Applying health psychology principles and practice to adoption and maintenance of physical activity

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DECLARATION

I grant powers of discretion to the university librarian to allow the thesis to be copied in whole or in part without further reference to the author. This permission covers only single copies made for study purposes, subject to normal conditions of acknowledgement.

LIST OF ABBREVIATIONS

95% CI – 95% Confidence Interval

AS – Ankylosing Spondylitis

BCTs – Behaviour Change Techniques

BMI –Body Mass Index

CRUNCH – CeReal nUtritioN for Child Health

DoH – Department of Health

HCPs – Health Care Professionals

HSE – Health Survey for England

IADL – Instrumental Activities of Daily Living

IPAQ – International Physical Activity Questionnaire

MD – Mean Difference

MVPA – Moderate to Vigorous Physical Activity

PA – Physical Activity

PACE-UP – Pedometer and Consultation Evaluation - UP

PROS – Patient Reported Outcomes

QOL – Quality of Life

SGUL – St George's, University of London

SPPB – Short Physical Performance Battery

T2DM – Type 2 Diabetes

TARS – Trial of physical Activity and Reduction of Smoking

WGS – Wrythe Green GP Surgery

WHO – World Health Organisation

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<u>Research</u>

LIST OF PUBLICATIONS RELEVANT TO DPSYCH TRAINING

Wahlich, C., Beighton, C., Victor, C., Normansell, R., Cook, D., Kerry, S., . . . Harris, T. (2017). 'You started something … then I continued by myself': a qualitative study of physical activity maintenance.. *Prim Health Care Res Dev*, *18*(6), 574-590. doi:10.1017/S1463423617000433

Wahlich C, Cook D, Kerry S, Limb E, Victor C, Iliffe S, et al. Primary care pedometer-based walking intervention: mixed-methods results from 3 year follow-up of PACE-UP cluster-randomised controlled trial. The Lancet. 2017;390:S11.

Harris, T., Kerry, S. M., Limb, E. S., Furness, C., **Wahlich, C**., Victor, C. R., . . . Cook, D. G. (2018). Physical activity levels in adults and older adults 3-4 years after pedometer-based walking interventions: Long-term follow-up of participants from two randomised controlled trials in UK primary care.. *PLoS Med*, *15*(3), e1002526. doi:10.1371/journal.pmed.1002526

Harris, T. J., Kerry, S., Victor, C., Iliffe, S., Ussher, M., Fox-Rushby, J., Whincup, P., Ekelund, U., Limb, E., Anokye, N., Ibison, J., DeWilde, S., David, L., Howard, E., Dale, R., Smith, J., Normansell, R., Beighton, C., Morgan, K., **Wahlich, C.,** Sangera, S., & Cook, D. (2018). PACE-UP (Pedometer And Consultation Evaluation-Up) walking intervention in 45-75 year olds with and without practice nurse support: a cluster randomised controlled trial with economic and qualitative evaluations. *Health Technology Assessment*.

Harris, T., Chaudhry, U., & **Wahlich, C.** (2019) How do we get adults and older adults to do more physical activity and is it worth it? *British Journal of Cardiology*. 26; 8-9.

In line with the requirements for the DPsych in Health Psychology Programme

Handbook 2016-2017 the following thesis includes:

Competency	Evidence submitted
Research	A research thesis (Approximately 15,000 words, excluding appendices) to be written to a standard acceptable for publication in peer reviewed academic Journals.
Generic Professional Practice	A reflective report (3,000 words) detailing how supervised practice has enabled me to fulfil the generic professional competence.
	A report (1,000 words) summarising the involvement of service users and/or carers in my training.
Consultancy work	A case study (3,000 words excluding appendices) with supporting evidence in appendices.
	A contract and working agreement conditions document (3,000 words, excluding appendices) with supporting evidence in appendices.
Psychological Interventions	A case study describing the process of conducting a psychological intervention that has been implemented through face-to-face work with an individual client (3000 words, excluding appendices) with supporting evidence in appendices.
	A supervisor's evaluation report or a workplace contact report detailing observation of the intervention delivery.
	A case study (2,000 words, excluding appendices) describing the process of conducting a psychological intervention that has been delivered through a medium other than face-to-face with an individual client with a reflective report on delivering this intervention included in the appendices.
Teaching and Training	Two teaching and training case studies (1 x 1,000 & 1 x 2,000 words, excluding appendices) with supporting evidence in appendices. One of the populations is health care professionals.
Systematic Review	A systematic review (6,000 words excluding appendices) to be written to a standard acceptable for publication in peer reviewed academic journals.

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SECTION A: PREFACE

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Introduction

This portfolio of work submitted for the Professional Doctorate in Health Psychology Training Programme was completed whilst undertaking two years' supervised practice as a Trainee Health Psychologist/Research Assistant in the Population Health Research Institute at St George's, University of London (SGUL). The professional competencies and research within this portfolio follow an overarching theme of physical activity, a topic I am passionate about both in my professional and personal life. Sub-themes covering other health psychology related topics are also evident in this portfolio of work. By keeping an open-mind, to potential opportunities, this has helped to ensure that my training and subsequently this portfolio is multi-dimensional and reflective of the breadth and depth of work covered throughout my two years of training. It demonstrates my ability to practice as a competent and knowledgeable health psychologist and researcher. My sub themes, linked to the DPsych qualification competencies, include:

- Qualitative research methods (research, teaching)
- Health promotion (teaching)
- Smoking reduction/cessation (psychological interventions)
- Dietary and food related behaviours (psychological interventions)
- Diabetes prevention (psychological interventions)
- Digital health (research, involving service users in training)
- Motivational interviewing (psychological interventions)
- Patient reported outcomes in ankylosing-spondylitis (consultancy work)

Research Thesis

The main element of this portfolio comprises an original qualitative study which explores barriers and facilitators to physical activity maintenance. Whilst working as a Research Assistant I was involved in the PACE-UP (Pedometer and Consultation Evaluation – UP) trial which is a pedometer-based walking intervention which has been shown to be effective both in the short-term (at 12 months) and in the long-term (at 3 years). My research project is a key element of the 3-year follow-up work as it provides an insight to patients' views and experiences of physical activity after taking part in the PACE-UP trial. This work is unique as currently very little is known about physical activity maintenance, especially what factors influence whether or not individuals sustain their levels 3-years after receiving an intervention. For this work 60 participants were recruited and semi-structured interviews were conducted over the telephone. Interviews were transcribed verbatim and thematic analysis was conducted. Two key themes and related subthemes were identified from the analyses which were presented and illustrated with verbatim quotes. Participants also reflected on what additional resources they would find useful to support PA maintenance. Upon completion of the study, the research findings were disseminated to various audiences via; publication (including a first author publication, chapter in the final report to funders (NIHR HTA programme), an accessible blog-post as well as oral presentations at a wide range of academic and professional conferences.

Professional Practice

The following outlines the work conducted to meet each of these three competencies as well as detailing the skills I have developed whilst progressing my professional practice:

Consultancy

The consultancy case study outlines a piece of work I conducted for a company called ██████████. The proposed task consisted of contributing to a literature review on Ankylosing Spondylitis (AS). ██ had been contracted by a pharmaceutical company

to help develop a patient reported outcome (PRO) to use with patients with AS. My role involved article filtering, data extraction and report writing. I was employed as a consultant on this project for 2 months (January 5th – March 4th 2017). Once my involvement came to an end this work was presented to the pharmaceutical company. To help my development as a professional I asked for feedback from the client on the services I had offered as a consultant.

Psychological Interventions

This section includes two different case-studies. Case study 1 describes my experience delivering an intervention through face-to-face work with an individual client. This work was conducted as part of the TARS (Trial of physical Activity assisted Reduction of Smoking) study. For this study I worked as a Health Trainer which meant I was responsible for delivering an 8-week intervention to help individuals reduce their smoking through increasing their physical activity. This intervention was based on Self Determination Theory (Deci and Richard, 1985) and informed by Motivational Interviewing (Miller and Rollnick, 1991). Through regular sessions I supported clients to make changes to their smoking and physical activity behaviour by focusing on problem solving, goal-setting and self-monitoring. Case study 2 describes my experience delivering an intervention through group work. This work was conducted as part of the CRUNCH (CeReal nUtritioN for Child Health) study which aimed to increase breakfast cereal fibre intake in children. For this work, I was involved in the (i) development, (ii) implementation and (iii) evaluation of the intervention delivered to a group of school children (aged 9-10 years old) in South London.

Teaching and Training

The first case study presented details my experience of teaching health care professionals (nurses and health care assistants). This session was delivered at a South London general practice and focused on behaviour change techniques (BCT). It aimed to provide a refresher to health care professionals already familiar with BCTs as well as providing an introduction to those unfamiliar with these techniques. The training was

designed to take a mixed-methods approach including didactic and interactive elements. The teaching session was received well and positively rated by the group. As a relatively inexperienced educator and trainee health psychologist, this teaching experience was daunting but helped to strengthen my presentation and communication skills, and increased my confidence to share and deliver information to qualified health professionals. The second case study documents my 'series' of teaching which was delivered to BSc Biomedical students at St George's, University of London. These sessions covered Health Promotion, Behaviour Change Theories and Qualitative Research Methods. After each of these sessions I gathered feedback from the students; doing this enabled me to make adjustments to my subsequent teaching to help ensure student engagement. All of these sessions were delivered confidently and were evaluated well.

Systematic Review

My systematic review and meta-analysis topic stems from my research project and my interest in physical activity maintenance. It was evident from being involved in the PACE-UP study and leading on the 3-year qualitative work that very few other studies had objectively measured physical activity maintenance, in particular beyond 12 months. My systematic review therefore aimed to find out exactly how many studies had objectively measured physical activity beyond 12 months and to describe and evaluate the extent to which the physical activity components affect overall activity (in terms of steps/day and weekly minutes of moderate-to-vigorous activity (MVPA)). Several electronic databases were searched and results were carefully reviewed based on inclusion, exclusion and quality criteria first at the title and abstract level and subsequently through reviewing full-texts. I applied meta-analysis to the five studies that provided appropriate data. The review concluded that whilst there were only a small number of studies that provided objective data on PA beyond 12 months, meta-analysis confirmed that both steps/day and weekly time in MVPA were maintained up to 4 years. This is an important positive message for practitioners and commissioners for services in terms of long-term maintenance.

Overall

The DPsych programme pushed me to new limits, challenged the way approached situations/opportunities and helped me to develop my professional conduct. Over the 2 years I have progressively observed myself grow and develop as a Trainee Health Psychologist in terms of knowledge, skills and confidence. Importantly the DPsych programme has taught me the importance of developing a reflective and reflexive practice and making space to think about (and learn from) events, activities and opportunities that I am exposed to on a daily basis. I look forward to what the next chapter brings now that I have formed the foundations for a successful career as a Health Psychologist in clinical practice, research and academia/education

SECTION B: RESEARCH

"You started something…then I continued by myself":
A qualitative study of physical activity maintenance

Abstract

Background: Many mid-life and older adults are not achieving recommended physical activity (PA) targets and effective interventions are needed to increase and maintain PA long-term for health benefits. The PACE-UP trial, a three-armed primary care pedometer-based walking intervention in those aged 45-75 years, demonstrated increased PA levels at 12 months. A three-year follow-up was conducted to evaluate long-term PA maintenance, including a qualitative component.

Aim: To examine facilitators and barriers to PA maintenance in mid-life and older adults previously involved in a PA trial.

Method: Semi-structured telephone interviews were conducted, three years post intervention, with 60 PACE-UP participants across all three study arms. Interviews were audio-recorded, transcribed verbatim and coded independently by researchers, prior to thematic analysis.

Findings: Two thirds of participants felt that since the PACE-UP trial they had an increased awareness of their PA, with the pedometer reported as 'kick-starting' regular activity, and then helping them to maintain regular activity. PA facilitators included: maintaining good health, self-motivation, social support and good weather. Lack of time was the most frequently cited barrier. Other barriers were often the inverse of the

facilitators; for example, poor health and bad weather. Participants described the type of 'top-up' interventions they would find beneficial to aid PA maintenance (e.g., text messages, online resources and walking groups).

Conclusion: A challenge for future PA interventions is to transform barriers into facilitators; for example, educating trial participants about the value of PA for many chronic health conditions to change this from inhibiting to promoting PA. Participants provided ideas for encouraging PA maintenance which could be incorporated into future interventions.

Chapter 1: Introduction

Defining physical activity

Physical activity can be defined as any 'bodily movement produced by skeletal muscles that requires energy expenditure' (Caspersen et al., 1985). This term therefore encompasses a range of human movement from competitive sport and exercise to hobbies and movement involved in daily activity.

The benefits of physical activity

The benefits of PA to both physical and mental health are widely recognised. PA can help prevent and manage over 20 chronic conditions and diseases, including various cancers, heart disease, stroke, obesity and hypertension (Lee et al., 2012). PA has the capacity to enhance mental health; it can help reduce stress, anxiety and depression as well as increase self-esteem (Schuch et al., 2018, Biddle and Asare, 2011). Additionally, PA can delay dementia onset and improve brain function and cognitive ability (Mayor, 2018, Blondell et al., 2014, Swift et al., 2014, Schuch et al., 2018, Hillman et al., 2008). Engaging in regular PA can therefore reduce premature deaths and has been comparable in its benefits to drug treatments in heart failure and stroke (Naci and Ioannidis, 2013). Despite the benefits, physical inactivity remains a huge problem worldwide.

Physical inactivity: the scale of the problem

Physical inactivity is responsible for 1 out of 10 premature deaths worldwide making it the fourth leading risk factor for global mortality (Lee et al., 2012). A recent study in The Lancet pooled self-reported data on PA from 358 population-based surveys across 168 countries including 1.9 million participants. Using these data, it is estimated that more than a quarter of people worldwide (27.5%) are not meeting the guidelines of 150 minutes of moderate exercise or 75 minutes at a vigorous intensity each week (WHO, 2010). This prevalence has been stable since 2001 suggesting there has been little progress in reducing global physical inactivity in the past 15 years. In high-income countries, which include the UK and USA, the proportion of inactive people has risen from 32% in 2001 to 37% in 2016. This is due to changing transport patterns, increased use of technology, cultural values and urbanisation. In low-income countries physical inactivity rates have remained stable at 16% (Guthold et al., 2018). Not only can physical inactivity be detrimental to the health of an individual but it also costs the UK £4.7 billion annually; £0.9 billion to the NHS alone. This is due to inflated cases of chronic diseases, such as heart disease, obesity and stroke, which can be prevented or managed through PA and as a result of loss of work productivity and absenteeism (2016b). The new WHO global action plan on physical activity (2018) has responded to requests by countries for updated guidance, and a framework of effective and feasible policy actions to increase PA at all levels. It seeks to reduce physical inactivity by 15% by 2030. It aims to do this by creating:

- **Active societies** through shifting social norms and attitudes.
- **Active people** by creating and promoting access to opportunities.
- **Active systems** through strengthening leadership, governance, partnerships, workforce capabilities, advocacy and information systems across sectors.
- **Active environments** by creating and maintaining safe places and spaces in cities and communities.

Physical activity guidelines vs. reality

For adults and older adults, the recommended level of PA is at least 150 minutes of moderate-to-vigorous physical activity (MVPA) or 75 minutes of vigorous PA weekly, or a combination of both, which can be achieved in 10-minute bouts or more (2011).

Seventy one percent of men and 66% of women aged 35-44 report meeting the Department of Health (DoH) recommendations however by the age of 65-74 only 58% of men and 52% of women (Health Survey for England (HSE) 2012) are meeting the guidelines. This is a pertinent issue as PA can also help prevent loss of independence, frailty and cognitive decline in older adults (McGowan et al., 2017). Objective PA measurements suggest that in reality far fewer people are meeting these recommendations (HSE, 2012).

Physical activity interventions

Given the high rates of physical inactivity, efforts have focused on developing and testing interventions to help increase the number of individuals meeting the DoH recommendations (Conn et al., 2011, Howlett et al., 2018). The methods for delivering these interventions have been varied and have been targeted at different levels including societal (e.g., mass media campaigns, transport policy, PE curriculum, insurance incentives), organisational (e.g., school and workplace initiatives), group and individual. Psychological theory has been used to develop components of interventions to support behaviour change. The Behaviour Change Technique (BCT) taxonomy v1 systematically describes 93 components 'or active ingredients' that can be applied to interventions (Michie et al., 2013). Many different Behaviour Change Techniques have been shown to be effective at increasing PA including enhancing self-efficacy, goal setting, self-monitoring, demonstration of behaviour, graded tasks and developing strategies for 'relapse and prevention' (Chase, 2013, Howlett et al., 2018).

Walking – the near perfect exercise

One approach to increase PA has focused on increasing walking. Walking is considered one of the best forms of PA; it is convenient, low impact, free and develops and sustains physical fitness (Morris and Hardman, 1997). Both frequency and intensity can be built up gradually, so that it is a safe intervention, with a low risk of harm, particularly important to those who are very sedentary and /or who have chronic diseases. One narrative review looked at how fast an individual needs to walk (otherwise known as cadence) to meet public health recommendations in adults. It concluded that a cadence value of ≥100 steps/min in adults appears to be a consistent and evidence-based answer to 'How fast is fast enough?' (Tudor-Locke et al., 2018). This speed would equate to 3000 steps in 30 minutes. Given the advances in technology and surge in devices that allow individuals to monitor their activity, step-counting is now widely accepted in PA interventions. One particular device is a pedometer; this is a small, inexpensive gadget that is worn on the hip. Pedometers provide instant, relatively reliable feedback concerning the number of steps an individual has accumulated (Bennett et al., 2006). Numerous trials (Harris et al., 2017, Harris et al., 2015) and systematic reviews (Bravata et al., 2007, Kang et al., 2009) have demonstrated the success of pedometer interventions for increasing walking in low-active individuals including those with chronic health conditions such as osteoarthritis (Talbot et al., 2003), Type 2 diabetes (De Greef et al., 2011) and for those who are overweight or obese (de Vries et al., 2016). However, the majority of research in this field has focused on short-term changes in PA levels (≤12 months) and has overlooked PA maintenance post pedometer intervention.

The importance of physical activity maintenance

While initiating PA is paramount, creating interventions that help individuals to adhere to PA over the long term are needed. There is evidence that PA disengagement typically occurs about 6-7 months after an intervention has ended (Martin and Sinden, 2001, Hillsdon et al., 2005) and that the majority of individuals who start a PA programme drop out or relapse (Nigg et al., 2008). Currently little is known about the long-term sustainability of interventions which aim to promote PA. For PA to result in sustained

health benefits it needs to be practised on an ongoing basis (Reiner et al., 2013b). Stopping or significantly reducing PA can lead to a loss of initial health improvement (Mujika and Padilla, 2000). Therefore, greater emphasis needs to be placed on interventions which promote PA maintenance.

A systematic review and meta-analysis by Hobbs et al. (2013) aimed to evaluate the effectiveness of interventions to promote PA in adults aged 55-70 years, focusing on studies that reported long-term outcomes. Of the studies that had follow-up beyond 12 months, many were based on self-reported PA levels, with just two small trials providing objective data beyond 12 months (Opdenacker et al., 2008, Kuller et al., 2006). Self-reported measures of PA have been criticised as individuals often give socially desirable responses leading to overestimating the amount of PA actually achieved (Sallis and Saelens, 2000, Kuller et al., 2006). This is evident in one study which asked college students to complete validated self-report measures of PA and wear an accelerometer (a device that measures acceleration or movement) for 2 weeks. The results showed that participants' estimations of their time spent engaged in moderate-to-vigorous physical activity (MVPA) was significantly higher when measured via self-report compared to accelerometry (Downs, 2014). This suggests that individuals are less able to gauge levels of PA accurately. Objective PA measures (such as pedometers and accelerometers) are therefore considered more reliable and are the preferred method for determining PA levels as they minimise bias and improve precision (Limb et al., 2019).

Given the lack of evidence on the long-term effectiveness of PA trials, Hobbs et al. (2013) and a Cochrane review (Richards et al., 2013a), called for more trials with follow-up beyond 12 months with objective PA measures.

Theories of physical activity maintenance

Historically, both Social Cognitive Theory (SCT) (Bandura, 1986) and the Theory of Planned Behaviour (TPB) (Ajzen, 1991) have been applied to a broad range of behaviours and are some of the most widely used theoretical frameworks to explain and predict PA behaviour. According to SCT learning occurs in a social context with an interaction between the person, environment and behaviour (Figure 1). This theory proposes that people learn by observing others. SCT considers the unique way in which individuals acquire behaviour whilst also considering the social environment in which the behaviour is performed.

1. Social Cognitive Theory (Bandura, 1986)
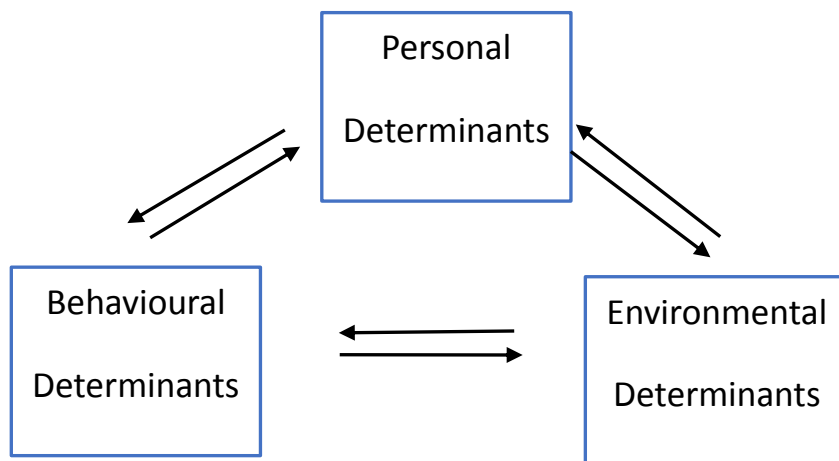
Figure 1: Social Cognitive Theory (Bandura, 1986)

The TPB posits that behaviour is driven by behaviour intentions, where behaviour intentions are a function of three determinants, an individual's attitude towards the behaviour (favourable vs. unfavourable), subjective norms (an individual's belief about whether others of importance think they should engage in the behaviour) and perceived behavioural control (the extent to which an individual believes they can perform the behaviour), see Figure 2.

2. The Theory of Planned Behaviour (Ajzen, 1991)
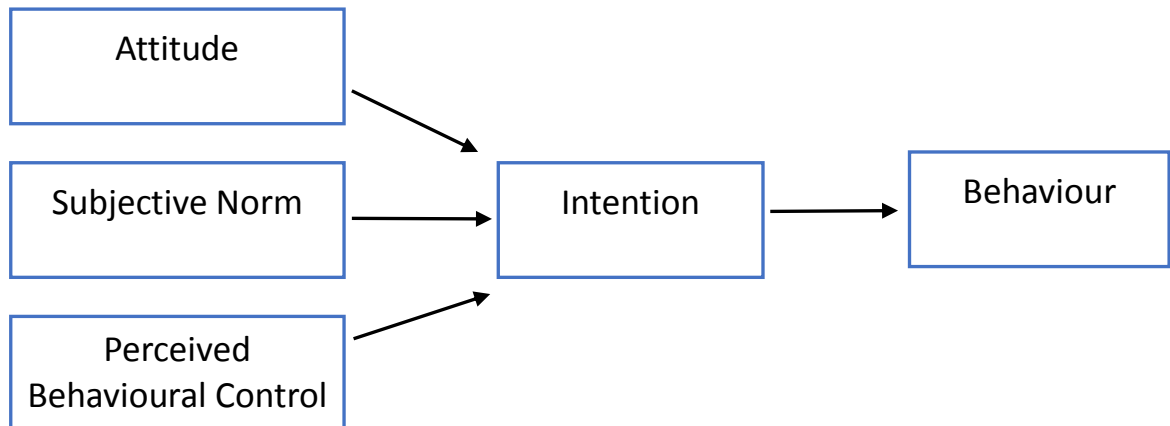
Figure 2: The Theory of Planned Behaviour (Ajzen, 1991)

While relevant to PA *adoption* these theories, as well as other theories commonly used with PA (e.g., Health Belief Model (Becker, 1974) and Self-Determination Theory (Deci and Richard, 1985)), are not sufficiently relevant to PA *maintenance*. For example, studies testing whether TPB can predict PA maintenance have provided mixed evidence for the different constructs of the model. Armitage (2005) found perceived behavioural control (PBC) was significantly predictive of intentions and actual PA behaviour. However, a weakness of this study was that maintenance was only measured over 12 weeks. It can be argued that maintenance and PA adoption are very different processes (Williams et al., 2008) and therefore theories that include maintenance of behaviour change are required.

One theory that does consider maintenance of behaviour change is the Transtheoretical model (TTM) (Prochaska and DiClemente, 1982). It posits that individual's move through a series of stages when modifying behaviour; pre-contemplation (not ready), contemplation (getting ready), preparation (ready), action, relapse and finally maintenance (Figure 3). However, TTM has received a lot of criticism, one weakness of the model is that it assumes that individuals typically make coherent and stable plans, when in fact they do not. Another weakness is that it assumes behaviour is the result of a linear decision-making process and does not consider that it can change over time (Sniehotta, Presseau, Araújo-Soares, 2005).

Some authors (e.g., West 2005) argue that this model should be abandoned completely.

3. The Transtheoretical Model (Prochaska and DiClemente, 1982)
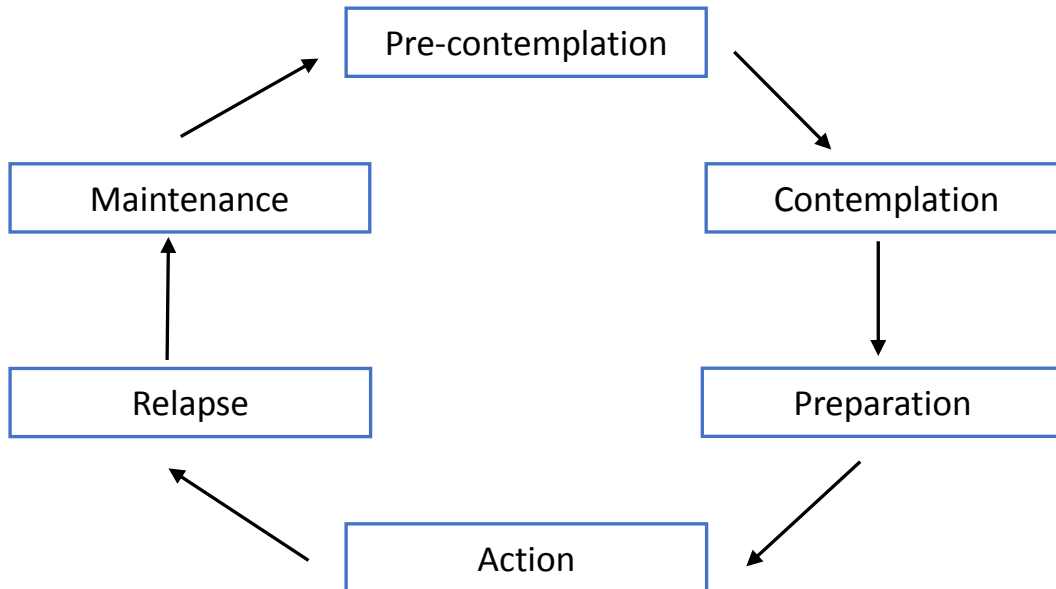
Figure 3: The Transtheoretical Model (Prochaska and DiClemente, 1982)

Another theory, which specifically focusses on PA maintenance, is the Physical Activity Maintenance model (PAM). PAM differs from SCT and the TPB in that it focuses explicitly on PA maintenance, it incorporates triggers for PA relapse and it integrates both environmental and individual aspects considered important for maintaining PA (Nigg et al., 2008). This theory incorporates individual psychosocial variables (goal-setting, motivation, and self-efficacy) and contextual variables of the environment and life stress (thought to negatively impact PA maintenance), see Figure 4.

4. The Physical Activity Maintenance Model (Nigg et al., 2008)
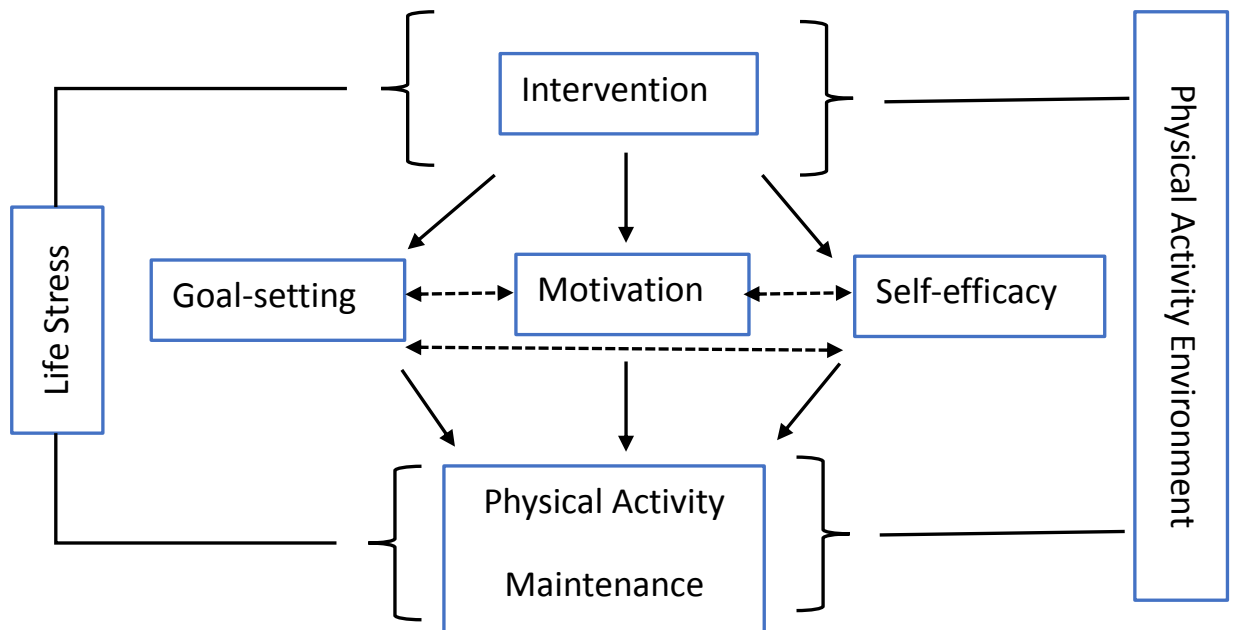
Figure 4: The Physical Activity Maintenance Model (Nigg et al., 2008)

In one study, these three theories (SCT, TPB and PAM) were compared to evaluate whether they could be used to predict future behaviour, in this case attendance at a fitness centre. Attendance was assessed electronically using a magnetic card register system, participants were then classified as intermittent or regular attendees. The study found that SCT showed the highest predictive power, followed by PAM and TPB. In particular, perceived behavioural control (from TPB), self-efficacy and social support (from SCT) and life stress (from PAM) significantly predicted PA behaviour (Jekauc et al., 2015).

One common feature of the aforementioned theories is self-efficacy (a person's confidence in their ability to successfully perform a behaviour). This construct has been considered a key factor in both initiation and maintenance of behaviour (Bandura, 2004) with some studies showing it to be a predictor of PA maintenance (Wendel-Vos et al., 2007).

Another, more recent, model that helps to explain and predict behaviour is the COM-B model (Michie et al., 2011b). This model attempts to encompass all the psychological components identified in earlier models, using a simplified structure. This model proposes that for someone to engage in a particular behaviour (B) at a given moment they must be physically and psychologically capable (C) and have the social and physical opportunity (O) and be motivated (M) to do so.

5. The COM-B model (Michie et al. 2011)
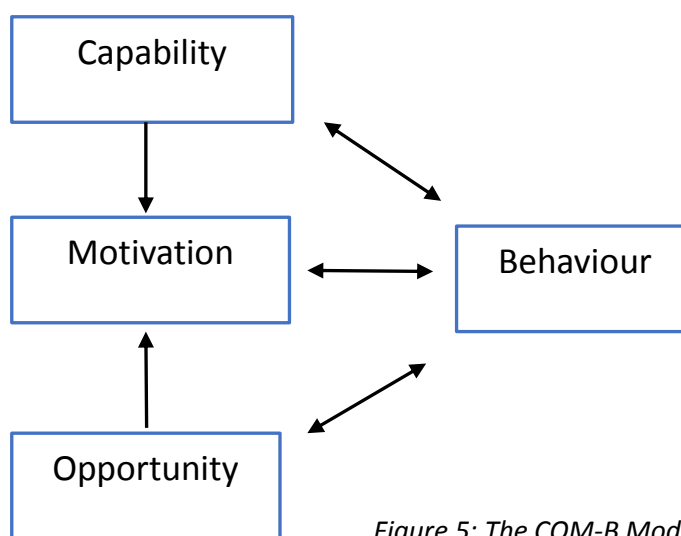
Figure 5: The COM-B Model (Michie et al. 2011)

All components of the COM-B model are independent, and work in unison to help change a behaviour or support the maintenance of a behaviour once an individual has adopted it into their regular pattern of behaviour (Coulson et al., 2016). To date, numerous empirical studies have used COM-B in order to develop behaviour change interventions in different contexts; for example, medication adherence (Jackson et al., 2014), children's health (Alexander et al., 2014, Handley et al., 2016).

Applying theories, such as the above, can be beneficial to help understand, explain and predict different health behaviours, in this case PA. Linking BCTs with theories of behaviour change allows investigation of possible *mechanisms of action* (Michie et al., 2009). This present qualitative work is explorative, as a result, this study was not informed directly by psychological theory, and instead aims to identify components that might influence PA maintenance. The components identified through this research may

help in considering the theories which are most applicable for PA maintenance in mid-life to older adults.

Rationale of research

Currently there is no accepted definition of post-trial PA level maintenance (Kahlert, 2015). One frequently used definition of successful maintenance is participating in regular PA for six months post-intervention (Rhodes et al., 2008). In this paper, this definition is extended to include what people are doing /can do to remain physically active in the longer term (i.e., beyond the six months usually referred to).

Whilst several studies have explored the features of interventions (content and delivery) associated with the long-term effectiveness of PA interventions (O'Brien et al., 2015) there has been very little research exploring the specific factors that motivate individuals to sustain PA post-intervention. Previous research into these factors has focused on the barriers and facilitators to PA adoption (Horne and Tierney, 2012, Mailey et al., 2014, Martins et al., 2015, Alvarado et al., 2015). However, it has been suggested that PA adoption and maintenance require unique approaches (Nigg et al., 2008, Howlett et al., 2018). Additional research to distinguish what factors lead to successful and unsuccessful PA maintenance for adults has been recommended (Marcus et al., 2000, Boutelle et al., 2004).

The PACE-UP (Pedometer and Consultation Evaluation – UP) randomised controlled trial provided a unique opportunity to explore barriers and facilitators to physical activity maintenance post intervention.

Chapter 2: The PACE-UP trial

<u>Background to the PACE-UP trial</u>

PACE-UP was a three-arm randomised control trial undertaken in seven general practices in South West London, UK. It recruited between October 2012 and October 2013 (n=1023), with 12-month follow-up completed by October 2014 (n=956). The aim was to increase PA levels in inactive patients (those not achieving current UK PA guidelines) aged 45-75 years, using a complex intervention based on pedometer step-count feedback and handbook based on behaviour change techniques, with and without practice nurse PA consultations (Harris et al., 2017).

One intervention arm (nurse support, n=346) received a pedometer, handbook, PA diary, written instructions for a 12-week walking programme (based on individual baseline blinded pedometer step-count) and three individually tailored PA practice nurse consultations. The second intervention arm (postal, n=339) received exactly the same written materials, but these were posted out, and they did not receive any nurse PA consultations. The materials and the consultations were based on behaviour change techniques such as self-monitoring, goal-setting, boosting motivation, anticipation of setbacks and building long-term habits. Both intervention arms were asked to post back their completed PA diaries after the three-month intervention. The control arm (n=338) continued with their usual PA**.** After the 12-month follow-up, the control arm participants were offered the intervention; 66% chose to have the pedometer, handbook and diary posted to them and 20% opted for a nurse appointment to discuss their PA, where they also received these materials.

Twelve-month results showed that participants in the nurse and postal arms achieved statistically and clinically significant increases in PA levels from baseline, both in terms of step-count and accelerometer assessed minutes spent in MVPA compared with the control group, and there was no significant difference in PA levels between the two intervention arms. However, the nurse group had significantly greater confidence in their ability to exercise (exercise self-efficacy) compared with the other two groups; this

may be an important factor in longer-term PA maintenance (Harris et al., 2017). The trial also showed that the postal arm was more cost-effective than the nurse arm at 12 months (Anokye et al., 2018). Immediately after the 12-month follow-up, qualitative work explored the initial barriers and facilitators to increasing PA levels for participants in both intervention arms (Normansell et al., 2014). Important barriers identified included poor physical health, mistrust of monitoring equipment, an inflexible routine, work and other commitments, and bad weather. Facilitators included desire for a healthy lifestyle, a flexible routine, social support and a belief in the importance of PA for health.

PACE-UP 3-year follow-up

Given the positive effects of the pedometer-based walking intervention on PA levels at 12 months, the PACE-UP follow-up aimed to determine whether participants' PA levels had been sustained 3-years post intervention (Harris et al., 2018a)

The 3-year follow-up was conducted from October 2015 to November 2016. All participants, who had not withdrawn from the PACE-UP trial, were contacted and asked to wear an accelerometer for 7 days to measure the PA they were currently doing as part of their usual routine. Participants also completed various patient reported outcome measures. In order to minimise seasonal effects on PA levels baseline, 12 month and 3-year outcomes were measured in the same calendar month for each participant. At 3-years, accelerometry data were collected from 214 participants in the control group, 236 in the postal and 231 in the nurse group (63%, 66% and 67% of the original sample respectively). The 3-year follow-up quantitative analysis was on-going whilst this qualitative work was conducted and is presented in the discussion section.

A mixed-methods approach to understand physical activity maintenance

Qualitative research methods generate non-numerical data and are said to 'help provide rich descriptions of phenomena'. They enhance understanding of the context of events

and of the events themselves. Through identifying patterns in data, qualitative methods help to make distinctions and provide meaningful explanations (Sofaer, 2000). On the other hand, quantitative research methods, generate numerical data, and are associated with a belief that reality can be measured and observed objectively (Tariq and Woodman, 2013).

'Mixed-methods' refers to using both qualitative and quantitative research methods to investigate a topic. These two approaches are said to complement each other given their differing outputs. Put simply, qualitative research takes an interpretive perspective, in that it aims to make sense of the world generating rich and novel views. In contrast, quantitative methods stem from a 'realist' approach and therefore values research as a way of using precise measures to predict a 'real world' concept that is not open to interpretation (Yardley and Bishop, 2015). Mixed-methods research has been said to 'harness the strengths and counterbalance the weaknesses' of both approaches and can be very powerful when trying to answer a complex issue (Tariq and Woodman, 2013).

The PACE-UP trial therefore adopted a mixed-methods approach to provide a more comprehensive evaluation of and insight into PA maintenance. The qualitative strand provided an opportunity to explore how participants, in each arm of the trial, felt about the intervention in terms of PA maintenance. It also enabled us to determine what factors might act as facilitators and barriers to participants increasing/maintaining their PA levels and what factors might help participants to overcome any barriers. Thematic analysis was chosen as, if performed rigorously, it can produce trustworthy and insightful findings through identifying, analysing, organising, describing and reporting themes found within a data set (Braun and Clarke, 2006).

Contribution to this work

This qualitative study was independently led by myself with support from a small qualitative team. My role in this work included assessing existing evidence, formulating the research aims and objectives, designing the interview schedule, conducting over

50% of the interviews, undertaking the qualitative analysis and writing the findings up for publication.

3-year follow-up qualitative evaluation

Aim

To examine qualitatively the facilitators and barriers associated with PA maintenance three years post-intervention and to explore what resources could aid PA maintenance.

Chapter 3: Methods

Ethical approval

All aspects of the research methodology reported were reviewed and approved by Hampstead National Research Ethics Service. Ethical approval for this study was granted by July 2015, Trial registration: ISRCTN 98538934. St George's University of London was the study sponsor. Recruitment to the qualitative study began in March 2016. There were low risks associated with this study and the interviews conducted with the participants. Participants were given a full description of the PACE-UP 3-year follow-up outlined within an information sheet. The consent form for the 3-year follow-up included a box participants had to initial to indicate they were happy to be contacted for a short telephone interview for this qualitative work. Participants had the choice to opt out at any time without declaring a reason for their withdrawal. Participants were anonymised and their confidentiality was respected by replacing their names with ID numbers. Any information collected from the research including participants' contact details was stored in a secure location and documents held on a computer were stored in a password protected database on a secure server. During the telephone interviews participants were referred to by study ID number to respect anonymity. After publication of both the 3-year follow-up qualitative and quantitative results all participants were posted a summary of the findings (see Appendix 2).

Sampling and recruitment

The trial statistician randomly sampled the three trial arms for participants who had completed a three-year follow-up and had consented to be approached for interview. The samples were stratified by age, gender and ethnic group so that a diverse range of participants could be contacted.

At 12 months, participants in the control group were offered a nurse consultation, a pedometer sent to them in the post, or had the option not to receive any further support. The majority (212/322; 66%) opted to receive the pedometer by post. Those who attended the nurse consultation and those who opted not to receive any further support (i.e., did not want a pedometer sent in the post) were excluded from the sample procedure, to ensure that those interviewed had experienced the same trial procedures. In addition, at 12 months, participants in the postal group were also offered a nurse consultation which few took up (64/322; 20%). Again, those who attended the nurse consultation were excluded from the sampling procedure for the same reason.

Although aware of which group the participant was in, the interviewers were blinded to participants' PA levels both during the trial and at three-year follow-up.

Participants were contacted via email and telephone to arrange a telephone interview with either myself (CW) or another qualitative researcher working on the trial (CB). Prior to the interview, participants were reminded of consent to be interviewed, assured of anonymity and confidentiality, and reassured that they were free to stop the interview at any time without providing a reason. If happy to continue, consent was then sought for the interview to be audio-recorded. On completion of the interview, participants were offered a £10 high-street gift voucher to thank them for taking part. The interviews were conducted by both CW and CB in parallel, an important aspect of this process was to ensure both interviewers were consistent and learnt from each other during the process. This was achieved by meeting regularly to discuss various interviews and at times, listening in on each other's interviews.

Interview schedule

The interview schedules were developed through discussions with the qualitative team (TH, CW, CB, CV and RN). There were slight differences between the questions asked to the intervention groups (postal and nurse) and to the control group participants, for example the control group were not asked about pedometer use (see Appendix 1). In order to determine whether the interview schedule was appropriate and encourage discussion around the relevant topics, the qualitative research team met regularly to finalise the schedule and adapt the research questions, if needed. After conducting a few preliminary interviews (subsequently included in the analysis), recordings were shared with the team and interview questions were refined to include more open questions and to clarify some questions.

For example, rather than asking:

• *How do you feel about the amount of physical activity you're doing at the moment? Prompt: happy or feel you could be doing more?*

It was decided that it would be better to break this question down into two separate questions (one open ended and one more closely related to the trial). This would hopefully encourage more discussion around this topic and also get participants to consider directly any effects that the trial may or may not have had on their PA levels.

This question was therefore changed to:
1. *Can you tell me about the physical activity you did last week? Was that a typical week for you?*
2. *Do you think taking part in the PACE-UP trial has changed the physical activity you are doing now*?

Interview methodology

Interviews were transcribed verbatim by an external source, checked for accuracy and potential identifying features were removed. Early transcripts were circulated to the research team to ensure consistency between the interviewers and to help assess when data saturation had been reached. The data were analysed using thematic analysis, the six steps of which are outlined in Figure 6 (Braun and Clarke, 2006). The analysis took a semantic approach with the themes identified using the "explicit or surface meanings of the data" (Braun & Clarke, 2006:84) and did not attempt to provide an in-depth conceptual description and understanding, therefore staying 'closer' to the data obtained (Neergaard et al., 2009). Transcripts were read repeatedly by CW and CB and coding was initially of phrases or words which captured the participant's feelings about the trial and their PA. Where there was consensus about the emerging phrases or words they were clustered in themes. An inductive approach was used to see which sub-themes arose naturally from the data, rather than having prescribed categories.

Step 1	• Familiarisation	Step 4	• Reviewing themes
Step 2	• Generating initial codes	Step 5	• Defining and naming themes
Step 3	• Generating themes	Step 6	• Interpreting and reporting
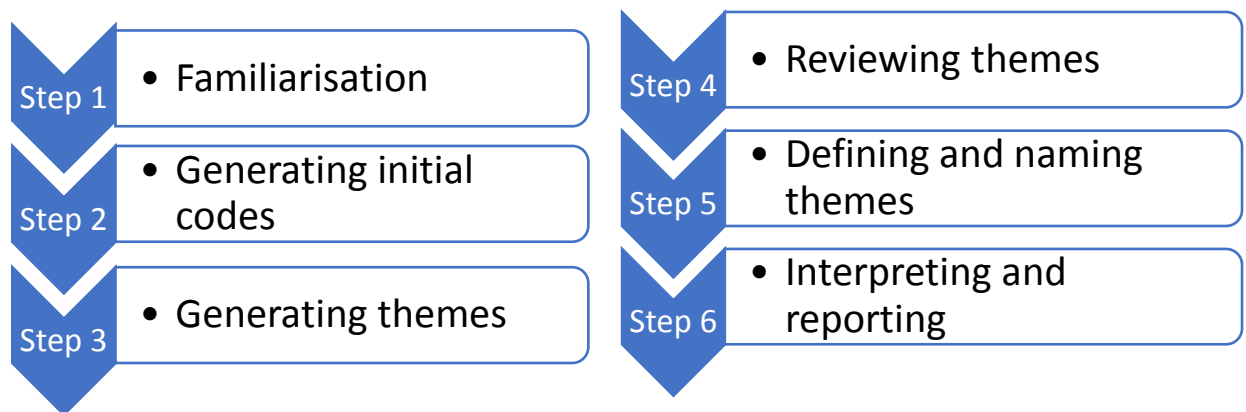
Figure 6: Thematic analysis steps (adapted from Braun and Clarke, 2006)

Chapter 4: Findings

Between March and April 2016, 105 participants were randomly selected, 96 were contacted and all agreed to participate[1]. Telephone interviews were arranged and undertaken with 60 participants (20 from each-arm of the trial). Although data saturation was achieved before completing the 60 interviews, recruitment continued to ensure views from participants of different demographic profiles. Of those recruited 70% (42/60) were aged 60-75 years old, 62% (37/60) female and 87% (52/60) were of white ethnicity (see Tables 1 and 2). Interviews lasted between four and 22 minutes (median 10 minutes, mean 11 minutes). One participant had difficulty hearing, so they were emailed the questions to complete.

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[1] Nine participants were not contacted as the target number of participants had already been recruited and data saturation reached.

Table 1: Breakdown of interview participant characteristics (n=60)

N	Group	Gender	Age	Self- reported ethnicity
1	Nurse	Female	52	White other
2	Post	Male	56	White British
3	Control	Male	68	White other
4	Post	Female	61	White British
5	Nurse	Female	50	African
6	Control	Male	58	White British
7	Control	Female	66	White British
8	Post	Female	69	White British
9	Nurse	Male	68	African
10	Nurse	Female	59	White British
11	Control	Female	62	White British
12	Nurse	Female	62	White other
13	Control	Female	56	Asian other
14	Post	Male	52	White British
15	Control	Female	64	White British
16	Nurse	Female	63	Caribbean
17	Post	Female	67	White British
18	Control	Female	73	White British
19	Nurse	Female	64	White British
20	Control	Female	61	White British
21	Post	Female	64	White British
22	Post	Female	58	Caribbean
23	Control	Male	61	White British
24	Post	Male	67	White British
25	Nurse	Female	54	White British
26	Nurse	Male	75	White British
27	Post	Female	62	White British
28	Post	Male	64	White British
29	Nurse	Female	49	White British
30	Control	Male	67	White British
31	Control	Female	63	White British
32	Post	Male	67	White British
33	Post	Male	64	White and Asian
34	Control	Male	68	Ethnic group - other
35	Post	Male	50	White British
36	Control	Male	62	White Irish
37	Post	Female	60	White Irish
38	Control	Female	68	White British

N	Group	Gender	Age	Self- reported ethnicity
39	Post	Female	49	White British
40	Control	Female	56	White British
41	Post	Male	63	White British
42	Nurse	Female	68	White British
43	Control	Male	60	White British
44	Nurse	Female	67	White British
45	Nurse	Female	65	White other
46	Control	Female	62	White British
47	Nurse	Male	67	White British
48	Control	Female	52	White other
49	Nurse	Female	65	White British
50	Control	Female	58	White British
51	Post	Male	65	White Irish
52	Control	Male	54	White British
53	Nurse	Male	71	White British
54	Nurse	Male	66	White British
55	Post	Female	60	White British
56	Nurse	Female	65	White British
57	Nurse	Female	62	White British
58	Nurse	Female	51	Unknown
59	Post	Female	70	White British
60	Post	Male	56	White British

Table 2: Summary of interview participants' characteristics

		Participant n	%
Age	45-59 years	18	30
	60-75 years	42	70
Gender	Male	23	38
	Female	37	61
Ethnicity	White/White other	52	87
	Caribbean	2	3
	African	2	3
	White Asian	1	1.75
	Asian-other	1	1.75
	Ethnic group-other	1	1.75
	Unknown	1	1.75

<u>Key themes and sub-themes</u>

Two key themes and nine subthemes were identified from the analyses which are presented and illustrated with verbatim quotes. Participants also reflected on what additional resources they would find useful to support PA maintenance.

<u>Long-term effect of the PACE-UP trial</u>

Within this key theme, three sub-themes were identified (Figure 7); increased awareness, lifestyle changes and pedometer use.
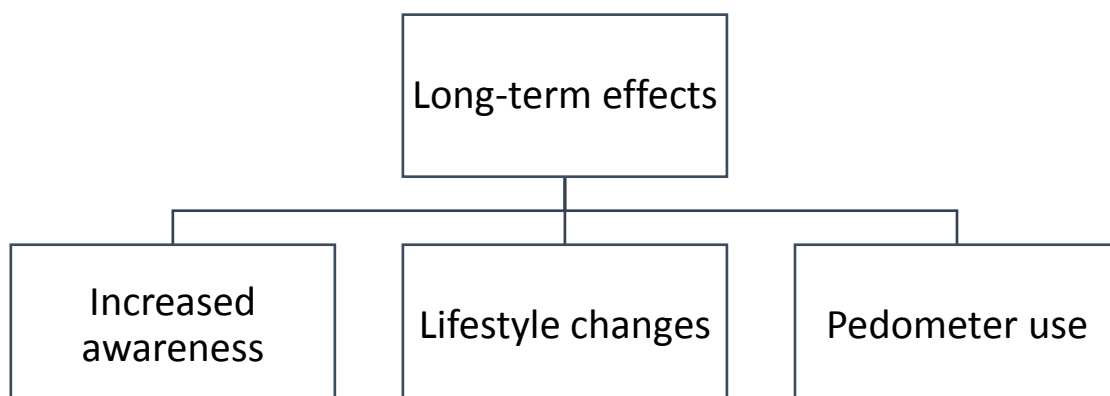
Figure 7: Long-term effect of the PACE-UP trial - key themes identified

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Increased awareness

The majority of participants felt since the PACE-UP trial they had an increased awareness of PA, regardless of whether they thought the trial had actually changed their PA levels. Some participants described developing an awareness of the importance of PA and how much PA they should be doing:

*'I think it's made me more **aware** of the need to walk more but discipline the PACE-UP trial has provided I suppose, in terms of monitoring how many steps I do per day, and what you actually need to do to achieve that number of steps per day, it's made me more **aware** of the need to actually commit to doing some exercise a day, just strolling around the house, and going to the shops occasionally doesn't really make much difference. It doesn't meet the sort of threshold that you need to reach to ensure that you lead a healthy lifestyle, so I think it's the discipline of PACE-UP has had an effect on my perception of health and wellbeing.'* (MALE, AGED 56, WHITE BRITISH, POSTAL GROUP)

*'I think it's made me more **aware**. Well as soon as I started the trial, I started thinking of the physical side of my life, and … how much exercise I was doing and so it was informative because **I didn't realise that you were supposed to try and get out of breath**, once a day'.* (FEMALE, AGED 63, WHITE BRITISH, CONTROL GROUP)

Others described having a better understanding of the amount and intensity of PA needed to meet the guidelines and how this can be built up gradually over the day:

*'… it has **given me a lot of insight** and support really, doing small amounts of physical activity regularly has been you know / having the pace-o-meter on… it made a huge difference as opposed to the mind set of, oh, I've got to do an hour in the gym. Actually **10 minutes solid walking somewhere, several times a day, actually builds stuff up**….. it's **given me insight and therefore changed the mind-set** … its actually also given me confidence … and support in a curious kind of way. I just feel, when I'm down, and I think oh God, I'm too tired to do anything, it actually boosts me on that kind of level, on the motivational level.'* (FEMALE, AGED 69, WHITE BRITISH, NURSE GROUP)

Lifestyle changes

Participants attributed a number of positive lifestyle changes to being involved in the PACE-UP trial, including walking rather than using motorised transport, walking during work lunch breaks and walking up escalators:

*'I make myself **walk more than I did** before because it was very easy to you know catch the bus and come back on the bus, whereas now I **rarely catch the bus** down* [the hill]. *I'm **always walking**.'* (FEMALE, AGED 63, WHITE BRITISH, POSTAL GROUP)

*'Well it just sort of **sprung me into action** with regard to doing a little bit of walking every day, so I **try to incorporate at least 10 minutes**, but ideally at least 15, at lunch time… I'll just mosey around the block a couple of times from work and it has made me feel a lot better'* (*FEMALE, AGED 60, WHITE IRISH, POSTAL GROUP*)

*'I also **realised how fairly easy it is just to build up** the steps so today, for example, there are two stations I could have gone to, to come home from where I was and I just walked to station which was furthest away, you know, it's just what I will do and walk up the escalators and underground stations'* (MALE, AGED 66, WHITE BRITISH, NURSE GROUP)

There was some indication that these lifestyle changes were sustainable in nature:

*'[PACE-UP] just **reinforced the importance** of just keeping up the exercise and just being aware that it's a **lifelong thing now**. We'll just continue like this. Yes, that's what we'll do really.'* (MALE, AGED 53, WHITE BRITISH, POSTAL GROUP)

*'I'm much more **aware** of moving, moving around. I do walk a lot more from A to B, not going for walks, but **getting walking in to my daily routine**.' (FEMALE, AGED 51, UNKNOWN, NURSE GROUP)*

Whilst some participants used the above strategies to integrate healthy behaviours into their lifestyle, others explained that an inflexible routine, and a preference for sedentary activities, prevented a positive walking habit formation:

*'I'm **/ not exactly inactive**, but **as soon as I get home from work, the feet go up** and you know that's it. I don't go anywhere unless I really have to.'* (FEMALE, AGED 61, WHITE BRITISH, POSTAL GROUP)

*'My **interests are more cerebral** really, you know, I was a researcher, I do a lot of reading, I belong to a book club... I do photography. I suppose that's a bit more active but not a lot more active actually. I'm always doing as much as I can. **I could do more if I perhaps dropped my other interests, which I'm not prepared to'** (FEMALE, AGED 69, WHITE BRITISH, CONTROL GROUP)

Pedometer use

Participants had differing views towards the effectiveness of the pedometer intervention for aiding PA maintenance. For some, they felt using the pedometer helped 'kick-start' regular PA and initiated activity with support:

*'Well, before the PACE-UP trial I had no incentive. And that really did help me. That put me / **gave me the first steps as it were, got me on the right track,** and then going to the gym and getting somebody there who could set out a routine for me and encourage me and things, next step, and then got the Fitbit as well at Christmas, and then that's really helped.'* (FEMALE, AGED 51, UNKNOWN, NURSE GROUP)

The participants continuing to use the pedometer post-intervention found it a useful motivational tool for goal setting and self-monitoring:

*'I try to **ensure that I reach 10,000 a day**, although I don't always do/achieve that, but I know that that's **my benchmark** and therefore **if I fall below it I believe I haven't done enough exercise for that day**'.* (MALE, AGED 56, WHITE BRITISH, POSTAL GROUP)

*'I want to walk more every day … **it has been a great incentive with the pedomet**er, it does **keep you on track to be healthy**'* (FEMALE, AGED 57, ASIAN OTHER, CONTROL GROUP)

For others, they felt using the pedometer increased PA initially but reported the 'novelty' of wearing it had worn off. Participants stopped wearing the pedometer for numerous reasons including finding it inconvenient or inaccurate.

*'I think it **made me more aware of walking** as a means of health and I was very interested to count how many paces I did per day, that was **quite fascinating to count and watch** / it's **quite addictive** isn't it, counting … on a long-term basis I can't keep wearing that thing all the time, **it irritates me to wear it and I forget to switch it on and it doesn't work as a practical method.**'* (FEMALE, AGED 50, WHITE BRITISH, POSTAL GROUP)

*'The pedometer I think probably **helped a lot initially**, just to encourage me to go, but I've sort of abandoned that because it just is a bit awkward really.'* (FEMALE, AGED 61, WHITE IRISH, POSTAL GROUP)

A minority of participants stated that using the pedometer had a negative impact on them psychologically. Participants commented on feeling demoralised and *'like a failure'* (MALE, AGED 63, WHITE BRITISH, POSTAL GROUP) if they had not managed to meet each daily step target (target number steps were set to be achievable and increase gradually over the 12-week walking programme):

*'It doesn't motivate me to do more, but **it makes me feel guilty for not doing more**.'* (MALE, AGED 56, WHITE BRITISH, POSTAL GROUP)

*'**Sometimes you think you've done more than you have**, when you look in your pocket, you think, oh the pedometer's not working'* (FEMALE, AGED 64, WHITE BRITISH, CONTROL GROUP)

Some participants reported becoming obsessive over monitoring their step-count and how this also had a negative impact on them:

*'I **felt in competition with myself and I'm not sure that that was a good thing**, because I thought I'm trying to walk more than I really need to, just so I can get my figures up.'* (FEMALE, AGED 65, WHITE BRITISH, POSTAL GROUP)

*'I used to show [the pedometer] to friends but they didn't seem that interested! I gave up! I mean it's **a big drawback in becoming a health freak**'* (MALE, AGED 71, WHITE BRITISH, CONTROL GROUP)

However, although some participants were no longer using the pedometer provided as part of the PACE-UP trial, a few reported using other PA monitoring devices such as mobile phones and Fit-Bits.

*'I **kept forgetting to put the pedometer on, but I always had my phone on me**, so I thought well I'll just use my phone. So it made more sense because I've got it handy. And then, when I do go for a walk, it's nice to have it on me …. rather than another piece of equipment'* (FEMALE, AGED 52, WHITE OTHER, CONTROL GROUP)

<u>Facilitators and Barriers to PA maintenance</u>

Most of the themes relating to the facilitators and barriers to maintaining PA were the inverse of each other; these included weather/season, health, self-motivation, ageing, and social support. Time, was the only theme described as a barrier to maintaining PA and not a facilitator (Figure 8).
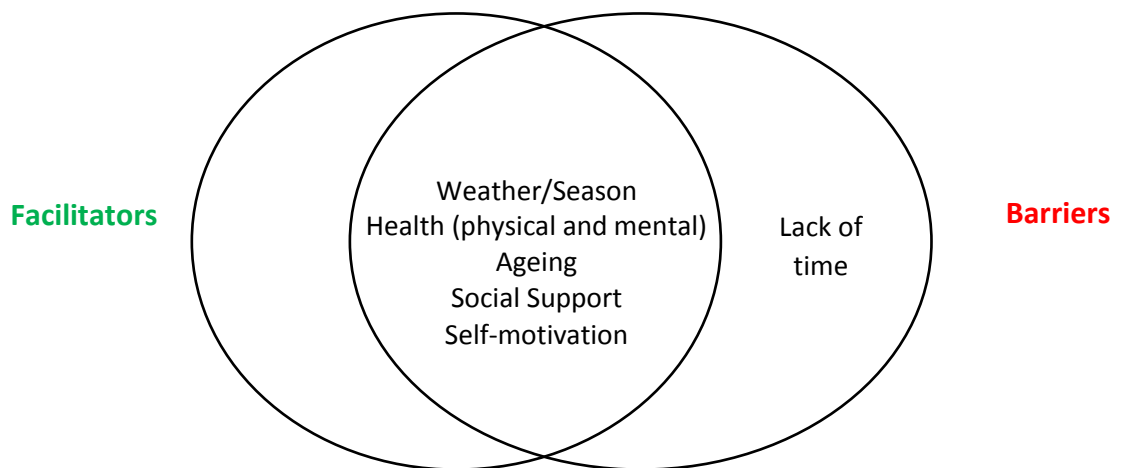
Figure 8: Barriers and facilitators to PA maintenance

Weather and season

For many participants, the weather and season were important factors linked to PA motivation and engagement.

*'It depends on the weather for me… when the weather is fantastic and you wake up and the **sun is shining, I can't wait to get out**, and then on the days when you wake up and it's so **grey, the mood just isn't there**.'* (FEMALE, AGED 63, CARIBBEAN, NURSE GROUP)

*'The **sun shining is a bit encouraging**!... when you work and when you finish it's dark and before you go to work it's dark, so it's really not a nice time of year to go out and do something and I'm not a person that would go to a gym and stuff like that, so it really is outdoor stuff, so really the spring and the summer.'* (FEMALE, AGED 61, WHITE BRITISH, POSTAL GROUP)

For some, bad weather prevented undertaking PA whilst for others PA was guided by the season:

'*I toyed with the idea of walking in to XXXXX yesterday and **I certainly had the time but the rain came down and it put me off**'* (MALE, AGED 64, WHITE BRITISH, POSTAL GROUP)

'*I mean **I'm waiting for the weather to get a bit better to start going out for walks** with groups like the Ramblers.'* (FEMALE, AGED 63, WHITE BRITISH, CONTROL GROUP)

Health (physical and mental)

Health was mentioned by many (both from younger and older age groups) as a reason for continued engagement in PA. Participants cited the following physical health motivators: keeping fit; preventing long-term health conditions; managing existing health conditions; keeping in shape; losing weight; and helping with an injury. Whilst some participants spoke about general health-related benefits of PA others spoke about specific ailments:

'*The **more active I am, the better the arthritis is**, so I know if I've sat down for even more than half an hour, when I get up, I'm stiff, so I know to keep myself lubricated. **I need to be walking as much as possible** and that's why I swim as well, so **that's my main motivation** really, is to just keep the joints as lubricated as possible.'* (FEMALE, AGED 61, WHITE IRISH, POSTAL GROUP)

'*I **don't want to gain any weight**, and my **family history has diabetes** in it and I know keeping your weight down is a factor, so **that's my motivation**.'* (FEMALE, AGED 64, CARIBBEAN, NURSE GROUP).

Participants also spoke about the mental health benefits of PA and how PA makes them *feel better,* more alert and have a more positive outlook on life.

'*Physical activity, it's important, not only for things like weight control, but also for things like **reducing the aging process, but also keeping your mind physically active** and …*

*having a better positive view of life, so having a **physical exercise routine doesn't just improve your physical well-being, but it does improve your mental well-being** …. I certainly do feel more mentally alert and **I feel happier after having done some exercise**, so I think that's the take-away for me from the PACE-UP trial is the acknowledgement or the understanding that keeping up some sort of physical routine is good obviously physically, but also good mentally'.* (MALE, AGED 56, WHITE BRITISH, POSTAL GROUP)

Having physical limitations was also cited as a barrier to PA. For some this was linked to specific health conditions such as arthritis, whilst for others it was the general aches and pains related to ageing that limited PA:

'***I've got an ongoing problem where I get pain,** so there's **no way I'm going to be going out walking if I don't have to**.'* (FEMALE, AGED 61, WHITE BRITISH, POSTAL GROUP)

*'**I shouldn't just blame everything on my illness** that I need to / in spite of my difficulties, **I still need to be fit, to be healthy**.'* (FEMALE, AGED 57, ASIAN OTHER, CONTROL GROUP)

Concerns about possible adverse health events as a consequence of increasing PA was also seen as a barrier to engagement. One participant was unsure of the safest way to increase their activity levels as they got older and felt there needed to be better advice and guidance:

*'…**I'm just a little bit afraid of becoming more active**, simply because you feel that, well, I'm doing quite well with what I'm doing, so what's the point of sort of having a **risk of a heart attack** or something like that, suddenly break in to a stride and start running, so maybe **a bit of guidance** on what's going to happen to you if you do step up your exercise plan.'* (MALE, AGED 67, WHITE BRITISH, POSTAL GROUP)

Self-motivation

Many participants cited self-motivation as an important reason for engaging in PA and a few explained that it was the PACE-UP trial that had provided them with self-motivation.

 'You started something and then I continued by myself' (FEMALE AGED 56, WHITE BRITISH, CONTROL GROUP)

*'I think it **comes from you**. You have to want to do these things don't you …'* (FEMALE, AGED 65, WHITE BRITISH, NURSE GROUP)

Whilst some participants reported having the resources (park, gym etc.) to be active they explained the main barrier to not participating in activity was a lack of self-motivation.

*'In my area things **the resources are there it is just for me to be a bit more committed**, a bit more motivated, to do it.'* (FEMALE, AGED 57, ASIAN OTHER, CONTROL GROUP)

For some, lack of self-motivation was linked to a misconception about the long-term benefits of engaging PA and potential health outcomes:

*'**If somebody turned around to me and said, you're going to have to walk 10,000 steps a day, otherwise you're going to die in two years' time, that might do it**, but I haven't got that…I've got to do this otherwise it's a serious serious thing, because I'm not that unfit. I'm just not doing enough really, you should walk 10,000 steps a day, and actually I haven't and I don't and I know I should.'* (MALE, AGED 56, WHITE BRITISH, POSTAL GROUP)

Ageing

Some participants placed importance on PA as a way of staying young and active and trying to slow down the ageing process.

*'… **with advancing years**, you're more aware that / and as the saying goes, **if you don't use it, you lose it**, and I'm very much aware of that now'*. (FEMALE, AGED 73, WHITE BRITISH, CONTROL GROUP)

*'But you're only as good as your sort of last day I think at my age…something's going to strike me down at some point, but **there are things that I can do to help myself, and one of those is exercise**.'* (MALE, AGED 67, WHITE BRITISH, POSTAL GROUP)

A few participants spoke about age as a barrier to PA and how participating in sport had become harder as they got older. For some this was because they found PA *'more of a strain'* (FEMALE, AGED 59, WHITE BRITISH, NURSE GROUP).

*'I **used to, you know, play squash and I used to coach rugby** and I played hockey and things like that, I don't do those things any more. Sometimes I think I should but it's / **as you get older it gets a bit harder** to do them.'* (MALE, AGED 59, WHITE BRITISH, CONTROL GROUP)

Participants had differing opinions over retirement and whether or not having more leisure time would affect PA levels. Some participants saw not working as an opportunity for additional PA:

*'I **work between 30 and 40 hours a week** still and I **don't actually have much time for anything else at the moment, nor do I have a lot of energy left**. I am aiming to retire in 18 months, when I'm 70, so one of the things that I want to do is to take up swimming and to do more yoga, so it really / my main activities are walking, yoga and swimming, when I take it up, again.'* (FEMALE, AGED 69, WHITE BRITISH, NURSE GROUP)

Whereas others felt that not having a daily commute (i.e., changes to their activities of daily living) would reduce PA levels.

*'I always walked to work and you know and I wasn't quite concerned, but **when you retire, you start becoming more relaxed and haven't got the pressure of getting up and doing things straight away**, so your lifestyle's more relaxed, hence, you don't do [as much] physical exercise as you think you're doing.'* (FEMALE, AGED 64, WHITE BRITISH, CONTROL GROUP)

Social support

Although a few participants stated a preference for solitary activities, many participants spoke about the importance of having friends and family to motivate them to participate in PA. For some, this motivation came from making a commitment to exercise with someone else (instrumental social support). For others, social support provided them with confidence to try new activities or encouragement to push themselves further (emotional/motivational social support). Support from and *accountability* to family and friends were therefore seen as common facilitators to PA.

*'… I do **have a friend that I walk with** on a Thursday, so I'll say, ooh, I don't really feel like walking today and **she'll say, oh come on, get a move on**, and she'll / we'll just both say oh shall we **walk just a little bit further and we'll walk a little bit further**, or you know / or push each other up the hill in a way, so **we motivate each other** …'* (FEMALE, AGED 52, WHITE OTHER, CONTROL GROUP)

*'… you know maybe my motivation is having somebody to do [physical activity] with…if **I've promised to do something, I'll do it, but if I've only promised myself, then I might find excuses not to do it.'** (FEMALE, AGED 64, WHITE BRITISH, NURSE GROUP)

*'I go with my friend, so **we sort of motivate each other as much as we can** …Yes, it's nice to go with somebody and I think they make you go, you know, it's very easy just to come*

*home and sit down and not go, whereas **if you've arranged to go with somebody, I think you're more likely to do it**.' (FEMALE, AGED 54, WHITE BRITISH, NURSE GROUP)*

PA was also seen as an opportunity to meet new people:

*'There isn't much reward coming from the physical activity, **there has to be something else rewarding really**….I think / well the **social thing is one thing that actually helps really**. That keeps me going to the class' (FEMALE, AGED 69, WHITE BRITISH, CONTROL GROUP)*

Family members were also seen as indirect motivators with some participants expressing a desire to keep up with younger family members as an incentive to maintain an active, healthy lifestyle.

*'To **remain independent**, and I've got nieces and a nephew … I need to be active to keep up with them because they are young. I just need to keep up with everyone else really**. I don't want to slow down and become old**. Unfortunately, I'm not really motivated by anything else.' (FEMALE, AGED 65, WHITE BRITISH, NURSE GROUP)*

A few participants spoke about how participating in the trial had positively influenced the PA of those around them by making others engage in more activity:

*'It's **been beneficial for me and to friends** … I've got a particular friend that used to never worry about steps, but now talks about steps all the time, and that's partly through my talking about my own experience with PACE-UP.' (MALE, AGED 56, WHITE BRITISH, POSTAL GROUP)*

*'… because I'm noticing how much I'm walking **I'm noticing how much they [family] are walking or not walking** and I think that's how … its **spread out more to the family**' (FEMALE, AGED 52, WHITE BRITISH, CONTROL GROUP)*

In contrast, not having anyone with whom to participate in activity was seen as a barrier, with participants reporting that lack of social support led to a reduction in walking:

*'I like walking but **my friend that I used to go walking with quite a lot has moved away**, so there's **not so much incentive now** to go for a walk'* (FEMALE, AGED 59, WHITE BRITISH, NURSE GROUP)

Lack of time

Time was identified as a barrier by nearly half of participants, making it the most frequently cited barrier, and was the only theme not identified also as a facilitator. Lack of time included being 'too busy', 'family responsibilities' (looking after children, caring for relatives) and 'work commitments'.

*'To me my reluctance to do physical activity was really based on I'd say laziness… and if you are working full time… **it takes discipline I think to do things in a time when you're supposed** / you should be relaxing after work, the **thought of actually doing physical exercise**, which didn't at the time seem to me to be a relaxing activity, but **a chore**, deterred me from doing any physical exercise really.'* (MALE, AGED 56, WHITE BRITISH, POSTAL GROUP)

*'I have a disabled child so **I'm a full time carer** and sometimes I would **feel I really don't have the energy** to do that ... because actually it's very difficult, when you're caring for a young child, in particular, to find time, energy, motivation, to do something for yourself and actually it's **easier to sit in and eat a big bag of crisps and a huge packet of biscuits**.'* (FEMALE, AGED 50, WHITE BRITISH, NURSE GROUP)

Even though some participants had a strong sense of self-motivation to participate in PA, time was still the limiting factor to them engaging in this behaviour.

*'It's not because I don't want to do the exercise, or …or that I haven't got the motivation to do it, it is **just finding time**.'* (FEMALE, AGED 54, WHITE BRITISH, NURSE GROUP)

*'I used to absolutely love walking, but also it's the **time factor**. At the moment I've got a mother who's 90 and I've had to spend a lot of time going around and sorting out carers and different things, so time-wise**, I haven't had a lot of spare time**.'* (FEMALE, AGED 62, WHITE BRITISH, CONTROL GROUP)

Some participants were able to find solutions to having a lack of time, including integrating PA into their schedule or changing their daily activities.

*'…I do have an issue of time really, which is why I find **walking to and from school is quite a good thing because it makes me have exercise and it's killing two birds with one stone**, because it's something that needs to be done as well'* (FEMALE, AGED 49, WHITE BRITISH, POSTAL GROUP).

As seen in a previous quote, others were able to overcome the barrier of time by incorporating multiple short bouts of PA into each day.

*'Oh I've got to do an hour in the gym. Actually **10 minutes solid walking somewhere, several times a day, actually builds stuff up**.'* (FEMALE, AGED 69, WHITE BRITISH, NURSE GROUP)

<u>Reflections from trial participants on additional support to aid PA maintenance</u>

At the end of the interview participants were asked to comment on what additional support could be provided to aid PA maintenance, and were offered examples which included; annual nurse appointments, walking groups, text messages and online resources. These suggestions were offered as probes after the participant's initial response. Participants also provided other useful suggestions:

Annual nurse appointments

Overall participants were positive about the option of seeing a nurse annually to discuss their PA. Participants felt having a nurse (or an authoritative figure) to report to regularly would provide 'accountability' and remind them to participate in/undertake/maintain PA levels.

*'I was probably more motivated through the trial than I was once that stopped, so **if I had a regular point / an appointment that meant I checked in with somebody on a regular basis, I'd probably be more motivated, so external accountability** has always been quite useful.'* (MALE, AGED 66, WHITE BRITISH, NURSE GROUP)

*'If you are having it **validated by professionals**, I think it's **taken more seriously**.'* (FEMALE, AGED 57, ASIAN OTHER, CONTROL GROUP)

Walking groups

Again, the role of social support was viewed as helpful to engaging in PA. However, it was important to participants that walking groups included people of similar fitness levels and were at a convenient time.

*'I suppose maybe if there were **walking groups** around for people I mean I know there are walking groups, but they're usually for people who are fitter than me.'* (FEMALE, AGED 68, WHITE BRITISH, POSTAL GROUP)

Walking groups were also seen to provide 'accountability' (which relates back to the importance of social support mentioned earlier):

*'If I was part of a [walking] group, **if I reported to somebody, I would definitely do it, because I don't really report in to anybody, I'm not part of a group, I don't do it, as***

much, even though I know the benefits are there.' (FEMALE, AGED 62, WHITE BRITISH, NURSE GROUP)

Some participants viewed organised walking groups as too restrictive and would prefer to be part of a group that was *'more spontaneous than arranged'* (MALE, AGED 67, WHITE BRITISH, POSTAL GROUP)

Text messages and online resources

Participants had differing opinions over the use of text messages and online resources to encourage PA maintenance, with some having a strong preference for one over the other.

Some participants favoured the idea of being able to go online at their *'own time'* (FEMALE, AGED 63, WHITE BRITISH, CONTROL GROUP) to find PA guidance and viewed text messages as *'intrusive'* (MALE, AGED 56, WHITE BRITISH, POSTAL GROUP) and a *'nuisance'* (FEMALE, AGED 52, WHITE OTHER, NURSE GROUP)
Others preferred the idea of regular text message reminders to be physically active and felt that they would be less likely to view online resources as that required them to be *'a bit more proactive'* (FEMALE, AGED 51, UNKNOWN, NURSE GROUP)

*'I think you **need little reminders**, little jolly reminders, probably quite a good thing, I think anything with a / like a **positive message**, yes, is **very helpful'*** (FEMALE, AGED 52, UNKNOWN, NURSE GROUP)

Additional ideas suggested by participants

A few participants spoke about the value of a more holistic nurse consultation, suggesting nurses include advice and information on diet as well as PA:

*'… if you wanted any thoughts about the trial and how it could be, not necessarily improved, but how it could be adapted slightly to **talk about diet as well**, because I think that the **two go hand in hand**, the exercise and the diet'* (FEMALE, AGED 50, WHITE BRITISH, NURSE GROUP)

Others spoke about a need for more opportunities for older people to participate in PA and difficulty with some established activities:

*'I think it would be good if there was some sort of community, like a walk once a week…, **if you're a bit older, it becomes a little bit difficult to join particular classes**'* (MALE, AGED 56, WHITE BRITISH, POSTAL GROUP)

Some participants felt there were no additional resources that could be provided to encourage PA maintenance and that being active was ultimately down to self-motivation.

*'These days one gets plenty of messages about being physically active. I don't think / if people are not active it's not because they don't know they should be, and that certainly applies to me, out of inertia, laziness, busyness, you know, there are **all sorts of reasons why I'm not as active as I could be, but it's not because you don't give me the information or anything like that**.'* (MALE, AGED 59, WHITE BRITISH, CONTROL GROUP)

Chapter 5: Linking the findings: PACE-UP 3-year follow-up; a mixed-methods approach

The PACE-UP 3-year follow-up mixed-methods approach had two main aims;

1. To see whether PA increases seen at 12 months were sustained at 3 years (quantitative)
2. To explore barriers and facilitators to PA maintenance (qualitative)

The main outcomes of the quantitative analysis were changes in 7-day accelerometer average daily step counts and weekly time in MVPA in ≥10-minute bouts in intervention versus control groups, between baseline and 3 years. PACE-UP followed up 67% (681/1023) of the original sample at 3 years. The intervention vs. control comparisons were: additional steps/day postal +627 (95% CI: 198–1,056), p = 0.004, nurse +670 (95% CI: 237–1,102), p = 0.002; total weekly MVPA in bouts (minutes/week) postal +28 (95% CI: 7–49), p = 0.009, nurse +24 (95% CI: 3–45), p = 0.03. This meant that at 3 years there was a similar and consistent intervention effect compared to 12-months, indicating that participants' PA levels had been sustained and that the two intervention groups were still performing similarly to each other (Harris et al., 2018a).

Whilst these numbers tell us about the actual maintenance of average PA levels, they do not tell us why or how participants maintained them. Including this qualitative strand to the 3 year follow-therefore helps provide a unique insight into PA maintenance; including barriers, facilitators and potential ideas to promote PA maintenance.

Chapter 6: Discussion

This qualitative evaluation identified perceived barriers and facilitators to being physically active three years after participants took part in a PA intervention. An important finding was that the results of each theme were consistent across the three arms of the trial (nurse, postal and control) with no group differences emerging. Most participants reported an increased awareness of PA, as well as an increased understanding about the importance of PA for health and knowledge about the amount of PA required to meet PA guidelines. Participants highlighted different barriers and facilitators to being able to stay physically active in the longer term, which were predominantly the inverse of each other and were similar across the three groups. Important facilitators and barriers included: the weather; health; self-motivation; ageing; and social support. Lack of time was the most frequently cited barrier to maintaining PA. Participants provided useful insights on what additional resources could encourage them to stay physically active in the longer term.

Comparison with other studies

To our knowledge, this is the first qualitative study to explore the barriers and facilitators to PA maintenance three years after a PA walking intervention has been delivered.

Interestingly, the majority of barriers and facilitators found in this study were also reported in the previous qualitative exploration of reasons for participating in the PACE-UP trial (Normansell et al., 2014). This provides support for the credibility of our work and suggests, as others have found, that barriers and facilitators may be similar for both PA adoption and maintenance (Tulloch et al., 2013). Of note, time as a *facilitator* (as well as a barrier) emerged from the 12-month interview data, with participants reporting the benefits of having a flexible routine which allowed them to fit in more PA. In this study, time was the most frequently stated barrier to PA, this is consistent with previous research (Reichert et al., 2007, Kowal and Fortier, 2007, Evenson et al., 2008, Costello et al., 2011, Kelly et al., 2016). Whilst we found that time was not identified as a facilitator, some participants were able to find strategies to overcome it as a barrier, such as incorporating PA into their daily routine.

A systematic review, which explored barriers and facilitators to the uptake and maintenance of healthy behaviours (including PA) by mid-life adults, also reported some similar findings to our study. Additional barriers and facilitators identified in the review included; socio-economic status (SES), ethnicity, gender and transport issues i.e., coming from a lower SES, being female and having to drive to PA opportunities were all linked to lower levels of PA (Kelly et al., 2016). Given that our sample was predominately Caucasian (and therefore non-representative) we were unable to explore sub-group differences in this present study. Consistent with our findings Kelly et al. (2016) also found health to be both a facilitator and a barrier to PA. Fear of illness and ageing, previous illness and other health related issues (e.g., weight loss, feel good factor) were recognised as facilitators. Conversely, existing ailments or chronic health conditions were cited as barriers to PA. Whilst we did not find any differences in terms of age, previous studies have found health to be more frequently cited, as a barrier to PA, with

increasing age (Booth et al., 1997, Sørensen and Gill, 2008). Another study with similar findings to ours was a review evaluating PA of rheumatoid arthritis patients which found that reducing stiffness was a facilitator for PA but experiencing stiffness was also seen as a barrier (Veldhuijzen van Zanten et al., 2015).

Consistent with a study exploring the effectiveness of a pedometer to increase PA in primary care six months post-intervention (McKay et al., 2009), our participants spoke about the pedometer helping initially (in terms of self-monitoring, helping to set goals and acting as a cue to action) until the novelty of wearing it had worn off, or until they found other ways to monitor their PA levels. Our participants also spoke about how, at the start, wearing the pedometer had made them more aware of how many steps they were doing however now that they had this awareness they no longer needed it to monitor their PA levels.

Social support has been found to be important for both behaviour initiation and maintenance (McAuley et al., 2003, Floegel et al., 2015). In our study, social support was associated with remaining physically active in the longer term, in particular co-participation where individuals were more likely to engage in physical activity if they had committed to doing it with someone else. Other participants spoke about lack of social support being a barrier to PA, explaining they were less likely to engage in PA if they did not have a companion. Kelly et al. (2016) included studies that identified social support as a facilitator (Hooker et al., 2011, Babakus and Thompson, 2012) and those that identified lack of social support as a barrier (Im et al., 2013). Whilst we had too few participants from different ethnic groups to comment on any important effects, cultural and ethnic differences can help to explain why some people place more importance on social support, in terms of PA, than others. The notion of 'individual-versus family-oriented PA' has been well documented in the literature (Berg et al., 2002, Belza et al., 2004). One study found that ethnic minority women place more value on the role of family-orientated activities than white women (Im et al., 2013).

Additional resources to aid PA maintenance

Participants provided useful insights on what additional resources could encourage them to stay physically active in the longer term.

One recurring topic across themes was that having someone to report to regularly motivated individuals to participate in PA. Frequent contact with participants during the maintenance phase of an intervention has been found to be important (Marcus et al., 2000); however, little is known about what needs to happen during these contacts, the frequency they need to occur and at what point they can cease and behaviour still be maintained. Participants in our study had differing opinions over what additional support could have been provided to encourage PA. This highlights the need for some aspects of the PA interventions to be tailored to the individual. Previous research states that for behaviour change to be successful, strategies need to be developed by gender, age, risk status, ethnicity and baseline activity (Marcus et al., 2000, Berg et al., 2002, Sørensen and Gill, 2008). Maintenance of PA following the end of an intervention may also be influenced by attitudes and behaviours, as well as pre-existing individual characteristics (Bock et al., 2001).

There is some evidence that booster and reminder strategies could help people engage in PA continuously following the initial intervention, for example in the form of workshops, e-mail, internet, phone call, mail reminder or group sessions. However, some uncertainty remains in respect to the most effective and efficient way to deliver these booster messages (Müller-Riemenschneider et al., 2008). The internet, email and phone have all been used in recent years as a mode for delivery of booster messages. Participants in our study reported mixed views over their preference for text reminders versus online support. Although delivering messages via the internet would significantly lower the cost of the booster (compared to print or phone messages), interventions using these resources need to be mindful that certain population groups may not be targeted if utilising this approach.

Strengths and limitations

We were able to recruit and interview a large sample of participants (n=60). Participants included both men and women of varying ages. Taking a random sample of those who had consented to be contacted for an interview minimised sampling bias. Everyone who we managed to successfully contact agreed to take part in the interview indicating an excellent take-up rate.

Another strength of this study is that participants were recruited using a population-based approach through primary care registers. Research in primary care is critical to evidence-based practice; it helps practitioners to question their practice and be better translators of evidence and findings can improve patient care (Liew, 2017). One major hurdle in primary care has been recruitment (both at the practice and participant level) and data collection (Bower et al., 2009). For example, one review looked at 114 UK trials in different health care contexts and found that only 31% recruited successfully (defined as ≥100% of its recruitment target) and only 45% recruited above 80% of their target (McDonald et al., 2006). In the PACE-UP trial the GP practices agreed that their practice would participate and then provided appropriate access to patient registers to allow the PACE-UP research team to send postal invites to potentially eligible patients. A strength of the PACE-UP work is that participants to the original trial were recruited within the specified time frame and the only study extension required was to enable researchers to follow up participants 3 years post intervention.

Limitations of this research should also be acknowledged. In particular response bias which is evident at various levels within the PACE-UP trial i.e., within the main trial, 3-year follow-up and qualitative follow-up work. It is recognised that broadly speaking PA participation is unequally distributed across society with gender, age, disability, education and socioeconomic status as determinants. With this in mind, certain subgroups of population are more likely to be inactive. Historically, there has been significant response bias in PA interventions that predominantly recruit white, middle-class and middle-aged women. This results in under-represented male, socioeconomically disadvantaged and minority ethnic populations (Cooke and Jones,

2017). The PACE-UP trial, from which the participants were sampled, was conducted in South West London. Although a diverse area in terms of ethnicity and socio-economic status, care should be taken when transferring the findings to a wider context, especially as those interviewed were mostly Caucasian. In the main PACE-UP study only 10% of those who were invited actually participated in the trial, with lower participation rates for those from the South Asian ethnic group (Kerry et al., 2018). Whilst this qualitative sample represented the participants in the PACE-UP trial (78% of whom were Caucasian), it does not represent the population of South London as a whole, which has a higher proportion of non-Caucasians than other areas of London. This is a pertinent issue considering that some ethnicities (particularly South Asians) are known to perform less PA than the White British population (Williams et al., 2011). This is important given that South Asians suffer from elevated rates of cardiovascular disease and diabetes (Gholap et al., 2011). Although there have been various research studies evaluating PA interventions and exploring barriers and facilitators to PA engagement/adoption in people from different ethnic backgrounds (Horne et al., 2018, Wilbur et al., 2017, Joseph et al., 2015), to our knowledge there has been little research looking at barriers and facilitators to PA maintenance for these groups. This would be an interesting topic to explore given that PA adoption and maintenance require unique approaches (Nigg et al., 2008, Howlett et al., 2018) and may be affected by ethnicity (Im et al., 2013). Several approaches could be taken to potentially increase uptake of those from the South Asian population (thus minimising response bias) including; advertising research opportunities within the community rather than a GP setting, having health champions within the community to promote the benefits for PA and educating individuals from a young age about the benefits of PA for health.

Response bias is also evident in the PACE-UP follow-up work. As with all research, our findings only represent the views of those who consented to be contacted. Whilst in previous research we contacted those declining to participate in the PACE-UP main trial to explore reasons for non-participation (Normansell et al., 2016) we did not attempt to contact those declining to take part in the 3-year follow-up. Our findings therefore only represent those participants that were recruited to the initial PACE-UP trial and then continued with the trial at 3 years. Participants who did not consent to be interviewed

or who dropped out from the follow-up might have differing views and issues surrounding PA maintenance that we were unable to capture. It would have been interesting to conduct interviews with non-participants (i.e., those we were unable to get hold of to provide accelerometry data at 3 years) to gauge whether they had differing barriers and facilitators to PA maintenance.

Qualitative research is based on researchers' interpretations, and therefore open to researcher bias (Pope and Mays, 2013). In addition, thematic analysis has been criticised for its flexible approach which can lead to inconsistency and lack of coherence when developing themes derived from the dataset (Nowell et al., 2017). The researchers undertaking the analysis were aware of the facilitators and barriers identified from qualitative interviews at 12 months (Normansell et al., 2014). It was important that, while undertaking the data analysis, the researchers avoided the unconscious 'seeing' of data they expected to find (Crabtree and Miller, 1999) and did not force the data into preconceived categories (Charmaz, 2006). We mitigated these risks by conducting the interviews and transcriptions by two researchers working independently (CB and CW) who had not been involved in the previous qualitative study. Emergent themes were discussed, circulated to the larger research group and any discrepancies were resolved through discussion. Having the wider team actively involved in the analysis increased credibility and trustworthiness of the data interpretation (Noble and Smith, 2015). Illustrative verbatim quotes are provided for each sub-theme to demonstrate the relationship between the interpretation and the evidence, increasing trustworthiness.

Our exploratory between-group comparisons may also be limited by contamination of the control group after 12 months following all participants being offered a pedometer see Harris et al. (2018a) for more details.

We did not attempt to correlate participants' views with any objective measure of PA and interviewed participants without knowledge of their objective PA levels, either earlier on in the trial, or at the three-year follow-up. Whilst this may have introduced some element of measurement bias, it was a deliberate decision for a number of reasons. Firstly, the quantitative analysis was still on-going at this point. Secondly PA

levels can vary over time and during different seasons and we were interviewing participants over a short time period (March-April 2016); whilst their most recent objective PA monitoring from the three-year follow-up could have been anytime between October 2015 and March 2016. Finally, length of time between providing objective three-year follow-up data and being interviewed differed for different participants.

Although unaware of participants' objective PA measures, the interviewers were aware of which arm of the trial participants were in. This is a potential risk of bias as the outcome assessor (in this case the interviewer) may have changed the way they asked the interview questions or conducted the thematic analysis. In order to minimise this risk the statistician, who generated the list of participants, could have anonymised the lists using a number rather than providing the group name. This would have ensured the interviewers remained blind to group allocation, although individual participants might still have mentioned details which would give away their group allocation to the interviewer.

We acknowledge the potential influence that being aware of the findings from the previous qualitative study, carried out shortly after the PACE-UP intervention was delivered (Normansell et al., 2014), could have had upon our interpretation and analysis. We adopted strategies to mitigate this. However, one further strategy to minimise 'researcher bias' that we would seek to include in future research would be a wider discussion of results with either study participants (also known as member checking (Birt et al., 2016)), experts by experience (those who do/do not exercise) and those involved in service delivery. This approach would further increase the credibility of our findings (Nowell et al., 2017).

Another limitation could relate to my role as a research assistant on the PACE-UP 3-year follow-up. I was responsible for recruiting participants to take part in the follow-up and asking them to wear an accelerometer to provide data for the quantitative evaluation. Participants therefore had prior knowledge of my role in the project and therefore may have felt it difficult to be critical of the trial. However, it could also be argued that

because I had already built a rapport with participants they may be more willing to be open and provide honest feedback.

Implications for Health Psychology

Long-term effects of the PACE-UP trial: Increased awareness

Many participants mentioned an increased awareness of the importance of PA three years post-intervention. In line with the TTM it has been suggested that individuals only proceed to the Contemplation stage when they are aware they engage in too few activities and that awareness of the adequacy of PA levels is important for the motivation to increase activity levels (Ronda et al., 2001). The challenge is therefore how to translate this knowledge and awareness into sustainable behaviour change or, put another way, how do we move an individual into the later stages of the TTM. One's importance of changing, readiness to change, and confidence in ability to change are some of the various dimensions related to motivation toward changing an unhealthy behaviour (Bertholet et al., 2012). Therefore, these aspects need to be targeted to help increase an individual's motivation (a key construct in the COM-B model).

Facilitators and barriers to PA maintenance: Overcoming the barriers

One approach to help people overcome psychological barriers has focused on increasing an individual's self-efficacy (one's confidence in their ability to succeed/perform a behaviour in a variety of situations). Self-efficacy is a central construct to Bandura's SCT (Bandura, 1986), it has been incorporated into the aforementioned TPB (Ajzen, 1991) and PAM (Nigg et al., 2008), increases as an individual moves through the later stages of the TTM and relates to the capability aspect of the COM-B model (Michie et al., 2011b). A key part of self-efficacy theory is that 'the stronger the individual's belief in his or her ability to perform a set of actions, the more likely they will be to initiate and

persist in the given activity' (Lee et al., 2008). For example, someone with high self-efficacy may engage in a more health related activity when an illness occurs or the weather is bad. Self-efficacy is a key determinant of PA behaviour and has been found to be associated with PA adoption as well as maintenance (Sallis and Saelens, 2000, Sharma et al., 2005). Many interventions have therefore focused on increasing self-efficacy (Williams and French, 2011) including determining the most effective BCT to increase this psychological construct (French et al., 2014). Given the evidence that targeting self-efficacy is an effective means of helping people overcome psychological barriers, future research into PA maintenance should focus on building this key construct.

One way to help understand and subsequently develop interventions to overcome barriers to PA maintenance would be to map activities to behaviour change theory. If we retrospectively align our findings with the COM-B model our sub-themes could be categorised into the Capability, Opportunity and Motivation constructs. If this is done at an individual level we can identify which part of this 'interacting system' is absent for each participant. By categorising the findings in this way it would enable us to design interventions or utilise different behaviour change techniques to help individuals overcome their specific barriers and maintain a given behaviour.

For example, if we focus on just one construct 'opportunity'; a participant reporting a lack of time to engage in PA is lacking the physical opportunity to be active. Future research needs to address time as a barrier by supporting individuals to better incorporate PA into daily life or by considering strategies for prioritising PA when there are competing sedentary activities. Efforts to overcome lack of time, should consider the guidelines suggesting that the recommended 150 minutes of MVPA a week can be achieved in bouts of just 10 minutes or more (WHO, 2010), for example, brisk walking is a good way of integrating PA into daily life. Many participants in our study attributed positive lifestyle changes to the PACE-UP trial, for example walking rather than using motorised transport. For those who cited time as a barrier, providing them with examples of how others, also involved in the trial, have successfully integrated PA into their daily routine by finding opportunities (e.g., going for lunchtime walk at work) and

made sustained behaviour changes, may be beneficial. Previous research supports this suggestion, demonstrating that PA advice from realistic exercise leaders, or role models in the community, is potentially more effective in encouraging PA participation than advice from unrealistic role models (Allender et al., 2006, Buman et al., 2011).

Participants had differing opinions over whether retirement would increase or decrease PA levels. For some they saw having more leisure time as an opportunity to engage in additional PA whereas for others changes to their activities of daily living (i.e., no longer walking to the tube station as part of their commute to work) meant they were engaging in less PA. This posits whether retirement, as a transitional point in life, could provide a key opportunity to deliver PA interventions to improve health (Baxter et al., 2016). Events or circumstances which lead individuals to positive behaviour change are known, in the field of psychology, as 'teachable moments' (Demark-Wahnefried et al., 2005) or 'windows of opportunity'. Could retirement provide a 'teachable moment' to reinforce the importance PA maintenance in individuals that are already active and PA initiation for individuals that are inactive? This is particularly pertinent, as previously mentioned, PA can also help prevent loss of independence, frailty and cognitive decline in older adults (McGowan et al., 2017). Whilst we did not unpick the relationship between mid-life/older and working/retired individuals it would be interesting to see whether different barriers and facilitators are important for these participant groups.

Facilitators and barriers to PA maintenance: Transforming PA barriers to facilitators

Another challenge is how to transform PA barriers to facilitators, for example demonstrating the value of PA for many chronic health conditions to change this from inhibiting to promoting PA. Efforts to increase PA need to focus on increasing awareness and confidence about the levels of exercise and types of activities that are not only safe, but may be beneficial for specific health conditions that become more common as people age (Kaewthummanukul and Brown, 2006, Sharma et al., 2005). As aforementioned, by increasing someone's self-efficacy they may be more likely to engage in PA despite having a health condition. Research has also suggested that self-efficacy to overcome health-related barriers to PA is higher in those who participate in

regular PA (Veldhuijzen van Zanten et al., 2015), again this justifies why it is so important to focus on PA maintenance.

<u>What is the added value of this research?</u>

By utilising a mixed-methods approach, the PACE-UP trial provides a valuable insight into physical activity maintenance. Findings from the PACE-UP trial and 3 year follow-up indicate that PACE-UP is an effective (Harris et al., 2018a) and cost-effective intervention (Anokye et al., 2018) that could be rolled out in routine primary care and could make an important long-term contribution to addressing the public health physical inactivity challenge. This qualitative work helps to validate the quantitative findings, it also helps to ensure that participants 'had a voice' enabling us to understand on a wider level why the trial was successful at maintaining PA for some people and why, in some cases, it was not. Furthermore this qualitative work helps us to understand, on an individual level, the barriers and facilitators participants face when trying to maintain their PA levels.

<u>On-going work since publishing the PACE-UP 3 year quantitative (Harris et al., 2018a) and qualitative findings (Wahlich et al., 2017)</u>

Since completing the PACE-UP 3-year follow-up the final Health Technology Assessment (HTA) report has been published (Harris et al., 2018b).

Additional analyses have also been conducted to evaluate intervention effects on long-term health outcomes (related to walking) using routine primary care data. These analyses also combined data from another similar, effective pedometer-based walking intervention conducted by the same team (PACE-Lift), based on 60-75 year primary care patients, which had objective follow-up data at 4 years (Harris et al., 2018a). This analysis involved downloading the primary care data for trial participants who had given consent and counting the number of 'new' health episodes since being exposed to the interventions, over 4 years of follow-up, including cardiovascular events, depression episodes, fractures, falls and diabetes diagnoses. It found that participants in the

intervention groups had significant decreases in new cardiovascular events (Hazard ratio 0.24 (95% CI 0.07 to 0.77) and fractures Hazard ratio 0.56 (95% CI 0.35 to 0.90) at 4-year follow-up (Harris et al., 2018e) These analyses provides further evidence that PACE-UP participants were sustaining their PA levels long-term. They also confirm the importance of conducting qualitative work to understand individual's barriers and facilitators to PA maintenance.

Before implementing PACE-UP, at scale, in the NHS there are a few outstanding issues that need to be addressed:

- *New Technology.* Since the trial was undertaken there has been a dramatic increase in the use of wearable technology for measuring personal PA levels (e.g. smartphones, Fitbits, Garmins, etc) online monitoring and PA mobile apps. Further research has looked at how the PACE-UP 12-week PA programme can be integrated into use of these new technologies, specifically through development of both online support and development of an app to support the paper-based intervention.

- *Recruitment.* Recruiting randomly selected participants aged 45-75 years through the post resulted in an uptake of only 10% overall and with lower uptake in socio-economically deprived groups and South Asians (Kerry et al., 2018). We attempted to increase the reach of the PACE-UP intervention by trialling different recruitment methods in primary care. For example, we recruited through primary care consultations, with a GP or nurse, for chronic health conditions where a PA intervention is indicated (for example through diabetes clinics) as well as through NHS Health Checks (where low PA levels have been identified).

Further details on the PACE-UP Next Steps project (including findings and challenges) can be accessed online: https://doi.org/10.24376/rd.sgul.7308722.v1

Since conducting this work the PACE-UP team have been in discussion with stakeholders (Public Health England, NHS England and the Royal College of General Practitioners) about scaling up the intervention, either as part of the NHS Diabetes Prevention Programme or more widely within primary care.

Conclusion

Interviews with 60 participants three years after taking part in a PA intervention revealed that most reported an increased awareness of PA, regardless of whether they had been in one of the intervention groups or the control group. They also identified perceived barriers and facilitators to being physically active and provided constructive ideas for encouraging PA maintenance which could be incorporated into future interventions. A challenge for future PA interventions is how to transform barriers into facilitators, for example educating participants about the value of PA for many chronic health conditions, to change this from inhibiting, to promoting PA, as it did for some participants.

Limitations of this research are recognised, in particular response, and measurement biases which limit the representativeness of the findings. Future research into maintenance post PA intervention would benefit from addressing the gaps in this research. For example, by accessing groups we were unable to (i.e., those who might have had a negative experience of the intervention and those who chose not to take part in the follow-up). Future research would also benefit from correlating objective PA maintenance data with qualitative responses to determine whether barriers and facilitators were different for those who had and those who had not maintained their PA levels.

Final thoughts

This qualitative work provides a unique insight into why some people do, and some people do not, maintain PA levels sometime after receiving a PA intervention. When developing PA interventions, it is important to remember that each individual is different. To one person something may be seen as a barrier to PA maintenance, but to another it may be seen as a facilitator. As with efforts to change other health behaviours, there is not a 'one size that fits all' approach to helping individuals sustain their PA levels. Whilst costly, to maximise effectiveness, PA maintenance interventions need to be implemented at various levels in line with the WHO global action plan which aim to create active societies, people, systems and environments.

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Appendices

Appendix 1: Interview schedule used in the PACE-UP 3-year follow-up qualitative study

Intervention group

Main questions

1. Can you tell me about what physical activity you did last week? Was that a typical week for you?

2. Do you think taking part in the PACE-UP trial has changed the physical activity you are doing now?

3. Is there anything about the PACE-UP trial that you particularly remember? *i.e. take-home message*

4. Do you still use the pedometer, diary or handbook given to you after the PACE-UP trial? If so, how often do you use them? *If no, do you use anything else? i.e phone, Fitbit.*

5. What normally motivates you to be physically active? Is that different to how it was before you participated in PACE-UP?

6. Would you recommend the PACE-UP trial to family and friends?

7. Are there any additional resources or support that you could suggest that might help to keep you physically active?" i.e family, friends, text messages, online resources, annual visit to nurse, walking groups….

Closing

That was all the questions I had for you, is there anything else you would like to add or think I've missed?

Control group

Main questions

1. Can you tell me about what physical activity you did last week? Was that a typical week for you?

2. Do you think taking part in the PACE-UP trial has changed the physical activity you are doing now?

3. Is there anything about the PACE-UP trial that you particularly remember? *i.e. take-home message*

4. What normally motivates you to be physically active? Is that different to how it was before you participated in PACE-UP?

5. As a participant in the study you may have received a pedometer, diary and handbook after the main trial was over. Did you find these resources helpful? Have you continued to use any of these resources? *Do you use anything else? i.e. phone, Fitbit…*

6. Would you recommend the PACE-UP trial to family and friends?

7. Are there any additional resources or support that you could suggest that might help to keep you physically active?" i.e. family, friends, text messages, online resources, annual visit to nurse, walking groups….

Closing

That was all the questions I had for you, is there anything else you would like to add or think I've missed?

Prompt sheet

Pedometer use

- In what way do you think using a pedometer influences your physical activity?

Barriers to being physically active

- Are there any barriers or difficulties you've had to overcome when it comes to physical activity?

Motivation

- Do you set yourself any physical activity targets/goals? *If yes, prompt more.*

- Do you adopt any strategies to help you stay motivated to be physically active? *If yes, prompt more.*

Peer/social support and physical activity

- Under question 5 if not discussed

Appendix 2: Feedback sent to PACE-UP participants after the 3-year follow-up

PACE-UP 3 year follow-up feedback

St George's University of London

Pedometer And Consultation Evaluation – UP

Why did we do the main trial?
Physical activity is vital for health, yet most adults and older adults do not achieve the recommended 150 minutes weekly of at least moderate intensity physical activity, such as brisk walking (ideally in at least 10 minute bouts). Pedometers increase walking, but most trials have only been for short periods and have not separated out nurse support from the effect of using a pedometer.

What did we want to find out?
Whether inactive 45-75 year olds can increase their physical activity by a pedometer, diary and guidelines and whether tailored practice nurse support increases any benefits at 12 month.

How did we do it?

1023 participants from 7 South West London GP Surgeries were randomised into 3 groups and followed up 3 and 12 months after baseline.

Baseline

Random allocation

CONTROL (USUAL ACTIVITY GROUP) No intervention received

POSTAL PEDOMETER GROUP 12 week walking & pedometer intervention delivered by post

PEDOMETER PLUS NURSE SUPPORT GROUP 12 week walking & pedometer intervention delivered over 3 nurse consultations.

Followed up at 3 months, 12 months and 3 years

What did the 3 year follow-up involve?
In October 2015 we started the PACE-UP 3 year follow-up, to determine whether participant's physical activity levels had been maintained. This involved re-contacting all of the original PACE-UP participants and measuring the physical activity they were currently doing, as part of their usual routine, with an accelerometer. We had excellent follow-up rates both at 12 months and again at 3 years. This meant we were able to collect a lot of valuable data for our trial:

Time points	PACE-UP participants	Follow-up rate (%)
Total number of PACE-UP participants at the start	1023	-
Total number of participants at 12 months	956	93%
Total number of participants at 3 years	681	67%

What did we find?

3 and 12 month follow-up:
We found significant increases in physical activity levels from baseline in both the nurse and the postal groups at 12 months in both average daily step-counts, and time spent in moderate or vigorous physical activity weekly compared to controls. The postal group maintained the increase seen at 3 months with an increase of 640 steps/day and an extra 35 mins of time spent in moderate or vigorous activity weekly. The nurse support group reduced slightly between 3 months and 12 months, and were very similar to the postal group at 12 months.

3 year follow-up
3 years post-baseline both nurse and postal groups continued to have higher physical activity levels compared to the control group (approximately an extra 24 and 28 minutes/week, respectively, compared to their baseline levels of moderate or vigorous physical activity in bouts and an extra 670 and 630 steps/day, respectively). The graphs on the next page demonstrate the findings in pictures.

The graphs show the change in physical activity over time for the different groups:

Weekly time in moderate or vigorous physical activity
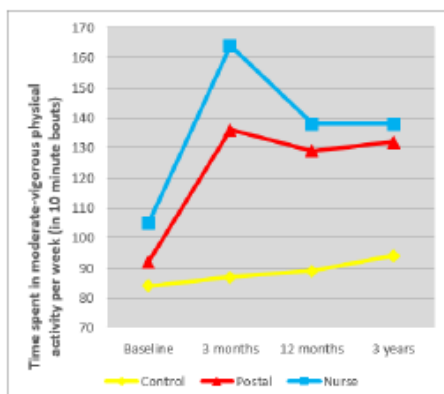
Average number of daily steps
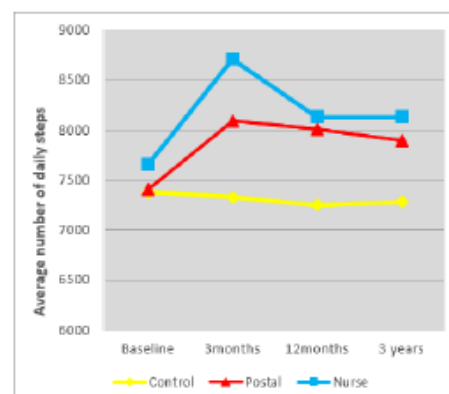
We also interviewed some participants after 3 years to get their feedback on PACE-UP:

'[PACE-UP] reinforced the importance of just keeping up the exercise …. it's a lifelong thing now'

'PACE-UP was actually key in showing me how regular exercise can make me feel so much better about myself'

'I make myself walk more than I did before … now I rarely catch the bus …I'm always walking'

'I started thinking of the physical side of my life, and … how much exercise I was doing and it was informative because I didn't realise that you were supposed to try and get out of breath, once a day'

What do our findings mean?
We have shown that a short term walking intervention can increase physical activity levels over the longer term. The increase in physical activity levels is large enough to affect important disease risks. This is known from research linking physical activity (particularly walking) with onset of heart disease and death. If the increase in physical activity seen in the nurse and postal groups at 3 years was sustained long-term it would reduce both heart disease and deaths by about 4%.

To read our findings in full please see: Harris et al. (2018). Physical activity levels in adults and older adults 3–4 years after pedometer-based walking interventions: Long-term follow-up of participants from two randomised controlled trials in UK primary care. *PLOS Medicine*,15 (3): e1002526 http://journals.plos.org/plosmedicine/

What happens next?
Mindful that people may wish to monitor their physical activity online or via their mobile phones or other monitors we extended PACE-UP to include online resources and we are currently evaluating these resources with primary care patients. In summer 2018 the full report of the main trial and 3 year follow-up will be published in the National Institute for Health Research Library online: https://www.journalslibrary.nihr.ac.uk/hta

If you have any questions or comments about our work or would like to be emailed or posted a full copy of the published paper we would love to hear from you! Please contact:
Charlotte Wahlich (Research Assistant) cwahlich@sgul.ac.uk 07976 043262

The follow-up work was been adopted by the South London CLAHRC: www.clahrc-southlondon.nihr.ac.uk

Thank you very much for supporting the PACE-UP study

NHS
National Institute for Health Research

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SECTION C: PROFESSIONAL PRACTICE

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UNIT 1: GENERIC PROFESSIONAL PRACTICE

Introduction

This report will describe and reflect upon my professional practice as a trainee health psychologist. It details how my role has enabled me to meet the required generic professional skills competence, including personal experiences, obstacles and achievements, outlining how I have developed professionally and as a person.

My decision to pursue a career in Health Psychology stems from studying for my MSc in Health Psychology in 2010 (jointly run by University College London and King's College London). This decision was further reinforced by working as a research assistant on numerous interesting projects including a study which developed a weight management programme for people with learning disabilities. As a result, I enrolled on the full-time Doctorate in Health Psychology in September 2016 at City, University of London.

My two-year journey to becoming an applied psychologist has been very challenging but incredibly rewarding. When I was first introduced to the core competencies, I was unsure how I could complete everything required whilst working in my role as a research assistant, not only would my skills be stretched but my workload was also about to increase. I initially felt hesitant and uncertain of where to start. My workplace supported me fully throughout my training. Through regular supervisions my workplace supervisor and I identified opportunities to meet each of the competencies. I developed a 'say yes to everything (and learn how do it later)' attitude, which meant I

was often out of my comfort zone. However, this approach also meant that I was exposed to many unique opportunities which have taught me many transferrable skills for future situations.

My work experience journey

When I started the Doctorate, I was employed full time on a fixed-term contract at St George's University, London (SGUL) as a Research Assistant on the PACE-UP (Pedometer and Consultation Evaluation-UP) trial three-year follow-up (Harris et al., 2018d). I held this position for a year before commencing the Doctorate. In December 2017 I was offered a permanent position within the Population Health Research Institute, at SGUL, which saw a change in my role; I went from managing a single project to supporting the work of multiple projects (listed below). In this role I have I had to utilise my organisational and time-management skills.

- I am a Research Assistant and Health Trainer on the TARS (Trial of physical Activity assisted Reduction of Smoking) research project aiming to help smokers to cut down their rate of smoking /number of cigarettes using increased physical activity and health trainer support over an 8-week period.
- I led on the PACE-UP Next Steps project which aimed to explore ways to implement the successful PACE-UP intervention in routine primary care.
- I was the study co-ordinator on the CRUNCH breakfast cereal trial which developed and evaluated the acceptability of a high fibre breakfast intervention trial in school children aged 9-10 years old.
- I am the data manager for the ED-CO study which aims to screen for carbon monoxide exposure in emergency departments.
- I have also supported other projects including systematic reviews (e.g. a systematic review on pedometer-based walking interventions).

In addition, I have been involved in teaching at SGUL and I am also a member of the Institute Management Team, attending and contributing to regular meetings.

Highlights of my career progression as a professional include presenting at conferences to individuals from various disciplines and professions (e.g., primary care, behavioural medicine and public health), leading on the PACE-UP qualitative work (also my DPsych research project) and working on many exciting and varied research projects. Working on these different projects has meant I have gained experience working in many different research environments; from primary care, to community and schools, as well as working with client groups of various ages; children, adults and older adults.

In the next section I will outline how my training has allowed me to meet the key components of the Generic Professional Competence.

Professional Autonomy & Accountability

Legal and ethical boundaries of the profession:

I am aware of the British Psychological Society's (BPS) Code of Ethics and Conduct (2018) and the Health and Care Professionals Council's (HCPC) Standards of Conduct, Performance and Ethics (2016). On top of this I regularly ensure that my Good Clinical Practice (GCP) training and my Information Governance training on data security is up-to-date. In my professional and academic roles, I regularly reviewed and reflected upon my practice to make sure I was adhering to the ethical principles of Respect, Integrity and Responsibility and Competence. For example, for my research project, I interviewed 60 participants that had taken part in the PACE-UP 3-year follow-up. I ensured that all these participants understood that their participation in this qualitative work was voluntary, that they could withdraw at any time without giving a reason and that fully informed consent was gained before conducting an interview. Furthermore, in my Research Assistant/support roles I have gained experience building and managing databases which allow for accurate and anonymous information to be stored and transferred securely and confidentially. This has also enhanced my understanding and practice of General Data Protection Regulation (GDPR) and data

protection. Having worked on various research projects with participants from different backgrounds, I always ensure that I practice in a non-discriminatory manner. I understand how to minimise the impact of a power imbalance between practitioners and clients by ensuring I share information transparently.

Exercising professional judgement

Throughout my training as a health psychologist and whilst working at SGUL I have gained confidence in practising as an autonomous professional. An example of knowing the limits of my practice comes from my work with a client on the TARS study. My role as a health trainer involved using motivational interviewing, informed techniques to deliver an intervention which aimed to support and guide individuals to decrease their smoking behaviour and increase their physical activity. During a particular client session, they revealed some very sensitive personal history and also disclosed they had experienced suicidal feelings in the past. During the session I was sensitive to what the participant was saying, reiterated my role, determined whether the client was already getting support elsewhere and sign-posted the client to seek guidance from their GP. I found this session particularly challenging emotionally. Afterwards I sought support from my work place supervisor as well as the health trainer lead on the TARS study. This support provided a reflective space which not only helped on an emotional level, but also on a practical level as it enabled me to get feedback on how I managed the situation. I continued to see this participant for a further 7 weeks after this first meeting. Through regular workplace and academic supervision, I am able to critically evaluate the impact of my work and reflect on my practice. Although I do not have a formal mentor, in this instance, talking to someone independent of this project would have been beneficial to provide an outsider's perspective.

Continuing professional self-development

During my two years of professional practice I have built on my range of previous work experience in research and behaviour change. My academic work, presentations, teaching and conference attendance have all required and enabled me to evaluate new and emerging evidence relating to best practice in health psychology and ensure familiarity with existing and emerging policy documents. My practice has helped to shape my competencies, as well as my desire to develop research that will contribute to clinical practice. In order to ensure my professional competence developed over time, I sought out relevant training opportunities to enhance my learning outside of core work responsibilities. For example, I attended workshops on developing a reflective practice and on implementation science. Also, through regular workplace supervisions I have been exposed to further opportunities such as; participating in meetings with the head of strategic commissioning for public health; presenting a plenary session at The Lancet Public Health conference; developing a website as part of a physical activity intervention; taking the lead on recruitment site-visits at GP surgeries; as well as co-writing blogs and a journal editorial. Attending conferences such as the BPS Health Psychology Conference in 2017 as well as the Practitioner Applied Health Psychology Conference in both 2017 and 2018 has also helped to develop and enhance my knowledge of Health Psychology applications, through networking and learning from others. Before teaching each session in my 'series' of teaching I made sure my slides included the most-up-to-date theories, ideas and case-studies. I also practiced my presentations in front of my colleagues (and welcomed feedback) to ensure that I was well-prepared. This doctorate has taught me that no matter how experienced an individual may be, professional development is a life-long activity which must continue throughout my career.

Professional Skills

<u>Communication</u>

Throughout my role, I regularly liaise with service users, participants (older adults, adults and children), parents, teachers, health care professionals (including GPs, practice nurses, healthcare assistants, and practice managers) and colleagues. I have achieved effective interactions with others by ensuring I change the language I use to suit the audience to which I am communicating. This demonstrates my interpersonal skills and ability to liaise with individuals from varying backgrounds. When working with service users I provide them with the information necessary to make well educated decisions to gain informed consent. Healthcare has shifted from being didactic to patient- centred, therefore I work in partnership with clients to find an approach that works for them. For the TARS study I deliver health trainer support, over an 8-week block, to many different patients, therefore I am well practiced in using my communication skills to initiate, develop and end professional relationships.

Having worked on various research projects, I regularly attend meetings where I provide feedback to the rest of the team about the trial's progress. In such meetings, I communicate well with others and I can recognise and understand other people's points of view.

My verbal communication skills were further developed after attending the internal presentation skills training at SGUL in November 2016. I found this training course incredibly intense, however it really helped me to build my confidence and develop my presenting style. It also highlighted the importance of both non-verbal and verbal communication and demonstrated how these can be affected by culture, age, ethnicity, gender, religious beliefs and socioeconomic status.

Since this training I have presented at numerous conferences; winning an award for the best novice presenter at the Society of Academic Primary Care annual meeting in 2017. In 2016, I also won an award for 'best poster' demonstrating my ability to

communicate using a different medium at The Society for Social Medicine annual conference. In 2017 I was chosen to present at The Lancet Public Health international conference, here I presented in a plenary session, which was a powerful experience and helped me to grow as a public speaker. I have delivered 3 lectures to biomedical BSc students at SGUL. On top of this, I have delivered behaviour change technique training to nurses and healthcare assistants at a local GP practice and this was well received. All of these opportunities have enabled me to champion Health Psychology to a range of different audiences.

Providing psychological advice and guidance

Throughout my supervised practice I have gained experience summarising, tailoring and presenting complex ideas in an appropriate form. For example, when delivering teaching to students at SGUL I present health psychology theories and models in a formal setting. In contrast, when I deliver consultations as part of the TARS study, I am presenting ideas in an informal setting. Working in these contrasting settings has meant that I have honed the skill of explaining the nature and purpose of specific psychological techniques to target audiences (i.e., services users vs. professionals). One example of when I offered relevant advice on psychological issues came about when co-writing an editorial for the British Journal of Cardiology. This editorial (see portfolio) was entitled 'How do we get adults to do more physical activity and is it worth it?' My contribution focused on describing which interventions are effective for increasing and maintaining physical activity levels with a focus on the role of behaviour change techniques (Michie et al., 2013). For this I offered up-to-date knowledge and advice about what I thought should be included in the editorial and wrote the relevant section. A further example comes from when I was contacted by an international researcher, from the Czech Republic, to provide advice and guidance on how to teach behaviour change techniques to students and health care professionals. I offered support by meeting with this researcher and e-mailing them relevant and up-to-date information. Health Psychology is a new and emerging field in the Czech Republic, so it

was exciting to be able to offer this support and knowledge as well as help raise the profile of Health Psychology internationally.

Additionally, whilst working on the PACE-UP Next Steps implementation project I provided advice and guidance on the different behaviour change techniques included in the intervention to ensure they were effectively transferred from paper to a digital resource. I worked as part of a multi-disciplinary team providing expert knowledge to IT professionals who were not familiar with this area.

Building alliances and collaborative working

I am fortunate that my research support role has exposed me to various opportunities that have enabled me to build and sustain professional relationships collaboratively as a team member. I contribute effectively to work undertaken as part of a number of multi-disciplinary teams for example, I am an author on a systematic review (separate to that submitted in my portfolio) working alongside two Professors, the joint co-ordinating Editor of the Cochrane Airways group and a primary care Academic Clinical Fellow. I have really enjoyed working as a team on this project, the sharing of knowledge has made the process of conducting a systematic review more efficient and the regular meetings have helped to resolve any problems quickly. I have also learnt that, when working in a team, it is important to be flexible, to accept constructive criticism and to appreciate your colleagues' different work styles and skills.

One example of when working collaboratively has been more challenging, involves the process of trying to convert the effective PACE-UP pedometer-based walking intervention from paper resources into a mobile application (App). The App development was outsourced to an expert. However due to lack of budget, time scale and the app not delivering exactly what was required, meant the App was not fit for purpose and therefore could not be rolled out. This was frustrating as a lot of time and effort had gone into the development, both by the expert and by the research team. If

I was to work on a similar project again, I would hold regular team meetings with everyone involved in the project to ensure the website and app developers were working in unison from the outset. From being involved in this project I now have a better idea of how long apps take to develop (and subsequently test) and the cost involved. Although this work had its challenges it highlighted the importance and need to engage service users and stakeholders in the planning and evaluating of services, interventions or new products as well as the processes involved in each of these stages.

I have built alliances with different stakeholders such as local Public Health teams, schools and GP practices for various research studies e.g., PACE-UP, TARS and CRUNCH. This further demonstrates my ability to work collaboratively. On reflection, I have found the process of working collaboratively with stakeholders on a specific task e.g., involving an external organisation (i.e., a GP surgery) to help with research recruitment, to be incredibly beneficial and fruitful, however the process can also be quite time consuming. The process involves finding the right person within an organisation to talk to (if not already known), arranging a convenient time to talk with them (often to fit in with their schedule) holding a meeting and then following up on and executing any decisions made.

I have learnt that when working with stakeholders you need to be flexible with your time and that sometimes correspondence needs to be polite but persuasive to get actions achieved. Using this approach, I had to be confident in the request I was making to senior professionals. Although, at times, I found this daunting it was important I remained self-assured to maximise the impact of my advice.

Throughout my practice I have used my two very different supervisory relationships effectively to progress my learning and outputs. My supervisors have commented that I welcome constructive criticism and I am happy to adapt and make changes based on their suggestions or hold my ground when appropriate.

<u>Leadership</u>

Whilst working as the study co-ordinator on the CRUNCH project I led a team of two phlebotomists and two research assistants whilst we were out in the field collecting data in schools. In this role I had to make decisions and allocate work based on the specific boundaries of the individuals' competences. Leading a team in an often time pressured situation (we had to collect fasting bloods from up to 20 children each day, feed them breakfast and complete questionnaires all before 10am) honed my ability to make quick decisions to ensure that data collection ran smoothly and efficiently. This was appreciated by the study principal investigator and I received positive feedback about my leadership as a result. In this context I had to have a decisive and didactic leadership style, whereas in other contexts (for example when working with others to develop the materials and plan the site visits for the CRUNCH study) I had to employ a collaborative leadership style.

In addition, I worked collaboratively with and led a team of co-authors in an in-depth qualitative study which explored barriers and facilitators to physical activity maintenance (please see Section B for a detailed write-up of this work). Overall, the research process involved in conducting this qualitative project went well. I was able to respond appropriately to group dynamics and professional agendas (some of the co-authors were external therefore meetings had to fit in around varying schedules and had to provide enough notice). I also took the lead on writing the associated paper for publication, managing and taking on board diverse comments from the qualitative research team as well as the journal reviewers.

One example of applying the principles of 'change management and organisational development' comes from the TARS study. As a research group we decided that we needed to recruit more GP practices (to recruit more patients) however this required more site visits. Due to insufficient Principal Investigator time to conduct these visits, an organisational development was to train myself and another research assistant to be able to conduct these visits. We have since conducted many site-visits and

successfully recruited three additional GP practices, which has been of great benefit to the project objectives and allowed recruitment to target within the appropriate time scale.

Organisational and systemic issues

I have brought (health) psychology influence to bear through working effectively in several different multi-disciplinary and cross-professional teams within the institutes (for example with GPs, trainee GPs, epidemiologists, nutritionists, statisticians, public health specialists and specialists in behavioural medicine) and this has helped to raise the profile of health psychology and demonstrate its value within the department and beyond. My role in the Institute Management Team has also been an important part of this and feeds into the wider university organisational structure. My work supervisor has allowed me to work autonomously, whilst being available should I need support, which has also contributed to my confidence. The addition of an independent mentor would have been beneficial to provide a sounding board and backstop to any concerns I had as a trainee.

My department at work mainly comprises of epidemiologists, clinicians and statisticians meaning there are individuals with different skill sets that I can learn from. Whilst there is a Professor of Behavioural Medicine, with a psychology background, within the department (who I have been able to go to for support and guidance during my training) I am the only permanently employed trainee health psychologist. During my two years of professional practice I have found this to be both exciting (as it has enabled me to carve out a niche for myself, providing expertise that is not available elsewhere in the team) but on occasion quite daunting. At times I lack confidence in my own knowledge, also known as Imposter Syndrome (Clance and Imes, 1978b), and I feel that I do not have the appropriate 'expertise' to be providing advice on concepts derived from Health Psychology. Acknowledging my feelings and understanding my strengths and weaknesses has enabled me to gain confidence in my practice. It has been important for me to build my visibility within the Institute and adapt my practice

to different organisational contexts. This has been instrumental for my own personal development, but also for Health Psychology as a relatively young profession.

Conclusion

I hope through these sections I have demonstrated how my role enabled me to meet the required generic professional skills competence, including personal experiences, obstacles and achievements. I feel throughout my training I have developed professionally and as a person and I am looking forward to continuing to champion Health Psychology and practicing as a Health Psychologist.

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Service User Involvement Report

Patient and Public Involvement (PPI) can improve the way research is identified, prioritised, designed, conducted and disseminated (Brett et al., 2014). As service users have direct experience of utilising services, they provide a unique insight into what does and does not work and can therefore influence research (and practice) in a variety of ways. Interest in PPI has grown considerably with more/many countries now actively involving service users in research and evaluation (Staniszewska et al., 2017). Many of the major research funding programmes in the UK require researchers to demonstrate PPI in the design of a proposal and if successful, how PPI will be used in the research itself (INVOLVE, 2012). Considering the importance of PPI the Professional Doctorate in Health Psychology at City, University of London encouraged us to involve service users in our training.

PPI involves active and meaningful collaboration between researchers and patients throughout all phases of a project, including planning, data collection and analysis and sharing of findings (Chudyk et al., 2018). It is acknowledged that the case-study below, demonstrating my experience of involving service users in my professional practice, focuses on service users' experiences and evaluations (PPI conducted post-event) rather than their expectations (PPI conducted pre-event). This approach is recognised as a limitation in the conclusions section.

Background

PACE-UP is an effective pedometer-based walking intervention with long-term follow up (Harris et al., 2018c). The intervention aimed to encourage 45-75-year olds to gradually increase their physical activity (PA) and consisted of providing patients with a pedometer, a paper PA diary and a handbook containing a 12-week walking programme.

Since the PACE-UP trial began in 2012 there has been a dramatic increase in digital technology including online monitoring and the use of wearable devices for measuring

personal PA levels e.g., smartphones, Fitbits etc. Further work into how the PACE-UP 12-week physical activity programme could be integrated into use of these new technologies was therefore needed, specifically through development of online support, via a website.

We also wanted to test out different methods of recruitment to primary care to see if this would increase service user engagement. I will discuss the role of PPI in evaluating each below:

Developing the website

The website was developed by an expert in website development at SGUL. Given that PACE-UP had been demonstrated to be an effective intervention, a conscious effort was made to replicate the resources in a digital format. Particularly ensuring the behaviour change techniques embedded in the handbook and diary were transferred to the online materials. Appendix 3 shows the website interface and some of the features of the website.

The website was trialled by the PACE-UP research team and other SGUL team members before rolling it out to service users for further feedback.

Recruiting service users and testing the website

Through building strong relationships with local GP practices and health care professionals, inactive 45-75-year-old service users were recruited from three South London GP practices via three different methods:

1. Face-to-face consultation involved recruitment of individuals who were seeing either the GP or the practice nurse for a chronic health condition, where the practitioner believed that the patient could benefit from a walking intervention.

2. <u>Face-to-face NHS health check</u> involved recruitment of individuals having NHS Health Checks who were identified by the nurse or health care assistant as someone who might benefit from a walking intervention;

3. <u>Postal NHS health check</u> involved recruitment of individuals who had been for a NHS Health Check in the last 12 months and were recorded on the GP system as having low PA levels, and therefore might benefit from a walking intervention.

Service users were recruited via these three different routes to assess the feasibility and acceptability of each approach. These individuals were therefore not PPI members from the out-set, instead these individuals were recruited specifically to feedback on the trial processes. If interested in being involved, service users were provided with a pedometer, PACE-UP handbook, PA diary and details about the PACE-UP website including a registration code. In a 7-month period a total of 42 service users were recruited and given a pedometer pack to trial.

Evaluating feedback

Approximately 3 months after receiving the packs service users were posted an evaluation form to complete (see Appendix 4). The form aimed to explore what service users thought of the way they were recruited; the walking programme; how easy the different resources were to use; any problems encountered and any suggestions for improvements.

Conclusions

The PPI initiative was implemented by the government to give service users a voice to help raise aspirations, drive up standards, provide guidance and facilitate partnerships. Through the aforementioned work I have learnt there are numerous benefits of PPI, in this case the service users provided invaluable insight into whether people prefer to follow the walking programme digitally or using the paper resources. This finding can now be used to inform future work.

The National Institute for Health Research guidelines state that the stages of user involvement include; the development of grant applications, design and management, the undertaking, analysis and dissemination of research (NIHR, 2010). Conducting PPI work throughout these different stages therefore helps to inform subsequent processes. Whilst involving service users after website development has been beneficial from an evaluation perspective, we should have also involved service users in the planning. This would potentially have helped iron out any problems service users found with the website/recruitment methods earlier on in this process. It would been advantageous to run a focus group with service users (i.e., an advisory group) when developing the website to ensure that the users' website needs were captured and represented at this stage of the development. It would also have been interesting to ask their advice on how much support people would need when being introduced to the website to enable us to gauge whether this was a barrier and to provide this resource if necessary.

One challenge I found with this particular project was that PPI work can be very time-consuming, this was because due to the nature of this PPI work, we were recruiting service users via three distinct routes. This would have been different if we had already been in partnership with a group of service users. In this instance, service users were asked for feedback via the mail rather than by setting up a focus group or an advisory board. One way to improve the response rate of the mail-out for feedback on the intervention would have been to offer responders some form of incentive for returning their questionnaire such as a high-street shopping voucher or by providing lunch at an advisory group meeting.

Overall, I believe involving service users in research is incredibly beneficial. PPI offers unique and invaluable insights that can lead to more credible, efficient and effective (and sometimes cost-effective) studies being conducted.

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Appendices

Appendix 3: PACE-UP Next Steps website interface and key features

Appendix 4: Feedback questionnaire sent to service users that used the website

PACE-UP Next Steps

Thank you for trialling the PACE-UP Next Steps digital resources.

We would be grateful if you could answer a few short questions to give us some feedback:

Please tick

1. How useful did you find the PACE-UP Next Steps walking programme for increasing your levels of physical activity?

   ☐ Not at all useful

   ☐ Slightly useful

   ☐ Moderately useful

   ☐ Very useful

   ☐ Extremely useful

2. Do you think that taking part in PACE-UP has helped you to increase your physical activity levels?   **If yes**, by how much?

   ☐ Yes   ☐ A lot

   ☐ No   ☐ A little

   ☐ Not sure   ☐ Not sure

Our records show that you logged onto the PACE-UP Next Steps website.
We would love to get some feedback on our website so we can improve it for future research purposes.

3. Did use the PACE-UP Next Steps website to follow the walking programme?

   ☐ Yes. If yes, for how many weeks _____

   ☐ No – I used the paper resources to follow the walking programme instead

   ☐ No – I did not follow the walking programme at all

4. Did anything stop you from using the website to follow the PACE-UP 12 week walking programme?

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5. Please rate the following features of the website:

	Poor	Ok	Good	Brilliant
Look and feel				
Usability				
Functionality				
Content				
Navigation				

6. Did you encounter any problems using the website? If so, please tell us about them

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7. Would you recommend the PACE-UP next steps website to a friend or family member?

☐ Definitely would not recommend

☐ Probably would not recommend

☐ Not sure

☐ Probably would recommend

☐ Definitely would recommend

8.   What was your favourite feature of the website?

┌───┐
│   │
│   │
│   │
│   │
└───┘

9.   How could the website be improved?

┌───┐
│   │
│   │
│   │
│   │
└───┘

10. Are there any additional comments you would like to make about being involved in

this project?

┌───┐
│   │
│   │
│   │
│   │
└───┘

UNIT 2: CONSULTANCY WORK

Introduction

Consultancy can be defined as 'a formal relationship when one party seeks help from another, the consultant's role being to facilitate the process whereby both the consultant and client arrive at a mutually acceptable solution' (Earll and Bath, 2009). It can also be defined as 'knowledge transfer' from consultant to client (Ko, Kirsch & King, 2005). For my case-study I formed a formal relationship with █████████ ████ and sought to help them (through knowledge transfer) by providing a service to solve a specific problem.

In the following work I will present:

- the request and identification of the need for the health psychology consultancy
- the negotiating, planning and the management of the consultancy project process and
- reviews of the relevant consultancy approaches, theories and techniques and the consultancy methodology, design and implementation plan.

For each subsection I will explain the process, where appropriate include relevant theories and models and reflect on the experience documenting my learnings.

Assessing the consultancy request

The request for consultancy came from ███ a specialised consulting service that aims to measure the benefit of medical products from the patient perspective. ███ provide consultancy services to biopharmaceutical, diagnostic and device companies.

I had contacted ███ previously, offering my consultancy services but at that time there were no assignments available. I was later approached directly by ███ about an

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upcoming project which involved contributing to a literature review on Ankylosing Spondylitis (AS). ■ explained they had been contracted by a pharmaceutical company to help develop a patient reported outcome (PRO) to use with patients with AS. My role would entail support with article filtering, data extraction and report writing. According to Schein (1997) in this scenario ■ are considered the 'contact client' as they made the first contact with the consultant (myself) with a request for help. The pharmaceutical company are considered the 'indirect client', whereby they are affected by the work conducted but remain unknown throughout this process.

Reflection

Whilst the request for consultancy came from an organisation I had little prior knowledge of and the subject area (AS) was not one that I was familiar with (both features not uncommon to consultancy work (Earll and Bath, 2009)) I felt that this role would be very beneficial for my professional development. Honing my article filtering and data extraction skills would be good practice for when I came to write my own systematic review and having input and expertise from ■ will be a useful learning process. Having read Schein's (1997) article on 'The Concept of Client from a Process Consultation Perspective: A Guide for Change Agents' I was aware that the client system in this consultancy work was made up of more than one party; namely ■ and the pharmaceutical company. Whilst I did not have any contact with the pharmaceutical company, I acknowledge the ethical dilemmas of dealing with multiple parties especially if their needs/expectations differ.

Planning the consultancy

Following the initial discussions with the client, we spoke in more detail about the aims and objectives of this work. Unfortunately, due to my work commitments and the ■ offices being outside Central London, a telephone conversation was arranged rather than a face-to-face meeting. Schein (1997) emphasises the importance of 'accessing your ignorance in consultancy' therefore prior to the phone call I was

mindful to read the literature around AS and PROs (Patient Reported Outcomes) to ensure I had some basic knowledge and understanding. I also read up on the aims of ██ including some of their recent publications. I wrote down various questions to ask including queries on resource availability, deliverables, time management, finances and any possible barriers to delivering the outcome:

- *What's the aim of the project?*
- *What's the main research question?*
- *The scope of work – what will it entail?*
- *What's the timeline for the project e.g., when are the deliverable targets?*
- *Hourly pay*
- *Potential constraints to delivering work – conference attendance in January planned, potential delay in returning work.*

The client explained the objectives of the overall project were to:

1. Review the recommendations on the assessment of AS impact on patients' lives as described in guidelines from regulatory authorities.
2. Review the PRO commonly developed for and used in AS and their measurement properties
3. Review the PRO instruments and/or concepts used in on-going clinical trials in AS

It was agreed the 'scope of my work' would be to:

- Filter literature abstracts and articles on basis of inclusion/exclusion criteria provided by ██
- Source articles
- Assist with the creation of tables/ documents on basis of ██ templates

The client explained the final report was due in 2 months. Due to the pressing deadline of this work, I thought it important to be transparent from the out-set about the

amount of time I could realistically dedicate to this project in order to manage expectations. I told the client that I could commit 5-7 hours each week.

Reflection

After this phone call I had a clearer picture about what the work entailed and the end goal of the project. This consultancy work appealed to me because of its flexibility, meaning I could work my contracted hours around my usual 9-5 working day. I was mindful that taking on additional work might become burdensome, as I would have to make time for it in an already busy schedule.

Prior to receiving my first task from ▮▮, I felt anxious about the pressing deadline and only being able to provide 5-7 hours of support a week. However, I trusted that the client would allocate me achievable tasks and I felt confident I would be able to provide the full 7 hours a week of support if required. I usually work towards a goal by creating a Gantt chart so that I can keep track of my progress, however given that I was unaware how many tasks I would be sent throughout this consultancy period I felt there were too many unknowns to create a Gantt chart. For this project I did not think to ask the client if they had their own Gantt chart they were working towards. For future consultancy opportunities, I will ask to see the client's project schedule. This would enable me to monitor the work done/production completed in relation to the time allocated for each task. Not knowing the full scope of the work meant I went into this consultancy work with trepidation, however I still felt enthusiastic about the unknown.

Establishing working relationships with the client

A supporting relationship is vital to a successful consultancy partnership. It was agreed from the start of the consultant-client relationship that contact would be maintained

via email and that any problems could be shared openly. When conducting the consultancy work, I had a few queries over specific tasks. For example, one task was to review 230 quantitative abstracts related to AS. The aim was to identify any studies that used PROs i.e., questionnaires or rating scales completed by the patient and to document details of the PRO used. Whilst completing this task I had a query over one particular measure - *Ankylosing Spondylitis Disease Activity Score* (ASDAS). It is both a self-report and an objective measure (specifically it's a PRO but also looks at a patient's protein levels). I asked ███ how they would like this measure classified. It was decided that the ASDAS measure should be classified as a PRO as it does contain self-report elements.

I conducted the consultancy work remotely therefore I did not have regular meetings with the client to monitor the consultancy process. Based on Granovetter (1985) work on the social embeddedness of economic relations, Kitay and Wright (2004) outlined two different consulting roles, one related to the extent to which the consultant is external to the client organisation (termed as the 'outsider' role) and the second was termed the 'insider' role whereby the consultant develops a range of social ties with the client so that the boundary between the client and consulting organisation is blurred. Both of these roles have their advantages and disadvantages; for the outsider role the consultant is distanced from company politics and not restricted by the organisational culture; however, they miss out on networking opportunities. As an 'insider' the consultant is better able to understand the client's needs and assist in the implementation of their recommendations. However, a problem with this approach is the client may become dependent on the consultant resulting in huge expenditure (e.g., money) and the 'insider' role may be more influenced by organisational culture. During my time with ███ I took on the traditional 'outsider' role whereby I was viewed as an external 'expert' brought in to provide advice about a specific problem where the internal managers ███ were ill equipped or unsure of the best strategy or solution (Kubr, 2002).

Reflection

I always try to build and maintain good working relationships, this helps make work enjoyable and satisfying. My working relationship with ▇ was positive and professional. Being an 'outsider' and working remotely allowed me a lot of flexibility, however I feel I may have missed out on some opportunities a face-to-face ('insider') role may have afforded me such as; networking, social support, experience working within another organisation, the opportunity to build an enhanced rapport with my client as well as regular face-to-face meetings to review the progress and outcomes of the consultancy work. Similar worries were evident in a study by (Cooper and Kurland, 2002) which found that remote workers had concerns over the lack of development opportunities offered to them, including informal learning and mentoring from colleagues. Previous research has found that for some individuals remote working is associated with higher levels of job satisfaction (Baruch, 2000) and increased autonomy (Kelliher and Anderson, 2008), while others have found feelings of isolation impacting negatively on job satisfaction (Cooper and Kurland, 2002) and job performance (Golden et al., 2008). If the consultancy work went on for longer than 2 months, I feel I would have benefited from face-to-face contact with the client as I was starting to feel slightly isolated. If I was to conduct this consultancy work again, I would have made time to visit the client from the start of the contract to cement this relationship as this could be key to successful and accurate completion of the tasks.

Conducting the consultancy

The project ran from January 5th – March 4th 2017 and consisted of 13 tasks which were sent through via email with instructions and details about specific deadlines. Some deadlines were set by ▇, for example for one task they explained that it was pressing and asked for it to be returned the following day. Although this task required a quick turnaround, I managed to get this work completed. Other deadlines were set by me, for example for one task I explained to the client that I would be at conference

and probably would not be able to work on the task until the weekend. I thought it best to make this clear to manage expectations and to be upfront about when I would have the work completed.

For the nature of this consultancy work, I felt my responsibilities fell into the category of the "pairs-of-hands" role. Here the client is able to carry out the job themselves but might lack the time to engage in the work on their own and therefore requires some help (Block, 1981). The client already had a clear idea of the nature of the task (in this case this was dictated by the pharmaceutical company that had contracted █████) and as a result the client proposed the timescales. The consultant simply acts as a skilled executor of specialised knowledge (Block, 1981) otherwise known as an 'expert' (Brunning et al., 1990). This means that the client retains full control not just over the nature of the goal to be achieved, but is also in charge of making decisions over the required plans and changes in procedures (Block, 1981). This was evident by █████ having a clear outline of what they needed to achieve and dictating what tasks they needed completing and by when. As a result, the consultant's role is passive. Communication and collaboration between the client and the consultant is limited to requests for clarification and requests for feedback at agreed stages (Block, 1981). Since there is little communication the consultant is required to carry out the work independently. This role can also be described as the 'purchase model of consultancy' where the client purchases expert information or service (Schein, 1988).

It can also be termed, in part, as a 'technical expertise' style by Brunning et al. (1990) whereby I acted as the 'expert' providing a service to the client. As Schein (1997) points out, this model is consistent with some basic assumptions:

- *The client's diagnosis of the problem is accurate* – I felt ████ clearly understood the needs of the pharmaceutical company. Given their experience with similar projects they were well placed to understand what was required.
- *The client has accurately communicated their 'needs' to the consultant and they have understood the request* – ████ clearly communicated what was required

for each task through detailed emails and offering further guidance over the phone if needed.

- *The consultant has the ability and skills to fix the problem and meet the client's needs* – I had the right set of skills to support the client with this project in turn I felt ██ regarded me as sufficiently skilled and able to provide the service required (Schein,1988).
- *The client has thought through the consequences of obtaining the expertise* – A contract was drawn up prior to starting the work which detailed important topics such as where the responsibilities lay and the obligations for each of us etc.
- *The client has responsibility for any negative consequences of the consultancy* – The client retained full control over the work. For example, the client dictated the tasks to me, ██ was liaising with the pharmaceutical company directly, and I had no contact with them.

Reflection

Whilst I felt I had sufficient knowledge of the methodologies required to complete each task and perhaps could be considered an 'expert', I did not feel I was an 'expert' on the topic of Ankylosing Spondylitis. On reflection, I felt my role was simply assisting a larger project. Whilst I learnt new skills and increased my knowledge on the topic through preliminary reading and completing the tasks, overall, I did not feel like I had any ownership over the work. Previous work has suggested that this sense of 'ownership' is key to work-related attitudes such as commitment and satisfaction and behaviours including work performance (Van Dyne and Pierce, 2004).

Reviewing the process and outcomes of consultancy

Halfway through my consultancy ██ sent an interim report. This report had been collated for the pharmaceutical company to document ██ progress (including my work) so far. I was particularly interested to see how the findings from the tasks I had

completed had come together to produce the recommendations for the
pharmaceutical company.

Reflection

*Whilst the interim report provided a good measure of the consultancy outcome for the
pharmaceutical company, I was unaware of what the pharmaceutical company
thought of the work to date.*

*When returning each completed task, via email, I regularly asked the client for
feedback and to let me know if they wanted anything done differently. Unfortunately,
throughout my consultancy I was underwhelmed with the amount of feedback I
received. I found this element of the consultancy particularly challenging as I was
unsure whether what I was doing was correct. As this was my first ever consultancy
work I felt I lacked confidence in my 'expertise', this feeling has been termed 'Imposter
Phenomenon' (Clance and Imes, 1978a) whereby an individual doubts their
accomplishments and have a persistent fear of being exposed as a 'fraud'. Previous
research has suggested that Imposter Phenomenon is especially prevalent when taking
on new roles, which explains why I sought reassurance from the client in this new role.
In hindsight, I could have also sought further support from others such colleagues who
have expertise in conducting literature reviews.*

*At the end of my contract I sent the client an evaluation form, which I had developed
myself, to complete (see Appendix 5). I felt asking for in-depth feedback would enable
me to address any critiques before conducting future consultancy work.*

*On receiving the feedback, I was pleasantly surprised to see the client had rated me
excellent for: communication, decision making, problem solving, initiative, quality of
work completed and meeting deadlines (see Appendix 5).*

Evaluating the impact of the consultancy outcomes

The evaluation of a project needs to be clearly linked to the aims and objectives (Earll and Bath, 2009).

My consultancy work was conducted for a consultancy company who were in turn providing a service for a pharmaceutical company. This meant that I did not have immediate contact with the 'indirect client'. Whilst ▮ were happy with the work that I conducted for them and they felt I met the objectives outlined at the start in good time (which is backed up further by my evaluation feedback), I am unsure what influence/impact the work I conducted had.

Reflection

I find it slightly frustrating that I am unaware of the impact my consultancy work had and what the pharmaceutical company thought of the final report and literature review produced. The only 'outcome' I was shown was the interim report which was sent through to me to review towards the end of my consultancy tasks. Throughout this consultancy work I felt somewhat removed from the end outcome as I did not have contact with the 'indirect client'. For future consultancy opportunities I would like to have the confidence to ask the right questions in order to understand the wider impact of the work conducted (i.e., asking to see a copy of the final report).

Overall Reflection

Having completed the 2-months consultancy work and having had some time to reflect on the experience, I feel I undersold myself. I was conscious not to come across as inefficient to the client both because I wanted to get positive feedback and because I wanted to be considered for future consultancy opportunities. This meant that I reported logging less hours work than I had actually put into each task. At the time this discrepancy between hours conducted and hours logged did not warrant any thought

but looking back on this experience I am frustrated that I was not more honest about the number of hours worked. Underselling myself from the start could have potential impact in the future for example, I may be offered less hours in the future, be paid less for the work that I do or could be expected to complete a task within an unrealistic timeframe. This could also breed discontent which could negatively impact my work.

In the future I think it is important that the baseline is set in my favour from the start of consultancy period either by negotiating extra time; asking for a higher hourly rate or by being paid per task (rather than per hour).

Overall during this process my confidence has grown, in both the skills needed to secure and conduct consultancy work as well the skills needed to conduct a literature review and succinctly summarise documents. There are still some areas I feel I would benefit from exploring further, such as negotiating being paid per task rather than being paid per hour and conducting a consultancy project which involves direct contact with the client. I feel this dynamic would alter the client-consultant relationship and enable further skill development. I also feel I was somewhat naïve in finding out more about the outcomes/impact of the consultancy work and how the pharmaceutical company benefitted from the work.

The Consultancy Contract

The following outlines the development, negotiation, review and evaluation of a consultancy contract, which was agreed between a chartered health psychologist and Mixed Methods Senior Scientist at ▮▮▮▮▮▮▮▮▮ (i.e., the client) and me (i.e., the consultant) on the 5th of January 2017. The work involved helping with a literature review which was being conducted to help a pharmaceutical company develop a new patient reported outcome for the disease ankylosing spondylitis.

Project negotiations

Access to this consultancy opportunity was gained through a third-party referral. I was introduced to ▮▮▮▮▮▮▮▮▮▮ by one of the lecturers at City, University of

London. During the consultancy workshop I mentioned that I was looking for an opportunity for my DPsych and ███████ thought I might have the time and skills to undertake a consultancy post with ██.

As detailed by Oakes (1990) trust in a client-consultancy relationship is "essential to commercial transactions that are not fully controlled by either legal constraints of contracts or the economic forces of markets". This type of third-party referral, as pointed out by (Glückler and Armbrüster, 2003), has the advantage of building trust in a client-consultant relationship because the opportunity was communicated by a trusted acquaintance known both to myself and the client.

Keen to secure some work I emailed ██ introducing myself, explaining I was studying for the DPsych and offering my input and expertise for any upcoming projects. I also attached my CV as evidence of my ability and credibility (two more important components that can enhance trustworthiness (Nikolova et al., 2015)). By sending my CV to the client (███) it enabled them to see my previous experience and skill set and for them to match my knowledge with an appropriate project. The client explained that most of their consultancy opportunities involved conducting literature reviews and qualitative analysis and that they would keep me in mind for future opportunities. In mid-December 2016 the client made contact about a project they 'would definitely need additional support' undertaking. The project involved contributing to a literature review on Ankylosing Spondylitis (AS).

The client was mindful of my full-time Research Assistant post at St George's and asked what my availability was like over the next 2 months and how many hours a week could I allocate to a consultancy project like this.

I replied and expressed an interest in being involved in this work, however I felt I needed some clarity about what the role would entail:

- I explained I could commit to a few hours a week to the project, but I asked where I would be conducting the work i.e., at their offices or in my own time at

home? If at their offices, I would have to factor in travel time which may have impacted the number of working hours I could offer.

- I also approached the subject of money and asked whether this was paid work or voluntary. I felt it was important to be transparent from the off-set so thought this was an appropriate time to discuss pay, especially as integrity is a core component of the HCPC and BPS ethical guidelines (BPS, 2018, HCPC, 2016). The pay for this project was a set hourly rate. I did not feel it appropriate to try and negotiate a higher rate, especially as this was my first ever consultancy contract and therefore, I lacked the experience and portfolio to warrant a potentially higher pay grade.

The client suggested they call me for an informal chat to outline the scope of the work in more depth. Through discussions the client confirmed I could work remotely with an initial face-to-face meeting to discuss the details of the project. They explained they usually work by setting deliverable targets with set dates, but the actual working hours could be flexible e.g., evenings or weekends.

After discussions with my work placement supervisor at St George's, to ensure they were happy with me taking on this commitment and reassuring them that it would not affect my 9-5 role, I confirmed with the client that I would be interested in supporting the project.

Timescales and deliverables

When talking to the client on the phone they advised the contract would be for 2 months, as they had a deadline towards which they were working. The client explained that the tasks would be sent via email, sometimes a few at a time, once the previous task had been completed and sent back.

The tasks included: article filtering, data extraction, summarising documents, mapping qualitative findings to PROs, updating tables and writing part of the interim report. I

was excited to undertake this work as it provided me with an insight into the process of conducting a piece of consultancy work and the different steps required.

The contract

As Kubr (2002) highlights, the entry phase of consulting can be regarded as successfully completed when the consultant (in this case myself) and the client (█) finalise a contract whereby they agree to work together on a project.

After talking to the client, I had more information to make an informed decision about whether to accept this consultancy opportunity. Having reflected on the benefits of taking on this work I accepted this opportunity, via email, a few hours after the initial phone call.

Due to the nature of the tasks being relatively straightforward, and the client's deadline to deliver the outcome as soon as possible, the contracting phase of this project was very short. After the initial phone call with the client a contract was sent through. The full terms of the consultancy were noted within a written contract (see portfolio for a copy of the contract). Given the pressing time scale of the work the contract was dated for the work to begin the following day with the contract terminating after 2 months (January 5th – March 4th 2017). The contract outlined my responsibilities, the obligations of both parties and specified confidentiality agreements.

I carefully reviewed the document, clarifying anything about which I was unsure, before signing the contract and returning. For example, one thing I was unsure of was whether to write my personal address on the contract or my work address. I decided to use my personal address as conducting this work would be separate from my 9-5 job. I also had someone with experience in conducting consultancy work look over the contract for any loopholes I may have missed. For a piece of work this size, I did not

seek legal advice on this contract but I acknowledge in the future this may be necessary when conducting larger more complex pieces of work or when the consultant and client come from different business and legal environments and may misinterpret each other's intentions (Kubr, 2002).

Contract revisions

There was only one iteration of the contract and no revisions. The first contract was formally agreed by both parties.

Summary of meetings and correspondence

After our initial telephone conversation all other communication was done via email. I did not meet face-to-face with my client at all during the contracted period.

The client and I established a good relationship from the offset. Our email correspondence remained professional throughout the contracted time period. I found the client approachable and responsive to my queries. I felt confident that if I did have any major queries or problems, I was able to contact them for advice and guidance. I was transparent about when I could complete each task which I hope enabled the client to plan future tasks and upcoming deadlines (Rosenfeld and Denice, 2015).

At the end of the contracted period the consultant-client relationship was left on good terms. I explained to the client that I had enjoyed the role, in particular the variety of the tasks and seeing how all my work had come together to inform the interim report. I also expressed an interest in helping with future projects.

An example of our email correspondence:

I am glad you enjoyed this task. We essentially conduct this item mappings to evaluate whether the conceptual content of specific PRO instruments is relevant in a disease population - this was the first time we did it without empirical qualitative data - so we usually match quotations directly with the items - but I was pleasantly surprised at the results.

You did an excellent job. Could you please add the number of items next to the percentages for each case on sheet 2 and resend me the spreadsheet?

Best wishes,
S

From: ███████████████████████████
Sent: 11 February 2017 15:11
To: █████████ ████████████████████
Subject: Re: UCB1104 Next Task - Item Mapping

Please find attached my completed spreadsheet. I've also attached the Lit review and coloured in red the qualitative findings that have been mapped.

I particularly enjoyed this task so I hope I have done it justice! Any feedback please let me know.

Looking forward to the next task.

Best wishes,
Charlotte
_____
From: █████████████████████████████████
Sent: 08 February 2017 11:34
To: ████████████
Subject: UCB1104 Next Task - Item Mapping

The next task for this review once you complete what you are working on is to provide a mapping exercise between the qualitative findings and the 55 items of a fatigue instrument.

We usually perform these types of tasks with empirical qualitative data that we collect ourselves i.e. compare patients` quotations to items of a questionnaire. In this case the mapping will need to be a bit more top-level since we only have the findings not the actual quotations.

On sheet 1 of the spreadsheet, you will find the 55 items of this instrument, for the mapping please add the relevant finding and study author and classify whether you think this is an explicit or implicit match or no match in cases the findings cannot support that item. If there is more than one example in the data supporting an item just choose the most supportive one. By explicit match we mean that from the findings you see a clear direct support of the item. Implicit match we use for cases where we believe the data are essentially supporting the item but let`s say the language used is not 100% the same so we are making an inference that there is support for it.

Evaluation and feedback

Evaluation can be considered one of the key parts of termination in any consulting process. Evaluation enables the consultant to assess whether the assignment has met its objectives and to define the changes achieved. It has been suggested that this phase can be the most trying of a consultant-client relationship and there may be a tendency to avoid it altogether due to a fear of a negative response (Kubr, 2002).

I was keen to receive feedback on my work as I was unsure throughout the consultancy period whether I was meeting the brief. About a week after the contract had ended, I sent the client a feedback sheet that I had designed myself (see Appendix 5). This feedback sheet asked the client to comment on various attributes, for example my communication skills, accuracy, initiative and quality of work. To encourage the client to rate each attribute as either 'good' or 'poor' I chose to have only four response options removing the fifth middle 'neutral' option. At the time I made this decision because I was keen to acquire valuable feedback from the client to learn from before embarking on my next consultancy project. However, on reflection, it would have been more appropriate to include the fifth middle 'neutral' option to allow the client the opportunity to make this response if required. For each attribute I provided a narrative description so that the client knew what I meant by each of the terms. For example:

Initiative: 'Did the consultant propose any sound innovations? Did the consultant need more or less assistance than usual with the arrangements?'

The client provided reassuring feedback with which I was pleasantly surprised (see Appendix 5) and will take into my next consultancy role.

In the future I would also consider implementing an 'interim evaluation' to give the client the formal opportunity to suggest any improvements in the assignments during the consultancy process (Kubr, 2002).

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Appendices

Appendix 5: Client feedback on consultancy work

Performance Evaluation of Individual Consultant

Name: Charlotte Wahlich
Employer: ██████████████
Role overview: Client
Contract period: January 4th – March 4th 2017
Total number of hours worked: 50

Criteria	Rating				Comments
	Excellent	Satisfactory	Unsatisfactory	Not applicable	
1. Communication	✓				
2. Decision making/problem solving	✓				
3. Initiative	✓				
4. Quality of work completed	✓				
5. Meeting deadlines	✓				
6. Other (please specify)	N/A				
Overall performance	✓				

Reviewer's comments: It was a pleasure working with Charlotte, her communication skills as well as the quality of her work was excellent. Charlotte was engaged with the work and took the initiative to suggest alternative options or identify issues where necessary. The work was delivered on time and in very good quality both in terms of content and presentation. She also regularly asked for feedback on her work to ensure it met our expectations.

Evaluated By: ■	Date April 6th 2017

Narrative Descriptions of the Performance Evaluation Criteria

1. Communication
   - Did the consultant communicate clearly and efficiently? Did the consultant ask for any guidance if they needed help?

2. Decision making/problem solving
   - Did the consultant thoroughly investigate, understand, analyse, and report on all the aspects of the assignment?

3. Initiative
   - Did the consultant propose any sound innovations? Did the consultant need more or less assistance than usual with the arrangements?

4. Quality of work completed
   - Assess whether the quality of the consultant's outputs was fully satisfactory and met with the proposed research tasks.

5. Meeting deadlines
   - Did the consultant meet the proposed deadlines?

6. Other:
   - If there are any other aspects of the consultant's work you would like to comment on please list in this box.

UNIT 3: PSYCHOLOGICAL INTERVENTIONS

CASE STUDY 1 – Delivering an intervention face-to-face with an individual client

Setting: Patients were recruited as part the TARS (Trial of physical Activity assisted Reduction of Smoking) study. Patients either had sessions face-to-face (in their GP practice) or over the telephone.

Target clients: Adults aged 18 or over, who smoke over 10 cigarettes a day, who wish to reduce (but not quit) their smoking.

Description of work: An 8-week intervention programme delivered by a health trainer which aims to reduce smoking through increasing physical activity (PA).

<u>Background</u>

According to statistics from Action on Smoking and Health (ASH), around 10 million adults in the UK smoke. Although smoking prevalence has declined, smoking still remains one of the main causes of preventable morbidity and premature death in England (Buck and Frosini, 2012). ASH claims that around two-thirds of current smokers want to reduce smoking, but apart from e-cigarettes, and other nicotine replacement therapies, little support is available to help them. Research has suggested smokers who reduce the amount they smoke are more likely to make a quit attempt (Begh et al., 2015).

A pilot study which recruited smokers from Plymouth showed preliminary evidence that providing Health Trainer support to reduce cigarette consumption and increase PA, may reduce smoking rates, encourage more quit attempts and increase short-term abstinence (Thompson et al., 2015). Following on from this pilot, TARS was developed. TARS is a multi-centred parallel, two group, randomised controlled clinical trial, to

compare (i) tailored support to reduce smoking and increase PA as an aid to smoking reduction with (ii) brief advice on ways to reduce or quit smoking.

My role in TARS involved working as a Health Trainer meaning I was responsible for delivering the psychological intervention. This intervention was based on Self Determination Theory (Deci and Richard, 1985) and informed by Motivational Interviewing (Miller and Rollnick, 1991).

The main aims of the intervention were to determine:

- Whether additional behavioural support for an intervention promoting smoking reduction through increasing PA, compared to support as usual, significantly increases the proportion of participants who achieve prolonged abstinence at 9 months post baseline
- Whether the intervention, compared to support as usual, increases the proportion of participants who reduce self-reported cigarette smoking by at least 50% at 3 months and 9 months post baseline compared to baseline smoking levels
- Whether the intervention, compared to support as usual, increases PA levels

Selecting, designing and implementing the intervention

Having worked on TARS since January 2018 I have delivered the intervention one-to-one to over 15 patients, however for this write-up I am going to focus on one patient who I will refer to as 'patient N'. I have chosen this patient because they made considerable changes during the intervention in terms of their behaviour and attitudes.

In March 2018 I was notified via email, from the TARS trial team, that patient N had been allocated to receive the intervention. I called the patient to introduce myself, outlined what the health trainer sessions would involve and arranged our first session. The initial session took place at the patient's GP surgery in South West London. For this session I took with me: an audio recorder, a consent form, a pen, a pedometer, a

smoking diary and a fridge magnet which allows people to record the number of steps they've walked and their total number of cigarettes smoked per day.

The intervention was based on Self Determination Theory (SDT) (Deci and Richard, 1985). This theory was predetermined by the TARS research team. SDT examines why people adopt unhealthy behaviours and helps understand what can be done to promote lasting behaviour change. A part of SDT known as 'basic needs theory' suggests that people have three fundamental needs which sustain their behaviour, also known as the 3 'Cs' – Connectedness, Competence and Control (Figure 9). SDT states that if individuals feel connected (with others and/or nature), feel competent (confident) and in control (have choices) then this will increase their self-esteem which will in turn aid behaviour change.
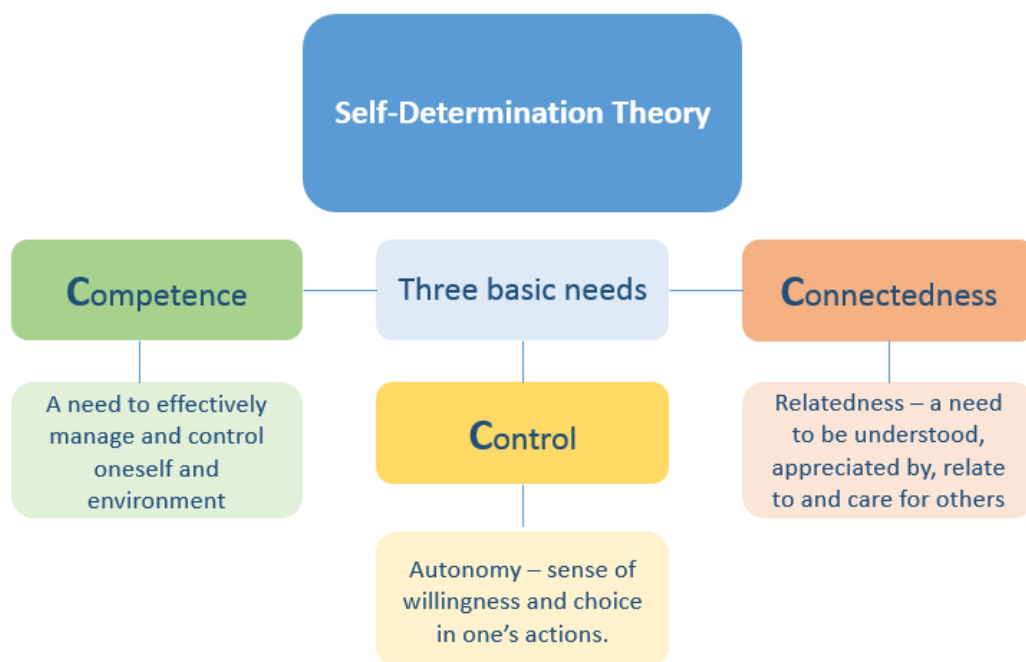
Figure 9: Self-Determination Theory

One theory in-line with the idea of 'readiness to change' is the Stages of Change Model, also known as the Trans-Theoretical Model (TTM), (Prochaska and DiClemente, 1982). The theory assesses an individual's readiness to act on a new healthier behaviour and provides strategies, or processes of change to guide the individual. This model posits that individuals go through five distinct stages when making a change:

pre-contemplation, contemplation, preparation, action and maintenance. The TTM is a common framework for studies of smoking cessation, however it has been considered controversial to use this model in this context as it has received a lot of criticism (West, 2005, Etter and Sutton, 2002, Littell and Girvin, 2002). One argument against the model is that it is more cost effective to invest time in someone who wants to quit vs. trying to move an individual through each of the stages. Stages of Change has not yet been applied to smoking reduction. Within the context of this trial we were only interested in those who want to cut down (action), rather than anyone at a different stage of the change process e.g., pre-contemplation (someone considering reducing) or maintenance (someone who has already cut down and wishes to sustain their behaviour).

I used the principles of Motivational Interviewing (MI) (Miller and Rollnick, 1991) to guide how the intervention was delivered. It has been argued that SDT may offer the theoretical backing that has historically been missing from MI and MI may offer SDT clinical techniques to translate its theoretical concepts (Patrick and Williams, 2012). SDT and MI have similar underlying assumptions both drawing upon the idea of unconditional positive regard and patient centeredness (Patterson and Joseph, 2006, Rogers, 1995), with this in mind the two were used in conjunction in this intervention.

The key principles of MI are:

- Empathy – this involves seeing experiences through the client's eyes.
- Self-efficacy – this refers to building a sense of competence (this has a direct link to SDT) to support the individual to 1) carry out the behaviour and 2) to overcome obstacles.
- Roll with Resistance – this involves listening to resistance rather than fighting or challenging it, this can be achieved by listening with empathy.
- Develop discrepancy – this can be achieved by highlighting the difference between where the participant is now and where they want to be.

Before delivering the intervention, I attended a 3-day training course which was run by Plymouth University (the lead site for the TARS trial). This training course built on and

extended skills and knowledge that I possessed as a trainee health psychologist and prepared me to deliver this intervention effectively.

I used different techniques to elicit a client-centred empathetic, understanding and trusting nature between myself (the practitioner) and patient N (the client).

These techniques included:

- Open ended questions "how does that make you feel?"
- Affirmations "You clearly have a lot of will-power"
- Reflection "It sounds like you…"
- Summaries "Let me see if I understand so far"
- Reframing
- Shifting focus
- Ask-tell-discuss "Do you mind if we talk about something that's worked well for other people?"

The initial session provided a chance to get to know the patient and explore their motivations for wanting to reduce smoking, current smoking habits, PA levels, previous reduction/quit attempts and what a 'typical' smoking day looks like. Through building a rapport, I assessed patient N's needs by gathering a detailed history of their smoking behaviour. The questions I used included:

- Can you tell me about a typical day from start to finish, trying as much as possible to describe when you smoke?
- What social influences do you face in terms of your smoking?
- How confident do you feel about reducing your smoking? Scale question (see below).

Developing a working formulation model

Rollnick et al. (1999) argue that for someone to be ready to change they need to have the confidence that they can make the change and change needs to be important to them. During this initial session, importance and confidence scales were used as assessment tools to measure readiness to change and to determine how important it

was for patient N to reduce their smoking and how confident they felt about reducing their smoking (Bertholet et al., 2012). I utilised these scales to establish how important it was for patient N to reduce their smoking (8/10) and how confident they felt about being able to do this (5/10).

Through this initial assessment I was able to link the patients' needs to the SDT 'basic needs theory'. Whilst it was very important for patient N to reduce their smoking they did not feel very confident about achieving this goal. Therefore, I was able to establish that their sense of 'competence' was relatively low. I also used this session to gauge where patient N felt in terms of 'connectedness' with others. Patient N spoke about missing out on social opportunities because they smoke. Patient N spoke positively about the aim of the TARS programme and how it appealed to them because they were fed up of people telling them to quit. They said that the TARS approach meant they had more 'control'. By establishing to what extent these three basic needs were satisfied I was able to develop a working formulation model of what to address in our subsequent sessions, specifically the need to increase patient N's sense of confidence and connectedness.

Providing feedback on the outcome of the assessment

Formulation can be described as a structured approach of relating theory to practice (Johnstone, 2014) . As a health trainer I used my clinical skills to combine theory/evidence with 'practice', otherwise known as making sense of the client's personal thoughts, feelings and meanings (Butler, 1998).

During my first session with patient N, I established patient N's main motivation to reduce their smoking was their health, they reported feeling breathless and this was in-turn affecting their fitness. At this stage the client was unaware of how much they were smoking but used the term 'chain smoking'. To 'develop discrepancy' we discussed how smoking was impacting the patient's lifestyle (unable to go to the cinema or travel on the underground as they were unable to go that long without a cigarette) and where the client sees themselves in 5 years' time (no longer a smoker, travelling to different countries). By developing discrepancy, it helps to focus the

client's attention on how their current behaviour differs from their desired behaviour and therefore acts as a motivational tool.

To increase patient N's confidence, I used open-ended questions to discuss what had worked well for them during previous quit attempts. Patient N spoke about distracting themselves from wanting a cigarette through doing something they enjoyed such as exercise, reading or keeping fit.

Given the intervention aims to reduce smoking through increasing PA, when patient N mentioned exercise I used this 'in' as an opportunity to explore ways in which patient N may be able to incorporate more activity into their daily routine (i.e., walking rather than getting the bus). Patient N spoke about how they used to walk more than they do now, using open-ended questions I explored the reason for this reduction in activity.

We discussed setting an objective for next week. Patient N did not want to set a goal (in terms of the number of cigarettes they wanted to reduce by) so I 'rolled with resistance'. Using the 'ask, tell, discuss' technique I suggested that it may be a useful exercise to keep a smoking diary to monitor the number of daily cigarettes smoked and rate each cigarette in terms of enjoyment (see Appendix 6). To monitor their PA patient N was also offered a pedometer and a fridge magnet.

Delivering the intervention

Best outcomes of behaviour change occur when the behaviour is planned, initiated, and maintained with the potential for relapse recognised and planned for (Sniehotta et al., 2005).

During my second session with patient N, we discussed their smoking diary (the client was shocked to realise they were smoking 25-30 cigarettes a day) and which cigarettes they enjoyed the most/least. Unsurprisingly, given that the time from waking up to having the first cigarette is an indicator of cigarette dependence (Baker et al., 2007), patient N reported enjoying their first cigarette the most. Patient N was smoking their first cigarette within 5 minutes of waking.

Again, by utilising the motivational informed technique of 'ask-tell-discuss' (Webb et al., 2009) I provided patient N with a menu of different strategies which could help them to reduce their smoking. Such strategies included the 'hierarchical reduction' technique which works by asking clients to rank cigarettes in order of easiest and hardest to give up. Starting with the easiest, individuals then plan which ones they will give up on a specified time scale. Another technique suggested was 'planned reduction', this approach works by using goal setting to determine how many cigarettes will be smoked each day.

By providing a menu of options and subsequently discussing the various reduction techniques this helped to ensure the session remained client-centred and increased patient N's sense of control. Patient N decided to experiment with the hierarchical reduction technique moving forwards. Table 3 outlines patient N's journey from week 3 to week 8 of the intervention:

Table 3: Patient N's journey through the 8-week intervention period

Session	PRACTICE **Patient N's progress since last session**	THEORY **Topics discussed**	IMPLEMENTATION **Behaviour Change Techniques**	MODE of delivery
1-2	Discussed in above text			
3	• Patient N struggling to monitor number of cigarettes smoked (hierarchical technique not working for them) • Tried to identify 'next' cigarette enjoyed the least • Enjoyed monitoring steps, patient N now has an awareness of how many steps they achieve a day	• Discussed progress • Revised strategies and plans • Encouraged trying a different reduction technique 'smoke free periods' where the client goes set amount of times without a cigarette • Built commitment to increase PA and reduce smoking (worked through pros and cons) • Encouraged continuation of self-monitoring – PA.	• Self-monitoring of behaviour • Feedback • Action planning • Problem solving • Goal setting (behaviour)	Telephone
4	• Went 2 hours without smoking – longest smoke free period since starting sessions • Tried using gum to manage cravings	• Sustained 'change talk' – healthier person – identity shift. • Discussed opportunities in which patient N can incorporate more PA into their daily routine.	• Reviewed behaviour goal • Social support (practical) • Goal setting	Telephone

Session	PRACTICE **Patient N's progress since last session**	THEORY **Topics discussed**	IMPLEMENTATION **Behaviour Change Techniques**	MODE of delivery
	• Talking about wanting to become a 'healthier person' speaking about healthy eating and exercise	• Discussed social influences on smoking.	• Self-monitoring of behaviour • Framing/reframing	
5	• Spoke about going out for a long dinner and not going for a cigarette break. • Spoke about eating fruit rather than chocolate as a distraction technique • Spoke about not making as much of an effort to reduce smoking as previous weeks. • Still using pedometer but has not been walking as much.	• Assessed progress with goals set last time • Discussed what patient N found easy/hard about completion of goals. • Normalised behaviour and lapses • Discussed what else patient N could do to distract themselves – patient N spoke about needing to be in employment • Discussed the link between PA as a way to manage cravings/act as a distraction. Patient N not fully engaged with this idea • Discussed barriers to walking and ideas to overcome barriers.	• Reviewed behaviour goal • Action planning • Distraction • Self-monitoring of behaviour • Goal setting	Telephone

Session	PRACTICE **Patient N's progress since last session**	THEORY **Topics discussed**	IMPLEMENTATION **Behaviour Change Techniques**	MODE of delivery
		• Planned new goals (competence)		
6	• Distracting themselves from cravings with gardening • Spoke about having a bike in the house but reluctant to use it. • Started to do a few exercises at home (stretches)	• Revision of goals • Talked about benefits of increasing PA and reducing smoking. • Discussed barriers to PA/cycling and ideas to overcome barriers. • Discussed use of 'if-then' plans • Signposted client to local PA opportunities	• Reviewed behaviour goal • Information about health consequences • Behaviour substitution • Self-monitoring of behaviour • Action planning	Face-to-Face
7	• Only smoked 15 cigarettes on one day (down from 25) • Reading information on how to manage stress using mindfulness rather than smoking. • Patient N utilising 'if-then' plans. If I walk to X destination, then I can have a cigarette.	• Discussed local PA opportunities and which appeal most to patient N • Reinforced positive changes up to this point • Reflected on the benefits gained from changed behaviour • Discussed benefits to health of reducing smoking even more • Discussed strategies for long-term maintenance	• Reviewed behaviour goal • Pros and cons • Behaviour substitution • Action planning • Goal setting • Information about health consequences	Telephone

Session	PRACTICE **Patient N's progress since last session**	THEORY **Topics discussed**	IMPLEMENTATION **Behaviour Change Techniques**	MODE of delivery
8	- Now has a job decorating, lots of moving/activity. - Talked about buying gym kit and joining dance lessons. - Spoke about inviting friends over for dinner. - Consistently down to 10-15 cigarettes a day.	- Emphasised distance travelled and achievements made. - Discussed triggers/cues to changes in PA and smoking behaviour - Reinstated techniques to deal with triggers - Consider positive experiences and how to re-engage in PA if relapse or smoking increases.	- Reviewed behaviour goal - Action planning	Face-to-Face

At the end of the 8 weeks, patient N's sense of control over their behaviour had been maintained and their sense of competence and connectedness had dramatically increased.

Evaluating and communicating the outcomes of the intervention

Evaluations are useful as they support organisational learning and help identify changes that may need to be made to ensure interventions are effective and of value (2014).

Throughout the 8-week intervention I made detailed notes on all of my sessions, I found this really useful to refer back to before each session and also to keep a track of the changes Patient N had made. These notes enabled me to evaluate the effectiveness of the intervention delivered to patient N. During the 8 weeks patient N had made the following behaviour changes:

- Reduced the number of cigarettes smoked from 25 to 10-15 a day – increased sense of competence.
- Increased their PA through walking and gardening
- Started to utilise mindfulness techniques to deal with stress rather than smoking – increased sense of control.
- Secured a job
- Travelled on the underground for longer than they had been able to prior to the intervention
- Socialised with friends without having to leave for a cigarette break – increased sense of connectedness.

Whilst patient N made a lot of changes something that I felt did not work as well as expected was the mode of delivering the intervention. I found it much easier to establish a rapport and assess the client's weekly needs during our face-to-face sessions than over the telephone. Research has also suggested that telephone consultations are often shorter and include less data gathering and rapport building than face-to-face consultations (McKinstry et al., 2010). To improve the delivery and

potentially the outcome of the intervention, I believe at least 4 face-to-face sessions within the 8 weeks would be beneficial.

Patient N's progress was communicated to them throughout our sessions, I also sent a summary report at the end detailing what they had achieved and what strategies appeared to have worked well for them (see Appendix 7). The letter also referred the client to their local stop smoking services so that they can contact other professionals to help them maintain changes.

On receiving the letter patient N messaged me saying *"Thank you for your warm and kind letter. I also enjoyed the TARS program and learnt a lot from this. I've applied some of the things we spoke of with my walking and my gardening. It's not easy but without your help I wouldn't have contemplated cutting down or giving up."*

Various other evaluation approaches will be utilised to explore which components of the intervention were effective/which were not including sending patient N a questionnaire to explore whether the intervention had a maintained effect on smoking behaviour and PA levels 3 and 9 months after their first session.

Reflective report

<u>*Working with patient N*</u>

Despite working with clients from different backgrounds, as part of TARS, I still felt nervous before my first session with patient N. Although I feel I have good people skills, these nerves were due to the anticipation of meeting and building an initial rapport with a new patient.

Overall, I found Patient N a pleasure to work with. Despite my initial nerves we established a good rapport which created a safe and trusting environment for our discussions from the outset. This early rapport helped the patient feel relaxed, comfortable and open to ideas. I also think that meeting patient N at his GP practice rather than at the hospital (where I am based for work) helped to put him at ease. Patient N spoke openly about how smoking was impacting his life – he disclosed that he was unable to travel on the underground or go to the cinema because he cannot go that long without having a cigarette. When I first met patient N, although it was really important for him to reduce his smoking, he had little confidence in his ability to achieve this goal, this was due to a number of reasons which we identified together such as; a fear of failure if they did not reach their goal and a lack of awareness of the different strategies that could help. Through emphasising any positive change patient N had made from each session to the next (no matter how small) this motivational technique helped to increase patient N's confidence. I utilised the 'ask-tell-discuss' method frequently during the 8-week programme which helped to ensure that the sessions were patient-centred with patient N setting his own goals and choosing which smoking reduction strategies to trial.

At times Patient N would go off on a tangent and talk about topics unrelated to the session, whilst this could be viewed as challenging I think that allowing patient N the freedom to talk about these topics actually helped to build up our rapport as the sessions went on. I think not allowing patient N to talk would have had a negative influence as he may have been less likely to disclose relevant information.

It was really pleasing to see the progress that patient N made from week one to week eight, moving from 25 cigarettes per day to 10-15 and increasing PA levels by walking and gardening more. Patient N said from the offset that he felt having a job would help reduce his smoking as it would keep him busy and smoking is often frowned upon in the workplace. Patient N also spoke about increasing his PA and mentioned owning a bicycle. After a few sessions it soon became apparent that despite owning a bicycle Patient N felt nervous about going out on the London roads which was a barrier to this activity. We discussed what other types of PA patient N enjoyed – dancing and yoga. I offered to put together a list of local PA opportunities together for patient N to look through. By the end of the 8 weeks patient N had made a number of positive health and behaviour changes; he had secured himself a job (which meant he was subsequently smoking less), he was speaking enthusiastically about signing up to a local PA class, he was eating more healthily and had even invited a friend over to his house (something he had not done before as he was ashamed of the smell of cigarettes). It was very rewarding to hear patient N say that the health trainer sessions had made them feel 'empowered' to make a change.

Delivering the intervention

I think combining SDT and MI worked well and helped to elicit the behaviour change seen in patient N. MI's practical techniques (e.g., open-ended questions, reflection etc.) enabled me to translate SDT's important concepts into therapeutic practice within a randomised, controlled trial setting. These techniques allowed me to explore patient N's motivations using a non-threatening and non-judgemental approach. I think without the MI tools I would have struggled to provide structure and direction to the sessions. Whilst delivering the intervention I was also mindful of which behaviour change techniques (Michie et al., 2013) I was delivering during each contact, I have mapped these onto each session as seen in Table 3.

Since this intervention was delivered as part of the research project, at times I found there was a tension between delivering the full intervention to ensure study fidelity and

the overall ecological validity of the trial. For example, because I wanted patient N to receive all 8 sessions I was incredibly flexible to their schedule and was happy to rearrange sessions if he could not make a certain week. However, if the TARS intervention was to be rolled out in the NHS I am not sure that it would be feasible to replicate this level of flexibility. This could result in higher attrition to the 8 week programme.

Some of the sessions delivered in the 8-week programme were conducted over the telephone. This was an important part of the intervention as, if found to be effective, it would make implementing the intervention more cost-effective than having entirely face-to-face sessions during the 8 weeks. Although I felt as though these telephone sessions went well (because I had developed this initial rapport with patient N) I preferred the face-to-face sessions as they give the opportunity to observe non-verbal communication such as expressions or body language. I think moving forward it's vital to have the first session face-to-face in order to build rapport early on.

One worry that I often had during my sessions was that individuals I work with may find it hard to take advice or talk openly to a non-smoker through fear of being judged. Having reflected on this I feel that by attending the health trainer training and working with multiple clients I have a good understanding of the intervention and I am well-equipped with the appropriate techniques to make me an effective practitioner. I believe that I am a very empathetic individual and whilst I have no direct experience of smoking I am able to see things from another's perspective and be non-judgemental which I hope came across in the sessions.

In summary it was really rewarding to deliver an intervention from start to finish and see the health-related behaviour changes patient N had made from week 1 to week 8 on an individual basis.

I was observed delivering this intervention, the feedback can be seen in Appendix 8.

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Appendices

Appendix 6: Example smoking diary given to patient N

Smoking diary

Use this diary to record how many cigarettes you smoke throughout the week – writing in the diary each day will be easier than trying to remember how many you smoked at the end of the week. Scoring how much you enjoyed each cigarette (out of 10) can be useful to help figure out which ones to cut out

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Morning							
Afternoon							
Evening							
Total							

Appendix 7: Feedback letter sent to patient N post intervention

Dear Patient N,

Thank you for taking part in the TARS research project, I have really enjoyed working with you and wanted to summarise briefly what we talked about.

You were involved in the project between April and June 2018 and during that time you attended all 8 sessions. In the initial session, you identified that smoking was really impacting you day to day living, you reported not being able to go to the cinema or on a tube as you could not go that long without having a cigarette. Your main motivation for wanting to reduce was your health and feeling out of breath.

Despite some initial difficulties recording the number of cigarettes you were smoking you found keeping a smoking diary and recording your daily number of steps (calculated using a pedometer) a useful exercise. You spoke about how when you're busy you're less likely to smoke. We discussed ways in which you could keep yourself distracted including going for a walk or gardening. You also spoke with enthusiasm about wanting to try local dance lessons.

By increasing your physical activity (through increasing your walking and gardening) your smoking reduced from 25 a day down to a consistent 10-15 cigarettes a day. You must be really happy with this progress.

I was really impressed with your energy, motivation and determination to achieve your goals. I really think that you can do anything you put your mind to, based on the huge changes you have made in your life – not only those specific to this project, but even more so the bigger changes you have made and how you want to live it. All credit to you for your determination and commitment.

If you need additional support with your smoking your local stop smoking service will be able to help and can be located here: <insert contact details>

Thank you so much for participating in the project – your consistent and enthusiastic engagement has provided important learning for the project and for me personally, and it has been a real pleasure to work with you. Good luck with your new job and all the best for your future.

With very best wishes,

Charlotte Wahlich (TARS Health Trainer)

Appendix 8: Psychological Intervention: Observer's Report

DPsych Health Psychology

School of Health Sciences

Psychological Intervention: Observer's Report

Name of Reviewee:	Charlotte Wahlich		Date of Review: 26-07-2018
Department/School:	Population Health Research		
~~Module:~~	~~Level:~~	~~Number of students:~~	
Session/activity to be reviewed:	TARS TRIAL		
	Face-to-face session with an individual client		

Areas you would like feedback on

Comments/reviews/recommendations on the following:
- Communication (clarity, ability to build a rapport, body language)
- Fidelity (content, structure, intervention delivery)
- Style (patient-centred vs didactic, flow)
- Organisation (time management, planning, resources to hand)
- Ability to adapt to difficult/unpredictable situations

Feedback on the identified areas:

Communication:

Charlotte quickly put the person at their ease. Clear questions were asked and charlotte quietly listened, prompted, signposted and summarised at the end.

Fidelity:

Well structured but could have provided more technical information on strategies for quitting

Style:

STYLE:

Patient-centred and very positive and encouraging.

Organisation:

Well structured and helped individual work towards a plan. Also, had appropriate resources available (eg: diary to provide).

Ability to adapt to situations:

Generally good but there were a couple of instances where Charlotte found it difficult to respond and could have improvised.

Additional comments:

Overall, Charlotte is an excellent health behaviour change counsellor and only needs to make small tweaks to become a better counsellor.

Date: 28-07-2018

CASE STUDY 2 – Delivering an intervention through group work

Setting: Primary schools in South London

Target group: Year 5 school children (aged 9-10)

Description of work: Delivering an intervention to increase breakfast cereal fibre intake in UK children

<u>Background</u>

There is widespread acknowledgment that there is a high prevalence of overweight/obesity in children from the UK and Western countries which is linked to an increased prevalence of type 2 diabetes in the younger population (Ehtisham et al., 2004). Obesity and type 2 diabetes are both major public health challenges nationally and globally (Chan and Luk, 2016). Research has shown that in children aged 9-10 years consumption of a high fibre breakfast cereal is associated with a more favourable type 2 diabetes risk profile, in particular lower insulin resistance (Donin et al., 2014). However, a large majority of children do not eat breakfast regularly (Harding et al., 2008, Hoyland et al., 2012) or eat unhealthy breakfast items (i.e., sweet snacks, crisps) this is particularly the case in children from deprived backgrounds (Moore et al., 2007, Dykstra et al., 2016). The CRUNCH (CeReal nUtritioN for Child Health) study, which started in 2017, aimed to develop an intervention to increase breakfast cereal fibre intake in UK children aged 9-10 years. The MRC guidelines advise that it is best practice when developing a complex intervention to do so systematically (Craig et al., 2008). Therefore, this phase of the CRUNCH study, involved piloting procedures and testing feasibility (acceptability, compliance, delivering of the intervention, recruitment and retention etc.), see Figure 10. It is hoped that the findings from this pilot will inform a larger definitive evaluation.
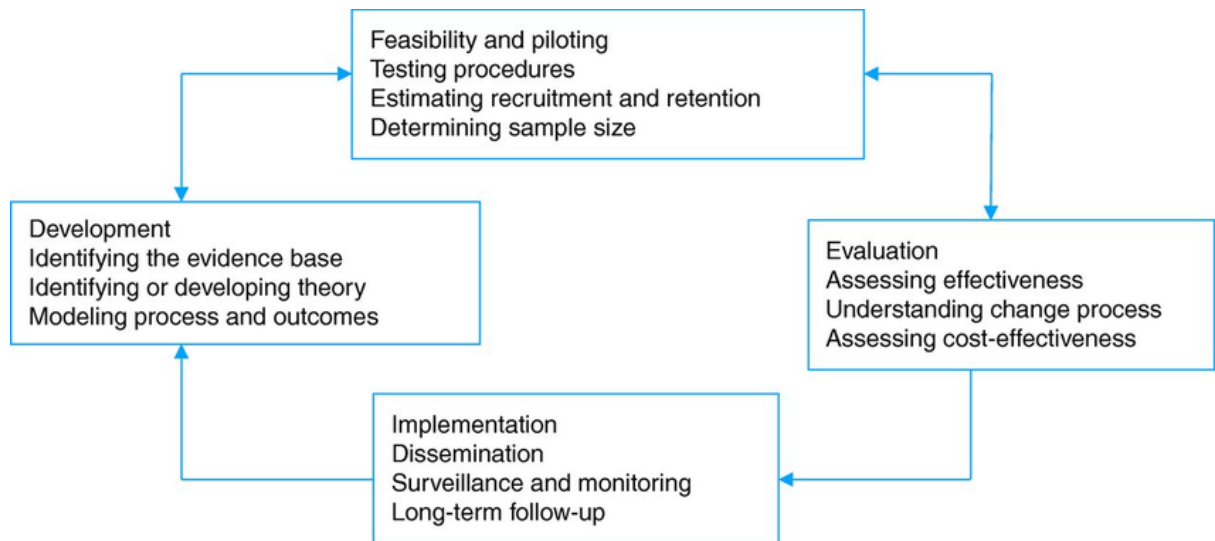
Figure 10: Key elements in the development and evaluation process of a complex intervention (Craig et al., 2008)

I was involved in the (i) development, (ii) implementation and (iii) evaluation of the intervention delivered to a group of school children in South London. This write-up will focus on these 3 stages.

The CRUNCH trial consisted of various phases:

Phase 1: The taste-test

All children in year 5 (aged 9-10), at each recruited primary school in South London, were invited to attend a taste-test to establish their cereal preferences. During the taste-test children tasted 8 different cereals (4 low fibre and 4 high fibre) and scored them in terms of their palatability using a Smiley Face Likert scale (see Appendix 9). This type of scale has been used before to evaluate children's opinions of snack preferences (Roberto et al., 2010). A questionnaire determining the children's breakfast habits was administered during this phase. The purpose of the taste-test was to establish the children's cereal preferences and to determine whether children were currently consuming a high or low fibre breakfast.

Phase 2: Baseline measurements

Children who stated they usually consume a low fibre breakfast (and thus there was scope for change in this target behaviour) were invited to take part in the CRUNCH 'trial' and attend a baseline measurement morning at the school. The baseline measurement mornings consisted of collecting fasting blood samples, completing a 24-hour dietary recall and a food frequency questionnaire. Children were fed breakfast after the fasted blood sample.

Phase 3: Randomisation

Children who took part in the baseline measurements were then randomly allocated to receive either a low fibre cereal or a high-fibre cereal breakfast which they were asked to eat for a month. The cereal was provided for free. To increase adherence children were given cereals they liked based on their responses to the taste-test.

To monitor progress/adherence to the intervention, children were provided with a wall chart and breakfast diary (see Appendix 10). The wall chart also acted as a prompt to remind the children to eat the cereal daily.

Phase 4: Interim visit

The interim visit was half way through the 'cereal eating month'. The visit consisted of a short quiz/game which was tailored to each group of children depending on the room availability at the school and time allocated. The purpose of this interim visit was to remind the children to eat their breakfast cereal, reinforce the importance of eating breakfast and to solve any problems i.e., to identify if a child had run out of or disliked their cereal. The quiz was also a chance to build a rapport with the children through making them feel relaxed and engaged, it was hoped this would lead to more truthful responses about intervention compliance.

Phase 5: Follow-up measurements

The follow-up measurements took place a month after the children had been given their cereal to eat and consisted of the same measurements taken during the baseline visit (phase 2).

Selecting, designing and implementing the intervention

From conducting the taste-test (Phase 1) it was possible to assess and screen who would be suitable to receive the intervention based on what each child was currently having for breakfast. A measure of self-efficacy was also used to assess whether the children were happy and felt able to eat the same breakfast cereal for a whole month. Children were reassured this would be a cereal that they had shown a preference towards at the taste-test. Only children that reported regularly eating a low fibre breakfast and willingness to eat, at least, one of the cereals continuously for a month were randomised to receive the intervention. Research has already proven the health benefits of eating a high fibre diet (Anderson et al., 2009, Anderson et al., 1994, Kranz et al., 2012). Children who reported already eating a high-fibre breakfast were not invited to the baseline measurements as it would be unethical to randomise a child who already eats a high fibre breakfast into the low-fibre cereal arm. Also, these children were unlikely to show any change in their cereal eating habits as they are already engaging in the target behaviour. These children did not obtain any further input from the study team apart from, along with the children on the low fibre diet, receiving an information sheet at the end of the study detailing the importance and benefit of eating a healthy breakfast.

Developing a working formulation model

The intervention for this study was based on the Social Cognitive Theory (Bandura, 2004) and corresponded to the current taxonomy of behaviour change techniques (Michie et al., 2011a). Social Cognitive Theory (SCT) proposes that environmental and personal characteristics influence behaviour. Previous research into dietary behaviour within children has also been based on SCT (Young Hong, 2016). According to Bandura (2004), nutrition interventions are more successful if they:

1. Strengthen an individuals' knowledge of the topic, for example their understanding of the benefits of a healthy diet
2. Improve environmental factors, including family/peer social support

3. Encourage self-efficacy, by nurturing confidence in performing a specific behaviour

4. Develop the use of self-regulatory behaviours by means of modelling behaviour and interactive learning

In line with the Social Cognitive Theory, CRUNCH incorporated various behaviour change techniques (Michie et al., 2013). The table below outlines how and at what point these constructs of the Social Cognitive Theory were implemented into the study design. For the purpose of this write-up I will only be focusing on a few of these techniques in the narrative:

Table 4: Implementing Social Cognitive Theory constructs in the CRUNCH trial

Social Cognitive Theory constructs	Implementation	Phase
Self-efficacy **Confidence in the ability to consume the designated breakfast cereal on a daily basis**	• Introduce breakfast cereals using taste-tests to assess palatability and preferences • Tailor the participant's individual choice of cereal for the duration of the trial to ensure the intervention is enjoyable for the participant and increases motivation to success	• Phase 1
Social Support **Extent to which support from family members and research team aids in behaviour change**	• Explore willingness of family to engage (meeting, information sheets, questionnaire) • Identify key members of family to act as role models to support and monitor behaviour change (meeting) • Identify and encourage appropriate social support (e.g., positive reinforcement from family, monitoring of progress on wall chart)	• Phase 2 – Phase 4
Self -regulation **Learning skills which increase motivation towards the desired breakfast behaviour and increase ability to resist alternative behaviour such as alternative cereals or not eating breakfast**	• Goal setting/evaluation/reflection • Information and education given by research team at baseline, mid-point and on completion; participation pack to encourage and motivate continued behaviour change) • Self-monitoring (breakfast diary) • Plan to overcome potential barriers such as boredom with cereal (provide list of potential barriers and strategies for overcoming them, wall charts stickers)	• Phase 2 – Phase 4
Outcome expectations	• Provide information/education	• Phase 3

Social Cognitive Theory constructs	Implementation	Phase
Having a strong belief in the value of switching to the designated cereal	• Message: 'Eating breakfast every day is important for health'	
Environmental factors **Create an environment which fosters behaviour change**	• Create triggers in the environment (wall chart, fridge magnets, cereal out and ready the night before, study bowl, school visit from researcher mid-trial – interim visit)	• Phase 2 – Phase 4
Motivation/Reinforcement **Maintain a strong desire to continue behaviour change**	• Put in place personalised rewards (wall chart of daily compliance per week, breakfast bowl, interim visit prize, offer of gift vouchers on completion and return of wall chart and diary) • Provided an appropriate cereal too	• Phase 2 – Phase 4

Providing feedback on the outcome of the assessment

As this intervention was delivered to a group of children, full written parental consent had to be obtained from the child's parent or guardian for the child to be able to take part in the taste-test and then, if appropriate, the trial (phases 2-5).

Feedback about the outcome of the assessment (i.e., the children's responses to the taste-test questions and subsequent invite to the trial if the children were eating low fibre breakfast cereal) was communicated to the children's parents/guardian via letter (see Appendix 11). This letter also provided more details about the 'trial' itself.

Delivering the intervention

The behaviour change techniques aforementioned were delivered at various different phases of the CRUNCH trial. For the purpose of this write-up I am going to focus on the interim visit (phase 3) which took place 2-weeks into the 4 weeks the children were asked to eat their allotted cereals.

The interim visits acted as an environmental trigger to remind the children to eat their cereal, it also encouraged motivation and reinforced behaviour by providing the children with a prize or 'reward' at the end of the quiz. These behaviour change techniques are recognised by Michie et al. (2013). The sessions normally took place at lunchtime in the school playground, lasted between 10-20 minutes and were attended by, on average, 15 children. The quiz consisted of asking the children one question at a time and then discussing the answer. The only resources needed to deliver this stage of the intervention included the list of quiz questions that had been specifically chosen to increase children's awareness about the importance of healthy eating, in particular the benefits of a healthy breakfast (see Appendix 12) and the 'prize packs'. These contained a CRUNCH branded badge and keyring. Despite only being a relatively small reward, children responded incredibly favourably to these 'prize packs'. The packs seemed to increase the children's enthusiasm in being part of the trial.

Evaluating and communicating the outcomes of the intervention

In order to evaluate the adherence to the intervention we asked for detailed feedback from both the children as well as their parents/guardians. This feedback was captured using a brief questionnaire (see Appendix 13). Children also returned their wall charts and breakfast diaries.

The effectiveness (or fidelity) of the intervention was objectively measured by comparing the baseline blood measurements (of plasma alkyl resorcinol – a biomarker of fibre intake) with the follow-up blood measurement. It can also be subjectively measured by comparing the children's 24-hour recall and food frequency questionnaires to see whether there are any differences pre and post intervention. Whilst the blood samples have now come back from the lab, this analysis is on-going. Once this information has been analysed the results will be communicated to the children, parents and schools either in the form of a feedback sheet (tailored appropriately to the different populations) or in the form of a school assembly.

Reflective report

I found it really interesting and insightful to be involved in a trial from the very start especially sitting in on the meetings to discuss the various behaviour change techniques that would be utilised in the intervention, having an input into the design of the materials for the trial (which included piloting, evaluating and amending materials where necessary), designing and delivering the interim visit and administering other stages of the intervention, including randomisation.

Designing and delivering this intervention has provided me with a useful learning experience. I have helped deliver an intervention using a variety of resources and methods; for example, through the breakfast diaries and wall charts (which were resources the children took home with them) to the interim quiz visit (which was the short quiz delivered in the playground/classroom). Because the client group was children an important aspect of this intervention was to ensure it was fun and

engaging which in turn we hoped would lead to behaviour change (i.e. eating the breakfast cereal for a sustained period of time). During the interim visit, I was mindful that the language I used was appropriate for the target population; school children. I did this by ensuring I avoided jargon words and was clear in my delivery of information and instructions.

I found this particular client group a pleasure to work with, they seemed genuinely excited about being part of a research project and were engaged in the intervention. I felt that I managed to establish a good rapport with the school children during the taste tests and baseline measurement days, this was beneficial when delivering the interim visit as I felt I had gained their respect which in turn meant the children were, on the whole, well-behaved and attentive. A failure of this could have been incredibly costly for the intervention. For this client group and nature of work (taking repeat blood samples) it was particularly important to build a good rapport, however this does pose the question of how much of the intervention was about the person delivering the key components vs. the actual key components themselves. It could be hard to untangle these two elements if the intervention is found to be effective. Previous literature has shown how a professional's personal characteristics can predict outcomes, in particular their self-confidence and work enjoyment (Heinonen et al., 2014). I think that a lot of the children's enthusiasm towards the trial (and therefore potential adherence to the cereal eating phase) was dependent upon the person delivering the intervention.

Feedback from the students suggested that they found the diaries and wall-charts useful resources. However, there is the concern that because the children were asked to bring these resources to the follow-up measurement day they could have simply completed them the night before rather than throughout the 4 weeks.

From delivering the interim visit I noted the following learning points and thoughts about future intervention delivery:

- *When asking if the children had any problems with their cereal or whether they had run out of their cereal they were often swayed by what someone else in their*

group had said. For example, if one child mentioned they wanted to swap their cereal this sometimes had a snowball effect. It may work better if children are asked these questions individually to get a more reliable response. Independence of responses is a criterion for many statistical tests therefore this could be an important factor.

- *The interim visit for the main trial was 2 weeks into the 4 weeks intervention period. I think in future it would be interesting to experiment with putting this visit sooner: for example, 1 week after the children are given the cereal. I think this is important to capture early on whether any children dislike the cereal/have run out or are not eating it. If they children were not eating their cereal, we could then have explored potential barriers and subsequently come up with potential solutions to rectify these.*

- *For the intervention quiz the sessions had to be adapted to the given room e.g., if allocated the playground or a hall it was possible to make the sessions more physical and interactive (as there was more space), however if allocated a classroom the sessions need to take a different, more structured, format e.g., the children discuss quiz answers in a team and shout out the answer. Both formats of quiz delivery seemed to work well.*

If I were to undertake a similar project to this again I think it would be beneficial to conduct a focus group with the client group (i.e., the children) before delivering the intervention to ensure that the children had an input and that the design was tailored to their suggestions. Patient and Public Involvement is important not only to help design the intervention delivery, but it would also be useful for content and measuring outcomes. For example, in this particular project it would be interesting to ask the children where and when they would had preferred the interim visits to occur.

One feature of the intervention, which I think was underutilised at times, was the behaviour change technique 'social support'. I think due to the complex design of this study and having lots of different elements going on meant that this aspect of the intervention was, in my opinion, not applied to its full potential. For future work it would be interesting to explore whether there would be additional opportunities to

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utilise social support within the school setting (i.e., through teacher reinforcement) or whether supplementary resources could have been given to parents/carers to aid behaviour change. For example, teachers could ask their class during registration to put their hands up if they remembered to eat breakfast and if they ate their CRUNCH cereal. Alternatively, the teachers could have reminded the children to accurately fill out their diaries/wall charts each day, this would help to mitigate the concern that children simply filled these out the night before handing them back to the research team. This would also help ensure a more accurate measure of compliance. However, setting up an 'in-group' (those in the trial) vs. 'out-group' (those already eating high-fibre cereal/those who did not have parental consent to take part in the taste-test) divide in the classroom could have unintended consequences. Again, if I were to undertake a similar project it would be beneficial to involve parents in the design of the intervention.

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Appendices

Appendix 9: Smiley Face Likert Scale response sheet used in CRUNCH taste test

What would you score this cereal for taste? (please circle one of the faces below)

Awful　　　Not good　　　Alright　　　Good　　　Brilliant
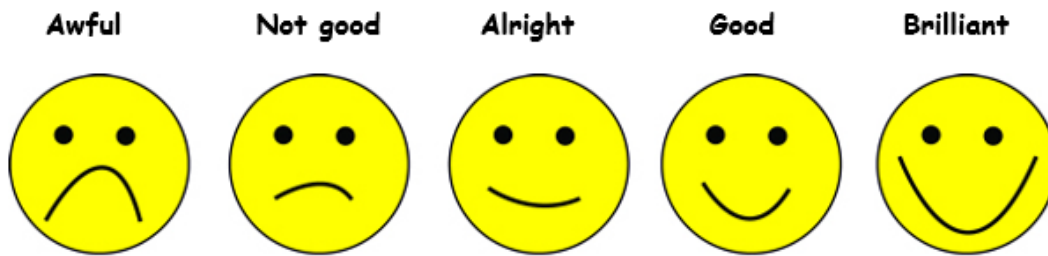
Do you have any other comments on this cereal?

………………………………………………………………………………………………

………………………………………………………………………………………………….

…………………………………………………………………………………………….…

Would you be happy to eat this breakfast cereal for a month?　　　Yes/ Maybe/ No

If no, why not?

……………………………………………………………………………………………………

……………………………………………………………………………………………………

……………………………………………………………………………………………………

Appendix 10: Wallchart used to monitor adherence to CRUNCH trial

WEEK 1

Please use this form to keep a record of whether you ate the cereal we gave you and what you had for breakfast each day. If you ate the cereal we gave you, please mark with a sticker or put a tick ✓

Week 1	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Did you eat the cereal we gave you for breakfast?							
Did you have anything else for breakfast? (please say what)							
Did you eat the cereal we gave you at another time of the day?							
Date			17th May	18th May	19th May	20th May	21st May

Appendix 11: Letter inviting children to CRUNCH cereal trial

Dear Parent or Guardian,

THE CRUNCH TRIAL

Your child recently took part in our breakfast cereal taste test, which provided very helpful information. We are now writing to invite your child to take part in a further stage of our research taking place on the **<insert date>**, which will study the effects of breakfast cereal (and cereal fibre) on health in children.

What would this further research involve for your child?

Your child would be provided with a free supply of breakfast cereal for a month. This cereal will have either a high fibre or low fibre content, chosen at random. It will be one of the cereals your child enjoyed in the earlier breakfast cereal tests. Your child will be asked to eat this breakfast cereal each day for a month. To monitor the effect of the breakfast cereal on health, we will ask your child to provide a small blood sample at the beginning and at the end of the one-month period, to assess blood sugar, fibre intake and other dietary factors. This will be taken by an experienced healthcare professional, using a special local anaesthetic spray to keep any discomfort to an **absolute minimum.** We will also measure your child's height, weight and body build and will ask him/her some questions about their diet and eating habits. **To give accurate test results, we will ask your child to come to school on the test days without breakfast – but we will provide breakfast as soon as the blood sample has been taken.** At the end of the study your child will be offered a £10 gift voucher to thank them for taking part in this research. We will keep you and your child informed of the results of the study by sending a newsletter once the research is completed.

We hope very much that your child will consider taking part in this next part of the research. The study has received ethical approval. **All the information from the study will be treated in complete confidence.** Please discuss the study with your child and fill in and sign the reply form enclosed with this letter. Please put the reply form in the envelope provided and give it to your child to return to school **as soon as possible (no later than <insert date>)**. If you have questions or would like to discuss the study further, please phone us on XXX-XXXX-XXXX or send us an email (XXXX).

THANK YOU VERY MUCH FOR YOUR HELP.

Appendix 12: Educational quiz for the CRUNCH trial interim visit

1. **Which is the healthiest drink?**

    Full fat milk, Water, Orange Juice or a Smoothie

2. **What is the most important meal of the day?**

    Breakfast, lunch or dinner

3. **Why is it important to eat breakfast?**

    Improved concentration, more energy, reduces hunger, decreases snacking between
    meals, maintains weight, improved mood, increased alertness,

4. **Which of these is the healthiest breakfast option?**

    Cereal and fruit, pancakes and waffles, blueberry muffin

5. **How many portions of fruit and vegetables should we eat every day?**

    1, 3, 5 or more

6. **Which of the following contains calcium?**

    Orange juice, potatoes, lemonade, Milk

7. **What does protein help your body do?**

    Grow and build strong muscles

8. **Which contains the most vitamin C?**

    Chocolate, oranges, chicken

9. **Where does most of our vitamin D come from?**

    Sunshine, eggs, oily fish

10. **Calcium is important for our bones and teeth- which foods are rich in calcium?**
    a) Milk, yoghurt and cheese
    b) Spinach and dried fruit
    c) **Both a and b**

Appendix 13: Example feedback form given to CRUNCH participants

FEEDBACK QUESTIONNAIRE

Q1. Did you enjoy taking part in the study?

I did not enjoy really it at all it	I did not really enjoy it	It was alright	I enjoyed taking part	I enjoyed

Q2. How often did you manage to eat the cereal we gave you?

Please tick Every day ☐

Most days ☐

Some days ☐

Never/hardly ever ☐

Q3. Did you enjoy eating the cereal every day?   (please circle)

Yes / Sometimes / No

If not, was there anything in particular you did not enjoy?

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Q4. Did you find anything difficult about eating the cereal every day?

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……………………………

Q5. Is there anything that might have made it easier for you to eat the cereal every day?

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Q6. Did anyone in your family help or encourage you to eat the cereal in the morning?

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……………………………

Q7. Did you find the wall chart we gave you helpful to remind you to eat the cereal in the morning?

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……………………………

Q8. Is there anything else we could have given you that would help to remind you to eat the cereal?

………

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……………………………

Thank you for your help and well done for completing the CRUNCH Study!

<u>UNIT 4: TEACHING AND TRAINING</u>

CASE STUDY 1 – HEALTH CARE PROFESSIONALS

- **Topic:** Training Health Care Professionals (HCPs) how to use behaviour change techniques (BCTs) in primary care.
- **Venue:** Wrythe Green GP Surgery (WGS), Carshalton
- **Date:** 21/10/17
- **Duration:** 45 minutes
- **Audience:** 4 practice nurses, 2 health care assistants, 1 observer (trial/line manager)

<u>Background</u>

PACE-UP (Pedometer and Consultation Evaluation – UP) Next Steps aimed to explore the best way to deliver an effective walking intervention (Harris et al., 2018d) through routine primary care. In 2017 WGS was recruited to trial two different recruitment/delivery methods; through routine practice nurse consultations and through NHS Health Checks with practice nurses or health care assistants.

I used this opportunity to offer 'top-up'/additional BCT training to HCPs involved in intervention delivery at WGS.

<u>Planning and designing the training session</u>

Assessing training needs and identifying content

To ensure I focused the delivery of this session at the right level, I liaised with a WGS senior practice nurse to assess the training needs of those that would be attending. This idea is based on 'Adult Learning Theory' or 'Andragogy' (Knowles, 1978). This theory posits that there are different challenges when teaching adults, as opposed to children, as adults can draw on their previous experiences, which vary between

individuals. Whilst adults bring a wealth of experiences and knowledge into the learning environment, they come from diverse backgrounds and may not share the same lifestyles, values or previous training as each other.

From email correspondence I established that whilst some HCPs reported some prior exposure to BCTs all felt they would benefit from a session covering the basics.

Selecting training methods & approaches

The training session was formulated to take a mixed approach including didactic and interactive elements (Davis et al., 1999). The didactic approach was chosen as it allows a large amount of information to be delivered in a limited timeframe (Baird, 1973). This style has been shown to be particularly effective for individuals who are motivated to learn (Blakely et al., 2009) and given that WGS was very receptive to receiving this training I felt confident that the HCPs would be engaged in this session. I chose to present Michie's COM-B model (Michie et al., 2013) as this is a simple, powerful practical guide to help HCPs understand how behaviours can be changed. The interactive element involved discussing different BCTs and relating them to real-life primary care consultations. While the focus of my training was on inactive patients (with the behaviour change goal being increased activity) I stressed that these techniques can be generalised and applied to a variety of health behaviours that HCPs need to deal with e.g., smoking and obesity. I ensured that there was time at the end for discussion and questions.

Delivering the training session

Due to GP surgery room availability this training was conducted in a small meeting room. I was aware of this prior to the session therefore I prepared a handout rather than using PowerPoint. Previous research has suggested that providing 'full' handouts represents poor pedagogical practice, presentations should require some active participation by the 'students' (Jones, 2003). The handout therefore provided outline structures requiring annotations and note-taking by the HCPs (see Appendix 14). The

handout was explained to the HCPs. The aim of this interactive component was to encourage a deeper level of learning (Biggs and Tang, 2007) as the HCPs needed to process information and suggest examples, rather than passively listening. This draws on Cognitive Learning Theory (Fry et al., 2014).

Prior to delivering the training I prepared a teaching plan to ensure that I covered the main points. I discussed this teaching plan with my work place supervisor and my line manager. From their suggestions I modified and shortened the training to make it more practical. Whilst I outlined the structure to the HCPs at the start, I did not share this teaching plan with them (see Appendix 15).

Evaluating the training session

To evaluate my training session, I arranged for my line manager (who was also the PACE-UP trial manager) and has experience of trial BCTs and practice nurse training, to sit in on my session. Unfortunately, I did not prepare anything to capture formal feedback from the HCPs but I encouraged informal email feedback. One email read:

'The session was really useful, thank you.'

'The session was clear and succinct -I will try and use some of the techniques discussed in my consultations with patients'.

Reflection

Planning:

On reflection I felt the training session went well. It was useful that I was aware which room the training would be held in before delivering the session as this meant I was able to design a handout rather than relying on a computer. This knowledge of the environment made it easier to plan my session. I was not fully aware of how much prior exposure the HCPs had to BCT training, I therefore had to adapt my teaching to this unknown training environment. The session could have been improved by sharing the

teaching plan with the learners prior to the session to gauge whether I was covering the right material.

Delivery

The room was not the most conducive to delivering this session, it was small and I was unable to use PowerPoint (which could have helped to make the session more interactive) so I had to rely on handouts. Given that I am quite familiar with the teaching materials, at times I felt that by going through the detail I was coming across as monotonous to the HCPs. In the future I need to have more confidence in what I am teaching and an awareness that what I am saying is of interest to others. I also think there would be added value in delivering this training as 2 sessions. This would give the HCPs an opportunity to practice some of the BCTs and report back any difficulties/problems in applying them to real-life consultations.

Evaluating

I received peer review feedback from my line manager who observed the session (see Appendix 16) which was useful as it provided confirmation that my teaching approach, of using the handouts, was considered appropriate. I think it would also have been beneficial to be observed by a practicing Health Psychologist to get some additional feedback to develop my own training style.

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Appendices

Appendix 14: Behaviour Change Techniques training - handout given to HCPs

Behaviour Change Techniques to increase physical activity in patients

Charlotte Wahlich—Trainee Health Psychologist

To change behaviour:

1. Need to understand the problem

2. Identify the behaviour—who/what/where/when

3. Understand the behaviour (using COM-B)

4. Intervene using behaviour change techniques

The COM-B model can be used to understand why behaviours are as they are.

For any behaviour to occur an individual needs to have:

1. **C**apability:

• Physical = strength, skill or stamina

• Psychological = Knowledge/mental processes

2. **O**pportunity

• Physical = accessible, time, resources, location

• Social = socially acceptable, cultural norm

3. **M**otivation

• Automatic =emotional reactions, desires, impulses

• Reflection = self-conscious intentions,
  evaluations (what's good and bad)

COM-B model

Michie, S., Atkins, L. & West R. (2014) The behaviour Change Wheel: A Guide to Designing Interventions, 1st edn. London: Silverback

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PACE-UP **Barriers to physical activity**

Health: *I've got an ongoing problem where I get pain, so there's no way I'm going to be going out walking if I don't have to.'* **F61**

Social support: *'I like walking but umm my friend, that I used to go walking with quite a lot, has moved away, so there's not so much incentive now to go for a walk'* **F59**

Time: *'I work between 30 and 40 hours a week still and I don't actually have much time for anything else at the moment, nor do I have a lot of energy left.'* **F69**

Behaviour Change Techniques

93 identified—a few examples:

	BCT	Description	Physical activity example
1	**Goal setting (behaviour)**	Agree a personal daily target/encourage patient to make a behavioural resolution	
2	**Goal setting (outcome)**	Set a general goal that can be achieved by behavioural means	Health goal = to lower blood pressure
3	**Problem solving**	Barrier identification/relapse prevention. Focus on the advantages and deal with the Disadvantages	
4	**Action planning**	Detailed plan of what will happen. Should include when, in which situation and where	
5	**Self-monitoring**	Track and review progress of desired behaviour	
6	**Social support**	Help/support from others to achieve desired Behaviour	Plan to meet a friend and go for a walk
7	**Habit formation**	Prompt rehearsal and repeat planned activities	
8	**Information about health consequences**	Provide further details about the benefits of a behaviour	Physical activity can reduce risk of diabetes
9	**Graded tasks**	Break behaviour down into small easy to achieve tasks. Gradual increase in behaviour.	
10	**Restructure environment**	Changes to the physical environment to support desired behaviour.	Repair bike/buy a new pair of walking shoes/raincoat
11	**Restructure social environment**	Changes to social interactions to support desired behaviour.	
12	**Time management**	Making time for the desired behaviour. Seeks to free up time for when behaviour can be performed.	

Michie et al. Ann Behav Med. 2013, 46: 81-95.

Linking Behaviour change techniques to different therapeutic approaches

Motivational Interviewing—client-based non-judgemental approach

R	**olling with resistance**	**Resist telling the patient what to do** **Avoid persuasion or argument**
U	**nderstand motivations**	**Understand values, needs, abilities, motivations and barriers to change behaviours**
L	**isten with empathy**	**Seek to understand from the patients perspective** **Respect decisions and choices**
E	**mpower**	**Help patient to explore how they can make changes e.g., set goals/techniques to overcome barriers.** **Encourage patient to come up with own solutions**

Appendix 15: Structure of behaviour change technique training delivered to HCPs

Delivering a session on behaviour change techniques to health care professionals

Wrythe Green General Practice 02/10/2017

Introduction

- Trainee health psychologist

- Q - what behaviour change technique training practice nurses and health care assistants have already received – discussion

- Q - Based on own experiences what has and hasn't worked in terms of behaviour change

What's need to change behaviour?

- Introduce the COM-B model.
  - Q - Has anyone heard of it before?
  - Q - Does anyone use any different models – discussion

- What are some of the potential barriers to PA?

- What did the PACE-UP participants say – go through quotes as well as other barriers e.g., age/lack of self-motivation.

- Introduce the different behaviour change techniques. 93 but focus on a few.
  - Q - Have people heard of them before?
  - Q - Do they use them already?
  - Q - Are some techniques easier to introduce than others?
  - Activity- What techniques could be used in the 4 PACE-UP quote scenarios (time, social support, health and weather/season)? Discussion

    e.g., you have a patient who says they have no time for physical activity.

  - Activity – Think back to the last patient you saw where you discussed increasing physical activity. Briefly described the consultation. What were some of the barriers and successes of that session?

Linking BCTs to different approaches

- Behaviour change techniques have different approaches e.g., CBT or motivational interviewing (MI)
- Focus on MI for today
- Q – Previous training on MI?
- Aim of MI is to: Approach that attempts to move an individual away from a state of indecision or uncertainty and towards finding motivation to making positive decisions and accomplishing established goals.
- 4 main components – RULE

Key messages

- Changing behaviour is a process
- Everyone will be different
- Can use BCTs alone or in combination
- Important with MI to build up a rapport with patient
- COM-B is the model used to identify and understand the behaviour, BCTs are the 'interventions' used to change the behaviour and MI is the approach/technique used to deliver/talk about the 'intervention'

Close

- Any questions?

Appendix 16: Peer review of HCP training session

<u>OBSERVATION FOR TEACHING/TRAINING</u>

Name of the Candidate: Ms Charlotte Wahlich

Setting: GP Practice

Name of the Competency: Teaching and Training

Population type: Health Professionals- Practice nurses and Health Care Assistants

Context (by the candidate): BCT training for physical activity/health interventions

OBSERVER'S FEEDBACK:

1. Oral and written skills	Charlotte communicated the training session very clearly and effectively and ensured the audience had the opportunity to ask questions throughout the session.
2. Assessed the current training provision/levels of knowledge of target group	At the start of the session Charlotte asked the audience about their prior experience with behaviour change, and any training they had undertaken. She also asked if they had any objectives for the session.
3. Use of appropriate teaching approaches	Charlotte decided to use paper-based teaching resources over PowerPoint due to limited resources available in the GP practice. This also allowed for the staff to reuse the handouts and meant they were able to concentrate on listening to the session rather than following a presentation.
4. Use of appropriate materials	Charlotte developed a very useful one page handout that the health professionals could use during the training session and refer to later in consultations. The handout describes behaviour change models, barriers to physical activity and behaviour change techniques.
5. Demonstrated skills and knowledge to maximise learners' development	Charlotte introduced herself summarising her background and training in health Psychology. Charlotte used examples and scenarios to engage with the audience and demonstrate her skills, but also encourages the learners to find solutions.

6. Exercised autonomous initiative in any unpredictable situations	Charlotte adapted well to the unpredictable teaching environment in a GP practice and the varied knowledge and experience of the audience. For example, many of the audience had little prior knowledge of BCT, and some had received previous training.
7. Competently and accurately responded to learners' queries and issues	Charlotte answered questions and queries well, with examples and evidenced based solutions.

Other comments:

Charlotte delivered a well-planned, informative and concise training sessions on behaviour change that was relevant to health professional working in primary care. The development of a useful reference guide to be used in consultations applies to not only physical activity behaviour change consultations but across a number of areas of health/lifestyle behaviour change.

Authenticated by:

CASE STUDY 2 – STUDENTS

<u>Series of teaching</u>

For my 'series' of teaching sessions I taught Biomedical students at St George's University, London for 5 hours over 3 different dates across 2 different modules (see Table 5).

Table 5: Series of teaching delivered at St George's, University of London

Date	Venue	Theme	Module	Audience	Duration	Format	Observer report	Student feedback
07/12/17	St George's University, London	Health Promotion	Behavioural Medicine	21 Biomedical students +1 observer	3 hours	Workshop	✓	✓
15/03/18	St George's University, London	Behaviour Change Theories	Psychology, Psychiatry and the Mind	18 Biomedical students	1 hour	Lecture	-	✓
29/03/18	St George's University, London	Qualitative Research Methods	Psychology, Psychiatry and the Mind	20 Biomedical students	1 hour	Lecture	-	✓

For the purpose of this write-up I am going to focus primarily on the workshop that I delivered on Health Promotion in December 2017. I am focusing on this session as it was the first I delivered and I learnt a lot from the experience. I will discuss how the feedback I received from the observer of this session, along with student feedback and self-reflection helped inform the two subsequent sessions I delivered in March 2018.

Health Promotion workshop

- **Theme:** Health Promotion as part of the Behavioural Medicine module
- **Venue:** St George's University, London
- **Date:** 07/12/17
- **Duration:** 3 hours
- **Format:** Workshop
- **Audience:** 20 students and 1 observer (Senior Lecturer in Behavioural Medicine/Module Lead)

Background

The Behavioural Medicine module is part of the BSc Biomedical Science course at St George's University of London, specifically it is for Year 3 students. The module consists of a series of lectures including sessions on obesity, smoking cessation and physical activity. The module culminates with a 3-hour session on Health Promotion, it is this session that I delivered.

The following will detail how I planned, designed, delivered and evaluated this session:

Planning and designing the teaching session

Assessing training needs and identifying content

To compliment my training as a Health Psychologist I approached the Module Lead to ask for teaching opportunities within the University. I was asked to re-design and deliver the final session on the Behavioural Medicine module on Health Promotion. Although I had already delivered the aforementioned training to HCPs I had no prior teaching experience with students. Keen to understand more about what was needed from this session I met with the module lead to discuss the key learning objectives to ensure my re-designed session still met these requirements. We also discussed how to improve the session focusing on what had worked well in the past and what could be changed to enhance learning. Previous student feedback suggested the session was

not interactive enough, that it spent too much time focusing on health promotion policy and did not relate back to earlier topics taught in the module. I therefore aimed to address these concerns.

Selecting training methods & approaches

In previous years, this session used a predominantly didactic approach (Entwistle, 1997) where the teacher stands in front of the class and the students listen passively and take notes. This approach is criticised for encouraging surface level learning where students only retain information in their short-term memory in order to regurgitate facts at a later date (Lockey, 2001). Given that teaching medicine and psychology is an ever evolving process where he teacher and the student need to stay up-to-date with current knowledge, previous literature had suggested a move away from the teacher-centred didactic approach (Spencer and Jordan, 1999).

The recommended teaching style for medical/biomedical students is a subject-based style including the use of interactive, problem-based and student-centred learning (Samarakoon et al., 2013). To improve this session I therefore thought it was important to pair a didactic approach (which is still recognised as a useful teaching tool in adult education (Fry et al., 2014)) with interactive activities and strategies. In line with the cognitive learning theory (Fry et al., 2014) this pairing would help to enhance deeper level learning by addressing students' short-attention span (Wankat, 2002) and help to consolidate learning from previous sessions given in the module.

The following section outlines the 4 different approaches used to help shift this session from a predominantly teacher-centred didactic approach to a more interactive approach including the pros and cons for each approach.

Delivering the teaching programme

To ensure that this session kept to time and that I had the correct resources I put together a teaching plan which I discussed and adapted with the Module Lead (see Appendix 17). I outlined the format of the afternoon to the students at the start of the session, so they knew what to expect.

i)   Lecture

The didactic lecture style has numerous weaknesses: it presumes students learn at the same pace, it lacks feedback, and students are typically passive during the session (Cashin, 1985). However, in contrast, lectures are advantageous in delivering a large amount of material to many listeners at the same time, in permitting maximum teacher control and in emphasizing learning by listening (useful for students who learn well this way). During the 3-hour session I delivered a 45-minute lecture where I covered definitions and models of health promotion. This lecture presented the 'basics' that would be required for the subsequent parts of the session. As learners have a short attention span (Wankat, 2002), with attention typically wavering after 15 minutes (Wilson and Korn, 2007), I made sure I broke up this lecture portion by asking the students questions throughout the session, aiming to facilitate discussion.

ii)   Group work

According to the social constructivism theory, individuals can only learn and develop by themselves up to a certain point (Vygotsky, 1978), beyond this the learner needs an instructor or peer to help them to understand new concepts and ideas. This can be achieved through group discussions. The session therefore included some small group work in line with the idea that learning is a collaborative process. Each group was allocated a different health topic that they were familiar with from a previous lecture and were asked to design a health promotion intervention to help them to consolidate learning from previous module sessions. This draws upon cognitive learning theory which postulates that the key to learning is through an individual's cognition with the 5 key aspects being; memory, thought, attention, perception and language processing. Although critics of the cognitive approach argue that it is reductionist in ignoring other factors shown to affect behaviour (e.g., upbringing, social context etc.).

By working together, to design an intervention to help solve a public health problem, this task encouraged the students to think about the potential applications of their intervention to a real-world scenario e.g., developing an intervention to help tackle the problem of inactivity within the workplace. In keeping with cognitive principles of learning, being mentally active to solve a problem involves higher order thinking skills

and processes, which in turn encourages greater information retention and memory (Braungart and Braungart, 2008) facilitating deeper level learning (Williams, 1992).

Although group classroom activities can be complex and difficult to plan (Bligh, 1986) it was hoped that this approach would help facilitate deep learning as the students would interact with each other and learn to solve problems. Presenting their intervention ideas back to the larger group encouraged greater class interaction and participation, allowing the group to explore new perspectives and helping students to improve on their communication and presentation skills (Girard and Trapp, 2011).

iii) Videos

In line with the VARK (Visual, Aural, Read/write, and Kinaesthetic sensory modalities) model and drawing on the aural and visual learning styles (Fleming and Baume, 2006) I used a few short videos to demonstrate different current health promotion campaigns. Videos can trigger discussion, stimulate thinking, increase memory of content, foster deeper learning and serve as a vehicle for collaboration (Snell, 1999, Berk, 2009). After the videos I allowed some time to discuss their content with the group. Guidelines have recommended that video clips are kept to a maximum length of three minutes (unless the learning outcome requires a longer extract), that the content of the videos relates directly to the purpose and that the number of videos is limited to only those few needed to get a point across. It is suggested too many could be confusing or distracting (Berk, 2009), with this in mind I only showed 2-3 short videos.

iv) Quizzes

A lecture style of teaching does not always provide the lecturer with any systematic information about whether the students are or are not learning and it has been suggested that feedback is important for learning (Jason and Westberg, 1991). To incorporate feedback into the session I used a short quiz at the end of the 45-minute lecture to test students' understanding of the key parts of the health promotion models and approaches presented to them. Providing this feedback both allowed me to check that learning was occurring and allowed students to check that they were correctly interpreting what was being taught.

The slides used in this teaching session are provided in my portfolio.

Evaluating the teaching session

To ensure teaching needs were met and that I had delivered an engaging and useful session, I had a senior lecturer in behavioural medicine sit in on my teaching to provide an independent review. I also put together a feedback sheet to hand out to the students. See Appendix 18 for my peer-review feedback and my portfolio for individual student feedback.

This teaching session was also recorded on a piece of software called Panopto which allows for the simultaneous capture of audio, video and applications. This meant I was able to listen back to my lecture and enabling me to reflect on how it went.

Reflection

Planning and delivery

While I felt I delivered the relevant information to the students during this teaching session I learnt a lot from the process and feel that there are a lot of areas that I can improve on that will help me develop as a lecturer.

What went well?

- *I paced the 45-minute lecture well and did not overrun.*
- *My slides were clear and did not contain too much information which could have been overwhelming and could have led to the students focusing on the slides rather than what I was saying.*
- *The short quiz was well-received, students interacted and provided answers*
- *Students came up with some great ideas when developing their own health promotion interventions. The student feedback sheets showed they enjoyed the process of developing the interventions.*
- *I presented myself professionally and was able to answer queries.*
- *The short 15-minute break provided, allowed students to approach the group work refreshed.*

What could be improved?

Although I asked questions throughout the session, I got very little response from the students. Having talked through with my peer-reviewer I am aware that I should not be afraid of the silence that follows asking question and not feel the need to fill the silence by moving on to the next slide. When teaching in the future I need to allow longer for students to get back to me with a response, and if they still do not respond I should try and re-phrase the question in different ways to aid discussion. In addition, I could also try asking students to talk to a neighbour to discuss posed questions and then get feedback.

I had been given a copy of the slides from the 2016 Health Promotion session. Whilst I took time adapting the slides to 'make them my own' I should have had more confidence in changing the content and order of the slides even more. As this was my first ever experience of teaching students, I was mindful not to alter the order of the slides too much, but I have learnt I need to do what works for me whilst still covering the main learning objectives.

I need to have a broader understanding of the topic I am teaching in addition to what's presented on my slides, including interesting case-studies that the students can relate to/ learn from. Whilst delivering the lecture, on occasion, I found myself reading from the slides. I hope that in the future I will have the confidence to talk around my slides more.

I also think the session could be made even more interactive by changing the layout of the room so that students sit in small clusters of 5 people rather than sitting in rows. I think that by changing the layout of the room it would be more conducive to group activities; for example, a post-it note exercise in which students brain storm definitions of health/health promotion before the answers are presented in the lecture.

Evaluating

The written and verbal feedback from my peer review (Appendix 18) was very constructive. The feedback highlighted the importance of providing additional detail beyond the information on the slides to help with learner engagement. The feedback

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also gave useful pointers on how to encourage more group discussion which I have tried to use in subsequent teaching. I also received some feedback from the students immediately after the session (individual student feedback included in my portfolio).

In summary, the average scores I received from the students are seen in Table 6. I was pleased to see my average overall rating was 4.6 out of 5 suggesting that students appreciated the session. Some of the comments from students suggested the session could be improved by more case studies, I think having more content to talk about beyond what is on the slides would help address this concern.

Table 6: Average student feedback scores from the Health Promotion session

The lecturer….	Average score out of 5 (5 being strongly agree)
Was well-prepared	4.9
Gave an interesting and informative lecture	4.7
Was good at explaining things	4.9
Taught at an appropriate pace	4.9
Was receptive to questions	4.8
Stimulated interest in the subject	4.1
Stimulated discussion about the subject	4.3
Stimulated me to think and learn	4.0
Had a good rapport with the class	4.4
Was available to answer Qs after the lecture	4.8
Was engaging	4.2
The slide content was organised & easy to follow	4.6
The session's content was relevant to my own needs as part of the course	4.7
Average overall student feedback score	4.6

Learning from feedback and making changes to my practice

Self-reflection (through listening back to my teaching session on Panopto) as well as student/peer feedback have been invaluable evaluation tools, helping to inform the subsequent lectures I have given as part of my 'series' of teaching required for the DPsych.

In particular the changes that I have made as a result of my learning, which I applied to the sessions I delivered on Behaviour Change Theories and Qualitative Research Methods in March 2018, include:

- *Developing my own slides to suit my own style and having the confidence to talk around them rather than relying on them. Please see my portfolio for a copy of the slides used in the qualitative research methods and behaviour change theories lecture.*
- *Using more case-studies and real-life examples to illustrate the point I am trying to make*
- *Ensuring the sessions have an interactive component, whether it be group-work, a quiz or videos.*
- *Eliciting discussion around a topic by having the confidence to hold a silence after asking a question and, if no response, re-phrasing the question.*

As with the Health Promotion lecture, I gathered student feedback after both the Behaviour Change Theories lecture and Qualitative Research Methods lecture. I found this useful in understanding whether the changes I made to my teaching sessions were having an impact on the student's learning experience. I was pleased to see that the student feedback scores for the last session I delivered had increased from the first session given (Table 7). Gathering student feedback also helped me to develop my teaching practice such as having the confidence to allow time for students to answer a question rather than trying to fill the silence with extra content.

Table 7: Average student feedback scores from the 'series' of teaching

The lecture….	HEALTH PROMOTION 07/12/2017 Average score out of 5 (5 being strongly agree)	BEHAVIOUR CHANGE THEORIES 15/03/2018 Average score out of 5 (5 being strongly agree)	QUALITATIVE RESEARCH METHODS 29/03/2018 Average score out of 5 (5 being strongly agree)
Was well-prepared	4.9	4.8	4.9
Gave an interesting and informative lecture	4.7	4.4	4.8
Was good at explaining things	4.9	4.5	4.8
Taught at an appropriate place	4.9	4.6	4.9
Was receptive to questions	4.8	4.3	4.8
Stimulated interest in the subject	4.1	4.1	4.5
Stimulated discussion about the subject	4.3	4.2	4.7
Stimulated me to think and learn	4.0	4.3	4.6
Had a good rapport with the class	4.4	4.6	4.7
Was available to answer questions after the lecture	4.8	4.7	4.6
Was engaging	4.2	4.6	4.7
The slide contents were organised and easy to follow	4.6	4.8	4.9
The session's content was relevant to my own needs as part of the course	4.7	4.6	4.7
Overall student feedback	4.6	4.5	4.7

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Appendices

Appendix 17: Health Promotion session lesson plan

Programme: Biomedical Science BSc   **School**: St George's University of London

Module: Behavioural Medicine. This   **Academic Level:** Undergraduate (year 3 of BSc)
session is on Health Promotion and
Changing Health Behaviours.   **Date**: Thursday 7th December 2017

Duration: 3 hours   **No. of students:** 20

Tutor: Charlotte Wahlich

Lesson aim:
To enable students to understand the importance of health promotion and to summarise the different models and approaches used in developing health promotion campaigns. This lesson will also give students the opportunity to create and design a health promotion intervention.

Specific learning outcomes:
Students will be able to: • Explain the importance of health promotion   • Define Health and Health Promotion   • Identify the agencies responsible for health promotion in the UK and their roles.   • Name some of modifiable determinants of health   • Discuss the clinicians' role in health promotion   • Summarise different strategies and approaches used in Health Promotion   • Give examples of health promotion in practice and how they have been evaluated   • Create and design a health promotion intervention to help tackle a current public health issue

Links to previous sessions:

Linked to previous sessions in the Health Promotion module e.g., smoking, physical activity and healthy eating.

Links to future sessions and assessment

This is the last session in the behavioural medicine module and will draw on health related topics from previous sessions.

Resources

PowerPoint

Envelopes including different health promotion problems.

Research paper presented by students at start of session

Evaluation of the session for future use

- Need to make the lecture session more engaging. Going through the different models of health promotion is a bit dry – need to have more case-study examples to make this section more engaging.
- Designing the intervention activity at the end worked well. It may be beneficial to give each group a piece of A3 flipchart paper and marker pens so they can write their ideas down and present back to the rest of the group.
- Due to time at the end of the session each group was asked to feedback one idea but by using the flipchart paper to record multiple ideas these could still be presented but not talked about explicitly when feeding back.

Time plan

Time	Teacher Activity and links to LO	Student Activity	Resources
14:00	Students present a research paper that was allocated to them last week.	x4 students present paper Other students listen	PowerPoint
14:10	Facilitate class discussion about presentation/research paper	Students ask/ answer questions	N/A
14:20	Lecture: Introduce topic: Health promotion. Go through learning outcomes for the session.	Students listen/read slides/answer questions	PowerPoint
14:40	Lecture: Present definitions of health and health promotion. Introduce different health promotion models and approaches.	Students listen/read slides/answer questions	PowerPoint
15:05	Short quiz to test students understanding of the different health promotion models and approaches. Different scenarios are presented to the students. 'A nurse explains all the different types of contraception available to the patient, the patient then chooses their preferred option'	Students presented with various scenarios and have to vote for the best fitting model/approach for each scenario (multiple-choice options) using 'Poll Everywhere'	PowerPoint
15:15	Present a 'real-life' example of a health promotion intervention	Students listen	PowerPoint

Time	Teacher Activity and links to LO	Student Activity	Resources
	taking place at St George's University of London		
15:30	BREAK Set up computer with videos of current health campaigns	Short comfort break for students	N/A
15:45	Present a few current health campaigns via video e.g., piano on stairs to encourage walking	Students watch videos and feedback any comments	PowerPoint and videos to health campaigns
15:55	Presentation by an internal Professor presenting another 'real-life' example of a health promotion intervention taking place at St George's	Students listen	PowerPoint
16:15	Outline plan for last 45 minutes of the session. Place envelopes containing a different health topic on each table e.g., alcohol abuse, teenage pregnancy, increasing uptake to breast screening, increase physical activity in the workplace on each desk Students allocated time to design an intervention to address the problem Envelope also includes some questions to consider: target audience; is the intervention behavioural or environmental?	Small group work – buzz groups (brief discussions generating ideas for follow-up) X1 designated scribe/illustrator per group. Students work together to design an intervention which will be presented back to the class for discussion.	Envelopes containing different health topic problem.

Time	Teacher Activity and links to LO	Student Activity	Resources
	What does the intervention involve? What is the main outcome? How will the outcome be measured?		
16:40	Review each group's intervention Q&A session	Small group teaching – mini-presentations x1 designated spokesperson presents intervention design to the whole group for discussion Qs from the whole group Reply from working group	
16:55	Conclude session, re-cap learning outcomes	Students listen	PowerPoint

Appendix 18: Peer feedback from delivering the Health Promotion session

Teaching and Training Observer's Report

Name of Reviewee: Charlotte Wahlich		Department/School: Institute of Medical & Biomedical Education		
Date of Review: 7/12/17	**Session/activity to be reviewed:** Lecture on Health Education & Promotion	**Module:** Behavioural Medicine	**Level:** 3rd Year Under-graduate	**Number of students:** 20

| **Areas you would like feedback on:** |
|---|
| - Style of communication
- Ability to answer questions/respond to students comments
- Preparation of materials |
| All |

Feedback on the identified areas:
The slides and accompanying information were well prepared and the lecture was delivered to a good standard. It was well paced, and pitched at the correct level. Delivery was clear and easy to understand. The lecture was well structured and easy to follow. Students were given the opportunity to participate and asked to contribute their knowledge and opinions. A non-threatening, accessible environment was established.

Some of the narrative descriptions and information related to the slides could have been more detailed with examples to make the teaching more memorable and applied, rather than confined to the information on the slides. Slides are useful prompts but it is helpful to provide more context and depth around this.   When asking the audience a question, giving them a little longer to think about their answer, breaking a question into component parts, or asking them to discuss with the person next to them first may be more likely to encourage them to participate.

Overall, this lecture was delivered well. Students were attentive and asked appropriate questions.

Additional comments:

This was the first time Charlotte had delivered a lecture and she did very well. I'm sure she will enjoy the experience more as her confidence increases and she becomes more familiar with the process.
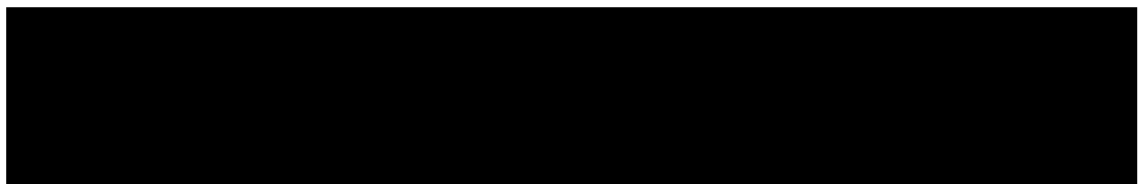
Date: 12/12/17

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SECTION D: SYSTEMATIC REVIEW

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Randomised controlled trials of community-based physical activity interventions in adults with long-term follow-up and objective physical activity measurements:

A systematic review and meta-analysis

This chapter has been redacted from this thesis as this piece of work is currently being considered for publication elsewhere.