Early Career Research Award Application Cover Sheet

Entry Title: The Health4Life Initiative: An eHealth Intervention to Improve Physical and Mental Health in Adolescence and Beyond

Name of Applicant: Dr Lauren Gardner

Organisation: The Matilda Centre for Research in Mental Health and Substance Use, University of Sydney
The MHS Early Career Researcher Awards (Innovation)

Part B

The Health4Life Initiative: An eHealth Intervention to Improve Physical and Mental Health in Adolescence and Beyond

Summary: Describe your research (max. 400 words)

Chronic diseases such as mental disorders, cardiovascular disease, and type 2 diabetes are the leading causes of death and disability worldwide. Unhealthy behaviours, such as eating poorly, smoking, risky alcohol use and physical inactivity, are known risk factors for chronic diseases. More recently, poor sleep and excessive sedentary recreational screen time (e.g., online gaming and watching TV), have also been identified as important risk factors. These lifestyle risk behaviours, collectively referred to as the “Big 6”, typically emerge during adolescence and, if not addressed, become entrenched by adulthood. In addition to the long-term harms, these risk behaviours are associated with short-term harms, such as anxiety, depression, psychological distress, and obesity. Early and effective prevention is therefore critical to reduce the short-term harms and interrupt the long-term trajectory towards chronic disease.

Importantly, the Big 6 risk behaviours tend to co-occur as people engage in multiple risk behaviours simultaneously, which increases the risk of harms beyond simply adding the effects of single behaviours. A multiple health behaviour change approach, in which risk factors are targeted together, rather than in isolation, is a timely and efficient way to improve the health of adolescents and address the root cause of chronic disease.

The Health4Life Initiative is a school-based eHealth intervention that aims to empower young people to improve their physical and mental health by concurrently targeting the Big 6 risk behaviours. The program consists of three components: 1) An online, interactive cartoon-based program with additional class activities, delivered at school to all year 7 students (universal prevention), 2) A companion smartphone app to reinforce the material taught in class and encourage self-monitoring and goal setting (universal prevention), and 3) Booster content based on cognitive behavioural therapy and motivation enhancement principles, delivered to students identified as most at risk of chronic disease when they are in years 8 and 9 (selective prevention).

I am coordinating a cluster randomised controlled trial (RCT) in 71 schools (>6,600 students) across New South Wales, Queensland and Western Australia to evaluate the effectiveness of the Health4Life program. This involves managing a $6M philanthropic grant and a team of 21 investigators and 8 research staff across 6 Universities. The universal intervention components, baseline and post-test surveys were implemented in 2019. The 12-month follow-up survey and selective intervention are currently underway. Students will also be assessed on the Big 6 and mental health outcomes at 24- and 36-month follow-up.

Focus: Describe how your research illustrates Innovation (max. 200 words)

The Health4Life Initiative is innovative because it:

- **Is an Australian and world first trial** of an eHealth school-based intervention that simultaneously targets the Big 6 lifestyle risk behaviours among adolescents.
- **Utilises eHealth components** which can overcome common implementation barriers experienced within traditional face-to-face interventions, such as teachers requiring training to facilitate delivery and programs being adapted. eHealth interventions have the potential to increase engagement, fidelity and scalability.
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- Uses a multiple health behaviour change approach, as opposed to most prevention approaches that have focused on changing single behaviours only. A multiple health behaviour change approach can efficiently modify the Big 6 risk behaviours and improve health.
- Integrates a multimodal combination of universal and selective prevention within one program which is both novel and at the forefront of prevention in chronic disease.

Potential Impact: Summarise the potential contribution to and/or implications for society (max. 200 words)

The Health4Life program aims to equip students with the knowledge and skills required to make healthy choices and support their friends as they navigate the critical adolescent period. If found to be effective, Health4Life has the potential to make a substantial public health impact by empowering young people to improve their physical and mental health in adolescence and beyond. This would not only reduce the short-term harms among adolescents (e.g., mental health problems, alcohol-related harms, obesity), but also reduce the incidence of chronic disease, minimising the associated costs, disability and early mortality. The use of eHealth methods offers potential to facilitate more efficient translation, along with increasing access to a large number of young people, including hard to reach populations, at a lower cost than traditional face-to-face interventions.

Consumers’ Contribution: Describe any contribution by Mental Health consumers/person with lived experience other than as subjects; e.g. reference group, researcher (max. 200 words)

The Health4Life Initiative was developed using an iterative co-design process, incorporating students, teachers and health professionals. Firstly, the core content areas for the program were developed based on the best available evidence and the results from a survey among 815 young people to identify knowledge gaps, attitudes, barriers and facilitators to good health. Character profiles were developed with and reviewed by young people (n=7; aged 12-15 years; 2 males and 5 females), and based on these characters and the findings from the survey, draft cartoon scripts were written by members of the research team. The scripts underwent review by expert researchers (n=22) and young people (n=9). In particular, youth reviewers modified the language and relevance of the storylines. Following animation, user testing was also conducted among 41 year 7 students, whereby they viewed each cartoon lesson and provided feedback that guided further modifications. Teachers (n=8) and curriculum experts (n=6) also provided feedback on the school-based program. Similarly, the Health4Life app content and design was developed based on the findings of the survey among young people and a focus group with 12 adolescents.
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Curriculum Vitae (max. 4 x A4 pages)

Education/Qualifications

2014 – 2018  
**Doctor of Philosophy**  
School of Psychology, University of Wollongong  
Thesis title: Participation and Dropout in Organised Youth Sport: The Role of Implicit Beliefs and Key Social Figures

2009 – 2013  
**Bachelor of Psychology – First Class Honours**  
School of Psychology, University of Wollongong  
Thesis Title: The relationship between implicit theories, anxiety and attributional style in amateur soccer players

Research Appointments

Dec 2018 - Present  
**Postdoctoral Research Fellow (Level A)**  
The Matilda Centre for Research in Mental Health and Substance Use, University of Sydney

Feb 2018 – Dec 2018  
**Research Program Officer**  
Centre of Research Excellence in Mental Health and Substance Use, National Drug and Alcohol Research Centre, UNSW Sydney

Jun 2017 – Feb 2018  
**Program Coordinator**  
Black Dog Institute

Feb 2016 – May 2017  
**Research Assistant**  
Faculty of Education and Social Work, University of Sydney

Mar 2014 – Apr 2018  
**PhD Candidate**  
School of Psychology, University of Wollongong

Nov 2013 – Feb 2016  
**Research Assistant**  
School of Psychology, University of Wollongong

Grants and Funding

- **Funding as Chief Investigator A:** $192,338.  
  **Funding as any Chief Investigator:** $402,338


- Gardner, L. A. Postgraduate Research Support Scheme to present PhD findings at an international conference, University of Wollongong, 2016. $3000 **Role: CIA**

Publications

Peer-Reviewed Journal Articles


cluster randomised controlled trial of an eHealth school-based program targeting multiple lifestyle risk behaviours among young Australians. BMJ Open. Accepted 30th May 2020. *Equally credited authors.


**Book Chapters**


**Conference Presentations**

**Oral Presentations**


**Poster Presentations**


**Invited Presentations**


**Teaching and Education Engagement**

**Mentoring, Supervision and Education**

Lucy Watson – CMHDARN Community Research Mentoring Program
Community Health Promotion Officers, ACON Health

June 2020 – Present

Christopher Lai – Summer Research Scholarship Student
Sydney Medical School, University of Sydney

Dec 2019 – Feb 2020

Scarlett Smout – Master of Public Health (Capstone Research Project) & Research Assistant at the Matilda Centre, University of Sydney

Oct 2018 – May 2019

Evelyn Heap – Professional and Community Engagement (PACE) HLTH300 research placement, Macquarie University (Co-supervisor)

Mar 2019 – Jul 2019

**Workshops and Webinars**

- Invited to present on “Applying and Responding to Ethics Committees”, Lunch and Learn Workshop Series, The Matilda Centre, Sydney, August 18 2020
- Invited to present on the Health4Life Initiative and my research career for the Australasian Professional Society on Alcohol & other Drugs “Thoughts of Substance” series, Sydney, July 15 2020
- Invited to present on “Finding your wellbeing champion”, NSW Association of Independent Schools Wellbeing Podcast Series, Sydney, July 8 2020
- Invited by Sydney Primary Health Network to coordinate and co-present “AOD: Substance use and physical health” webinar, Sydney, February 12 2019

**Governance, Leadership & Engagement**

**Peer-Review**


**Leadership Roles**

- **Early Career Research Group Co-Coordinator**
  The Matilda Centre, University of Sydney
  2020 – Present

- **Co-Lead of the Conference Portfolio**
  The Matilda Centre, University of Sydney
  2019 – Present
To Whom It May Concern,

It is my pleasure to provide a referee letter for Dr Lauren Gardner. Lauren is a gifted early career researcher whom I have known for approximately 2.5 years during her time at the Matilda Centre for Research in Mental Health and Substance Use at the University of Sydney (formally known as the NHMRC Centre for Research Excellence in Mental Health and Substance Use at UNSW). Her program of research aims to better understand and prevent chronic disease by targeting physical and mental health determinants among adolescents, with a particular focus on internet-based prevention.

Lauren has demonstrated outstanding leadership throughout her research career. She is currently managing two large philanthropic projects ($6M each) aiming to develop, evaluate and take to scale internet-based preventive health interventions for secondary school students. This includes the Health4Life Initiative, which aims to evaluate the first internet-based program to reduce chronic disease risk and promote mental health among secondary school students by simultaneously targeting six key lifestyle behaviours (physical activity, diet, sleep, screen time, alcohol use and smoking). Lauren brought expertise in adolescent sport and physical activity to the project and made a substantial contribution to the development of the Health4Life program. She played an integral role in recruitment, implementation and pre- and post-test evaluation in 2019. Lauren is now the lead academic on the Health4Life Initiative, mentored by Prof Teesson. This is a complex project which involves a great degree of skill and expertise. She is coordinating the randomised controlled trial among 71 schools (>6600 students) across NSW, WA and QLD, and convening a research team comprised of 21 investigators and 8 research staff from 6 universities across Australia and the United States. She is concurrently leading the Climate Schools Upscale project, which aims to develop a sustainable model to disseminate the internet-based substance use prevention and wellbeing programs nationwide. Lauren is integrally involved in the translation of the Climate Schools programs to Australian schools (used by >800 schools and >23,000 students). The Upscale project has the potential to further drive large scale implementation of current and future (e.g., Health4Life) internet-based prevention programs, leading to significant short- and long-term improvements in health across Australia.

Lauren is a dedicated and productive researcher who has already made significant contributions to the body of knowledge about adolescent sport participation, youth mental health and internet-based prevention. Despite her early career stage (PhD 2018), her track record is exceptional. She has published 19 peer-reviewed papers (6 first author) in leading journals (e.g., The Lancet Digital Health, International Review of Sport and Exercise Psychology [IF=6.91]). She has presented her work on 13 occasions, including 4 invited presentations (e.g., American Academy of Child and Adolescent Psychiatry) and 6 international conferences (e.g., International Association for Youth Mental Health). Lauren has also secured over $400,000 in competitive research funding, including $192,000 as CIA. Her leadership is further evidenced by supervision and mentoring of 8 research staff and 3 students. Lauren regularly engages in community engagement activities, including participation in webinars, podcasts and the Community Mental Health Drug and Alcohol Research Network (CMHDARN) mentoring program. She also undertakes leadership activities within the academic community including journal peer review and coordinating the Matilda Centre conference portfolio and Early Career Researcher (ECR) group.

Lauren is a passionate early career researcher with unquestionable potential to undertake a research career in the prevention science field. I am delighted to endorse Lauren for this award.

Yours Sincerely,

Dr Katrina Champion
Senior Research Fellow and NHMRC Early Career Fellow
The Matilda Centre for Research in Mental Health and Substance Use
University of Sydney
Contact details for an additional referee who may be contacted by phone (max. 1/2 x A4 page)

Prof Maree Teesson
Director, The Matilda Centre for Research in Mental Health and Substance Use
University of Sydney
A Web-Based Intervention to Prevent Multiple Chronic Disease Risk Factors Among Adolescents: Co-Design and User Testing of the Health4Life School-Based Program

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\textsuperscript{3} Department of Exercise Physiology, School of Medical Sciences, Faculty of Medicine, UNSW Sydney, Sydney, Australia
\textsuperscript{4} National Drug Research Institute, Faculty of Health Sciences, Curtin University, Perth, Australia
\textsuperscript{5} Priority Research Centre for Physical Activity and Nutrition, Faculty of Education and Arts, University of Newcastle, Callaghan, Australia
\textsuperscript{6} See Authors Contributions section. All authors contributed equally.

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ABSTRACT

Background: Chronic diseases are the leading cause of death worldwide. Addressing key lifestyle risk factors during adolescence is critical for improving physical and mental health outcomes and reducing chronic disease risk. Schools are ideal intervention settings, and electronic health (eHealth) interventions afford several advantages, including increased student engagement, scalability, and sustainability. Although lifestyle risk behaviors tend to co-occur, few school-based eHealth interventions have targeted multiple behaviors concurrently.

Objective: This study aimed to summarize the co-design and user testing of the Health4Life school-based program, a web-based cartoon intervention developed to concurrently prevent 6 key lifestyle risk factors for chronic disease among secondary school students: alcohol use, smoking, poor diet, physical inactivity, sedentary recreational screen time, and poor sleep (the Big 6).

Methods: The development of the Health4Life program was conducted over 18 months in collaboration with students, teachers, and researchers with expertise relevant to the Big 6. The iterative process involved (1) scoping of evidence and systematic literature review; (2) consultation with adolescents (N=815) via a cross-sectional web-based survey to identify knowledge gaps, attitudes, barriers, and facilitators in relation to the Big 6; (3) content and web development; and (4) user testing of the web-based program with students (n=41) and teachers (n=8) to evaluate its acceptability, relevance, and appeal to the target audience.

Results: The co-design process resulted in a six-module, evidence-informed program that uses interactive cartoon storylines and web-based delivery to engage students. Student and teacher feedback collected during user testing was positive in terms of acceptability and relevance. Commonly identified areas for improvement concerned the length of modules, age appropriateness of language and alcohol storyline, the need for character backstories and links to syllabus information, and feasibility of implementation. Modifications were made to address these issues.

Conclusions: The Health4Life school-based program is the first universal, web-based program to concurrently address 6 important chronic disease risk factors among secondary school students. By adopting a multiple health behavior change approach, it has the potential to efficiently modify the Big 6 risk factors within one program and to equip young people with the skills and knowledge needed to achieve and maintain good physical and mental health throughout adolescence and into adulthood.