Scaling up evidence-based body image interventions for adolescents: Studies from the UK, India, and Indonesia

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Supervisory Team

Director of Studies: Professor Phillippa C. Diedrichs

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Declaration of authorship and training

I confirm that all of the work presented in this doctoral thesis, including the selected publications and accompanying commentary (except where stated), is the original work of the author. I confirm that none of the published body of work included within this portfolio of publications has been submitted for another academic award in this or any other institution.

I confirm that the necessary training requirements have been met through accredited learning (60-120 credits, of which at least 60 are at level M).

Kirsty M Garbett

Abstract

The field of adolescent body image research is well established and has been burgeoning since the mid-1990s. Body image concerns are prevalent among adolescents globally, and the extensive psychological and physical health consequences are widely recognised, particularly in high-income, English-speaking contexts (Cash, 2017). Encouragingly, a number of modifiable risk and protective factors have been identified and targeted interventions have shown effectiveness. The majority of these interventions are delivered by health professionals or researchers and target high-risk individuals, typically young women (Becker, Perez, et al., 2017), across Europe, Australia, and the United States (Chua et al., 2020). Reliance on expert provision, usually through face-to-face contact, makes many interventions costly, unsustainable, and inaccessible for most. As demonstrated by Kazdin and Blaze (2011), even doubling professionally delivered evidence-based interventions would still only reach a small proportion of those in need. In low- and middle-income countries, these statistics are even more concerning with even fewer health professionals available (Patel et al., 2016). As such, there is an urgent need to develop interventions that move away from the traditional health professional led model, to ensure interventions are scalable, cost-effective, and most importantly, accessible to those in need.

The eight publications presented in this thesis seek to improve the real-world impact of evidence-based body image interventions by evaluating the impact of low-cost, scalable body image interventions. Moreover, this thesis expands the regions where body image interventions are typically developed and evaluated (namely, in Europe, Australia, and the United States) to consider the efficacy of interventions in India and Indonesia. Lastly, this thesis explores the issue of measurement when working in new cultural contexts, specifically in the development and validation of a culturally adapted body image measure for use among Indian adolescents. Together, the findings of these publications advance the field of body image scholarship in relation to task-shifting intervention delivery, adaptation and development of cultural relevant evidence-based programmes, and validation of measures in new cultural contexts.

To circumvent the barrier of health professional led provision in the dissemination of body image interventions for adolescents, **Publication 1** and **2** report on the evaluation of an online intervention for mothers of UK adolescent girls. The randomised controlled trial reported in **Publication 1** provided support that mothers can be effective facilitators in the delivery of

body image interventions for their daughters. That said, it is widely recognised that mothers' engagement in interventions to improve the body image of their daughters is often low (Hart et al., 2015), limiting dissemination potential. **Publication 2** explores mother and daughter preferences for intervention content with the view to improve uptake, engagement with, and ultimately the dissemination of, these types of interventions.

Publication 3 and **4** evaluate teacher-led interventions in UK schools. Prior to these studies, school-based body image programmes had almost exclusively been evaluated when delivered by external providers. Few teacher-led interventions had been evaluated, and none reported sustained improvements in adolescent body image (Yager et al., 2013). **Publication 4** is the first study to show improvements in body image among adolescents following the delivery of a teacher-led classroom-based intervention up to six-months later. As well ensuring the accessibility and scalability through task-shifting intervention delivery to teachers, these studies provide useful insights to inform task-shifting of school-based interventions across the mental health field. These insights are presented in **Publication 5**, which reports on the extensive acceptability data collected during **Publication 3** and **4**.

Building upon the above studies, **Publication 7** examined the acceptability and preliminary efficacy of a school-based intervention once adapted for use in a new cultural context; namely, in urban India. This publication is an important and novel development in the field. There is high demand for school-based mental health interventions in countries such as India (Ministry of Health and Family Welfare, 2014; Parikh et al., 2019), yet research efforts remain sparse. To robustly measure intervention impact in India, this project was underpinned by the adaptation and validation of the Body Esteem Scale for Adults and Adolescents among Indian adolescents (**Publication 6**).

The final publication presented combines my learnings from the previous publications to report on the development and evaluation of a novel, social-media based intervention for Indonesian adolescent girls (**Publication 8**). This publication presents the protocol for a randomised controlled trial currently underway in Indonesia to evaluate a six-part series, developed in collaboration with an Indonesian creative agency, a non-profit technology focused organisation, a local research agency, and industry. This publication demonstrates my leadership skills within academia, and ability to work across multiple, multicultural stakeholders to achieve scalable evidence-based interventions for adolescents.

In conclusion, this thesis brings together a body of work that explores methods for scaling up and improving the reach of body image interventions for young people. The findings suggest task-shifting intervention delivery to community members, such as schoolteachers and parents, and employing online strategies, are scalable and sustainable options to disseminate evidence-based body image interventions to adolescents. Collectively, they demonstrate the need for a multi-level approach to tackling body image concerns, in that no one intervention will suit all those in need. Further, this thesis provides evidence that culturally adapted, evidence-based interventions can be efficacious in new cultural contexts. Issues regarding the validity of body image measures when working internationally are also considered.

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Abbreviations

BESAA	Body Esteem Scale for Adults and Adolescents
CAR	Centre for Appearance Research
CBPR	Community-Based Participatory Research
DSEP	Dove Self-Esteem Project
GDPR	General Data Protection Regulation
HIC	High-Income Countries
IF	Impact Factor
LMIC	Low-and-Middle-Income Countries
QAA	Quality Assurance Agency
PSHE	Physical Social and Health Education
RCT	Randomised Controlled Trial
UK	United Kingdom
UNICEF	United Nations International Children's Emergency Fund
UWE Bristol	University of the West of England, Bristol

Chapter 1: Introduction

The portfolio of work presented in this thesis brings together eight years of research undertaken at the Centre for Appearance Research (CAR) based at the University of the West of England, Bristol (UWE Bristol). I began conducting research at CAR in 2014 shortly after completing my MSc in Health Psychology at the University of Nottingham (2012-2013). Co-supervised by CAR's director, Professor Diana Harcourt, my MSc project focused on psychological growth following appearance-altering trauma, and piqued my interest in the field of appearance psychology. When CAR announced they were recruiting a Research Associate a few months after I completed my studies, I jumped at the chance to apply.

I quickly realised I was joining CAR at a pivotal point for the academic body image field and CAR. With regard to the academic field, publications exploring body image were growing rapidly (Cash, 2017). Body image had been operationalised (although this continues to be revised and refined; Tylka & Wood-Barcalow, 2015b), the negative impact of body image concerns established (Kvalem et al., 2011; Stice, 2002; Nelson et al., 2009; Verplanken & Velsvik, 2008; Woertman & van den Brink, 2012), and a number of key influences contributing to the development of body image concerns theorised and rigorously examined (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). Importantly, several interventions to alleviate body image concerns had been developed and demonstrated effectiveness, particularly among young people (Melioli et al., 2016; Yager, Diedrichs, Ricciardelli, & Halliwell, 2013).

Parallel to these developments, CAR was awarded a research grant from the Dove Self-Esteem Project (DSEP), a global youth education initiative and the social mission agenda for Dove, one of the world's largest personal care brands owned by the multinational company Unilever. The DSEP's social mission was (and still is) to '*ensure that the next generation grows up enjoying a positive relationship with the way they look – helping young people raise their self-esteem and realise their full potential*' (Dove, n.d.). DSEP executes this aim through equipping community providers (such as parents and schoolteachers) with evidence-based interventions to educate young people, as well as delivering online education. In line with this, the goal of DSEP's unique partnership with CAR was (and continues to be) '*to ensure DSEP tools demonstrate proven impact through rigorous independent evaluation, and that they are best in class, up-to-date, relevant, and effective through ongoing evidence-based evolution, development, and monitoring'* (Dove, n.d.). Our role as academic researchers is to

ensure DSEP interventions are informed by scientific evidence to improve body image among adolescents, and to independently evaluate these interventions through rigorous empirical evaluation.

In 2014, this collaboration between industry and an academic research centre was novel for the body image field. Now in its eighth year, the partnership has generated more than £5 million research funding to UWE Bristol, of which I was a co-applicant for the last three years, totalling £3.7 million. As an academic team, we have published over 20 papers in peer-reviewed journals and presented at multiple conferences and public engagement events. Most importantly, together we have reached over 69 million young people in over 140 countries with evidence-based body image programmes (Dove, 2021).

This thesis presents eight peer-reviewed academic publications I have significantly contributed to throughout this trail-blazing academic-industry partnership, to demonstrate how I have met each of the six doctoral descriptors required for the award of DPhil by publication from UWE Bristol. A full list of my academic publications and conferences presentations can be found in Appendix 1.

Aims and objectives

This thesis will begin with a critical appraisal of existing research in the field of adolescent body image interventions (Chapter 2). My research approach will then be outlined, which will incorporate discussion on epistemology, research methodology, and ethics (Chapter 3). Next, I will present and critically reflect on each of the publications presented in the thesis (Chapter 4), demonstrating how my research has significantly contributed new knowledge. I will conclude by drawing the overarching findings from the thesis together, addressing key methodological considerations, and outlining what I believe to be important next steps for the field (Chapter 5). Chapter 5 will end with personal reflection, and an outline of my future research plans.

In summary, the objectives of this DPhil thesis are to:

1. Evaluate the acceptability and effectiveness of scalable body image interventions in the United Kingdom (UK)
2. Adapt and validate a widely used body image measure for use in a new cultural context

3. Consider if and how evidence-based body image interventions for adolescents can be adapted and utilised effectively in new cultural contexts

For the first objective, three scalable interventions are evaluated via randomised controlled trials (RCTs) in the UK. All three interventions utilised community members to disseminate body image content to adolescents. For **Publication 1**, the efficacy of a website for mothers of adolescent girls was investigated. The website's effectiveness in improving mothers' self- and weight-esteem, and daughters' self-esteem, was established. Yet, prior research consistently shows uptake in online interventions for parents to be poor. This led to **Publication 2**, whereby secondary analyses on data collected during the RCT was conducted to explore how uptake of this and similar interventions could be improved by considering mothers' and daughters' preferences for intervention content. The second and third interventions (**Publication 3** and **4**, respectively) were secondary school based; a single-session workshop and a five-session workshop series. These interventions were novel in that they utilised teachers as facilitators rather than relying on health care professionals, thus aiding scalability. Both interventions were shown to effectively improve adolescent body image. A follow-up publication (**Publication 5**) bought together the acceptability findings from both studies, from the perspective of both teachers and students, to highlight key considerations when developing evidence-based interventions for teacher-led delivery.

For the second objective, one paper will be presented to exemplify a body of work I've co-led to culturally adapt and validate psychosocial measures for new cultural contexts. Specifically, **Publication 6** presents the cultural adaptation and psychometric validation of the Body Esteem Scale for Adolescents and Adults (BESAA) for use among English-speaking adolescents in urban India. This paper contributes to the field significantly, as the first robustly validated scale to assess body image in this population. This measure underpins the third objective of the thesis, and, more broadly, emphasises the need to psychometrically validate measures when employing them in new cultural contexts.

Objective three will combine learnings from objective one and two, and consider how effective interventions can be adapted and developed for new cultural contexts. In **Publication 7**, the five-session school-based programme evaluated in **Publication 4** was culturally adapted for use in India, and a pilot RCT undertaken to assess its acceptability and preliminary efficacy. This study led to a full scale RCT of the intervention in India, the manuscript for which is currently under review. **Publication 8** is my most recent work, and

presents the protocol for the evaluation of a social media-based intervention for Indonesian adolescent girls, which again has been underpinned by preliminary measures validation work (publications not presented as part of this thesis).

Bibliographies of publications

Table 1 documents my contributions to each publication submitted as part of this thesis. These contributions have been confirmed by each of my co-authors (Appendix 2). The UWE Doctoral Descriptors are described below the table.

Table 1. Unique contributions to each publication.

	Publication	Role	UWE Doctoral Descriptor
1.	Diedrichs, P. C., Atkinson, M. J., **Garbett, K. M.**, Williamson, H., Halliwell, E., Rumsey, N., Leckie, G., Sibley, C. G., & Barlow, F. K. (2016). Randomized controlled trial of an online mother–daughter body image and well-being intervention. *Health Psychology*, 35, 996–1006. https://doi.org/10.1037/hea0000361	Completed comprehensive literature review Led data collection Collaboratively drew conclusions and corresponding implications Disseminated the findings Contributed to the editing of the paper	1 2 5
2.	**Garbett, K. M.**, & Diedrichs, P. C. (2016). Improving uptake and engagement with child body image interventions delivered to mothers: Understanding mother and daughter preferences for intervention content. *Body Image*, *19*, 24-27. https://doi.org/10.1016/j.bodyim.2016.07.004	Conducted literature search Contributed to the overall concept of the study Designed the study with supervision Conducted quantitative data analysis for the project Wrote and edited the paper with supervision	1 2 3 4 5 6
3.	Diedrichs, P. C., Atkinson, M. J., Steer, R. J., **Garbett, K. M.**, Rumsey, N., & Halliwell, E. (2015). Effectiveness of a brief school-based body image intervention 'Dove Confident Me: Single Session' when delivered by teachers and researchers: Results from a cluster randomised controlled trial. *Behaviour Research and Therapy*, *74*, 94-104. https://doi.org/10.1016/j.brat.2015.09.004	Conducted qualitative analyses Contributed to the editing of the paper Disseminated the findings	1 2 4 5

4.	Diedrichs, P. C., Atkinson, M. J., **Garbett, K. M.,** & Leckie, G. (2021). Evaluating the "Dove Confident Me" Five-Session Body Image Intervention Delivered by Teachers in Schools: A Cluster Randomized Controlled Effectiveness Trial. *Journal of Adolescent Health*, *68*(2), 331-341. https://doi.org/10.1016/j.jadohealth.2020.10.001	Contributed to the overall concept and design of the project Led data collection Developed design of, and conducted, qualitative analyses Disseminated the findings Contributed to the writing and editing of the paper	1 2 3 4 5 6
5.	**Garbett, K.M.,** Atkinson, M.A. & Diedrichs, P.C. Acceptability of teacher-led school-based body image interventions: Perspectives from teachers and students in the UK. Under review at *Journal of School Psychology*.	Co-led the overall concept and design of the project Conducted a literature search Managed data collection Led qualitative and quantitative analyses Led the interpretation of the analyses Wrote and edited the paper	1 2 3 4 5 6
6.	**Garbett, K.M.,** Lewis-Smith, H., Chaudhry, A., Uglik-Marucha, E., Vitoratou, S., Shroff, H. Dhillon, M., & Diedrichs, P.D. (2020) Cultural adaptation and validation of the Body Esteem Scale for Adults and Adolescents for use in English among adolescents in India. *Body Image*, *37*, 246-54. https://doi.org/10.1016/j.bodyim.2021.02.012	Designed the study with supervision Conducted a literature search Managed data collection Led the interpretation of the statistical analyses Wrote and edited the paper Disseminated the findings	1 2 3 4 5 6
7.	**Garbett, K. M.,** Lewis-Smith, H., Chaudhry, A., Shroff, H., Dhillon, M., White, P., & Diedrichs, P. C. (2021). Acceptability and preliminary efficacy of a school-based body image intervention in urban India: A pilot randomised controlled trial. *Body Image*, *37*, 282-290. https://doi.org/10.1016/j.bodyim.2021.02.011	Co-developed the concept and design of the project Conducted a literature search Managed data collection Co-developed statistical analysis plan Led qualitative analysis Interpreted the statistical analyses Wrote and edited the paper	1 2 3 4 5 6

8.	**Garbett, K. M.,** Craddock, N., Haywood, S., Nasution, K., Saraswati, A. L., Medise, B. E., Girl Effect, Percolate Galactic, Diedrichs, P. C., & Williamson, H. A Novel, Scalable Social Media-Based Intervention 'Warna-Warni Waktu' to Reduce Body Dissatisfaction Among Young Indonesian Women: Protocol for a Parallel Randomised Controlled Trial. *JMIR Research Protocols* http://doi.org/10.2196/33596	Led the conceptualisation of the study Academic lead on intervention development Led the study design Wrote and edited the paper	1 2 3 4 5 6

Requirements of the DPhil by publication award

The award of DPhil by publication at UWE Bristol is granted to candidates that meet six key 'doctoral descriptors'. These qualification descriptors align with guidelines from the Quality Assurance Agency (QAA) for Higher Education (QAA, 2015). The six doctoral descriptors doctoral students are required to demonstrate are as follows. They must:

1. have conducted enquiry leading to the creation and interpretation of new knowledge through original research or other advanced scholarship, shown by satisfying scholarly review by accomplished and recognised scholars in the field;
2. demonstrate a critical understanding of the current state of knowledge in that field of theory and/or practice;
3. show the ability to conceptualise, design and implement a project for the generation of new knowledge at the forefront of the discipline or field of practice including the capacity to adjust the project design in the light of emergent issues and understandings;
4. demonstrate a critical understanding of the methodology of enquiry;
5. have developed independent judgement of issues and ideas in the field of research and/or practice and are able to communicate and justify that judgement to appropriate audiences;
6. critically reflect on their work and evaluate its strengths and weaknesses including understanding validation procedures.

The published works presented in this thesis, along with critical commentaries, will demonstrate how I fulfil each of the six doctoral descriptors. Specifically, I will situate my

work within existing knowledge, explain my unique intellectual contribution to each project and publication, reflect on the research approaches, and document my personal development over the past eight years.

Chapter 2: Background

Body image: What is it and how is it measured?

Body image refers to how a person thinks, feels, and behaves towards their body and appearance (Thompson et al., 1999). Body image is multidimensional and comprised of cognitive, perceptual, affective and behavioural components. The attitudinal components of body image (i.e., cognitive elements) consist of two dimensions, as defined by Cash (1994); evaluation (how satisfied someone feels about their appearance) and investment (the importance someone places on their appearance). Whilst both dimensions have received attention in the literature, evaluation is most often investigated and often operationalised as body dissatisfaction or body satisfaction (Cash, 2011; Kling et al., 2019). Increasingly, researchers are investigating positive body image, which examines people's relationship with their bodies beyond appearance, to encompass feelings such as body appreciation, body acceptance, and body functionality (Piran, 2016; Tylka & Wood-Barcalow, 2015a).

Body image is typically measured via self-report (Alleva, Tylka, & Van Diest, 2017; Murray et al., 2019; Talbot, Cass, & Smith, 2019; Tylka & Wood-Barcalow, 2015b). A recent review identified over 150 measures that assess evaluative components of body image (Kling et al., 2019). Of these, several were identified as having adequate psychometric properties, and thus can be considered reliable and valid measures of body image among defined populations. This is encouraging; without validated measures, scholarship in the field would be significantly undermined (Cash, 2011). However, the abundance of measures presents a significant challenge when attempting to make cross-study comparisons, given these measures assess different underlying constructs (Cornelissen et al., 2019). Collaboration between researchers to adopt a set of core measures from which to study body image has been called for (Atkinson et al., 2020). To draw comparisons within the collection of works presented in this thesis, consistent measurement tools have been utilised wherever possible.

Body image: A critical issue among adolescents

A universal definition of 'adolescence' is contested (Sawyer et al., 2018). However, for the purposes of this thesis, adolescence is defined as *'the phase of life between childhood and adulthood, from ages 10 to 19'* (World Health Organisation, n.d.). This definition was chosen, rather than a more extended time frame that stretches into the early 20s, in order to

take a more focused approach. To date, research suggests that influences on, impacts of, and interventions to curb, body image concerns can be markedly different for young adults than they are for children and teenagers (Gattario & Frisén, 2019). Consequently, it was deemed appropriate to utilise a more targeted adolescent timeframe to account for this.

Prevalence

A high proportion of adolescents experience body image concerns (Al Sabbah et al., 2009; Chongwatpol & Gates, 2016; Singh, Ashok, Binu, Parsekar, & Bhumika, 2015). A global study in 2017 found six out of ten adolescent girls report some degree of body dissatisfaction (Dove, 2017). Similar prevalence rates have been found in studies utilising a plethora of body image measures, in countries as diverse as Japan, Finland, and the Philippines (Maezono et al., 2019; Tadena, Kang, & Kim, 2020). Further, young people in high-income countries often cite body image concerns as one of the key issues in their lives (British Youth Council, 2017; Tiller et al., 2020).

Girls are disproportionately impacted by body image concerns (Lacroix, Atkinson, Garbett, & Diedrichs, 2020; Maezono et al., 2019; Park & Epstein, 2013; Singh Mannat, Parsekar, & Bhumika, 2016), and more likely to report lower levels of body appreciation (He, Sun, Zickgraf, Lin, & Fan, 2020), compared to boys. Nevertheless, boys are not immune to appearance concerns; boys are increasingly receiving research attention in this area (Levine, 2019; Murray et al., 2017), as are gender diverse groups, including non-binary and transgender people (Tabaac, Perrin, & Benotsch, 2018). Taken together, extensive evidence suggests body image concerns are disproportionally felt by girls and young women around the world, but these concerns are frequently present across adolescents, regardless of gender.

Nature of concerns

Historically, body image research has predominantly examined women's dissatisfaction with their weight and shape. This is likely due to the influence eating disorder scholarship has had on the field, whereby body dissatisfaction and internalisation of appearance ideals emphasising thinness are established modifiable risk factors for the development of some eating disorders (Beinter, Jacobi, & Taylor, 2012; Harrer et al., 2020). Weight concerns dominate appearance concerns among adolescent girls in many parts of the world (Amaral & Ferreira, 2017; Chongwatpol & Gates, 2016; Cruz-Sáez, Pascual, Salaberria, Etxebarria, &

Echeburúa, 2015; Garousi, Garrusi, Baneshi, & Sharifi, 2016; Gitau, Micklesfield, Pettifor, & Norris, 2014; Huon, Mingyi, Oliver, & Xiao, 2002; Micali et al., 2015), with those of a higher weight more likely to experience body dissatisfaction than their lower weight counterparts (Weinberger, Kersting, Riedel-Heller, & Luck-Sikorski, 2016). Whilst this may be the global norm (Swami, 2015), there is evidence to suggest girls and young women in certain areas of the world may not idealise thinness. For example, in areas of the world where the impact of Westernisation and modernisation are less readily felt (e.g., Malaysia, South Africa, Ghana, and Tonga), girls and young women express body dissatisfaction due to preferences for a larger sized body (Amenyah & Michels, 2016; McCabe, Waqa, Dev, Cama, & Swinburn, 2013; Swami et al., 2010).

Body size preferences for boys are less clear. Recent research in the United States found many adolescent boys sought to gain weight (Nagata et al., 2019), despite boys of a higher weight status reporting being the most dissatisfied with their body size (Weinberger et al., 2016). This incongruity is likely due to the appearance ideal for boys in the United States being both lean and muscular (Jones, Bain, & King, 2008), a trend also prevalent in European countries (Rodgers, Ganchou, Franko, & Chabrol, 2012), suggesting boys want to gain muscle mass, as opposed to fat. A more global perspective on body size ideals among boys is lacking (Edwards, Tod, & Molnar, 2014). Limited research suggests a thin yet muscular ideal is prevalent across many parts of the world (Frederick et al., 2007; Hyun, Lee, Ro, Gray, & Song, 2016; Thornborrow, Onwuegbusi, Mohamed, Boothroyd, & Tovée, 2020), although in some Asian contexts slight male bodies may be equally desirable (Louie, 2002; Monocello & Dressler, 2020).

As the field of body image research has grown internationally, so has the nature of concerns under study. Beyond weight and shape, there has been an influx of research into concerns around skin shade (Craddock, Dlova, & Diedrichs, 2018; Hutchinson, Prichard, Ettridge, & Wilson, 2015; Peltzer, Pengpid, & James, 2016), teeth shade and structure (Kavand, Broffitt, Levy, & Warren, 2012), facial features (Mellor et al., 2013), height (Mellor et al., 2013), hair (Mellor et al., 2013), and acne (Dalgard, Gieler, Holm, Bjertness, & Hauser, 2008). Of particularly interest when considering body image concerns globally, researchers have begun to unpick how and why appearance ideals may differ across cultures, ethnicities, and religions. For example, research has begun to explore how Islamic religiosity and the wearing of the hijab in some parts of the world is related to body image. Specifically, wearing of the hijab has been found to be negatively associated with body dissatisfaction (Kertechian &

Swami, 2016) and positively correlated with positive body image (Kertechian & Swami, 2016; Sidi, Geller, Abu Sinni, Levy, & Handelzalts, 2020). Further, strength of faith has been found to be positively correlated to body satisfaction (Sidi et al., 2020). Such contextual factors regarding the nature of body image concerns in different regions of the world are important in the following chapters of this thesis, when attention is turned to intervention adaptation for new cultural contexts.

Impact of concerns

Body image concerns play a substantive and prolonged role in the physical and mental health of young people. Longitudinal research conducted primarily in high-income countries has found adolescent body image concerns predict disordered eating behaviours, depression and low self-esteem (Goldschmidt et al., 2016; Jacobi & Fittig, 2018; Wichstrøm & von Soest, 2016). Body image concerns are related to poorer school attainment, earlier initiation of sexual relationships, and risky health behaviours such as smoking, drug use, and self-harm (Bornioli, Lewis-Smith, Smith, Slater, & Bray, 2019; Farhat, Iannotti, & Caccavale, 2014; Halliwell, Diedrichs, & Orbach, 2014; Van Voorhees et al., 2008). Furthermore, body image concerns are associated with avoiding life events, such as going to the doctor, a party, or shopping for clothes (Dove, 2017). If not addressed, these adverse consequences are likely to continue throughout early adulthood and beyond (Costello, Copeland, & Angold, 2011; Knapp, McCrone, Fombonne, Beecham, & Wostear, 2002). Taken together, these studies underscore the need for early intervention to tackle body image concerns.

Body image: Theory

An etiological approach is often favoured when designing interventions to combat body image concerns among young people (Stice, Marti, Shaw, & Rohde, 2019; Yager et al., 2013). That is, targeting the underlying sociocultural and psychological influences on body image that are modifiable and thus targetable. The Tripartite Influence Model is a well-established theory with empirical support, first proposed by Thompson et al. (1999). Within the model, three dominant sociocultural influences (peers, family, and media) are positioned as having a direct effect on body dissatisfaction, as well as an indirect effect via two psychological processes: internalisation of appearance ideals (e.g., the extent someone cognitively ‘buys into’ society’s beauty ideals) and appearance comparisons (e.g., the extent an individual compares their appearance to others).

The model has received extensive empirical support in the literature among adolescents and young people around the world, particularly among girls. The model has been supported in research with Iranian adolescent girls (Shahyad, Pakdaman, Shokri, & Saadat, 2018), adolescent girls in the United States (Shroff & Thompson, 2004) and young women in Japan (Yamamiya, Shroff, & Thompson, 2008). Research among boys and young men is limited, but support from various cultural contexts such as Korea (You & Shin, 2019), France (Girard, Rodgers, & Chabrol, 2018), and the United States (Tylka, 2011) exists. While this research provides support for the Tripartite Influence Model, the majority of studies have relied on cross-sectional samples (Girard et al., 2018; Shroff & Thompson, 2004; Tylka, 2011; Yamamiya et al., 2008; You & Shin, 2019), which makes drawing inferences about causal and temporal relationships problematic.

One of the few studies that has considered the Tripartite Influence Model over time found that, at least among girls in Australia, the relationship between internalisation of appearance ideals, appearance comparisons and body dissatisfaction is reciprocal in nature rather than linear (Rodgers, McLean, & Paxton, 2015). This does not invalidate the model, but suggests targeting these components simultaneously in interventions may be most effective to reduce body dissatisfaction. This bi-directionality has been supported by other studies such as Rousseau, Eggermont, and Frison (2017) who found a reciprocal relationship between body dissatisfaction and social media-based comparisons over time among Finnish adolescents; however, the bidirectional relationship between internalisation and body dissatisfaction was not replicated recently among a German adolescent sample (Hoffmann & Warschburger, 2019). Instead, this study found a linear pathway between these variables, as proposed by the model.

Taken together, the Tripartite Influence Model can be considered a useful theoretical framework from which to design body image interventions. More longitudinal research, particularly in low- and middle-income countries (LMICs), would be useful to understand how, when, and under what circumstances, reciprocal relationships between variables might exist. However, given the vast majority of studies point to the components of the model being of importance in the development (and persistence of) body image concerns among adolescents, it is a frequently adopted theory from which to design interventions efforts.

Body image: Interventions for adolescents

Social-ecological Model: A Framework for Prevention

The social-ecological model of health offers a useful lens from which to summarise academic progress in the development of body image interventions for young people (see Figure 1; Sallis, Owen, & Fisher, 2015). The socio-ecological model recognises health behaviour change cannot be achieved without a multi-level approach (Golden & Earp, 2012; Green, Richard, & Potvin, 1996; Sallis et al., 2015), and outlines four distinct levels of interventions. Individual interventions such as self-help books or one-to-one therapy are considered level one interventions. These interventions are delivered direct-to-individuals and provide strategies to deal with a particular pressure (e.g., appearance pressures). At the relationship level (level two), friends or family members are involved in the intervention (e.g., parents). These interventions have received extensive research support in the body image field in both school (Chua, Tam, & Shorey, 2020; Yager et al., 2013) and university settings (Becker & Stice, 2017). Level three interventions target both individual and institutional level change (Golden & Earp, 2012), and include whole school approaches to tackling body image concerns (O'Dea, 2007). Societal interventions (level four) involve advocacy, social policy and activism. A flagship example of this is the work of Bryn Austin and colleagues, who examine policy change initiatives in the portrayal of beauty standards in the fashion and weight-loss industry (Rodgers, Ziff, Lowy, & Austin, 2020; Yergaliyev, Aveling, Lee, & Austin, 2020). Another example is The Official CROWN Act, a movement to end hair discrimination in the workplace (Dove, 2019). The potential for this level of intervention is well-recognised in the field (Atkinson et al., 2020), but it is currently the least explored level of intervention.

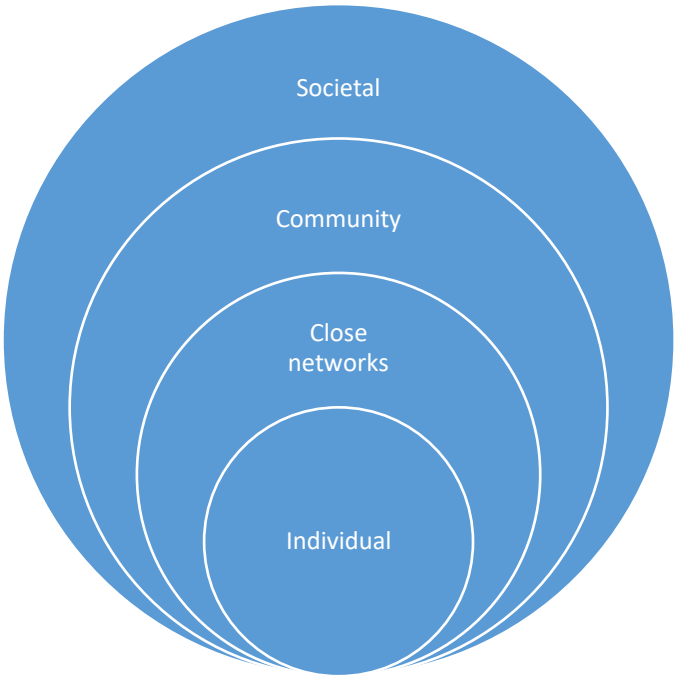


Figure 2. Social ecological framework for body image prevention (adapted from Sallis, Owen, & Fisher, 2015).

The interventions evaluated in this thesis are level two interventions. Level two interventions are deemed particularly appropriate for adolescents due to the influential role peers and family play in shaping attitudes and behaviours at this developmental stage (Gardner & Steinberg, 2005). As described by social cognitive theory (Bandura, 1998) and the bioecological model of human development (Bronfenbrenner & Morris, 2006), peers and immediate family play a crucial role in the development of adolescent health behaviours (Giletta et al., 2021), including attitudes towards healthy eating and exercise (Evans et al., 2010), substance use (Loke & Mak, 2013), and body image (Ricciardelli & Mellor, 2012). Interventions designed to incorporate an adolescent's immediate social circle prompt close network modelling as well as peer and family support, and thus may increase the potency of an intervention compared to interventions targeting the individual alone (Hu et al., 2021). Further, level two interventions are aptly suited to adolescent audiences due to the developmental stage with which they are situated. Specifically, adolescence is a period of rapid intellectual and emotional growth (Rice & Dolgin, 2005), with adolescents already accustomed to the uptake of such information within their social settings (e.g., at home or school). As such, level two interventions are likely to be acceptable as they are aptly suited to the adolescent's broader learning environment (Craig et al., 2020).

Level two interventions will now be considered in more depth.

Level two interventions

Extensive literature documents the important role parents play in the development of their children's body image (Hart, Cornell, Damiano, & Paxton, 2015), making parents an ideal target for intervention efforts. Parents may directly influence their children's body image through appearance related comments, or behaviours expressed towards their child (Rodgers, Wertheim, Damiano, & Paxton, 2020; Valois et al., 2019). Indirectly, parents act as powerful body image role models (Dell'Osbel et al., 2020; Klein, Brown, Kennedy, & Keel, 2017) and are often gatekeepers to mental health support (Logan & King, 2001).

The importance of involving parents in body image interventions was recognised in the mid-1990s (Graber & Brooks-Gunn, 1996), yet research in this area is sparse. In 2015, a review of child and adolescent body image interventions involving parents identified just four high quality studies (Hart et al., 2015). Of these, two reported positive results: one comprised face-to-face workshops for mothers which involved psychoeducational and behavioural activities such as role play (Corning, Gondoli, Bucchianeri, & Salafia, 2010), the other a direct-to-girl internet-based intervention comprised psychoeducational and journaling, supplemented with psychoeducation pamphlets for parents (Sniezek, 2006). Since Hart et al.'s review, progress has been made in the development of interventions for parents of very young children aged 2-6 (Hart et al., 2015; Hart, Damiano, Li-Wai-Suen, & Paxton, 2019), but little to no progress in the development of interventions for parents of adolescents, despite adolescence being a critical developmental period when body image concerns are likely to emerge and increase (Bucchianeri, Arikian, Hannan, Eisenberg, & Neumark-Sztainer, 2013; Frisén, Lunde, & Berg, 2015; Lacroix et al., 2020).

The school environment has received extensive attention in the development and evaluation of universal body image interventions for adolescents (Chua et al., 2020). Schools are safe, structured environments offering sustainable learning space to deliver interventions (Levine & Smolak, 2006). A systematic review of universal secondary school-based body image interventions (Yager et al., 2013) identified several interventions resulting in significant short-term improvements in body image. Successful interventions focused on media literacy, self-esteem, and the influence of peers. In addition, the review found interventions that lasted approximately five hours were the most effective. Only three of the 16 studies reviewed found sustained improvements in body image, at either 3 months (Richardson & Paxton, 2010), 6 months (Wilksch & Wade, 2009), or 30 months (Wilksch & Wade, 2009). More

recently, a systematic review and meta-analysis provided an update to Yager et al.'s review (Chua et al., 2020); again, the authors found school interventions focusing on media literacy and peer relationships were most effective, as were multi-session interventions lasting around five hours over approximately one month.

Improving intervention reach

The research presented thus far can be summarised using the behavioural epidemiology framework (Sallis et al., 2015; Sallis, Owen, & Fotheringham, 2000). The behavioural epidemiology framework is a useful tool to assess progress in a particular field, and plan future research priorities, through mapping five critical research phases toward health promotion and disease prevention: (1) establishing links between a construct and health; (2) developing measurement tools; (3) identifying influences on the construct; (4) evaluating interventions to change the construct; (5) translating research into practice (Figure 2). The field of adolescent body image, at least within high-income, English speaking contexts, has matured through phases 1-3 and has made progress in identifying effective intervention techniques and modalities in phase 4, particularly regarding level three interventions. To propel the field forward to generate real change among those in need, attention must turn to phase 5. Notably, the need to translate research into practice (phase 5) in tandem with the evaluation of effective interventions (phase 4) to stimulate impact has been emphasised by those in the field for some time (Atkinson et al., 2020; Austin, 2012). It is here, at the cross section of phase four and five of the behavioural epidemiology framework, that this thesis is situated.

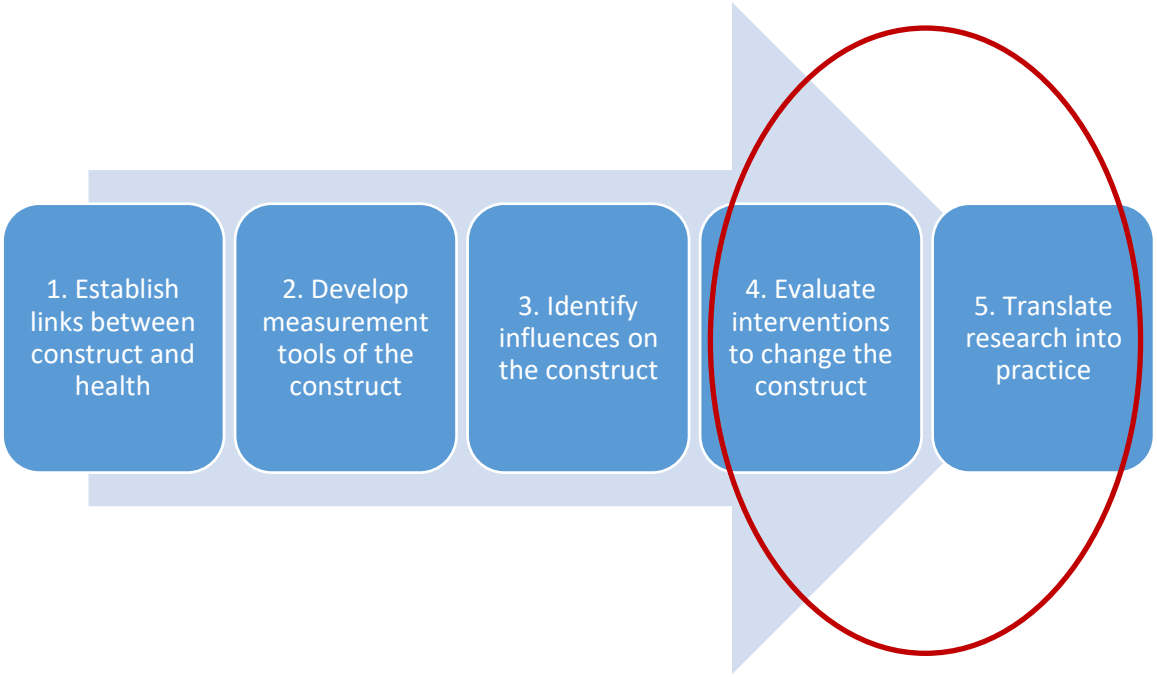


Figure 3. Visual representation of the behavioural epidemiology framework (Sallis, Owen, & Fotheringham, 2000). Circled in red is where the work presented in this thesis is situated.

The dissemination of effective interventions is of central importance across the mental health field (Hoeft, Fortney, Patel, & Unützer, 2018; Kazdin, 2019; Naslund et al., 2017; Patel, Flisher, Hetrick, & McGorry, 2007; Patel et al., 2018). The vast majority of adolescents requiring mental health services globally receive no support at all (Kazdin, 2019). Whilst the development of effective interventions is vital, if they do not reach those in need, they fail to have any real impact (Kazdin & Blase, 2011). When viewed in this way, it is clear developing an effective intervention is only the beginning of the journey towards improving the health of populations (Durlak & DuPre, 2008). Consideration of how interventions can be scaled up to reach those in need is an imperative next step.

For the remainder of this chapter, I summarise three potential solutions to scale up evidence-based body image interventions for adolescents internationally. Each of these pathways will be examined in the subsequent publications presented in this thesis.

Harnessing technology

Body image interventionists are only beginning to exploit digital technology as an effective tool for intervention dissemination (Guest et al., 2019), despite success in this area for the treatment of other mental health conditions, such as depression and anxiety (Calear, Christensen, Mackinnon, Griffiths, & O'Kearney, 2009; Clarke et al., 2009; Fairburn & Patel, 2017; Saulsberry et al., 2013; Van Voorhees et al., 2008). In 2021, internet penetration was as

high as 90-96% of the population in many parts of Europe and US, and 60% globally (Kemp, 2021). Moreover, a high percentage of young people in many parts of the world are utilising the internet to source health related information (Park & Kwon, 2018). In Indonesia for example, over 90% of 15-19 year olds access the internet regularly (Haryanto, 2019), with one of the main motivators being to seek information (Luthfia, 2019). As such, there is an unprecedented opportunity to disseminate evidence-based interventions directly into the hands of adolescents across the world. Prior to 2014, when the research for this thesis began, only one online intervention to improve adolescent body image had undergone preliminary evaluation in the peer-reviewed literature (Franko, Cousineau, Rodgers, & Roehrig, 2013). *BodiMojo* is a body image mobile application grounded in self-compassion and sociocultural theory which has been shown to improve appearance esteem and self-compassion among late adolescents after six weeks of engagement up to three months later (Rodgers et al., 2018). However, a number of other hypothesised improvements were not found, including body image flexibility and mood. With adolescent acceptability feedback for *BodiMojo* largely positive (Franko et al., 2013) and internet-based interventions showing promise among young women (Low et al., 2006; Stice, Rohde, Durant, & Shaw, 2012), the evidence suggests online platforms are a viable option to explore further in relation to adolescent body image. Indeed, there has been calls across the mental health field to extend the use of technology to reach more people with mental health support (Kazdin, 2015).

Given the emerging success of online programmes to alleviate health concerns among young people, and their potential for scalability, it is timely to continue efforts in this regard. The benefits of online formats (i.e., accessibility, reach, convenience) lend such interventions to be of particular benefit to those with less severe concerns who may not be inclined to seek more intensive support (Ryan, Shochet, & Stallman, 2010), or those unable to access professional support (Gulliver, Griffiths, & Christensen, 2010; Le et al., 2019). Given approximately half of adolescents report moderate discontent about their appearance (Lacroix et al., 2020), online interventions may offer a low-intensity cost-effective strategy to engage these individuals with low level support needs. They may lend themselves particularly well to countries where many barriers to face-to-face interventions exist, such as physical inaccessibility, stigma, shame, limited services, and cost (Arjadi, Nauta, Chowdhary, & Bockting, 2015), yet internet penetration and smart phone use is high.

Task-shifting to community providers

Task-shifting is defined as the redistribution of intervention dissemination and facilitation from highly trained providers (e.g., psychologists) to individuals with fewer specialist skills (e.g., parents or community providers; World Health Organisation, 2008). Along with online dissemination, task-shifting allows for much greater intervention reach through reduced reliance on specialist providers, and has shown acceptability and efficacy for the treatment of mental health conditions such as depression (Patel et al., 2017) and schizophrenia (Balaji et al., 2012). Task-shifting is vital to addressing the burgeoning mental health issues among youths across the world. As reported by Kazdin and Blase (2011), if every mental health professional utilised the most efficacious evidence-based resources in their practice, the global need would still not be met, due to the global shortage of highly trained professionals.

Task-shifting has been utilised and rigorously evaluated in the dissemination of *The Body Project*, a cognitive dissonance-based body image intervention originally developed for use among older adolescents and young adult women in the United States (Becker et al., 2017; Becker & Stice, 2017), and has recently also undergone adaptation for use among young women in China (Luo, Jackson, Stice, & Chen, 2021) and Brazil (Hudson, Amaral, Stice, Gau, & Ferreira, 2021), as well as men in the United States (Brown, Forney, Pinner, & Keel, 2017) and the UK (Jankowski et al., 2017). Through task-shifting intervention delivery to community providers via partnerships with universities and sororities, the World Association of Girl Guides and Girls Scouts and the National Eating Disorders Association, *The Body Project* has been successfully disseminated to over 6.2 million young people in over 140 countries (D Mortty, personal communication, December 8, 2021). Researchers have now begun exploring the efficacy of virtually delivering *The Body Project*, further enhancing the programmes dissemination potential (Ghaderi, Stice, Andersson, Enö Persson, & Allzén, 2020).

The development and successful dissemination of *The Body Project* offers a useful roadmap for how body image interventions for adolescents can be developed to aid scalability. Of noteworthy importance, the success of *The Body Project's* dissemination can be attributed to partnering with community organisations, rigorous on-going assessment of intervention outcomes, and openness to adaptations for new audiences and/or community contexts (Becker et al., 2017). However, barriers to its dissemination still exist and pose important questions for future efforts. Firstly, despite the success of task-shifting, it is not solely

delivered without the face-to-face support of professionals. *The Body Project* adopts a 'train-the-trainer' model, which in most circumstances (but not all – see Hudson, et al., 2021), involves in-person training by specialist providers, all of whom are based in the United States or the UK (Body Project Collaborative, n.d.). Secondly, facilitator training requires funding (Body Project Collaborative, n.d.), a potential implementation barrier in some contexts, especially for those who require training facilitators to travel, which is more costly. While the evolution of *The Body Project* offers useful direction for task-shifting intervention delivery to aid dissemination potential, significant questions around the extent of face-to-face health care professional provision required and funding of dissemination efforts remain. Both of these aspects of dissemination will be considered in the publications presented within this thesis and the subsequent discussion chapter.

Expanding cultural relevance

The research summarised so far, unless otherwise stated, has been conducted across high income countries; most notably, the UK, Australia, and the United States. This is reflective of the body image field more broadly, with research in LMICs lagging behind high-income regions (Cash, 2017). A recent systematic review of universal body image interventions for children and adolescents failed to identify any that have been rigorously evaluated in LMICs (Chua et al., 2020), although this is starting to change, with *The Body Project* recently undergoing successful adaptation for young adults in Brazil (Hudson et al., 2021) and China (Luo et al., 2021).

This imbalance of intervention research cross different parts of the world is problematic for a number of reasons. Firstly, emerging research documents that although body image concerns are pervasive across cultures and ethnic groups (Al Sabbah et al., 2009), the nature of these concerns differ from region to region (Kertechian & Swami, 2016; Mellor et al., 2013; Swami et al., 2010). Thus, effective interventions in some countries (e.g., an intervention focused on thin-ideal internalisation) may be ineffective in others (where skin shade may be a more salient concern, for example), making direct adoption of effective interventions to new cultural contexts ill-advised. Secondly, adolescents in LMICs are the most likely to struggle to access mental health support due to a shortage of highly skilled providers (Fairburn & Patel, 2014). Thus, it is timely for body image researchers to consider how effective interventions can be developed and scaled up for use in LMICs. Finally, delivery formats, modalities and language must be considered within the context they are to be delivered

(Marsiglia & Booth, 2015). Adapting learning methodologies to fit within cultural and institutional structures, ensuring cultural values are upheld, as well as more practical considerations such as internet connectivity and available resources, must be acknowledged and addressed within any new cultural context (Bernal, Bonilla, & Bellido, 1995; Bernal, Jiménez-Chafey, & Domenech Rodríguez, 2009).

There is ongoing debate within the social sciences regarding the most appropriate way to develop interventions for new audiences around the world (Chu & Leino, 2017). Some scholars, particularly those striving to decolonise the roots of theory and knowledge, such as Raewyn Connell (2014, 2020) and Linda Tuhiwai Smith (2013), argue a purely inductive approach to intervention development in new cultural contexts is necessary. Using this method, intervention design would be driven by theory from within a new cultural context, rather than adapted from other cultures or contexts. Whilst such a strategy may hold appeal from an acceptability perspective, it may be rendered ineffective if not based upon scientific investigation (Castro, Barrera, & Martinez, 2004). Additionally, this strategy discounts the acceptability and effectiveness observed across the mental health field regarding the application of therapeutic techniques developed in high-income contexts to varied cultures and settings globally (Murray et al., 2014; Patel, Chowdhary, Rahman, & Verdeli, 2011). For example, adaptations of mental health programmes based upon cognitive-behavioural therapy and interpersonal therapy have shown acceptability (after cultural adaptation) and effectiveness in India, Pakistan and Uganda (Patel et al., 2011), as have interventions based upon cognitive restructuring and behavioural activation in Iraq and Thailand (Murray et al., 2014). Such evidence leads many scholars to unite behind the adaptation of existing evidence-based interventions to new cultural contexts, provided careful consideration is given to cultural appropriateness and validation (Bernal, 2006; Bernal et al., 2009; Castro et al., 2004; Marsiglia & Booth, 2015; Rodriguez, Baumann, & Schwartz, 2011). Such an approach is becoming increasingly commonplace across the social and behavioural sciences and the global mental health field (Ferrer-Wreder, Sundell, & Mansoory, 2012), and a number of good practice guidelines exist (Castro, Barrera Jr, & Holleran Steiker, 2010; Sangraula et al., 2021). A meta-analytic review found culturally adapted programmes generally show greater effectiveness than traditional bottom-up approaches to intervention design (Soto, Smith, Griner, Domenech Rodríguez, & Bernal, 2018). Furthermore, the extent of cultural adaptation is important, with the efficacy of interventions increasing the more cultural adaptations are incorporated (Soto et al., 2018).

The efficacy of culturally adapting evidence-based body image interventions for new adolescent audiences is not well-established. This represents a vital pathway to increase the scalability and accessibility of body image interventions across the world, and importantly, to ensure interventions are both effective and appropriate for those in need.

Chapter Summary

This chapter has briefly summarised current understandings of the nature, causes, and consequences of body image concerns among adolescents, and discussed progress made in the development, evaluation and dissemination of effective interventions to alleviate body image concerns among this demographic. It is timely to consider how these interventions can be scaled up to reach those in need. In the chapters that follow, my contribution to the development and evaluation of scalable body image interventions will be presented, which focuses on three strategies to aid scalability: utilising online platforms (**Publications 1, 2, and 8**), task-shifting intervention delivery to community providers (**Publications 3, 4, and 5**), and exploring the cultural adaptation of evidence-based interventions for new cultural contexts (**Publications 6, 7, and 8**).

Chapter 3: Research Approach

Etiological approach to intervention development

The interventions designed and evaluated throughout this thesis take an etiological approach (Stice, 2016), targeting influences on body image concerns, as outlined in the Tripartite Influence Model. Two literature reviews, in 2012 and updated in 2019 (Lewis-Smith, Garbett, Macrae, & Diedrichs, 2019; Lewis-Smith, Whale, & Diedrichs, 2012), identified further modifiable influences on body image to be targeted. These narrative synthesis literature reviews summarised the existing evidence on the nature, impact, and influences on body image concerns among adolescent girls, and reviewed existing interventions to address these concerns. I second authored the 2019 literature review, taking responsibility for defining the review search terms, running the search, collating and evaluating the evidence, and co-writing the final report. This report was funded by DSEP and presented to them in the form of a 112-page report (Lewis-Smith et al., 2019). This report continues to guide and support DSEP's strategic plans to improve body confidence among young people and has influenced the design of the studies presented in this thesis, along with several other interventions undertaken as part of CAR's partnership with DSEP.

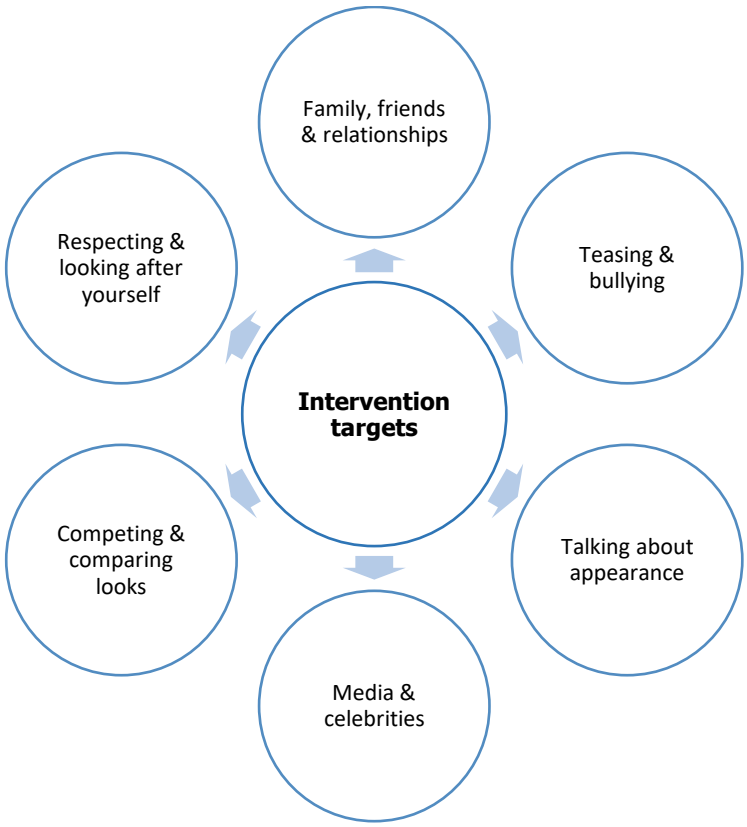


Figure 4. Etiological factors targeted in the body image interventions presented in this thesis.

The six core factors targeted across the interventions described in this thesis are summarised in Figure 3. These include five established risk factors for negative body image: friends, family and relationships (the direct and indirect appearance pressures from close social networks, including attitudinal or behavioural modelling); appearance-based teasing and bullying (direct negative comments about appearance, in person or online); talking about appearance (any positive or negative appearance based conversation, e.g., "fat talk" and "body talk"); media and celebrities (exposure to unrealistic appearance ideals in the media and an individuals' internalisation of these ideals); and appearance comparisons (the extent individuals compare their appearance to others). To summarise the literature reviews, as well as being factors theorised in the Tripartite Influence Model (Thompson et al., 1999), substantial evidence supports these as significant contributors to negative body image, either via longitudinal (Juvonen, Lessard, Schacter, & Suchilt, 2016; Rodgers et al., 2015; Suchert, Hanewinkel, & Isensee, 2016; Valois et al., 2019; Vandenbosch & Eggermont, 2016) or experimental (Veldhuis, Konijn, & Seidell, 2014) research. In some cases, the evidence has been summarised in systematic or meta-analytic reviews (Marcos, Sebastián, Aubalat, Ausina, & Treasure, 2013; Mills & Fuller-Tyszkiewicz, 2017).

The sixth targeted factor is protective, termed 'respecting and looking after yourself'. This factor targets elements of positive body image, such as taking a holistic view of the body, appreciating the body for what it can do, and listening, and responding, to the body's needs (Tylka & Wood-Barcalow, 2015a). It is theorised that by increasing these components, positive body image is enhanced both directly and indirectly via self-objectification (Menzel & Levine, 2011). This has been supported by a number of experimental studies that have found increasing body appreciation and focus on functionality, as well as encouraging intuitive eating, can lead to improvements in both positive and negative body image (Guest et al., 2019). Thus, this sixth factor could have the dual effect of improving positive body image as well as reducing body image concerns among young people.

Pragmatic paradigm

Pragmatism is a school of thought that can be traced back to the late 1800s with the work of Charles Sanders Pierce, William James, and in the mid-1950s, John Dewey. Pragmatists unite around the belief that solutions are more important than philosophical discussion (Weaver, 2018). In the words of Charles Sanders Pierce, pragmatists are concerned with '*what is*

tangible and practical' (Peirce, 1992, p.131). Less concerned with truth and the nature of reality, pragmatists take a utilitarian perspective and focus on action, outcomes, and creating meaningful change. To the pragmatist, knowledge is useful in as far as it can be a tool for action. In other words, what is important is 'what works'.

In the context of body image intervention research, pragmatism is a valuable approach. As discussed in Chapter 2, there is a need for immediate remedial action to tackle body image concerns among adolescents globally. A pragmatic approach circumvents questions relating to ontology (nature of reality) and epistemology (the nature of knowledge) and directs attention towards solutions. This frees researchers to move forward with action utilising the knowledge and tools available at a particular moment in time. In this sense, pragmatic research breeds trial and error, flexibility, and continual learning (Morgan, 2014).

A pragmatic approach is exemplified throughout this thesis. The interventions developed are based upon theory and evidence, and undergo refinement once applied to real world contexts (such as in the classroom, or in the hands of parents). Fluid thinking and flexibility to adapt processes based upon new information has been essential. This approach is critically important when working in the field of body image, where societal changes (such as the rise of social media use, or the increased availability of non-invasive cosmetic procedures) can have a rapid impact on exacerbating or ameliorating concerns (Marques, Paxton, McLean, Jarman, & Sibley, 2021; von Soest, Kvalem, Roald, & Skolleborg, 2009). Pragmatic action will be discussed in the majority of studies presented, particularly in regards to the evolution of the school-based intervention '*Confident Me'*. Across the duration of the projects presented, *Confident Me* has undergone considerable alteration in response to new evidence, feedback from users, changing societal landscapes, novel cultural contexts, and technological advances to ensure it remains relevant, acceptable and effective to its target audience. Agility and reactivity have been important elements to the research projects presented, making pragmatism a useful paradigm to work with.

A model for evidence-based practice

In line with a pragmatic paradigm, a conceptual model toward evidence-based practice was adopted. Figure 4 illustrates Dove's approach to evidence-based practice, which is utilised during the creation of each of Dove's interventions, including those discussed in this thesis. This model is adapted from the work of Spring and Neville (2010), and brings together four

pillars that guide intervention development. The best available research (i.e., the academic evidence) is only one component informing intervention development. Of equal importance are the opinions preferences of key stakeholders, input from other experts within and beyond the field of body image, and the values, insights, expertise, and influence of DSEP. Examples of how these four evidence-based pillars have been carefully balanced is a common theme throughout this thesis, most notably in **Publication 8** where the development of a social media based intervention for Indonesian adolescent girls is discussed.

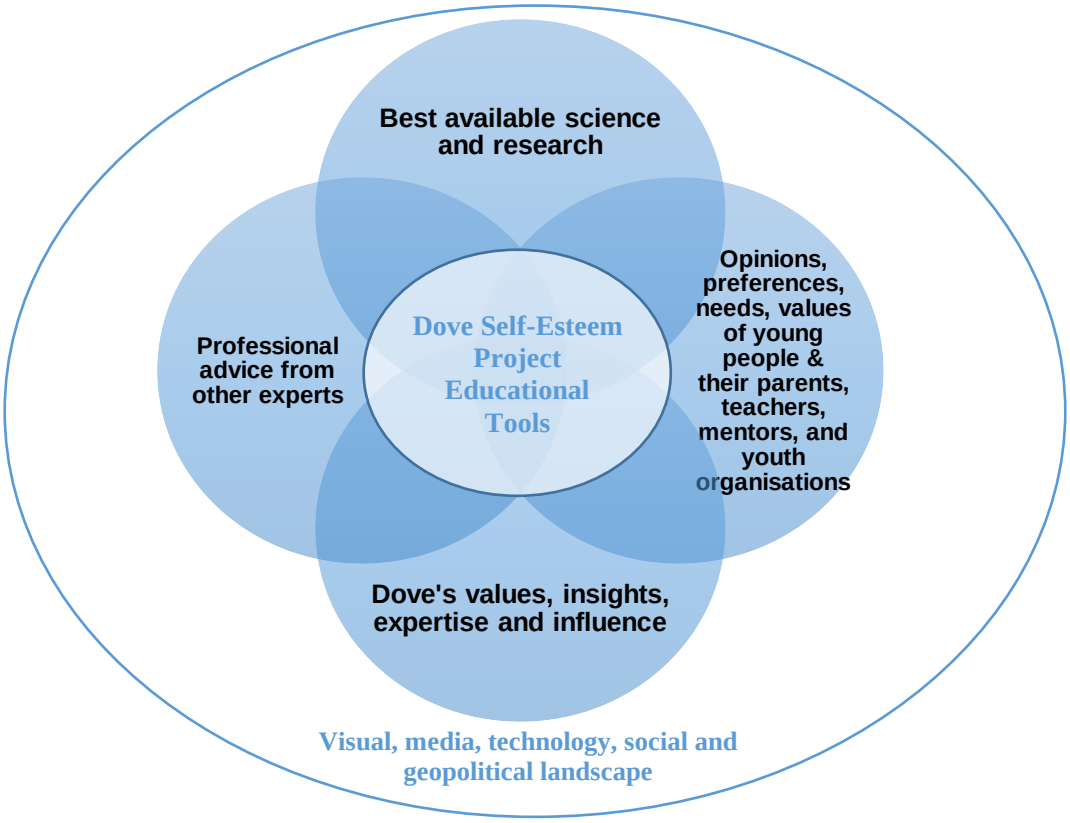


Figure 4. Elements of evidence-based practice guiding the development of all DSEP interventions. Reproduced from the DSEP Content Development Framework, with permission from DSEP.

Research methods

In line with pragmatism, mixed methods were utilised throughout this thesis in recognition that there is often no one right or wrong way to conduct research. Rather, the triangulation of information across approaches adds breadth and depth to research outputs (Johnson, Onwuegbuzie, & Turner, 2007). Results from four RCTs are presented (**Publications 1, 3, 4, 5** and **7**), which predominantly rely on quantitative methodologies yet employ supplementary qualitative methodologies to enhance understanding and interpretation of the quantitative data; a well-recognised approach to mixed methods research (Creswell, 2015). Likewise,

mixed methods were employed in the translation and psychometric validation of a new measurement tool (**Publication 6**), in line with best practice (Swami & Barron, 2019). In this example, mixed methods were sequential; an earlier qualitative phase with the target population informed the later quantitative data collection stage. Finally, concurrent mixed methods were adopted in **Publications 5** and **7**, where findings from different methods were used within one study to allow for triangulation of data. When utilising mixed methods in this way, inherent weaknesses of each are diluted, and the strengths of each are combined (Gilbert, 2006).

Each RCT was conducted in an applied setting. The school-based trials took place in participants' normal learning environment (i.e., the classroom). Likewise, the online intervention study with parents had an applied component to it, whereby mothers were encouraged to access the intervention at home as much or as little as they wished during the duration of the trial, after initial exposure in a controlled setting. The decision to conduct applied research was a deliberate one. In each trial, we sought to understand how the interventions would be delivered, and received, when disseminated in the real world. When using an applied approach, researchers have less control of situational variables such as how, when and where participants might participate (e.g., if participation is remote), or at what point in the day survey completion takes place in the school setting (i.e., which may influence how alert, tired, or motivated participants are). Steps were taken to monitor situational variables, such as: maintaining accurate research process logs, objective assessments of intervention fidelity, and an appreciation of, and commitment to, continual communication and relationship building with key collaborators and stakeholders (e.g., teachers). Garnering as much information as possible in this way allowed for the interpretation of unexpected research findings, or in some cases allowed for the modification of analyses in light of arising issues (see critical commentary 4 for an example).

Importantly, each RCT has not been considered the end point of each intervention development process. Instead, an iterative process has been adopted, with each RCT involving an acceptability component to inform further intervention refinements, if necessary (Figure 5). In this way, acceptability data is not treated as a descriptive, but as a mechanism to address implementation barriers (Long et al., 2016). Further to this, DSEP monitor and gather implementation data during intervention dissemination, in order to make further adjustments or adaptations if required (in collaboration with academics, including myself).

Again, this approach exemplifies the pragmatic stance taken in the production of knowledge within this thesis.

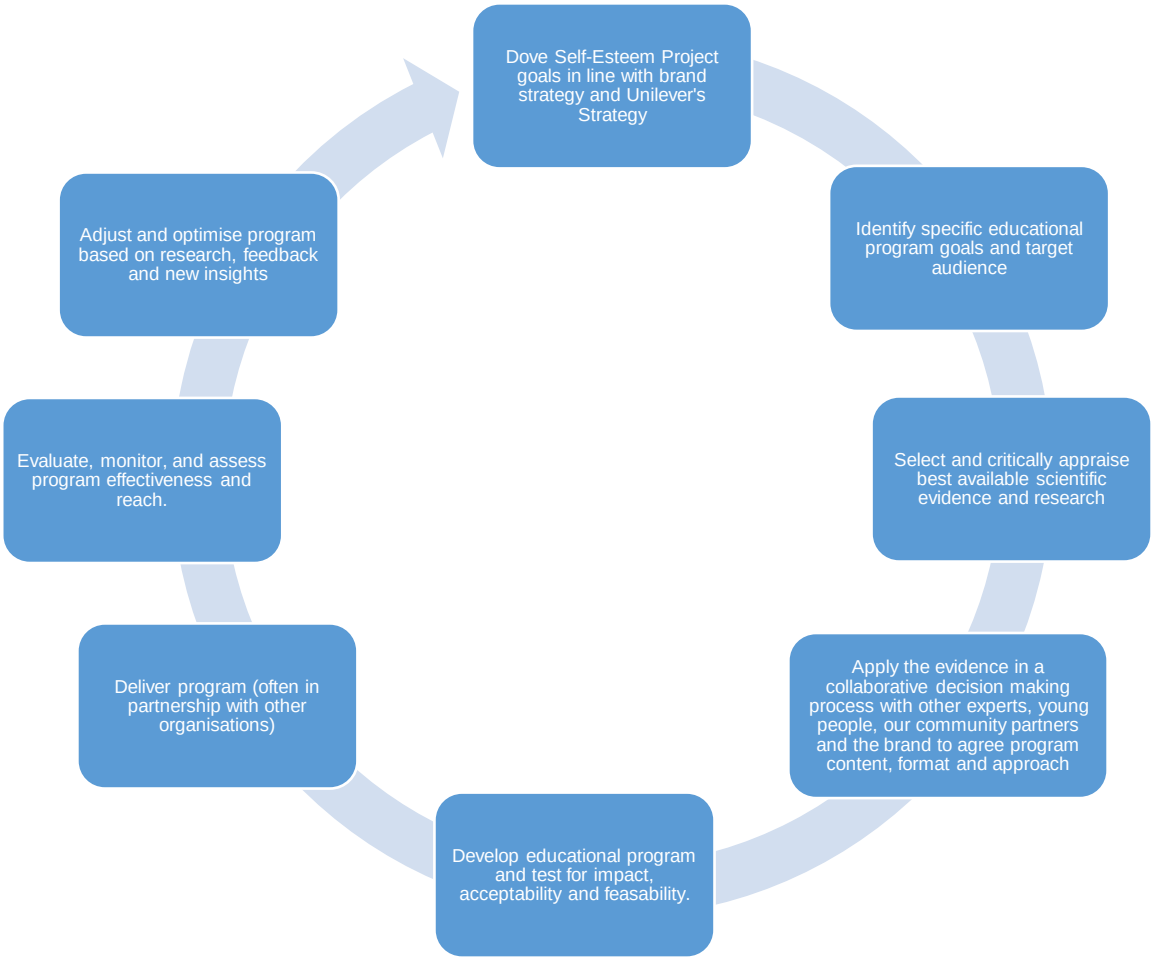


Figure 6. The cycle of research and development utilised to create DSEP evidence-based interventions. Reproduced from DSEP's Content Development Framework, with permission from DSEP.

Ethical considerations

All studies presented in this thesis received ethical approval from the UWE Bristol's Faculty Research Ethics Committee. Data were held and used in accordance with the Data Protection Act 1998 and, since May 2018, the guidelines of the General Data Protection Regulation (GDPR).

Given the majority of participants were under 18 years old, additional ethical considerations were given due attention. Informed assent from participants under 18 was obtained across all studies, as was informed consent from a primary caregiver in most circumstances. For research conducted in the UK in non-school settings, adolescent assent and active informed primary caregiver consent were sought. For UK school-based research, passive informed

consent was obtained from primary caregivers, whereby students took an information sheet home from school and primary caregivers were asked to respond only if they wished for their child not to be involved in the research. This method benefits from reduced participant burden, and facilitates the recruitment of a more representative sample of young people (Spence, White, Adamson, & Matthews, 2015). It is also in line with British Psychological Society's Code of Human Research Ethics (British Psychological Society, 2021).

Additional ethical considerations were required for the research conducted in India and Indonesia. These research projects involved a pragmatic balance of judgement between upholding ethical rigour as defined by UK ethical guidelines alongside the practical consideration of working internationally where local ethical codes of conduct differ. For example, under Indian regulations, informed consent can be waived if data is anonymised and for the purpose of public health research (Indian Council of Medical Research, 2018), which these studies were. Nevertheless, we obtained informed assent from all participants, as the multidisciplinary team, including Indian academics, deemed this important given the potentially sensitive subject matter. School principal teachers also gave consent for student participation, and could request parental consent was additionally sought. In Indonesia, local ethical approval for our research was obtained, too; specifically, from Universitas Indonesia which stipulated active parental consent was gained for participants under 18 years of age. To further safeguard participants during international research projects, safeguarding protocols were developed in collaboration with DSEP and the United Nations International Children's Emergency Fund (UNICEF), and executed by each of the internationally recognised research agencies we commissioned to run the research locally.

Chapter 4: Critical Commentary

This chapter explores each of the publications submitted and summarises how the six doctoral descriptors have been met.

Objective 1: Evaluating scalable body image interventions in the UK

My research career began concurrently to DSEP investing in the academic integrity of their social mission to free young people of appearance related concerns by forming an academic partnership with CAR in 2014. The publications presented in this thesis relate directly to DSEP's mission. My role, and that of the wider team at CAR, has been to ensure DSEP interventions are based upon sound theoretical and empirical evidence, and to evaluate their effectiveness (i.e., their ability to improve body image among young people). The first three interventions were evaluated in the UK: a web-based information hub for mothers of adolescent girls; a single-session school workshop; and a five-session workshop series for schools. **Publications 1** to **5** are my academic outputs from this stream of research. The critical commentaries below highlight and reflect upon my individual involvement in these projects.

Publication 1: Online intervention for parents of adolescent girls

The DSEP Website for Parents is a website designed for parents of adolescent girls. It is an information hub with brief articles written for parents seeking advice and support for their daughter's body image, in addition to providing support for mothers to work on their own body image. The website includes articles to help parents navigate conversations and body image-related topics with their daughters. It also includes articles to promote positive body image among mothers. The rationale for focusing on mothers' body image as well as providing support for daughters' body image was based upon research showing mothers' body image has a direct influence on their daughters' body image (Handford, Rapee, & Fardouly, 2018; Webb, Rogers, Etzel, & Padro, 2018). The articles on the website were written by a global advisory board of youth, body image and education experts from academia and other sectors. My role was to assist in the evaluation of the website's effectiveness in improving mothers' and daughters' body image and offer recommendations to further improve content and format post-trial.

The original research design was a two-arm RCT comparing exposure to the website to an assessment-only control group. However, it became apparent while reviewing the literature that tailored e-health interventions (i.e., interventions 'designed to address the individual characteristics and/or preferences of persons within a sample'; Beck et al., 2010, p.105) are often more effective and acceptable than untailored alternatives (Bennett & Glasgow, 2009). Interested in exploring the potential for tailoring content to improve effectiveness, and with the approval of our funders, a third arm was added to the trial; a tailored-website condition. In this condition, mothers were asked to select which topics they would like to learn about in relation to their daughter's body image, and given a personalised pathway based on their responses.

My role was to assist with measures selection, secure ethical approval, develop data collection protocols for the research agency, manage recruitment, screen data, and contribute to the manuscript write-up. I also led the process of structuring the website content for the tailored-website condition. I organised the 125 articles on the website into one of the six DSEP curriculum themes (Figure 3). I then identified which articles from each theme should be considered the most impactful in improving body image, leaning on the evidence base regarding effective intervention techniques (Alleva, Sheeran, Webb, Martijn, & Miles, 2015). For a summary of the intervention change techniques used in this and other interventions presented in this thesis, see Chapter 5, 'Future Directions'. Further, I received brief acceptability feedback from participating mothers on the articles under consideration for each theme. From here, my co-authors and I discussed and finalised the tailored-website condition materials for the RCT.

Including a third arm in the trial proved fruitful. The tailored website resulted in significantly higher self-esteem (post-exposure), weight-esteem (six-week follow-up), and reduced negative affect (12-month follow-up) among mothers, relative to the assessment-only control group. Mothers in this condition were also more likely than mothers in the assessment-only condition to seek additional support for body image 12-months later. These positive results were not found in the intervention-untailored condition, suggesting the tailored nature of the intervention was beneficial and necessary for superior effectiveness. Across both intervention conditions, mothers reported increased conversations with their daughters about body image and were more likely to report they had sought additional help for body image concerns (post-exposure and six-week follow-up). Daughters whose mothers viewed the website reported significantly improved self-esteem and negative affect at six-week follow-up. These

results were incredibly promising, especially as mothers had only viewed the website for 30-60 minutes each and daughters had no direct contact with the website. These findings make a useful contribution to understanding that a brief, low-intensity website for mothers of adolescent girls can significantly improve mother's body image, as well as the self-esteem and negative affect of both mother and daughter. They also provide further support regarding the benefits of tailoring digital intervention content.

Considering the trial findings, several recommendations were made to DSEP to further improve the website. Firstly, we recommended the website be arranged into themes mothers could choose from, as we found mothers who were provided with a personalised pathway through the website spent longer engaging in the content, and effectiveness was increased. Second, we advised the process of mothers sharing the website content with daughters was made as easy as possible (e.g., through "click to share" buttons), to bolster impact on daughter outcomes. Third, we advised parents should be directed to the articles identified as most potent upon first engagement. To address the second and third point, a downloadable PDF activity pack for mothers and daughters was created, titled '*Uniquely Me'*, comprising the core articles used in the trial. Lastly, given the impact fathers can have on daughter's body image (Rodgers & Chabrol, 2009) and the emerging evidence that fathers face a unique set of barriers when attempting to discuss body image with their daughters (Siegel, Winter, & Cook, 2020), it was recommended the resources be adapted for use by both mothers and fathers. The resulting website, and downloadable '*Uniquely Me'* resources, are presented in Figure 6. These resources have reached over 2.4 million adolescents globally (Dove, 2021).

The RCT findings were published in *Health Psychology* (Impact Factor (IF) = 4.27). The article has been cited 25 times since publication in September 2016. I have presented the findings at the *International Conference of Eating Disorders* (2015) and *Division of Health Psychology Annual Conference* (2016).

Figure 7. Example pages from the DSEP Website and corresponding 'Uniquely Me' downloadable content.

Publication 2: Improving parental uptake in body image interventions for adolescents

Publication 1 identified the DSEP Website for Parents as effective in improving body image among mothers and improving self-esteem and reducing negative affect among mothers and

daughters. These results were based upon mothers viewing the website under standardised conditions for 30 minutes for a financial incentive, as well as mothers being encouraged to further access the website at home as much as they wished after the 30 minutes of standardised viewing was complete. On average, mothers in the tailored condition viewed the website for a further 32 minutes at home, and mothers in the unstructured condition for seven minutes. Mother's viewing the website under standardised conditions was a necessary compromise in the study's external validity to evaluate website impact, given the extensive evidence that parental uptake and engagement with interventions to improve body image among their children is often poor (Hart et al., 2015). Thus, despite promising findings in **Publication 1**, an important question remains; how can uptake and engagement in parental interventions be improved?

To further our understanding of this question, I conducted secondary analyses on some of the RCT data. We were fortunate to be able to collect a relatively large amount of dyadic data (N = 235 mother-daughter dyads) during the trial with little attrition. The study comprised a within dyad comparison of what body image topics mothers and daughters wished to talk about together and the congruence of their preferences. These data were collected during the RCT when assessing mothers' preferences for topics in their tailored pathways, and was assessed for the purpose of this study with daughters at one-month follow-up. The topics consisted of five of the six themes identified as sociocultural risk factors for poor body image (Figure 3).

The findings were surprising. Across the dyads, mothers and daughters most wished to talk to each other about '*family, friends, and relationships'* and '*self-care'*; however, within-dyad agreement was low (chance or below chance level), suggesting mother-daughter dyads are not attuned to each other's preferences. This finding has important implications for promoting parental uptake of body image interventions. Firstly, whilst media literacy interventions are perceived as some of the most successful programmes for improving body image among adolescents (Yager et al., 2013), this study suggests promoting parental interventions as such may not be the best strategy to aide dissemination as mother's failed to report a preference for this content. Rather, marketing interventions as being relationship focused, or as one of self-care, may increase engagement due to this aligning with mother preferences. Second, the findings suggest mothers should be encouraged to have open discussions regarding the nature of body image concerns with their daughters prior to engagement in intervention content, to ensure they are accessing content relevant to their

daughter. This may, in turn, further benefit parental engagement if parents feel they are meeting the needs of their daughter.

This study was published as a short report in *Body Image* (IF = 6.406), with only minor revisions after first submission. One reviewer commented the paper was well written; this was encouraging feedback given my writing insecurities at this point in my career. The article has been cited seven times since publication in December 2016. The process of leading a project from conception to publication was a great learning experience for me, and gave me the confidence to seriously consider a career in academia for the first time. As a first-generation graduate, I had never considered academia as a viable career route for me. A key learning from this project was understanding that individual publications are just one part of a much bigger conversation. Unlike the large scale RCTs I was undertaking, the premise of this study was simple and the statistical analyses relatively uncomplicated. Yet, it was well received by my peers. The findings were novel, unique and added an important contribution to an on-going conversation regarding parental engagement in early interventions to improve mental health among adolescents (Hackworth et al., 2018; Piotrowska et al., 2017).

Publication 3: Single-session school-based body image intervention

In tandem to the above studies, I became increasingly involved with a second stream of research within the DSEP-CAR partnership involving the development and evaluation of a single-session, school-based body image intervention for 11-14 year olds. This research built upon mounting evidence that school-based interventions focusing on media literacy, peer relationships, and self-esteem were effective in improving body image among early adolescents (Yager et al., 2013). *Happy Being Me*, an Australian intervention designed for girls, was identified as one of the most effective school-based programmes. Based on this, we sought to develop and evaluate an adapted version, for a universal, gender-inclusive school setting, incorporating pressures from social media, as well as professionally made, engaging video content. We also reduced the content of *Happy Being Me* to fit into a single, 90-minute session. Single-session interventions are valuable due to their potential for greater accessibility, and thus scalability (Schleider & Weisz, 2017), despite producing less effective results than their multi-session counterparts (Le, Barendregt, Hay, & Mihalopoulos, 2017; Stice et al., 2019).

Critically, this project progressed the field by exploring intervention effectiveness when delivered by trained teachers, rather than by external providers (often psychologists). Using

facilitators external to the school can create a significant barrier to widespread dissemination of school-based interventions, due to the financial and human resource required (Kazdin & Rabbitt, 2013).

My first memory of my involvement in this study was during my first few weeks as a Research Associate, when the study lead, Professor Diedrichs, requested I pilot co-deliver the 90-minute intervention in a local secondary school classroom, under the watchful eye of the students' usual class teacher, research assistants, and representatives from DSEP. The objective was to assess the timing of the lesson and gather acceptability data from teachers and students prior to the RCT.

Delivering the intervention took me out of my comfort zone and gave me my first taste of applied research. I was assured the programme had been skilfully designed by academics, teachers, and pedagogical experts, to be interactive, student-led, and would likely be enjoyable for everyone involved. This was not the experience I had in the classroom; my delivery felt rushed, I had no opportunity to respond to student questions, and I felt flustered as I tried to stay on track with the detailed lesson plan I held nervously in my hands. I left the school gates full of self-doubt. However, somewhat encouragingly (from a personal perspective at least), my experience was strikingly similar to my three more experienced research colleagues who were also delivering the intervention in neighbouring classrooms. In the coming days we worked quickly and efficiently to identify the key issues experienced during intervention delivery to modify the intervention. The feedback from observing teachers and students informed our decisions, in addition to our own experiences. The changes we made included: streamlining the content to increase student interactivity and timely completion of the lesson; reformatting the resources to improve ease of facilitator delivery; and redesigning the student-facing resources to make the intervention more visually appealing.

This experience taught me the importance of trialling intervention materials as early as possible, collaborating with key stakeholders from the outset, and to never make assumptions in research. The pilot was an eye-opening experience, and was critically important to the subsequent stages of this research project.

The main trial was a pragmatic cluster RCT across six schools in England. Randomisation occurred at the school level and included three arms: an external researcher-led intervention condition (delivered by myself and two research colleagues), a teacher-led intervention

condition, and a waitlist control condition. The two intervention arms were important to compare external provision to schoolteacher provision, with the latter being particularly important for wide scale dissemination.

During the execution of the RCT, I played a supportive role in project management, as well as delivering the intervention multiple times. Day-to-day, I assisted in scheduling schools for data collection and intervention delivery, conducted fidelity assessments, and led focus group discussions with teacher and students. I thoroughly enjoyed the breadth of tasks assigned to me, and I felt very fortunate to be working alongside those I could learn from. During data analyses and write-up, I conducted content analyses of acceptability data from teachers and students, developed a coding and scoring rubric from which to assess fidelity, and led reports for our funders and participating schools. These tasks gave me experience of distilling complex statistical findings into a language various audiences could understand, and in presenting qualitative results in an engaging, accessible way.

The findings were complex. In brief, the intervention was successful in improving body image among adolescents. We found positive effects immediately following the intervention, as expected (Alleva et al., 2015). Contrary to our hypothesis, effects were stronger when delivered by teachers, despite teacher adherence being poorer than that of external providers. This finding was in contrast to a previous review which found content experts such as psychologists and researchers were more effective in improving body image when delivering interventions (Stice, Shaw, & Marti, 2007). However, this review was largely based on research with selective (rather than universal) samples, and with groups older than those who took part in the *Confident Me* trial; two factors likely to reduce the need for stringent behavioural management skills from the facilitator. One possible reason our findings conflicted with this review is that expertise in classroom behaviour management and tailoring content to different learning styles and abilities was a fundamental aspect of successful intervention delivery in universal school settings, skills better held by schoolteachers.

This study is published in *Behaviour Research and Therapy* (IF = 4.473). It has been cited 91 times since publication in November 2015. In September 2014, the intervention received the Quality Assurance Mark from the Physical, Social, Health and Economic (PSHE) Association (the national body for PSHE education in UK, with over 50,000 members), boosting the likelihood of intervention uptake and engagement. In 2020, I was the academic lead in ensuring the reaccreditation of this Quality Assurance Mark from the PSHE

Association in collaboration with DSEP and EdComs (a communications and marketing agency specialising in education). This involved updating the *Confident Me* materials based on recent feedback from schoolteachers and stakeholders such as Edcoms and PSHE Association to ensure the intervention remained relevant to students, accessible to teachers, and effective in improving body image. Edits included using gender-neutral and inclusive language, updating references to social media to incorporate newly popular platforms, and modernising the layout and style of the materials. Figure 7 illustrates the development of the single-session *Confident Me* resources from the pilot delivery in 2014, to the most recent 2021 version. By the end of 2020, it is estimated that over 3.7 million students in the UK have taken part in *Confident Me: Single Session* (Dove, 2021).

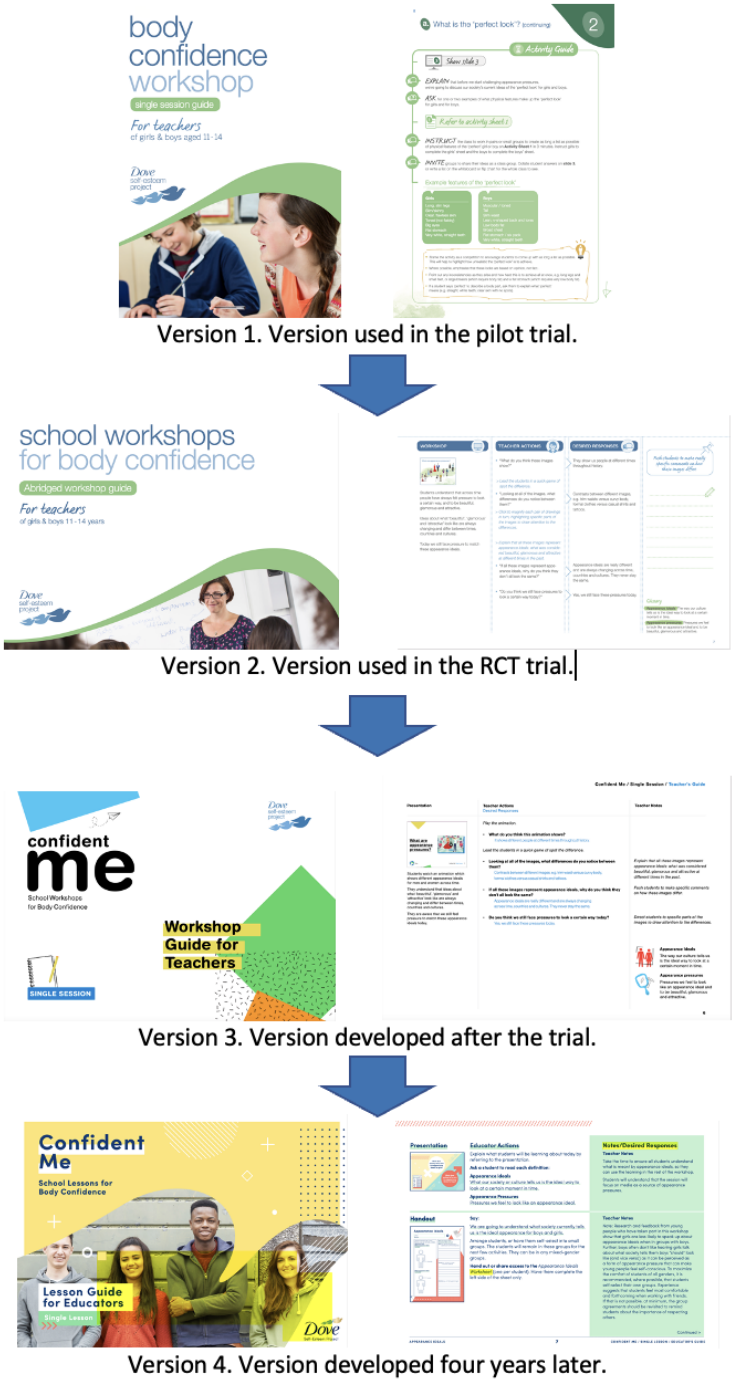


Figure 8. Evidence-based iterations of Confident Me from 2014-2021.

Publication 4: Five-session school-based body image intervention

In quick succession to the research undertaken for **Publication 3**, our research team undertook the development and evaluation of an extended five-session version of *Confident Me* in UK schools. The reasoning behind developing two school-based resources was based upon triangulating research evidence that multiple sessions are likely to engender more

sustained improvements to body image compared to single sessions (Yager et al., 2013) despite single-session providing greater accessibility (Schleider & Weisz, 2017). Thus, the decision to develop two programmes was made, a single-session workshop and a five-session workshop series, whereby the five-session version would be recommended wherever feasible (subject to effectiveness).

Evaluation of *Confident Me: Five Session Workshops Series* was undertaken in a similar manner to that described in **Publication 3** with a few key differences; most notably, a two-arm rather than a three-arm trial was conducted, as we were reasonably confident based on **Publication 3** that trained teachers could effectively deliver the intervention. I was now the sole full-time Research Associate on the project, responsible for the day-to-day management of the project. I relished the opportunity to take ownership of the project, and apply the research skills I learnt during **Publication 3** to achieve this. The importance of building rapport with stakeholders came to the fore in this project, in particular when a key contact at a control school excitedly informed me during an informal conversation that all the participating girls had received an externally-led body image lesson between the baseline and follow-up questionnaire. Of course, this presented an unexpected and critical confounding variable compromising the data received from the girls participating from that school, rendering this data unusable in the RCT analyses. This problem could certainly have gone unnoticed had I not invested time in building relations with key project stakeholders.

School recruitment was the biggest challenge of this project due to the time commitment required from schools. Not only were we requesting schools schedule the five-session workshops, but we also requested they schedule at least four data collection sessions with all participating students, and one-hour focus groups with a subset of students. Additionally, the trial involved two-hours of teacher training, as well as teacher focus groups, and the completion of multiple teacher feedback forms. I had to think creatively during the recruitment process, leaning on relationships with school counsellors I had formed during **Publication 3**, as well as delivering training events at local school conferences to garner interest from eligible schools. I reached our target sample size after expanding the radius of schools invited to participate from within 15 miles to within 150 miles of UWE Bristol's campus. I recall the elation of recruiting our sixth and final school, interrupting Professor Diedrichs during a meeting to inform her of our success.

Our findings were largely as expected. The five-session intervention, compared to the control condition, produced improvements in body image among girls and boys, and this was maintained at six-month follow-up. This is the longest sustained improvement in body image observed in a trial of a school-based body image intervention delivered by schoolteachers in a universal setting. Changes in secondary outcomes such as internalisation of appearance ideals and social comparisons were not found, calling into question the mechanisms through which *Confident Me* is improving body image. Perhaps other mechanisms are at play; alternatively, failure to see a shift in these outcomes may have been a consequence of floor effects witnessed at baseline.

Overall, **Publication 3** and **4** provided strong support for the effectiveness of *Confident Me*, yet further research is still required. For example, it would be informative to extend our findings to incorporate an active control condition, to understand how *Confident Me* performs comparative to other interventions that aim to improve body image in the school setting. This may involve comparing *Confident Me* to the current routine equivalent (e.g., anecdotally UK schoolteachers develop their own lesson plans to tackle body image in schools) or compared to other evidence-based alternatives (e.g., Atkinson et al., manuscript in preparation). Further, it would be informative to compare the effectiveness of various components of *Confident Me* (Freedland et al., 2019) to analyse the most impactful, active ingredients; a potentially important future research project when considering how crowded school curriculums are (PSHE Association, 2020). Additionally, whilst this study was conducted in an applied setting in close to real world conditions, teachers received two hours of in-person training prior to workshop delivery. For the DSEP programme to be scalable, this face-to-face training will not always be available to teachers choosing to deliver the intervention, so a video series containing the core elements of the face-to-face training was created and published on the DSEP website, to supplement intervention resources. Where financial resources allow, face-to-face training funded by DSEP is routinely provided to facilitating teachers (Dove, 2021). Nevertheless, it would be informative for future research to evaluate the effectiveness of the intervention when only the online video training is provided.

The RCT findings were published in the *Journal of Adolescent Health* (IF = 5.01). Since publication in February 2021, it has been cited 14 times.

Publication 5: Acceptability of teacher-led interventions in the UK

During the RCTs conducted in **Publication 3** and **4**, a large amount of acceptability data was collected to a) aid the interpretation of our findings and b) inform optimisation of each intervention to further improve acceptability among teachers and students. For both trials, I led the analyses of the extensive acceptability data to produce reports for our funders, participating schools, and to recommend intervention adaptations. As well as an overhaul of the design of all the student-facing resources and the inclusion of more images of boys, the content was condensed, activities frequently omitted by teachers removed, and more guidance given to teachers on the type of responses they are looking to generate from students.

The data collected was rich. Whilst some of the quantitative acceptability findings were presented in the RCT publications, it was evident that much of the qualitative data we obtained would be of interest to the broader academic community, particularly those looking to task-shift the delivery of school-based interventions to schoolteachers. Acceptability findings for school-based interventions are rarely reported in academic publications (Silva, Collier-Meek, Codding, & DeFouw, 2020), yet acceptability with key stakeholders is vital to an intervention's real-world success (Eckert & Hintze, 2000). Consequently, I set about writing up our acceptability findings for an academic audience.

I began to develop this publication in 2015, shortly after the RCT was finalised. I found the process particularly difficult with few previous publications of this nature to inform the format and presentation of the findings. In hindsight, I was trying to do too much with one paper. I was in the middle of learning new terms, such as 'dissemination', 'implementation science', and 'community-based participatory research (CBPR)', and I attempted to label our work as all of these things. In reality, our studies were pragmatic RCTs which contributed to all of these important areas of research, whilst not strictly being a study of 'dissemination' or 'implementation', or a clear example of CBPR methods (Wallerstein & Duran, 2006). Nevertheless, I drafted a manuscript, and sent it to my co-authors in late 2015. The feedback I received was extensive, and required much more time than I was able to give due to other funded priorities. Further, I was about to leave my post as Research Associate to travel, with no timeline of when I might (if ever) return. At this point, the manuscript was shelved.

Two years later, I was fortunate to return to CAR to work on a series of new international projects (**Publications 6-8**). As with any new project, these demanded my full attention and

my manuscript for the *Confident Me* acceptability findings remained quietly on the shelf. In 2020, the COVID-19 pandemic stalled the majority of our international research projects and I found myself with time to spare (a novelty in a fast-paced industry-funded research environment!). With the support of my co-authors, Professor Diedrichs and Dr. Atkinson, I returned to the acceptability study manuscript, knowing it had potential. Reviewing my original manuscript five years on was a valuable reflection point. I was able to read my work critically and empathise with the comments from my co-authors. My writing style had developed over the years and I noticed an unnecessary quest to impress in my written style in 2015. The manuscript required a complete rewrite, and the time and space I had while working from home during the pandemic gave me the opportunity to do this.

This is the publication I am most proud of. It was a publication that could have easily gone unfinished, but with perseverance it is now under advanced review at the *Journal of School Psychology* (IF = 4.29). I made the decision to submit to this journal as I believe the findings are of particular benefit to those working across the field of school mental health. As mentioned previously, overreliance on external facilitation of interventions across the school mental health field is a hurdle that needs to be overcome if widescale dissemination is the end goal (Owens et al., 2014). The findings I present in this paper offer useful insights for those looking to task-shift intervention delivery to aid scalability whilst maintaining evidence-based effectiveness, including how to design a manualised intervention that is amendable to individual teacher pedagogies, and navigating the support needs of teachers with varying levels of competence in delivering mental health education.

Objective 2 and 3: Expanding into new cultural contexts

In 2017, shortly before I returned to CAR, the team had received new funding from DSEP to further our school-based *Confident Me* intervention work in a new cultural, geographical and economic context, India. This was an incredibly exciting project as I had just returned from travelling throughout Asia and had been noting the nuances of appearance pressures faced by young people in this context. Whilst initially a one-year funded project, our success in India has led to a further four years of funding from DSEP, as we continue to develop and enhance the availability of adolescent body image interventions across the country.

Publication 6: Development and validation of a body image measure for use among Indian adolescents

The first obstacle we faced when developing our research design for an India-based RCT of a culturally adapted version of *Confident Me* was how to best measure body image in this context. I conducted a literature review of what body image-related measures had been previously used in this population and concluded that no validated measures were available. This meant taking several steps backwards to move forward, to focus on the development of a psychometrically sound measure before evaluating the intervention (Figure 8). The BESAA was chosen to be adapted and psychometrically assessed, due to the scale's strong face validity, holistic conceptualisation of body image, and evidence of its validity across other cultural contexts (Chang, Li, Loh, & Chua, 2019; Confalonieri, Gatti, Ionio, & Traficante, 2008; Mendelson, Mendelson, & White, 2001). Also, this measure had previously been used in the evaluation of DSEP programmes in the UK, thus allowing for some degree of comparison across results.

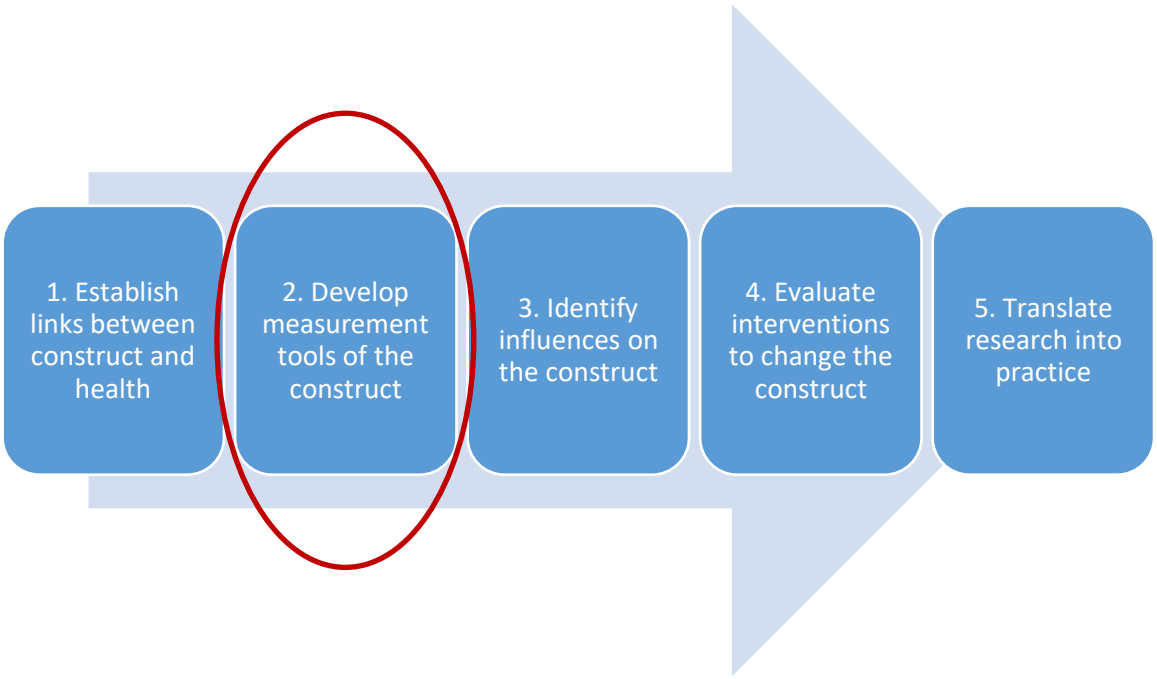


Figure 9. Visual representation of the behavioural epidemiology framework (Sallis, Owen, & Fotheringham, 2000).

Despite being a junior member of the team, this project presented the opportunity for me to take a leadership position. Collectively, we had little experience of working in LMICs, and even less working on the validation of measures in new cultural contexts, so I set about filling this void. I worked to thoroughly understand the process of validating a measure in a new

cultural context, and noticed the variability with which this task was being conducted, as has been noted recently elsewhere (Swami & Barron, 2019). Fortunately, around the time I was conducting this work, Viren Swami and David Barron were writing 'good practice guidelines' on this exact topic. I emailed Professor Swami who kindly provided me with a copy of the draft manuscript (Swami & Barron, 2019). This manuscript proved pivotal in my understanding of measure adaptation and validation, providing a clear road map of what was required. It became apparent we did not have the required skills, nor the time capacity to learn these skills. With funding from our grant, I sought out statistical collaborators. After reaching out to the statistics department at UWE Bristol and exhausting my contacts with links to statisticians, it was a chance encounter at a conference that I was able to establish a viable collaborator for this project. I met Dr. Sam Norton at the *Division of Health Psychology Annual Conference* in Manchester in 2019 when I was presenting preliminary findings of our measures validation work in India (despite already acknowledging the shortcomings in this work). Dr. Norton and I discussed the issues arising from my preliminary data analyses and he agreed to connect me with Dr. Silia Vitoratou, co-director of the Psychometrics and Measurement Lab at the Biostatistics and Health Informatics Department of Kings College London.

Dr. Vitoratou and I have now successfully collaborated on a number of measures validation projects across India, Brazil, and Indonesia. We have published four papers and have a further eight co-authored papers currently in preparation. This has been an incredibly mutually beneficial partnership; I have grown as an independent researcher as well as a collaborative member of an interdisciplinary, cross-university team. I have also learnt so much from Dr. Vitoratou and her team about statistical interpretation of findings from exploratory and confirmatory factor analyses. I am hopeful to continue this partnership in the future, and was delighted when Dr. Vitoratou recently invited me to contribute to consult on a PhD project exploring adverse body image experiences of non-gender conforming individuals.

This research was published in *Body Image* (IF = 6.41) in June 2021 and has been cited three times. The peer review process was intense, likely due to the recent guidelines published by Swami and Barron (2019) stressing the importance of rigorous validation methods. Whilst this project began as a small side project underpinning a larger aim within our team, measures validation has become a fundamental aspect of my career. Since undertaking this research, along with the adaptation and validation of other psychosocial measures in India, Brazil, and

Indonesia, I have developed a critical eye of the validation work for other measures, and have become increasingly sceptical of work based upon unvalidated tools of measurement. I now frequently review measures validation articles submitted to *Body Image* and the *International Journal of Eating Disorders*. I have also presented work related to measures validation at numerous events, including: *Division of Health Psychology Annual Conference*, *Appearance Matters Biennial Conference*, and the *International Conference of Eating Disorders*.

Publication 7: Pilot study of a school-based intervention in India

For this project, alongside my CAR colleagues, I worked in close collaboration with a number of external stakeholders mainly based in India, including academic collaborators at the Lady Shri Ram College at the University of Delhi (Dr. Megha Dhillon) and the Toronto District School Board (Dr. Hemal Shroff), as well as Psychologists at the Karma Center for Counselling and Well-being, based in Delhi, India. Whilst the funding for this project was originally awarded to Professor Diedrichs and Dr. Lewis-Smith for a one-year period, the resources required for this project far outgrew our capacity and I, together with Professor Diedrichs and Dr. Lewis-Smith, successfully secured a second year of funding to ensure the completion of this work.

Briefly, this project involved the adaptation of the five-session *Confident Me* series (**Publication 4**) for use in urban Indian schools. Prior to the acceptability trial, Dr. Lewis-Smith and I worked closely with Drs. Shroff and Dhillon to ensure the cultural appropriateness of the intervention, making changes to the programme where necessary whilst ensuring we maintain the evidence-based rigour of the programme. We were fortunate to visit Delhi during this process, where I learnt as much from my collaborators as I did during my evenings spent in the city.

Once all parties were confident we had developed a programme suitable for Indian adolescents, we began our acceptability study. Like **Publication 6**, it was necessary to revisit the behavioural epidemiological framework to consider how, and under what conditions, we should conduct our acceptability and preliminary efficacy trial. On review of the evidence to date, it was decided after multiple discussions that rather than evaluate *Confident Me* in India when delivered by teachers (as with **Publication 3** and **4** in the UK), it was important to first evaluate *Confident Me* in Indian schools when delivered by health care professionals. Of course, this stifles our ability to draw "real world" conclusions on *Confident Me's* impact if and when delivered by teachers; however, it allowed us to ascertain the acceptability and

preliminary efficacy of *Confident Me* when delivered under close-to-optimum conditions. Future work is required to evaluate *Confident Me* when delivered by schoolteachers (a project we have since acquired funding for, and is currently being led by Dr. Lewis-Smith, in collaboration with UNICEF and DSEP).

Our pilot trial of *Confident Me India* was a success. Students and teachers responded positively to the content, and the quantitative results indicated preliminary efficacy. Moreover, we learnt ways we could further improve the programme to increase acceptability. This highlighted to me the importance of a pilot trial. Post-pilot, we were able to regroup and make further adaptations to the programme based on student, teacher, and facilitator feedback (e.g., reducing repetition in the teacher guide, and providing more support to facilitators on how to make the workshops more student driven). This feedback was instrumental in enabling us to create a further reiteration of the intervention before investing resources in a large-scale RCT.

Unlike the earlier RCTs, I experienced much more autonomy during this project. I was successfully promoted to Research Fellow during this trial and was tasked with managing a consultant research assistant, Anshula Chaudhry, who was working on the project full-time in Delhi throughout the duration of the trial. Anshula and I would speak on a daily basis to discuss trial progress, troubleshoot any issues arising (there were many!), and assist with any questions she had. I was also responsible for liaising with statistician Associate Professor White during the quantitative data analysis, conducting the qualitative analysis, and for writing the manuscript. I thoroughly enjoyed this process which enabled me to put into action all the skills I had developed up to this point in my career.

This study proved difficult to publish. Having been through the pilot process on numerous occasions, I required no convincing of the value of such an endeavour; however, it seems others in academia were unconvinced. I submitted the pilot findings to three journals, each rejecting the paper before sending it out for review, noting the limitations of pilot studies. This was disappointing news, but we believed in the value of the paper and, undeterred, resubmitted to a fourth journal (*Body Image*). This time, it was sent out for review, and we received incredibly positive feedback. The reviewers recognised the challenges of conducting research internationally, commended our assessment of fidelity, and felt the paper was written ‘beautifully’. These comments restored my somewhat waning faith in my approach to

international intervention development and taught me that perseverance pays off. The paper was published in June 2021 and has been cited six times.

This study was a building block for future research evaluating *Confident Me* in India. Since this study, I've been heavily involved in the full scale RCT that found strikingly similar results to the preliminary efficacy results from the pilot trial. This study is currently under review at the *Journal of the American Academy of Child and Adolescent Psychiatry*. Furthermore, I was a co-applicant on a successful funding bid with DSEP to adapt and re-evaluate the intervention for rural India, where resources such as PowerPoint and video capabilities are lacking, in collaboration with UNICEF. This stream of research is on-going and led by my colleague, Dr. Lewis-Smith.

Publication 8: Protocol for the evaluation of a social-media based intervention among Indonesian adolescent girls

My most recent research has integrated my learnings throughout the previous publications to develop and evaluate a novel social-media based intervention among Indonesian adolescent girls. Intervention development took over 18 months and involved a multi-country, multicultural, multidisciplinary team; I led from a body image academic perspective, Girl Effect (an international non-profit organisation that builds media content that aims to arm girls with the skills to make positive choices in their lives) led on their knowledge and experience of delivering online interventions to girls across LMICs, and Percolate Galactic (an Indonesian-based creative agency that specialises in marketing for youth) led on the creative elements of the intervention. The research was conducted in collaboration with local academics from Universitas Indonesias (Dr. Bernie Medise and Dr. Kholisah Nasution), as well as Associate Professor in Women's Studies at the University of Hawai'i, Dr. Ayu Saraswati. The intervention is now developed and currently under-going evaluation; the publication presented as part of this thesis is the protocol paper describing the RCT to evaluate the intervention's effectiveness.

A wealth of literature indicates internet-based mental health interventions show promise (Guest et al., 2019; Pennesi & Wade, 2018; Rodgers et al., 2018; Seekis, Bradley, & Duffy, 2020), particularly among LMICs (Arjadi et al., 2015). Internet penetration even across rural areas of Indonesia is high (Haryanto, 2019), making internet interventions aptly suited for this audience to circumvent the need for face-to-face alternatives. Furthermore, almost all

young people in Indonesia use social media (Ngussa, Fitriyah, & Diningrat, 2021), thus the benefit of delivering the intervention via social media means young people can be met where they are already at, an important consideration given high drop-out rates often seen in online interventions (Linardon & Fuller-Tyszkiewicz, 2020). Finally, partnering with industry (i.e., DSEP) ensures the intervention reaches those in need; specifically, there is funding set aside to pay for targeted Meta (Facebook and Instagram) marketing so that the intervention will show up in Indonesian adolescent girl's social media newsfeeds, providing intervention effectiveness is established.

Developing the intervention, '*Warna-Warni Waktu'* (meaning 'Colourful Time Travel'), required heavy reliance on my prior learning on evidence-based practice, particularly the components outlined in Figure 4. Having conducted a thorough literature review to identify the modifiable risks factors for body image concerns among Indonesian adolescent girls, it was evident similar themes emerged to those seen in other areas of the world (i.e., the risk factors identified in Figure 3), directing us toward these themes once again during intervention development. In hindsight, this was 'the easy bit'. Much trickier was developing ideas around how to present this information in an appealing way for girls briefly on social media. This required utmost attention, again given the low engagement rates often reported for online mental health interventions (Linardon & Fuller-Tyszkiewicz, 2020) and also knowing we would be competing for attention with other social media content on the newsfeeds of the target demographic. Unlike school-based programmes where participation stems from authoritative figures such as headteachers and school counsellors, this intervention requires instant buy-in from the target audience. Designing an intervention that was both acceptable and (hopefully) effective, took time. I led from the academic perspective, while guided by the lived experience of others in the team, the creative capabilities of our local stakeholders, the knowledge of social media capabilities from Girl Effect, as well as continually involving our target age group in shared decision-making. This process required push and pull from all sides of the evidence-based practice framework, and careful consideration from all team members.

Figure 10. Screenshots of the Warna-Warni Waktu videos. Reproduced from the Warna-Warni Waktu intervention, with permission from DSEP and Girl Effect.

The resulting intervention comprises six sequential video episodes (Figure 11) telling a fictitious story of a young women who learns strategies to resist appearance pressures through the help of animated time travellers on a quest to save the world from body image concerns. Each video is supplemented with two-to-five short activities (Figure 12) that reinforce the key messages of each video, based on research highlighting active learning provides a deeper level of understanding (Arthurs & Kreager, 2017). These activities include story completion, word searches, and spot the difference exercises.

Figure 11. Example supplementary activities to the Warni-Warni Waktu intervention. Reproduced from the Warna-Warni Waktu intervention, with permission from DSEP and Girl Effect.

The protocol paper included in this thesis outlines the evaluation of the intervention. I led on the conceptualisation and design of the RCT, and will lead on implementing the plan in the coming months. A key consideration when designing the RCT was whether to host the intervention on social media during the trial. The advantage of hosting the intervention on social media would be the high level of ecological validity achievable, with participants viewing the content in the context with which it will be disseminated. However, I ultimately decided not to take this option, given the lack of adherence data obtainable, and the possibility social media platforms could edit settings at any point before or during the trial, calling into question our ability to execute the trial as planned. I made the decision to embed the intervention within university-approved software (Qualtrics) which allows for accurate tracking of adherence and a higher level of control over what the participant can view at any given time. A limitation of this approach (in addition to reduced ecological validity) is that the interactive element between participants during activity completion is omitted during the trial; however, on balance, to assess the absolute impact of the intervention, adherence

monitoring was deemed more crucial in order to answer the research questions posed. The research questions guided the decision to use a waitlist control condition (Freedland et al., 2019). Finally, the incorporation of a pilot study felt necessary given the novelty of the design, and to ensure the research agency were able to execute the detailed research protocol accurately. The pilot study is now complete, which indicated high acceptability and intervention adherence among participants, and preliminary analyses of effectiveness appeared promising.

The protocol for the development and evaluation of *Warna-Warni Waktu* has recently (January 2022) been accepted for publication in *Journal of Medical Internet Research: Research Protocols*. Reviewer feedback on the manuscript was minimal, and centred around providing further justification of decisions based upon the cultural context of Indonesia. This research, like the India stream of work, is underpinned by the adaptation and validation of appropriate outcome measures among the target group, of which I am currently leading a number of publications.

Chapter 5: Discussion

Body image concerns are a critical issue among adolescent across the world (Al Sabbah et al., 2009; Chongwatpol & Gates, 2016; Singh et al., 2015), with recent reports suggesting that over half experience some degree of dissatisfaction with their appearance (Dove, 2017). Risk factors are well established (Juvonen et al., 2016; Marcos et al., 2013; Mills & Fuller-Tyszkiewicz, 2017; Rodgers et al., 2015; Valois et al., 2019; Vandenbosch & Eggermont, 2016), as are the negative adverse mental and physical health consequences of body image concerns (Goldschmidt et al., 2016; Jacobi & Fittig, 2018; Wichstrøm & von Soest, 2016), indicating that interventions to curb such concerns are vital. While many interventions show promise in alleviating concerns, many do not offer scalable, cost-effective options for reaching the large population in need (Chua et al., 2020).

The overarching aim of the publications presented in this thesis was to extend upon the evidence base for body image interventions for adolescents with a view to develop and evaluate scalable options. In doing so, the publications address the call to action expressed by many body image scholars that progressing from research to real world impact is vitally important (Atkinson et al., 2020; Austin, 2012). With the majority of adolescents across the world not receiving any treatment for mental health concerns (Kazdin, 2019), including body image, real world impact depends on evidence-based interventions being scalable and accessible.

Publication 1 extended prior research into how parents may successfully facilitate body image interventions by examining the effectiveness of a website for mothers of adolescent girls. **Publication 2** supplements **Publication 1** by addressing how uptake and engagement in such interventions for parents can be improved, a critical barrier to this mode of dissemination (Hart et al., 2015). The next three publications (**Publications 3-5**) explored the potential to task-shift the delivery of school-based interventions to schoolteachers. Again, with the end goal of widescale dissemination at the heart of this research, these studies were conducted in an applied setting, with consideration given to both effectiveness (to ensure the intervention 'works') and acceptability (to ensure the intervention is seen as viable, helpful and desirable among key stakeholders). Acceptability research is often neglected in intervention development and evaluation work, but is imperative in ensuring barriers to dissemination are identified (Long et al., 2016), thus increasing scalability potential (Eckert & Hintze, 2000; Proctor et al., 2011; Sekhon, Cartwright, & Francis, 2017).

The remaining three publications (**Publications 6-8**) built upon **Publications 1-5** to consider if and how scalable body image interventions can be adapted for new cultural contexts; namely, in India and Indonesia. The scale of body image concerns in these countries (Azizah & Kristiutami, 2020; Ganesan, Ravishankar, & Ramalingam, 2018) coupled with the dearth of intervention research undertaken in these contexts (Chua et al., 2020; Kusina & Exline, 2019) make these publications both novel and of utmost importance. **Publication 6** underpinned **Publication 7** in adapting and validating a culturally appropriate version of the BESAA among Indian adolescents to allow for an accurate assessment of intervention effectiveness in this population. **Publication 6** is just one example of a portfolio of measures validation work I have contributed to across Indian, Indonesian and Brazilian adolescent samples (Lewis-Smith et al., 2021a; Lewis-Smith et al., 2021b; Smith et al., under review). **Publication 7** assessed the acceptability and preliminary efficacy of a co-educational school-based body image intervention in Delhi schools, the first of its kind in India. This publication has since been followed up with a fully powered RCT (Lewis-Smith et al., under review). Finally, **Publication 8** showcased the development and evaluation plan for a social-media based body image intervention for Indonesian adolescent girls. This brings together the wealth of knowledge I have built up through **Publications 1-7**, and sets the scene for where I see my research progressing in future.

The remainder of this chapter draws together the findings of these publications by firstly examining their collective contributions to the field. Next, overall strengths and limitations of the work presented are acknowledged, and future directions for the field briefly summarised. I conclude with some personal reflections, and outline my current and future research projects.

Contributions to adolescent body image intervention research

The publications presented in this thesis, along with the critical commentaries, make a significant contribution to the field of research into body image interventions for adolescents. These publications have advanced the field's progress towards translating research into practice (Torres, 2021), the fifth and final step in the behavioural epidemiological framework (Sallis et al., 2015), in a number of ways. Here, I highlight what I consider to be the most important three.

Task-shifting

Globally, we are experiencing a mental health crisis exacerbated by a lack of mental health professionals available to deliver evidence-based interventions (Patel et al., 2007). For the past 15 years, this issue has been widely recognised by those working in global health and strategies such as task-shifting or the use of digital technologies have been offered up as alternatives to labour intensive, face-to-face provision (Fairburn & Patel, 2017; Hoeft et al., 2018). The publications presented in this thesis present some of the first studies to consider both the acceptability and efficacy of task shifting body image interventions to community providers, such as parents (via an internet-based intervention: **Publications 1 and 2**) and schoolteachers (**Publications 3-5**). Findings show both parents and schoolteachers can effectively deliver evidence-based body image content to young people. Since these studies, there has been an encouraging uptick in the development and evaluation of face-to-face body image interventions task-shifted to community providers (Chua et al., 2020) as well as an increased focus on internet-based intervention research (Stice, Rohde, Shaw, & Gau, 2020; Wade & Wilksch, 2018; Williamson et al., 2019). Across the mental health field, task-shifting has been described as a 'sea change' (Fairburn & Patel, 2017, p.19). It is exciting to see this shift beginning to materialise in the body image field, too.

Like task-shifting, digital interventions show great promise in addressing the treatment gap (i.e., the difference in the proportion of people presenting with a concern and the proportion of those receiving treatment: Patel et al., 2010). This is particularly true for those with low level concerns who may require less intensive interventions (Kazdin & Blase, 2011). There is still work to be done (see 'Future directions' section below), but the studies presented here begin to scratch the surface of possibilities for scalable body image interventions for young people disseminated via the internet (**Publications 1 and 8**).

Expanding cultural relevance

Research developing and evaluating universal body image interventions in areas such as Asia, Africa, and South America is scarce (Chua et al., 2020). **Publications 7 and 8** examined if and how interventions can be developed for under-researched cultural contexts. If we look to the field of global mental health more broadly, there has been lively debate for the past 15 years regarding how to address the need for interventions in low-resource settings (Bemme & Kirmayer, 2020). This conversation dates to an inaugural *Lancet Series* in 2007,

where Vikram Patel and colleagues (2007) evidenced the wealth of mental health interventions developed alongside the lack of systematic scaling up achieved, particularly in LMICs. Specifically, Patel et al. (2007) called for interventions found to be effective in high-income countries (HICs) to be examined for their feasibility and effectiveness in LMICs, particularly those with scaling up potential. This idea has been hotly debated between those such as Patel (who argue global scaling up of mental health interventions that show effectiveness in HICs is imperative) versus those who question the epistemological underpinning of such an endeavour, concerned about imposing Western knowledge upon cultures who have their own definitions, presentations, and treatments for mental health (Summerfield, 2008). Recent commentaries suggest the field is now moving away from such dichotomous discussions, toward a middle ground where interventions developed elsewhere (i.e., in Western contexts) can be built upon for use in new cultures, taking into account sociocultural context (Bemme & Kirmayer, 2020; Lund, 2017). It may not be a perfect solution, but given the urgent need for mental health support for adolescents across the world (Patel et al., 2007), this appears to be the most promising path to generate change. True to the pragmatic paradigm adopted in this thesis, this approach has been taken in developing interventions for Indian and Indonesian adolescents, with promising results.

In summary, **Publication 7** provides support that body image interventions can be effectively adapted for new cultural contexts, while highlighting some important considerations. First, a literature review prior to undertaking cultural intervention adaptation identified similar risk factors for the development of body image concerns among Indian and UK adolescents, suggesting the targeted underlying constructs of the school-based programme *Confident Me* were relevant. Second, from the outset a large multicultural team of local researchers were brought together, including academics and psychologists, to ensure the mode of delivery was appropriate for Indian schools. Third, we undertook a thorough review of *Confident Me* content with local stakeholders, making amendments to aspects of the workshops deemed unsuitable for the cultural context. For example, role play scenarios were edited, examples of body talk modified, and the nature of concerns tweaked to include skin shade dissatisfaction. This process involved a delicate balance of adapting the content to suit the sociocultural context, while staying true to the intervention's key messages and change techniques.

I believe this publication, and its main trial counterpart of which I am second author (Lewis-Smith et al., under review), to be landmark papers in the field of body image research. It is the first project, to my knowledge, that has adapted and rigorously evaluated an evidence-

based school body image intervention among adolescents in a new sociocultural context from which it was developed. The process described in these publications provides a blueprint and empirical support for others in the field to do the same. As I look to the future, I hope to find similar positive results following the RCT of *Warna-Warni Waktu* in Indonesia, as described in **Publication 8**.

Valid tools of assessment

Publication 6 adds to the growing literature which underscores the importance of undertaking robust psychometric validation when using measures in new cultural contexts (Swami & Barron, 2019; Swami, Todd, & Barron, 2021). Psychometric measures validation publications are now commonplace in *Body Image* (the most popular journal for publishing body image related work), with most of these studies being conducted to a very high standard. As well as **Publication 6** providing the first robust measure of body image among Indian adolescents, opening opportunities for both local and international researchers to contribute to the understanding of body image in this population, it supports the importance of conducting rigorous measures validation work when working in a new cultural context despite the use of a common language (i.e., English).

Methodological considerations

Planning for future intervention dissemination has remained at the heart of the work presented in this thesis. As such, much of the work has been conducted in an applied setting and consequently, concessions in some aspects of the study designs were made. For example, in **Publication 3**, an eight-week follow-up period following the intervention was aimed for, but, due to timetabling issues at recruited schools, follow-up assessments ranged between 4-9.5 weeks later. This variation in follow-up time may have led to measurement bias, although the average interval evened out across conditions. Similarly, full adherence to the interventions when task-shifted to community providers was rare (**Publication 4**). Although these types of protocol deviations are often listed in the 'limitations' section of a paper, in my opinion these are necessary collateral damage in the quest for conducting research in an applied setting, to guide practice and future dissemination. These limitations could have been mitigated by conducting tightly controlled RCTs, but this would be far removed from how interventions will be delivered in practice, and the results would be of limited value when guiding dissemination efforts. The RCTs in this thesis are methodologically imperfect, but

vital if we wish to move beyond efficacy to effectiveness and real-world impact. Specifically, together they address the two final stages of the behavioural epidemiology framework (Sallis et al., 2015): they evaluate interventions as well as providing concrete direction regarding if and how they can be disseminated at scale. Extensive qualitative feedback collected throughout from key dissemination stakeholders (**Publications 5 and 7**) further add to the weight of the evidence that these interventions are scalable. Indeed, the interventions designed and evaluated throughout this research have benefitted the lives of millions of young people around the world (Dove, 2021), a statistic made possible in large part due to the learnings achieved through conducting applied research.

The publications presented in this thesis have all been executed with a high degree of rigour. All methodological aspects of each RCT were duly considered, including: deciding on the most appropriate comparison condition (Freedland et al., 2019), follow-up time points, sample size calculations, randomisation (e.g., cluster, block, blinding), and tools of measurement. Further, each RCT was registered on clinicaltrials.gov to reduce publication bias, facilitate research transparency, and contribute to a hub of knowledge which aims to encourage academic collaboration. My most recent research in Indonesia has been further supplemented with the publication of a research protocol (**Publication 8).** This has been valuable process in terms of receiving constructive feedback from peers prior to the trial, as well as communicating research plans with others working within this area at an early stage. I did not register the non-RCT studies presented in this thesis (**Publication 2** and **5)**, as (until recently) I was unaware this was possible. Now, having been exposed to sites such as Open Science Framework, I am keen to register my aims and objectives for future non-RCT projects.

The RCTs presented in this thesis have a number of strengths. The publications utilised sample sizes sufficient to detect the hypothesised small-to-medium effect sizes, with the exception of the pilot study **(Publication 6)**. The RCTs further benefitted from intention-to-treat analyses, as opposed to per protocol. Intention-to-treat analyses provide a more robust assessment of intervention effectiveness by not eliminating those who do not comply with intervention protocol (or fail to present for follow-up assessments), ensuring statistical power is maintained, and not losing the benefits of randomisation (Ranganathan, Pramesh, & Aggarwal, 2016). By retaining all participants who are randomised to a particular condition, a more accurate representation of what might happen in practice is achieved. Given this research is grounded in pragmatism, and the core goal being scalability, this is a significant

strength. The RCTs further benefited from substantial follow-up periods, unlike similar studies in the field (Chua et al., 2020; Hart et al., 2015). Long-term follow-up is important for the detection of delayed effects (as identified in **Publication 1**) or the emergence of possible harm (Llewellyn-Bennett, Bowman, & Bulbulia, 2016). Finally, wherever possible, we utilised valid tools of assessment. When evaluating interventions in new cultural contexts where valid measures were not available for the target population, the groundwork was first laid by developing culturally appropriate adaptations to established measures and psychometrically validating them for these groups. The significance of this preliminary work cannot be understated, and is an aspect of the work presented that is most commonly complimented by peer-reviewers.

Future directions

The publications in this thesis have furthered our understanding of body image interventions for adolescents. However, there are many unanswered questions to explore. Here I summarise just a few future directions I believe are important to consider as the field progresses.

Firstly, it has been encouraging to see that all the interventions presented in this thesis were associated with positive improvements in body image among adolescents (except in the case of **Publication 1**, where positive improvements in body image were found only for mothers). However, the mechanisms for these changes are poorly understood. The interventions each took an etiological approach to body image, targeting risk factors including internalisation, media pressure and social comparisons as defined in the Tripartite Influence Model (Thompson et al., 1999). These constructs were measured in most studies, yet changes in these were infrequently found (see **Publication 1, 3, and 4**). Thus, the question of *how* body image has improved (i.e., through which influence on body image) remains an important question, worthy of future consideration.

Similarly, it would be informative to run RCTs to examine which aspects of each intervention are the active ingredients, by utilising dosage or component comparators (Freedland et al., 2019). The interventions presented in this thesis utilise a plethora of change techniques informed by prior research supporting their use. Specifically, two key papers guided which change techniques to include in the interventions. In the early research presented, decisions were guided by a systematic review of school based interventions which identified teaching media literacy as an effective approach to improve body image among adolescents (Yager et

al., 2013). In later research, a meta-analysis examining effective change techniques in stand-alone body image interventions guided decision making (Alleva et al., 2015). Specifically, psychoeducation techniques (including discussing the concept of body image, the causes of negative body image, and the consequences of negative body image) were identified as effective by Alleva et al. (2015) and thus utilised across all interventions, as were discussions around social comparisons and cognitive behavioural methods (including discussing cognitions and their role in body image, and restructuring of cognitions). Interestingly, media literacy was not identified as an effective change technique by Alleva et al. (2015); however, given this review was based on all age groups, as opposed to adolescents alone, teaching media literacy remains a core component of the interventions presented in this thesis due to its established effectiveness among this age group (Kusina & Exline, 2019; McLean, Paxton, & Wertheim, 2016; Yager et al., 2013;). Like many body image interventions (Alleva et al., 2015), the interventions presented in this thesis utilise a combination of body image specific change techniques, as well as non-specific factors that may also play a role in effectiveness (e.g., alliance between facilitator and group members; Alldredge et al., 2021). Therefore, support for a single technique cannot be unequivocally concluded from the findings of the publications included in this thesis. Identifying which change techniques are the most potent in the interventions presented would be informative for future intervention development and could guide further intervention adaptation and potentially, content streamlining.

Second, **Publications 7** and **8** are some of the first body image interventions to be designed for, with, and evaluated among, adolescents in LMICs, achieving positive results. In order to address the global need for adolescent body image interventions, we need more of this type of work, particularly in countries not currently receiving any attention in this regard. Cultural adaptations are country (and sometimes regionally) specific (see Lewis-Smith et al., under review), particularly in countries like India where there is extensive linguistic diversity, and thus due attention is required for each new setting with which we work.

Third, expanding intervention research beyond adolescent populations is warranted. Adolescence is regarded as a critical period for the development of body image concerns (Bucchianeri et al., 2013; Frisén et al., 2015); however, increasingly, research suggests that concerns emerge earlier than this, during pre-adolescence (Lacroix et al., 2020). Intervention research among this age group is well underway, with task-shifting the delivery of pre-adolescent interventions showing efficacy (Pursey et al, 2021). Much like research among adolescents, most interventions have been developed and evaluated among pre-adolescents in

HICs; diversifying the cultural relevance of programmes is a key future direction for pre-adolescent intervention research.

Fourth, it is important to turn our attention to the sociocultural environment, and in doing so expanding our intervention toolkit beyond the individual level. In this way, we turn the interventions discussed in this thesis on their head, instead asking what can be done to prevent appearance pressures from being ever present in young people's lives, rather than how to equip young people with the skills and knowledge to resist such pressures. Of course, there are multiple challenges to this that have been well captured elsewhere (Atkinson et al., 2020), not least how to gain buy-in from industry, businesses, policy makers, and governments (Craddock, Ramsey, Spotswood, Halliwell, & Diedrichs, 2019). One strategy unduly neglected in the body image field is an assessment of the economic costs of implementing interventions (Austin, 2016). Governments and policy makers will demand evidence of economic costs and savings achievable through making 'body image conscious' changes to the sociocultural environment within which they govern. Likewise, businesses will need evidence that changing their brand or business model to be more 'body image conscious' does not hurt their bottom line (Craddock et al., 2019). There have been some great examples of this type of work (Diedrichs & Lee, 2011; Wright et al., 2014), but accelerated progress is needed in this regard if we are to see systemic change across societal systems, while simultaneously shifting the responsibility of blame from individuals (Austin, 2016).

Personal reflections

As I reflect on how I have developed as a researcher throughout the last eight years, one word sits front and centre in my mind; confidence. Only last week I was told by a collaborator that I am my own worst critic. Perhaps this is true; I would always prefer to find my flaws and correct my own typos than have someone else do it for me. I don't think this has changed. However, confidence in my ability has. When I look back to the early publications in this thesis, I see a different academic to the one I am today. I see one afraid to make suggestions, who ran away from opportunities, and required a week to prepare for a twenty-minute presentation. Of course, I was a very junior member of the team back then, but my lack of self-belief paled into insignificance any knowledge and skills I was accruing. Having taken the road less travelled and not completed a traditional PhD, it took me longer than most to gain my confidence. I knew I was learning and growing as a researcher, but would hold back

because, well, everyone else in the room was 'Dr.'. It is only in the past 18 months that I have managed to let some of that go. Speaking up and challenging others will never be my favourite pastime, but I have grown to a place where I am able to have faith in my experience, and confidence in my decision making. I'll still stress at the thought of a twenty-minute presentation, but thankfully it no longer takes me a week to prepare.

This thesis would not have been possible without continued support from our industry funders, DSEP. One of the biggest challenges of being an externally funded academic is the job uncertainty and working on relatively short contracts (between 4 months to 2 years in the time span of the publications presented here). I have been incredibly fortunate that DSEP continue to commit to an evidence-based approach and the academic integrity of their body image interventions. The stability of this funding has been integral to ensuring this thesis was seen through to completion. I believe building truly collaborative partnerships to be key to our combined success. I spend time building shared goals and values with our funders, and creating partnerships based upon mutual respect, understanding, open communication, and transparency. These soft skills can so easily fall under the radar, but given how vital they have been in completing this DPhil, it is an important reflection point for me.

Unlike a traditional PhD, the publications presented in this thesis have all involved team work. I have never spent long working hours alone, and critical research decisions were often based on long meetings, shared decision making, and team spirit. I consider this a strength of my thesis. In the early stages I was a member of the collaborative team; I listened, took notes, and made contributions to specific aspects of each study. Now, I am leading a team toward shared decision-making. I relish this responsibility, and enjoy putting my knowledge and experience into action, and sharing this with others.

I could not have predicted at the start of writing the publications in this thesis that we would end up internationalising our work. In hindsight, with DSEP being a global initiative, perhaps it was inevitable. The learning curve since moving into new cultural contexts has been steep, but thoroughly enjoyable. I have had the opportunity to learn from body image experts from India and Indonesia and visit these countries in the process. The conversations I have had because of these relationships have been so enlightening, especially in the Indonesian context where so little is documented regarding young people's appearance concerns. Learning to ask the right questions, paying attention and truly listening are core skills I have developed while conducting this research.

Current and future research

I am excited for what the future holds. Executing the RCT to evaluate *Warna-Warni Waktu* as described in **Publication 8** is my immediate task ahead. After almost two years in the making, I eagerly await the results from this trial. Additionally, I have several other projects underway, each building upon the work presented in this thesis.

I continue to collaborate with statisticians and academics around the world to robustly adapt, translate and psychometrically validate mental health related measures for new cultural contexts. I remain involved in CAR's work being conducted in India, specifically in the validation of measures in Hindi (as per **Publication 6**). This is a valuable next step in furthering body image efforts in India, as most of the population living in rural India do not speak English (Statista, 2020). This research will ensure non-English speakers in India are not overlooked in research, although validation in many other languages will be needed given the linguistic diversity of India. Further, I am supervising two Research Associates at CAR in the validation of measures among Brazilian and Indonesian adolescents, along with academics from these respective countries. I am thoroughly enjoying the process of guiding others through this process, including how to rigorously conduct translations. In addition to guiding my colleagues on *what* needs to be done, I make every effort to communicate *how* things are to be done, based on my experience to date.

Finally, I remain involved in continuing to develop *Confident Me* for new cultural contexts. I have been working in a supportive role to Dr. Nadia Craddock in the development of *Confident Me: Single Session* for use among Indonesian adolescents, in partnership with UNICEF and DSEP. Now developed, we have recently published a protocol paper for the cluster RCT to evaluate the intervention in Indonesia (Craddock et al., 2021). Unlike in India, we are developing and evaluating the intervention when task-shifted to schoolteachers due to integrating the intervention into Life Skills Education, an established UNICEF programme of health, well-being and relationship topics already embedded in the school curriculum via teacher facilitation. COVID-19 has impacted our ability to complete this project on time, and led to many adaptations to the trial along the way, but we are now successfully underway with data collection.

Doctoral descriptors

Through submission of a body of published work and complementary critical commentaries, this thesis demonstrates a significant contribution to knowledge in the field of adolescent body image interventions. Together, they support my application to be awarded the qualification of DPhil by publication at UWE Bristol. A summary of how each of the doctoral descriptors have been met is described in Appendix 3.

Conclusions

Various methods of scaling up body image interventions have been explored in this thesis, including task-shifting to parents and schoolteachers, and the use of digital technology. I cannot conclude one approach (or one intervention) should be favoured over the other, each is required and more. If we are to see universal change in how young people perceive their bodies, we need action at every level: the societal, the community, among close networks, and at the individual level. One intervention will not be the solution, we need interventions in many formats and intensities to tackle the global need, due to the multitude of barriers often faced by young people in accessing support (Kazdin, 2017, 2019). Publications in this thesis have explored website-based interventions, task-shifting, and educational content delivered via social media as scalable options for the field.

There is a long way to go. These studies only scratch the surface of what is necessary against a back drop of an increasingly appearance-focused world, from a rise in selfie editing (Tiggemann, Anderberg, & Brown, 2020), to the ever-increasing dominance of social media in young people's lives (Marques et al., 2021), and most recently, the upheaval of routine due to COVID-19 (Schneider et al., 2021). But it is a start, and a road map for the future. What is clear from the findings is that we do not need to reinvent the wheel for each new intervention, or within each new cultural context we work. We can work together in multidisciplinary, multinational teams to creatively develop and adapt the existing evidence base. The knowledge base for effective body image interventions is strong. If we can continue to build on that knowledge with a focus on scalability and real-world impact through collaboration with industry and technology partners, while not losing sight of the evidence-base, I believe we can continue to develop effective interventions within reach for young people around the world.

Appendices

Appendix 1. Bibliography of published works and conference presentations

Peer-reviewed publications

Note: *****denotes inclusion in this thesis.

*****Diedrichs, P. C., Atkinson, M. J., Steer, R. J., **Garbett, K. M.**, Rumsey, N., & Halliwell, E. (2015). Effectiveness of a brief school-based body image intervention 'Dove Confident Me: Single Session' when delivered by teachers and researchers: Results from a cluster randomised controlled trial. *Behaviour Research and Therapy*, *74*, 94-104. https://doi.org/10.1016/j.brat.2015.09.004

Garbett, K., Harcourt, D. & Buchanan, H. (2016) Using online blogs to explore positive outcomes after burn injuries, *Journal of Health Psychology*, *22*(13), 1755-1766. https://doi.org/10.1177/1359105316638549

*****Diedrichs, P. C., Atkinson, M. J., **Garbett, K. M.**, Williamson, H., Halliwell, E., Rumsey, N., Leckie, G., Sibley, C. G., & Barlow, F. K. (2016). Randomized controlled trial of an online mother–daughter body image and well-being intervention. *Health Psychology*, *35*(9), 996–1006. https://doi.org/10.1037/hea0000361

***Garbett, K. M.**, & Diedrichs, P. C. (2016). Improving uptake and engagement with child body image interventions delivered to mothers: Understanding mother and daughter preferences for intervention content. *Body Image*, *19*, 24-27. https://doi.org/10.1016/j.bodyim.2016.07.004

Lacroix, E., Atkinson, M. J., **Garbett, K. M.,** & Diedrichs, P. C. (2020). One size does not fit all: Trajectories of body image development and their predictors in early adolescence. *Development and Psychopathology*, 1-10. https://doi.org/10.1017/s0954579420000917

*****Diedrichs, P, Atkinson, M.J, **Garbett, K.M,** & Leckie, G. (2021). Evaluating the "Dove Confident Me" five-session body image intervention delivered by teachers in schools: A cluster randomized controlled effectiveness trial. *Journal of Adolescent Health*, *68*(2). 331-341. https://doi.org/10.1016/j.jadohealth.2020.10.001

Lewis-Smith, H., **Garbett, K. M.**, Chaudhry, A., Uglik-Marucha, N., Vitoratou, S., Dhillon, M., Shroff, H., & Diedrichs, P. C. (2021). Adaptation and validation of the Eating Disorder Examination-Questionnaire in English among urban Indian adolescents. *International Journal of Eating Disorders, 54*(2), 187-202. https://doi.org/10.1002/eat.23431

***Garbett, K.M,** Lewis-Smith H., Chaudhry, A., Uglik-Marucha, N., Vitoratou, S., Shroff H., Dhillon M., & Diedrichs P.C. (2021). Cultural adaptation and validation of the Body Esteem Scale for Adults and Adolescents for use in English among adolescents in urban India. *Body Image, 37*, 246-254. https://doi.org/10.1016/j.bodyim.2021.02.012

Lewis-Smith, H., **Garbett, K.M.,** Chaudhry, A., Uglik-Marucha, N., Vitoratou, S., Dhillon, M., Shroff, H., & Diedrichs P.C. (2021). Adaptation and validation of the Internalisation-General subscale of the Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ-3) in English among urban Indian adolescents. *Body Image, 36,* 254-262. https://doi.org/10.1016/j.bodyim.2020.12.004

***Garbett, K. M.,** Lewis-Smith, H., Chaudhry, A., Shroff, H., Dhillon, M., White, P., & Diedrichs, P. C. (2021). Acceptability and preliminary efficacy of a school-based body image intervention in urban India: A pilot randomised controlled trial. *Body Image, 37*, 282-290. https://doi.org/10.1016/j.bodyim.2021.02.011

***Garbett, K.M,** Atkinson, M., Diedrichs, P.C. Acceptability of teacher-led school-based body image interventions: Perspectives from teachers and students in the UK. Under advanced review at *Journal of School Psychology*.

Craddock, N., **Garbett, K. M.**, Haywood, S., Nasution, K., White, P., Saraswati, L., Rizkiah, C., Medise, B. E., & Diedrichs, P. C. (2021). 'Dove Confident Me Indonesia: Single Session': study protocol for a randomised controlled trial to evaluate a school-based body image intervention among Indonesian adolescents. *BMC Public Health, 21*(1), 1-20. https://doi.org/10.1186/s12889-021-11770-0

Garbett, K. M., Craddock, N., Saraswati, A. L., & Diedrichs, P. C. Body esteem among adolescent girls in Indonesia: Prevalence, impact, and psychosocial influences. Under review at *Asian Journal of Social Psychology*.

***Garbett, K. M.,** Craddock, N., Haywood, S., Nasution, K., Saraswati, A. L., Medise, B. E., Girl Effect, Percolate Galactic, Diedrichs, P. C., Williamson, H. A Novel, Scalable Social

Media-Based Intervention 'Warna-Warni Waktu' to Reduce Body Dissatisfaction Among Young Indonesian Women: Protocol for a Parallel Randomised Controlled Trial. Accepted at *Journal of Medical Internet Research: Research Protocols*. http://doi.org/10.2196/33596

Academic conference presentations

Garbett, K.M. Validating established measures in new cultural contexts: Insights, reflections and recommendations. Oral presentation at Appearance Matters 9, July 2021.

Garbett, K.M., Lewis-Smith, Chaudhry, Uglik-Marucha, Vitoratou, Dhillon, Shroff, & Diedrichs. The Body Esteem Scale among Indian adolescents: Adaptation and psychometric properties. Poster presentation at Appearance Matters 9, July 2021.

Garbett, K.M., Lewis-Smith, H., Chaudry, A., Shroff, H., Dhillon, M., & Diedrichs, P.C. (2020) The adaptation and psychometric evaluation of the Eating Disorder Examination Questionnaire (EDE-Q) among Indian adolescents. Poster presented at the International Conference of Eating Disorders, virtual (due to Covid-19), June 2020.

Garbett, K.M., Lewis-Smith, & Dhillon, M. (2020) Reaching low- and middle- income countries: Ensuring the culturally-appropriate validation and development of body image and disordered eating measures and interventions. Accepted workshop at the International Conference of Eating Disordered (cancelled due to Covid-19), June 2020.

Garbett, K.M., Lewis-Smith, H., Chaudry, A., Shroff, H., Dhillon, M., & Diedrichs, P.C. (2019). *Broadening our reach: Insight, reflections and recommendations for cross-cultural validation of measures.* Poster presented at British Psychological Society Division of Health Psychology Conference, Manchester.

Garbett, K.M (2017) '*Decolonising geographical knowledge: Opening the geographies of children, youth and families out to the world'*. Oral presentations at the *International Conference on the Geographies of Children, Youth and Families*, Loughborough, UK.

Garbett, K.M (2017) '*Women's body ideals in rapidly urbanising environments.'* Oral presentation at the *Royal Geographical Society Mid-Term Postgraduate Conference*, Cardiff, UK.

Garbett, K.M., Diedrichs, P., Atkinson, M., Williamson, H., Halliwell, E., Rumsey, Sibley, C., & Barlow, F (2015) *'Evaluation of an online body image resource for mothers*

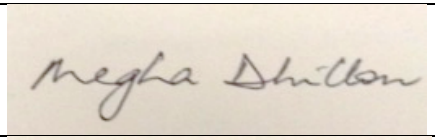
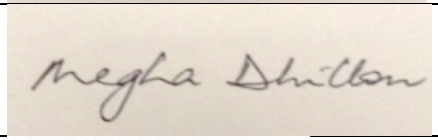
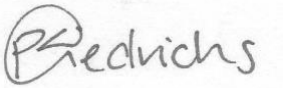
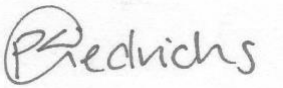
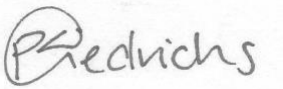
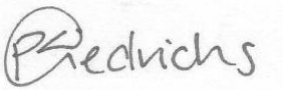
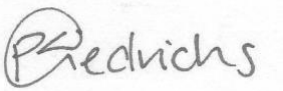
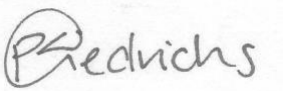
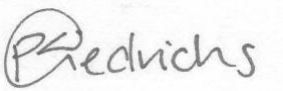
of adolescent daughters: A randomised controlled trial' Oral presentation at *Division of Health Psychology Annual Conference 2015*, London, UK.

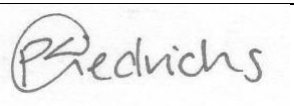
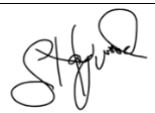
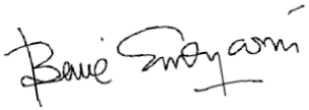
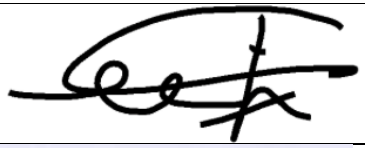
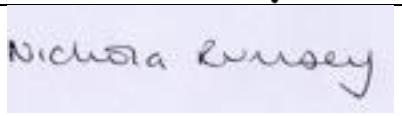
Garbett, K.M, Diedrichs, P., Atkinson, M., Williamson, H., Halliwell, E., Rumsey, Sibley, C., & Barlow, F (2015) *'Evaluating the Dove Self-Esteem Project Body Image Website for Parents: Results from a randomised controlled trial with mother-daughter dyads'.* Poster Presentation at *International Conference of Eating Disorders*, Boston, US.

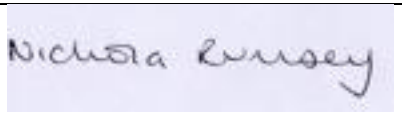
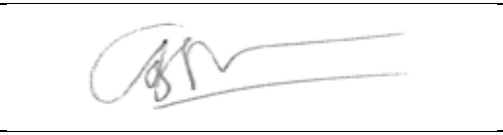
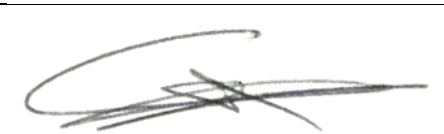
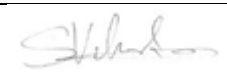
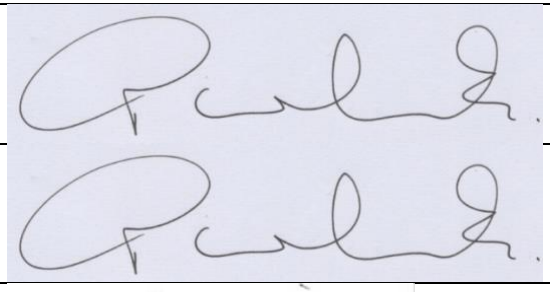
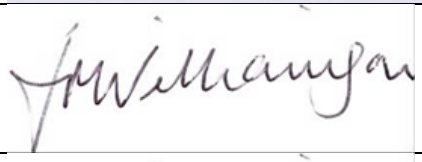
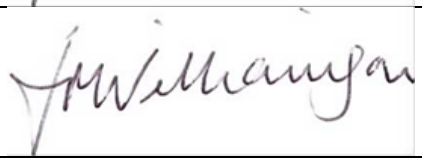
Garbett, K.M, Harcourt, D. & Buchanan, H (2014) *'An exploratory study into the positive outcomes following a severe burn injury: An analysis of online blogs'* Oral presentation at *Appearance Matters 6*, Bristol, UK.

Appendix 2. Signed statements of contributions to works submitted

Name (alphabetical order)	Publication Number	Statement	Signature	Date
Melissa Atkinson	1	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		04/11/2021
	3	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		04/11/2021
	4	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		04/11/2021
	5	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		04/11/2021
Laura Baines (on behalf of Girl Effect)	8	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		02/11/2021
Fiona Barlow	1	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		01/11/2021
Anshula Chaudhry	6	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		02/11/2021
	7	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		02//11/2021

Nadia Craddock	8	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored	NC	14/11/2021
Megha Dhillon	6	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		01/11/2021
	7	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		01/11/2021
Phillippa Diedrichs	1	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		27/11/2021
	2	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		27/11/2021
	3	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		27/11/2021
	4	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		27/11/2021
	5	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		27/11/2021
	6	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		27/11/2021
	7	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		27/11/2021

	8	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		27/11/2021
Sharon Haywood	8	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		01/11/2021
Samantha Jackson (on behalf of Percolate Galactic)	8	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		02/11/2021
George Leckie	1	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored	GL	01/11/2021
	4	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored	GL	01/11/2021
Helena Lewis-Smith	6	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		01/11/2021
	7	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		01/11/2021
Bernie Medise	8	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		02/11/2021
Kholisah Nasution	8	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		02/11/2021
Nichola Rumsey	1	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		07/11/2021

	3	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		07/11/2021
Ayu Saraswati	8	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		31/10/2021
Chris Sibley	1	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		31/10/2021
Elernora Uglik-Marucha	6	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored	E.U.M	29/11/2021
Silia Vitoratou	6	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		03/11/2021
Paul White	7	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		31/10/2021
	8	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		31/10/2021
Heidi Williamson	1	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		01/11/2021
	8	I confirm that the statement reflects the contributions that Kirsty Garbett made to the works that I co-authored		01/11/2021

Appendix 3. Doctoral Descriptors

A summary of how the UWE Bristol doctoral descriptors have been met is summarised below.

Doctoral Descriptor 1: *Have conducted enquiry leading to the creation and interpretation of new knowledge through original research or other advanced scholarship, shown by satisfying scholarly review by accomplished and recognised scholars in the field*

I have led or contributed to the leadership of the research projects contained within, and first-authored, five of the eight peer-reviewed publications presented in this thesis. For the other three, I was an integral part of the team, making significant contributions to the conceptualisation, design, and execution of each. Together, the publications demonstrate I have conducted original research that has generated new knowledge, which has undergone scholarly review by accomplished and recognised scholars in the field. The publications have undergone scrutiny from a range of peer-review audiences, from those working in the field of body image specifically (for publications in *Body Image*), to those working in the broader health psychology and adolescent health fields (see publications in *Health Psychology* and *Journal of Adolescent Health*).

Doctoral Descriptor 2: *Can demonstrate a critical understanding of the current state of knowledge in that field of theory and/or practice*

The linear path through which my research has developed showcases a critical understanding and awareness of the field's current knowledge of adolescent body image interventions. My critical understanding of the field is perhaps best exemplified in **Publication 5**, where I brought to the fore the acceptability findings of our school-based interventions in the UK. This is an often-overlooked aspect of body image interventions, despite its importance in an intervention's dissemination potential (Sekhon et al., 2017).

My critical understanding of the current state of body image literature is further exemplified in the background chapter of this thesis. Here, I summarised what is known about body image among adolescents. I applied a critical lens to our understanding of body image interventions for this population, which sets the stage for the publications presented in this thesis. I mapped my publications on to current conceptualisations of intervention development, and frame my work around current theoretical models of body image.

Doctoral Descriptor 3: *Show the ability to conceptualise, design and implement a project for the generation of new knowledge at the forefront of the discipline or field of practice including the capacity to adjust the project design in the light of emergent issues and understandings*

I was involved in the conceptualisation and design of all eight publications in this thesis. My ability to conceptualise and design a project is best exemplified in **Publication 8**, where I set out the protocol for the evaluation of a social media based intervention for Indonesian adolescents. After being a co-applicant on the funding for this project, I led the development of the intervention from the academic side, working with creative industries to ensure evidence-based content was embedded throughout, and ensuring we gained the input of our target audience throughout development. I then led the development of the evaluative component described in **Publication 8**: choosing the measures, deciding on the trial design, setting adherence parameters, and developing the study protocol documents.

I am well experienced in adjusting project designs considering emergent issues. In **Publication 1**, we adapted our trial to include a third arm, due to emerging evidence that tailored e-health interventions were more effective than non-tailored ones. This led to superior intervention effects being identified, and the conceptualisation of **Publication 2**. In **Publication 3**, recruitment targets were difficult to achieve through our proposed methodology (emails). Thus, I attended school conferences, made phone calls, and expanded our catchment area considerably to reach our recruitment target. In **Publication 8**, COVID-19 interrupted our initial plans to develop the intervention. This required us to be agile in our plans, switching from six, two-hour, face-to-face focus group discussions to a series of conference calls and quizzes via WhatsApp with young women over a three-day period. We also had to switch our recruitment from door-to-door to telephone interviews for the trial, neither of which had a detrimental impact on recruitment or data quality.

Doctoral Descriptor 4: *Can demonstrate a critical understanding of the methodology of enquiry*

This descriptor is demonstrated in chapter 3, where I discuss and critically appraise the methodological approach taken through the publications presented in this thesis. The research methodology across all studies was unpinned by the pragmatic research paradigm (Weaver, 2018), and therefore research methodologies were selected that were deemed best suited to the research questions. I have been fortunate to work across a number of randomised

controlled trials, each of which have incorporated a qualitative element, in the form of focus groups, interviews, or written acceptability feedback, giving me a breath of knowledge and experience in designing, collecting and analysing various types of data.

Doctoral Descriptor 5: *Have developed independent judgement of issues and ideas in the field of research and / or practice and are able to communicate and justify that judgement to appropriate audiences*

Throughout the duration of conducting the studies within this thesis, I refined independent judgement of issues associated with the development and evaluation of body image interventions among adolescents. Critically, I have become an expert in different methodologies to scale up such efforts, through task shifting to community providers (e.g., parents and teachers), utilising technology, and adapting and evaluating interventions for use in new cultural contexts. I have disseminated both orally and in writing through academic publications, at international conferences, to our funders, to participants, and via informal channels such as podcasts and academic magazines. This demonstrates my skills in communicating complex information to a wide range of audiences.

Doctoral Descriptor 6: *Can critically reflect on their work and evaluate its strengths and weaknesses including understanding validation procedures*

The publications submitted in this thesis include a reflection of the strengths and weaknesses of each and demonstrate an understanding of validation procedures. Undergoing peer-review was a key opportunity for me to learn from others in the field, critically reflect, and respond to criticisms levelled against my work. Some of the thoughtful comments from reviewers have been reflected on throughout the critical commentaries, as well as in the subsequent 'methodological considerations' section; this knowledge will allow me to further improve my work going forward. This notwithstanding, I am able to identify the many strengths in the work I have conducted, a summary which I provide in chapter 5.

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