies aiming to assess whether predictors for overweight and the metabolic syndrome can be identified during early life and interventions used to change children’s trajectories towards poor cardio-respiratory health outcomes.
PhD Project 5:

Children’s health and health-related quality of life

**Supervisors:** Prof Melissa Wake; A/Prof Lisa Gold; Prof Tim Olds

**Duration:** 3 years

**Aims/objectives:** Health economics analyses guide decision-making for effective and equitable health care allocation. However, typically these require knowledge of how health-related quality of life (HRQoL) varies by different health states at the population level – information that is lacking for children. In 2015, the Longitudinal Study of Australian Children is conducting a Physical & Biomarkers Module involving a nationally-representative sample of 3,4000 11-12 year olds. This PhD will quantify how children’s HRQoL varies by (i) state-of-the-art objective measures of cardiovascular, respiratory, hearing, vision, oral and other aspects of health; (ii) self-reported health status and pain; (iii) paired parent HRQoL and health measures.
PhD Project 6:

Food Stop!: How eating choices influence body composition and heart health in the national Longitudinal Study of Australian Children

Supervisors: Prof Melissa Wake; Dr Jess Boyce; A/Prof Pauline Jansen

Duration: 3 years commencing 2015

Overview: Overweight children (and adults) with unhealthy eating patterns are at risk for obesity and poor cardiovascular health. The consequences of childhood eating behaviours are poorly understood and the literature is limited in two ways. First, previous studies examining children's naturalistic choices and consumption have had small samples making it difficult to draw population-level conclusions that might influence intervention strategies. Second, no research has been able to study how children's naturalistic food choices relate to their developing body composition and/or heart health. This is because, until now, it has been technically too challenging to comprehensively measure physiologic profiles in community samples. Working within the Longitudinal Study of Australian Children’s Child Health CheckPoint, this project will address these current limitations, while also providing a rare opportunity to work within one of Australia’s most important and exciting national research projects.

Objectives: The Child Health CheckPoint provides a snapshot of children’s physiological functioning at 11-12 years (N = 4000) AND contains a 20-minute Food Stop in the middle of participants’ 3-hour visit. This Food Stop provides a unique opportunity to observe and accurately quantify the parents’ and children’s food choices and consumption data, and to correlate them with a range of cutting-edge anthropometric and cardiovascular measures that gauge micro-, macro- and endo-vascular health.

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Aims:

- Describe child and parent ad-libitum food choices and energy consumption
- Explore the relationship between questionnaire and observed food intake data.
- Examine cross-sectional relationships of food choices and energy consumption and (a) body composition and (b) cardiovascular health in paired population-based cohorts of:
  - 11-12 year old Australian children
  - Young to middle-aged Australian adults (their parents).
Masters / PhD Project 7:

Listen Up!: Pathophysiology of hearing loss in the national Longitudinal Study of Australian Children

Supervisors: Dr Rachel Burt; Prof Melissa Wake

Duration: 3 years commencing 2015

The Problem: Much is known about the genetic determinants of profound, congenital hearing impairment, with over 70 genes implicated in non-syndromic deafness. Despite this, very little is understood about susceptibility to progressive and age-related forms of hearing impairment. We know that as many as two thirds of people aged over 70 years suffer from a measurable degree of hearing loss, often resulting from death of sensory cells within the cochlea. Simplistically, this is often thought to reflect a lifetime of exposure to environmental insults such as noise and chemicals. Pathophysiological mechanisms of senescence, such as inflammation and oxidative stress, undoubtedly play a role in progressive hearing loss, as do genetic factors, particularly to early-onset of this condition. We aim to define the factors that predispose to progressive hearing loss and to use this information to inform guidelines for prevention of this condition, and as a foundation for development of improved diagnostic tools and treatment strategies for hearing loss.

The Project: The Longitudinal Study of Australian Children (also known as Growing Up in Australia and LSAC) is the biggest ongoing national study of children ever undertaken in Australia. It is studying the impact of Australia’s social and cultural environment on the next generation and aim to add to the understanding of early childhood development, inform social policy, and identify opportunities for intervention. 10,000 children have been followed every two years since recruitment as babies or pre-schoolers in 2004.

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As the 4000 children in the ‘Baby’ cohort turn 11-12 years old in 2015, they are invited to attend a one-off “Child Health CheckPoint” session to undergo a wide range of state-of-the-art assessments (see http://www.mcri.edu.au/research/research-projects/lsac-childhealthcheckpoint/). One of the components of this 10-year old health check – termed “Listen Up” - is an audiological assessment of each child and one parent. This will provide the most comprehensive population-based data on hearing profiles in young and middle-aged Australians ever collected in this country. We are also measuring conversation in noise and language processing, and collecting biosamples from both the child and the parent.

We hypothesise that many of the children with slight, mild, or unilateral hearing loss bear genetic variation that predisposes them to progressive hearing loss. Paired parent/child hearing data will permit us to assess the correlation of slight/mild childhood hearing impairment with early-onset age-related hearing loss. The inclusion of parent specimens in the LSAC biorepository will allow us to test the hypothesis that expression of pro-inflammatory cytokines such as TNF-a, IL-6 and IL-1b is correlated with age-related hearing loss. A planned extension to the project will include sequence analysis of children with slight/mild hearing impairment, to look for genetic variation in approximately 300 genes known and predicted to be involved in hearing impairment. Parental DNA will be used to determine heritability of any novel gene variants discovered in the children.

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Dr Rachel Burt; rachel.burt@mcri.edu.au
An opportunity exists for one or more Graduate Research Student (Masters or PhD) to join the LSAC team to implement the data collection for the Listen-Up component of the 11 year old health check and to drive the analyses of this data.

**Techniques:** There is scope for the student to be involved at multiple levels of this project ranging from audiologic assessment of study participants through to molecular biological and statistical analyses of the samples and data collected during the study. Training and support will be provided to ensure the student will develop the broad range of skills required for this project. The scope of the work can be adapted to suit students from a range of disciplines including (but not limited to) audiology, speech pathology, genetics and molecular biology or population health.
PhD Project 8:

The relationship between use of time and academic performance in 11-12 year old children.

Supervisors: Prof Tim Olds, Prof Melissa Wake
Duration: 3 years

Project aims/objective: The objective of this PhD will be to examine the associations between how children use their time and academic performance.

There is strong evidence of cross-sectional associations between physical activity (PA) and academic performance in children, and that bouts of PA acutely, if modestly, improve information processing and on-task behaviour. Studying, reading and playing a musical instrument are also associated with greater academic success. Little is known about how other aspects of use of time, such as screen time, chores, and social interactions affect academic performance. Furthermore, there are many potential confounders, such as socio-economic status, school resourcing, remoteness of residence, family structure, and of course previous academic performance.

The Longitudinal Study of Australian Children (LSAC) is Australia’s largest longitudinal study of children. A research team, funded by the National Health and Medical Research Council, is undertaking an additional physical health and biomarkers module as part of LSAC, the “Child Health CheckPoint”, at age 11-12 years, in late 2014-2015. Among the measurements in this module are comprehensive use-of-time recalls and 7-day 24-hour accelerometer data. These data can also be linked to national literacy and numeracy (NAPLAN) data. Together with extensive socio-demographic information, these data provide a unique opportunity to understand the associations between use of time and academic success.

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Honours Project 9:

About Time!: Use of time and health-related quality of life in the Longitudinal Study of Australian Children

Supervisors: Prof Melissa Wake; Prof Tim Olds; A/Prof Lisa Gold

Duration: 1 year

Project aims/objective: To examine associations between how children use their time and their health-related quality of life (HRQoL).

HRQoL goes beyond direct measures of population health, such as life expectancy, and focuses on the impact health status has on quality of life, positive emotions and well-being. Previous studies have shown that fatness and household income are associated with children’s HRQoL, as are some aspects of time use such as physical activity (positive) and screen time (negative). Some studies suggest that sleep may also be important. Little is known about other aspects of use of time such as chores, social interactions and school-related activities. Furthermore, socio-demographic factors can affect both use of time and HRQoL, making it hard to disentangle which factors are really important.

Working within the Longitudinal Study of Australian Children’s Child Health CheckPoint, the student will have a rare opportunity to contribute to one of Australia’s most important and exciting national research projects while also addressing a cutting-edge question. The CheckPoint provides a comprehensive snapshot of children’s use of time at 11-12 years (N = 4000) using the computerised MARCA (Multimedia Activity Recall for Children and Adolescents), as well as a utility-based HRQL measure (the CHU-9D) and child-self and parent-proxy version of the PedsQL physical and psychosocial functioning questionnaires. These data can be used to address the study question. (continued...)

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In a population-based cohort of 11-12 year olds, examine cross-sectional relationships of comprehensive computerised use-of-time diaries with:

a.) Self-reported:
   - health-related quality of life (CHU-9D);
   - physical and psychosocial health (PedsQL);
   - positive well-being (General Well-being Scale)

b.) Parent-proxy reported physical and psychosocial health (PedsQL)
Honours Project 10:

Kidney health and adiposity in the Longitudinal Study of Australian Children

Supervisors: Dr Siah Kim; Prof Melissa Wake; Prof Jonathan Craig
Duration: 1 year commencing Feb 2015

Overview: Adult obesity is a known risk factor for cardiovascular disease and chronic kidney disease. In children, the association between obesity and albuminuria is not as clearly established, with cross sectional studies such as the US NHANES reporting an unexpectedly decreased risk with increasing body mass index. Albuminuria and obesity in children, however, do cluster with impaired glucose tolerance, hypertension and hyperlipidaemia. Working within the Longitudinal Study of Australian Children’s unique Child Health CheckPoint, this project provides a rare opportunity to investigate the relationship between adiposity and albuminuria in children in one of Australia’s most important and exciting national research projects.

Objectives: The Child Health CheckPoint is providing a detailed physiologic profile of a nationally-representative sample of up to 4000 children at age 11-12 years (n=4000). This includes albuminuria, measured using dipstick albumin to creatinine ratio (ACR). In addition to body mass index, adiposity is measured by waist circumference, total and segmental body fat, and total and segmental lean mass. This project will provide definitive associations of ACR with specific and sensitive anthropometric measures, as well as training in child population research methodology.
**Honours / Masters / PhD Project 11:**

**Bone Zone! Key factors in developing a healthy skeleton in the Longitudinal Study of Australian Children**

**Supervisors:** Prof Melissa Wake; Dr Peter Simm

**Duration:** 1 year


Developing a healthy skeleton and attaining maximal peak bone mass are critical to healthy human development. Understanding this process could lower the lifetime risks of osteoporosis, a leading cause of morbidity in Australia and worldwide. Exciting new research areas are the crucial role of the muscle-bone unit in maximising skeletal development, and the degree of cross-talk between bone and adipose tissue. There is a dearth of large scale population studies in young people to further explore these associations.

We seek exceptional Honours, Masters and/or PhD students to join us in an exciting program of population bone research arising from the Bone Zone station of the Child Health CheckPoint. Study participants will each undergo peripheral quantitative computerised tomography (pQCT) scans of the lower limb, in order to assess bone density, skeletal geometry and measure bending strength. Muscle cross sectional data will also be available.

*(continued...)*
The participants will also provide comprehensive use-of-time recalls, 7-day 24-hour accelerometer data, submaximal fitness tests and anthropometric measures including detailed body composition. With these data, we seek to increase understand the complex interaction between physical activity, body composition and bone health.

With the same data collected for a parent of each 11-12 year old child, this presents a unique opportunity to also explore transgenerational effects of these issues.

The Honours student, in collaboration with the study team, will learn multiple techniques relevant to population health research and measurement, and will conduct quantitative analyses to address a subset of the study objectives described above.
Honours Project 12:

Food Stop!: How eating choices influence body composition in the national Longitudinal Study of Australian Children

Supervisors: Prof Melissa Wake, Dr Jess Boyce, A/Prof Pauline Jansen

Duration: 1 year commencing Feb 2015

Overview: Overweight children (and adults) with unhealthy eating patterns are at risk for obesity and poor cardiovascular health. The consequences of childhood eating behaviours are poorly understood and the literature is limited in two ways. First, previous studies examining children’s naturalistic choices and consumption have had small samples making it difficult to draw population-level conclusions that might influence intervention strategies. Second, no research has been able to study how children’s naturalistic food choices relate to their developing body composition. This is because, until now, it has been technically too challenging to comprehensively measure physiologic profiles in community samples. Working within the Longitudinal Study of Australian Children’s Child Health CheckPoint, this project will address these current limitations, while also providing a rare opportunity to work within one of Australia’s most important and exciting national research projects.

Objectives: The Child Health CheckPoint provides a snapshot of children’s physiological functioning at 11-12 years (N = 4000) AND contains a 20-minute Food Stop in the middle of participants’ 3-hour visit. This Food Stop provides a unique opportunity to observe and accurately quantify the parents’ and children’s food choices and consumption data, and to correlate them with a range of cutting-edge anthropometric measures that gauge fat mass, lean mass, and segmental body composition as well as traditional BMI measures.

Aims: Examine cross-sectional relationships of food choices and energy consumption with body composition in paired population-based cohorts of 11-12 year old Australian children and young to middle-aged Australian adults (their parents).
Honours Project 13:

Food Stop!:: How eating choices influence cardiovascular health in the national Longitudinal Study of Australian Children

Supervisors: Prof Melissa Wake, Dr Jess Boyce, A/Prof Pauline Jansen

Duration: 1 year commencing Feb 2015

Overview: Overweight children (and adults) with unhealthy eating patterns are at risk for poor cardiovascular health. The consequences of childhood eating behaviours are poorly understood and the literature is limited in two ways. First, previous studies examining children’s naturalistic choices and consumption have had small samples making it difficult to draw population-level conclusions that might influence intervention strategies. Second, no research has been able to study how children’s naturalistic food choices relate to their developing body composition and/or heart health. This is because, until now, it has been technically too challenging to comprehensively measure physiologic profiles in community samples. Working within the Longitudinal Study of Australian Children’s Child Health CheckPoint, this project will address these current limitations, while also providing a rare opportunity to work within one of Australia’s most important and exciting national research projects.

Objectives: The Child Health CheckPoint provides a snapshot of children’s physiological functioning at 11-12 years (N = 4000) AND contains a 20-minute Food Stop in the middle of participants’ 3-hour visit. This Food Stop provides a unique opportunity to observe and accurately quantify the parents’ and children’s food choices and consumption data, and to correlate them with a range of cutting-edge cardiovascular measures (retinal vascular photography, cIMT and pulse wave/velocity analysis) that gauge micro-, macro- and endo-vascular health.

Aims: Examine relationships of food choices and energy consumption with cardiovascular health in paired population-based cohorts of 11-12 year old Australian children and young to middle-aged Australian adults (their parents).

Professor Melissa Wake; Melissa.wake@rch.org.au
Honours Project 14:

Food Stop!: How eating choices influence physical activity and fitness in the Longitudinal Study of Australian Children

Supervisors: Prof Melissa Wake; Dr Jessica Boyce; A/Prof Pauline Jansen

Duration: 1 year commencing Feb 2015

Overview: Overweight children (and adults) with unhealthy eating patterns are also candidates for low physical activity and poorer levels of fitness. The consequences of childhood eating behaviours are poorly understood and the literature is limited in two ways. First, previous studies examining children’s naturalistic choices and consumption have had small samples making it difficult to draw population-level conclusions that might influence intervention strategies. Second, no research has been able to study how children’s naturalistic food choices relate to their physical activity and fitness levels. This is because, until now, it has been technically too challenging to comprehensively measure physiologic profiles in community samples. Working within the Longitudinal Study of Australian Children’s Child Health CheckPoint, this project will address these current limitations, while also providing a rare opportunity to work within one of Australia’s most important and exciting national research projects.

Objectives: The Child Health CheckPoint provides a snapshot of children’s physiological functioning at 11-12 years (N = 4000) AND contains a 20-minute Food Stop in the middle of participants’ 3-hour visit. This Food Stop provides a unique opportunity to observe and accurately quantify the children’s food choices and consumption data, and to correlate them with a range of cutting-edge fitness (broad jump, bicycle ergometry) and physical activity (7 day GENEActiv wits-worn accelerometry) measurements.

Aims: In a population-based cohort of 11-12 year old Australian children, examine cross-sectional relationships of food choices and energy consumption with objectively-measured fitness and 7-day physical activity.

Dr Jessica Boyce; Jessica.boyce@mcri.edu.au
Honours Project 15:

Hearts & Minds (1): How mental health influences childhood cardiovascular structure and function in the national Longitudinal Study of Australian Children

Supervisors: Prof Melissa Wake; Ms Kate Lycett

Duration: 1 year commencing Feb 2015

Overview: Cardiovascular disease and mental illnesses are leading causes of mortality and morbidity that frequently co-occur. This raises important questions of lifelong cause and effect, given that both cardiovascular disease and mental illness evolve from childhood and throughout adulthood. Technical advances now make measurement of cardiovascular structure and function feasible within population-based child cohorts. Working within the Longitudinal Study of Australian Children’s unique Child Health CheckPoint, this project provides a rare opportunity to work with cutting-edge measures in one of Australia’s most important and exciting national research projects.

Objectives: The Child Health CheckPoint provides a snapshot of macrovascular (carotid intima-media thickness, cIMT), microvascular (retinal photography) and endovascular (pulse wave and velocity) health in 11-12 year old children (n=3-4,000) as well as validated measures of mental health collected within the comprehensive 3-hour CheckPoint assessment. We hypothesise that poor mental health will be a risk factor, and positive well-being a protective factor, for cardiovascular health especially the functional measures that are believed to precede structural changes. As well as addressing these hypotheses, the student will learn about population research and objective, cutting-edge cardiovascular measurement in children.
Honours Project 16:

Hearts & Minds (2): How mental health influences adult cardiovascular structure and function in the national Longitudinal Study of Australian Children

Supervisors: Prof Melissa Wake, Ms Kate Lycett

Duration: 1 year commencing Feb 2015

Overview: Cardiovascular disease and mental illnesses are leading causes of mortality and morbidity that frequently co-occur. This raises important questions of lifelong cause and effect, given that both cardiovascular disease and mental illness evolve from childhood and throughout adulthood. Technical advances now make measurement of cardiovascular structure and function feasible within population-based child cohorts. Working within the Longitudinal Study of Australian Children’s unique Child Health CheckPoint, this project provides a rare opportunity to work with cutting-edge measures in one of Australia’s most important and exciting national research projects.

Objectives: The Child Health CheckPoint provides a snapshot of macrovascular (carotid intima-media thickness, cIMT), microvascular (retinal photography) and endovascular (pulse wave and velocity) health in 3-4,000 middle-aged adults (parents of the 11-12 year old children in the CheckPoint) as well as validated measures of mental health. We hypothesise that by this age poor mental health will be a risk factor, and positive well-being a protective factor, not only for vascular function but for more permanent structural changes. As well as addressing these hypotheses, the student will learn about population research and objective, cutting-edge cardiovascular measurement in adults.
Honours Project 17:

Listen Up!: How subtle hearing difficulties influence children’s language and wellbeing in the national Longitudinal Study of Australian Children

Supervisors: Dr Penny Levickis, Mr Peter Carew, Ms Sherryn Tobin, Prof Melissa Wake

Duration: 1 year commencing Feb 2015

Overview: Around 3% of older children are believed to have a slight or mild hearing loss, with many more experiencing auditory processing difficulties against background noise. The population prevalence, costs and burdens of these issues and the auditory thresholds are not known for children. Despite this information void, the fastest-growing sector of hearing aid fitting is for children with mild hearing loss. Technical advances with adaptive computerised testing now makes it feasible to measure not only hearing acuity but language processing both with and without background noise in the context of a large population-based study. Working within the Longitudinal Study of Australian Children’s unique Child Health CheckPoint, this project provides a rare opportunity to work with cutting-edge measures in one of Australia’s most important and exciting national research projects.

Objectives: The Child Health CheckPoint provides a snapshot of hearing acuity (pure-tone threshold), language against noise (LiSN-S), language processing (recalling sentences) and receptive vocabulary (NPTV) in 11-12 year old children (n=3-4,000). It is also measuring mental health problems, positive well-being and health-related quality of life (HRQL) using validated measures. We hypothesise that poor hearing acuity and auditory processing against noise will impact more on children’s language processing than vocabulary, and in turn will impact on mental health and HRQL above a demonstrable threshold. This will add to the evidence base informing when hearing augmentation should be considered for children. As well as addressing these hypotheses, the student will learn about population research and objective, cutting-edge adaptive psychophysical measurement in children.
Honours Project 18:

Listen Up!: How subtle hearing difficulties impact on adult quality of life in the national Longitudinal Study of Australian Children

Supervisors: Dr Penny Levickis, Dr Georgie Columbus, Mr Peter Carew, Professor Melissa Wake

Duration: 1 year commencing Feb 2015

Overview: Around 10% of adults in their 40s and as many as two thirds of those over 70 experience age-related hearing loss, with many more experiencing auditory processing difficulties against background noise. The population costs and burdens of these issues are not well described for adults, making it difficult to know at what thresholds the benefits of hearing aid fitting outweigh their burdens and costs. Technical advances with adaptive computerised testing now makes it feasible to measure not only hearing acuity but language processing both with and without background noise in the context of a large population-based study. Working within the Longitudinal Study of Australian Children’s unique Child Health CheckPoint, this project provides a rare opportunity to work with cutting-edge measures in one of Australia’s most important and exciting national research projects.

Objectives: The Child Health CheckPoint provides a snapshot of hearing acuity (pure-tone threshold), language against noise (LiSN-S), language processing (recalling sentences) and receptive vocabulary (NPTV) in the 3-4000 middle-aged parents of the 11-12 year old child participants. It is also measuring mental health, positive well-being and health-related quality of life (HRQL) using validated measures. We hypothesise that, at this age, poor hearing acuity and auditory processing against noise do not impact on language processing or vocabulary, but will have direct impacts on mental health and HRQL above a demonstrable threshold. This will add to the evidence base informing when hearing augmentation should be considered for adults. As well as addressing these hypotheses, the student will learn about population research and objective, cutting-edge adaptive psychophysical measurement in adults.

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Next Steps

If you would like to hear more about any of the projects listed in this booklet, please contact the supervisor listed under each project title. You may also find it helpful to read general advice about PhDs in each of the universities where our current potential supervisors are based:

University of Melbourne
http://gradresearch.unimelb.edu.au/handbooks/phd/index.html

Deakin University

University of South Australia

To keep in touch and up to date with the Child Health CheckPoint please visit www.lsac-childhealthcheckpoint.org.au. An updated list of PhD projects will be listed here