SOCIAL MARKETING FOR PHYSICAL ACTIVITY AND HEALTH: ENCOURAGING PATTERNS OF PHYSICAL ACTIVITY IN SCHOOL CHILDREN

Submitted by

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I certify that all material in this *thesis* which is not my own work has been identified and that no material has previously been submitted and approved for the award of a degree by this or any other University.

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ABSTRACT

Physical inactivity is one of the major public health problems of the 21st Century. In England it is reported that two thirds of adults (>16 yr) and one third of children (<16 yr) do not do sufficient physical activity to gain the health benefits that leading a physically active lifestyle has to offer. The benefits of physical activity and dangers of a sedentary lifestyle to health outcomes are well documented and numerous studies have investigated physical activity participation. Indeed, many interventions have been trialled to increase engagement in physical activity; however results are weak and generally do not correlate to sustained physical activity participation. Furthermore, much debate exists on how best to encourage both children and adults alike to engage in sufficient physical activity to maintain a healthy lifestyle.

The purpose of this research was to address this important research gap and to assess the physical activity levels and other factors for promoting engagement in physical activity of school aged children in Devon aged 7-15 years in order to assess the feasibility of using social marketing within the school setting to increase sustained physical activity participation. A mixed methods approach was adopted to gather data and consisted of both quantitative and qualitative methods, in two phases. The initial phase was quantitative in nature and utilised a self-report survey based on the theory of planned behaviour (TPB) (Azjen, 1991) and social cognitive theory (SCT) (Bandura, 1977) to measure the participants' physical activity levels; it also measured their beliefs and attitudes, subjective norms, perceived behavioural control and self-efficacy pertaining to physical activity participation. The second phase utilised qualitative methods adopting the socio-ecological model (McLeroy et al., 1988) to identify opportunities to promote participation in physical activity in recognising the multiple factors (individual, social environment, physical environment and policy) that influence an individual's behaviour. This phase consisted of a series of interviews with the students, teachers and head-teachers to enable the researcher to gain in depth information into physical activity patterns and beliefs. During phase two, ethnographic research was also conducted across a number of schools in Devon to complement and enhance the data collected in the survey.

The results revealed that of the 1124 participants ('students') surveyed, 48% were not sufficiently active to meet the government guidelines. Males were 30% more active than females. Physical activity decreased with age (e.g. 15 yr olds on average taking part in 3 hours less activity than 7 yr olds). Lifestyle/recreational activities were the most regularly participated activities (e.g. walking – 52%, running – 31%, football – 29%, outdoor play – 28%). Moreover, attitudes, subjective norms and perceptions of behavioural control affected physical activity participation both in and out of the school setting. Self-efficacy also played a role in physical activity participation. The results of the thesis show that interview and ethnographic data produced a rich source of evidence. Physical activity provision within schools played a major role in students' physical activity. Overwhelmingly the qualitative data revealed that students want greater choice in the physical activities they participate in and suggest that the focus of PE lessons should be on having fun and enjoyment rather than skills and rules. Transition from primary to secondary school affected physical activity participation and therefore experiences in schools, may affect children's general views on physical activity which it is suggested may impact on physical activity participation beyond the school gates and also in adulthood.

This thesis provides substantial evidence to support the link between the school environment and participation in physical activity in children and adolescents. More specifically it highlights a need to incorporate a 'whole school approach' to physical activity participation. This research has demonstrated that there is an urgent need to combine theory based physical activity research in schools with that of social marketing. Physical activity researchers and social marketers should combine their knowledge to bring together social marketing campaigns within schools to enhance the health and wellbeing of the whole school environment for both staff and students. An innovative school based social marketing campaign should encourage physical activity both within and outside the school environment and lead to sustained levels of physical activity participation across the life stages.

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ABBREVIATIONS

Analysis of Variance (ANOVA) - is a collection of statistical models used in order to analyse the differences between group means and their associated procedures (such as "variation" among and between groups), developed by R. A. Fisher.

Attitude – A psychological tendency that is expressed by evaluating a particular behaviour with some degree of favour or disfavour.

Behaviour – An action that is carried out at a specified time and is described in terms of the action itself, its target and the context.

Behavioural Beliefs – The perceived consequences of an action.

BMI – Body Mass Index

CHD – Coronary Heart Disease

CVD – Cardiovascular Disease

Competitive sport - Competition refers to a contest for some prize, honour or advantage. http://dictionary.reference.com/browse/competition; competitive sport is usually played or participated in between two or more persons or teams striving for the common goal of winning.

Confident - To be certain about something or feeling sure of oneself and one's abilities. http://www.yourdictionary.com/confident

To promote confidence students should be appropriately challenged and praised for working to the best of their ability and making progress. In turn, this should motivate and encourage them to have a go and try new things. It is also important pupils feel confident in their teacher's knowledge and ability to support their learning. http://www.afpe.org.uk/advice-on-new-national-curriculum/new-national-curriculum

Content Analysis – Qualitative analysis of verbal data to discover the underlying topics of themes. References to these themes are often counted to determine the most frequently mentioned items.

Control Beliefs – Beliefs about the likelihood that one possesses the resources and opportunities thought necessary to execute the behaviour (Ajzen & Fishbein, 1980).

Elicitation Study – A qualitative investigation of a subset of a population under investigation, to discover the salient behavioural, normative and control beliefs about the behaviour.

Exercise - A subcategory of physical activity that is "planned, structured, and repetitive, and results in the improvement or maintenance of aerobic power, muscular endurance, muscular strength, body composition, and flexibility" (Caspersen, 1985).

Fitness - There are two main types of fitness, health-related and skill-related. In the National Curriculum for Physical Education, the term is used to refer to health-related fitness. This comprises five components (cardiovascular endurance, muscular strength, muscular endurance, flexibility and body composition). Personal fitness - Personal fitness is the composite level of these five components that an individual possesses at any point in time.

Health is a state of complete physical, mental, social and spiritual well-being, free from disease. Physical health is linked with a capacity to enjoy life and cope with challenges. Negative health is associated with *morbidity* (physical or mental illness) and, in the extreme, with *mortality* (an individual's death).

Intention – A person's motivation in the sense of his or her conscious plan to exert effort in to carry out a behaviour.

Moderate to Vigorous Physical Activity (MVPA) – refers to the intensity of the exercise where at moderate level you can talk but not sing, and at vigorous level you would be unable to hold a conversation.

NICE – National Institute for Health and Clinical Excellence

Normative beliefs – Perceptions of significant others' preferences about whether one should perform a behaviour (Fishbein, 1980)

Outcome evaluation – Evaluation of the perceived consequences of an action.

PAR-Q – Physical activity readiness questionnaire

Perceived behavioural control - Refers to people's perceptions of their ability to perform a given behaviour (Arjen, 1991).

Physical activity (PA) – 'Any bodily movement produced by the skeletal muscles resulting in a substantial increase over the resting energy expenditure' (Bouchard & Shephard, 1994). PA can be measured using duration, intensity and frequency. **Duration** is the time spent in the activity. **Intensity** is the level of physical effort required and is divided into light, moderate, and vigorous bands. **Frequency** is the number of times PA is repeated and is usually measured per week. It is further classified into weight bearing such as carrying your own body weight (e.g. walking) or free-weight training (e.g. weight lifting) or non-weight bearing such as swimming and cycling.

Physical Inactivity – Is described as the non-engagement of physical activity 'beyond daily functioning' (CDC, 1996).

Physical education (PE) – is an educational course related to the physique of the human body, taken during primary and secondary education that encourages psychomotor learning in a play or movement exploration setting to promote health.

Point of decision prompts (PODPs) - provide a creative way in which signage and messaging can be used to encourage physical activity and especially use of the stairs. In addition to placement of POD prompts to encourage stairwell use, efforts can also be made to improve the safety and appeal of stairwells. The way in which point of decision prompts are designed and placed is key to their success.

Reliability – A property of a measuring instrument, indicating the extent to which it yields consistent results over repeated observations.

SD – standard deviation.

Self-efficacy – refers to an individual's belief in his or her capacity to execute behaviours necessary to produce specific performance attainments (Bandura, 1977, 1986, 1997). Self-efficacy reflects confidence in the ability to exert control over one's own motivation, behaviour, and social environment.

Sedentary Behaviour – refers to any waking activity characterized by an energy expenditure ≤ 1.5 metabolic equivalents *and* a sitting or reclining posture. In general this means that any time a person is sitting or lying down, they are engaging in sedentary behaviour. Common sedentary behaviours include TV viewing, video game playing, computer use (collective termed "screen time"), driving automobiles, and reading. Sedentary Behaviour Research Network. 2012.

Sedentary Lifestyle - the Health Survey for England (2007) defines children as sedentary if they either do no physical activity at all or less than 30 minutes a day of moderate intensity activity.

Social Cognitive Theory (SCT) – explains how people acquire and maintain certain behavioral patterns, while also providing the basis for intervention strategies. It argues that the environment affects behaviour by constraining and changing beliefs (Bandura, 1997).

Socio-ecological Model (SEM) - is a theory-based framework for understanding the multifaceted and interactive effects of personal and

environmental factors that determine behaviours, and for identifying behavioural and organizational leverage points and intermediaries for health promotion within organizations (McLeroy et al., 1988)

Social Marketing - Social marketing is an approach used to develop activities aimed at changing or maintaining people's behaviour for the benefit of individuals and society as a whole. - See more at: http://www.thensmc.com/content/what-social-marketing-1#sthash.Ctm47ogZ.dpuf

Sport - is defined as 'rule-governed, structured and competitive and involves gross motor movement characterised by physical strategy, prowess and chance (Biddle & Mutrie, 1991:8)

Sustained - To keep up or keep going; as an action or process; in the physical education context to keep up/maintain the behaviour of physical activity. http://dictionary.reference.com/browse/sustained

Theory of Planned Behaviour (TPB) – is a belief based social cognitive theory and is a revision of the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). It is a theory that links beliefs to behaviour and is used to predict and explain a person's intention to exercise.

Validity – A property of measuring instruments or of responses indicating the extent to which they measure what they are supposed to measure.

Well-being - physical, psychological and social states that are distinctly positive.

WHO – World Health Organisation

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CHAPTER 1

INTRODUCTION

1.1 Studying physical activity: research rationale

In order for PA aspirations set by the Department of Health targets to be met (Department of Health, 2011) and increase the number of children participating in a minimum of at least 60 minutes of PA per day, new methods to initiate behaviour change to facilitate healthy lifestyles need to be researched and implemented. Participation in appropriate levels of PA is beneficial to health, and promoting physical activity is an important component of the Department of Health's strategy in improving the health of the nation (Caspersen et al., 1995; NICE, 2009). Recently, due to the concerns of increasing cases of overweight, obese and type 2 diabetic children, PA and the strong associations to poor health in adulthood are being reviewed in the context of sustainability. The effects of PA and health outcomes are well known in adult populations but less well understood are the relationships between PA, health and fitness in children. Reviews from NICE (National Institute for Health & Clinical Excellence, 2008) have highlighted the importance of enhancing opportunities for PA within the school, family and community setting.

While recent policy and activity has been directed at strengthening the public health role of the NHS and local government facilitating partnership working to improve population health, difficulties remain in many areas due to capacity problems, differing health priorities within PCTs, the impact of continual organisational changes and the lack of alignment of performance mechanisms between partners. Much of the workload in the health services in lowering obesity rates and increasing PA will fall on the PCTs (Wanless, 2004). However, PCT's have other health priorities such as meeting targets with regard to community health services, reducing teenage pregnancy rates, tackling drug and alcohol abuse, reducing the prevalence of genitourinary transmitted diseases (Wanless, 2004). Therefore, due to the length of time children spend in schools and the consistent influence that schools have on children and adolescents, the school environment has a potentially unrivalled position and privileged opportunity to promote and implement PA thereby contributing to the health of future generations (Waring et al., 2007).

Schools have been identified as environments in which healthy PA behaviours can be fostered by children and adolescents and where they can accumulate

healthful levels of PA (Fairclough et al., 2009; Fox et al., 2004). Furthermore, schools should be encouraged to deliver multi-component PA programmes on another dimension to the existing research on PA.

This research will be embedded in a methodology that will explore the differing barriers and motivations for adopting sustainable patterns of PA in schools in the South West of England. Schools have already been identified as key settings for implementing health-enhancing behaviours such as PA and healthy eating interventions in the battle to combat overweight and obesity in the UK (NICE, 2009). Despite only accounting for an extremely small percentage of the school week, traditionally PE lessons are seen as the primary source to increase PA and sports participation in schools. Yet, schools are also able to provide a unique context and a number of different opportunities for students to learn and develop healthy behaviours, at a time in their lives when they are receptive to behaviour change (Fox et al., 2004). The school environment clearly has the potential to increase the PA levels of its children by changing their beliefs on PA, educating children as to the health benefits of PA, facilitating participation and increasing self-efficacy. In investigating ways in which social marketing can be used to enhance change in PA patterns, facilitating modal shifts from sedentary activity to other more active choices, schools will benefit from 'physical active' environments. Accordingly, the research fits within the 'sport health and wellbeing' theme in which these relate to personal choices concerning activity, health and their marketing context and it therefore contributes to the work in well-being on innovation and PA marketing. Indeed, the research is embedded within a national policy-making framework for sustainability that is emphasizing the importance of social marketing towards pro-environmental and PA change.

Changing PA behaviours of children is complex. Whilst social marketing campaigns can change health behaviours the effects can often be small (Hornik, 2002). A well run multi-faceted social marketing campaign should have a positive impact on attitudes towards PA by surrounding children with engaging messages and promoting opportunities for PA participation both in schools and in their daily lives, thereby resulting in sustained patterns of PA in order to foster PA for life. Whether or not social marketing can bring about behaviour change remains that of an empirical question (Hastings & Domegan, 2014). Following on from the

rationale for the research, the remainder of this introductory chapter outlines the background for research into PA in section 1.2. Section 1.3 sets out the research focus. Finally section 1.4 gives an overall structure of the thesis.

1.2 Research background

There are two epidemics within the UK, one is obesity and the other is physical inactivity, which contributes to the cause of the other (Blair, 2007). Illnesses associated with a poor lifestyle are becoming ever more prominent and impact on not just individuals but the population as a whole (Thirlaway & Upon, 2009). Inactive lifestyles are now a major cause of obesity; whilst portion sizes have increased and are more palatable, and energy-dense foods are freely available, the predominant cause of obesity is the reduction in energy expenditure (Blair, 2007). Other chronic lifestyle diseases such as coronary heart disease, stroke, certain cancers and type II diabetes, osteoporosis, osteoarthritis and depression have been linked to a decrease in or lack of PA (Department of Health, 2004; Thirlaway & Upton, 2009). Despite clinical symptoms not presenting until adulthood, the origin of many chronic diseases begins in early childhood (Twisk, 2001). Moreover, whilst lifestyle related diseases are generally associated with adulthood, the numbers of children suffering from type II diabetes, hypertension, metabolic syndrome and depression are on the increase in children (Ahrens et al., 2006; Loke, 2002; Reilly, 2005). This is likely to be the result of lifestyle changes within families which have led to a decrease in PA, an increase in sedentary behaviours and unhealthy diets (Burke, 2006; CDC, 1996; Lottenberg, 2007).

1.2.1 The benefits of physical activity

The benefits of PA and dangers of a sedentary lifestyle are well documented in both children and adults and include physical, psychological, mental and sociological benefits (Biddle et al., 2004; Fox, 1999; Hardman & Stensel, 2003). The evidence of the health benefits from PA in adults is convincing (Anderson & Mechelen, 2007) and decreases the risk of the incidence from either chronic diseases or risk factors for chronic diseases (Economos, 2001). Engaging in regular PA together with partaking of a healthy diet is critical in the prevention of many chronic health conditions such as cardio-vascular disease, hypertension, obesity and diabetes, certain cancers, as well as improving bone health and

overall quality of life (Biddle et al., 2004; Bratteby et al., 2005; Livingstone, Robson, Wallace & McKinley, 2003 Riddoch & Boreham, 1995; Twist, 2001). PA is also beneficial to psychological health, benefits of which include improved self-esteem and emotions, and in the treatment of depressive illness (Biddle & Mutrie, 2008; Taylor et al., 1999).

Not only is PA linked to improved physical health in children and adolescents, PA is also an important contributor to their psychological health (Calfas & Yaylor, 1994; Mutrie & Parfitt, 1998; Thirlaway & Upton, 2009). However, the benefit of being physically active has been vague in children mainly because of the lack of hard endpoints and lack of evidence for a dose-response relationship (Anderson & Mechelen, 2007; Twisk, 2001). Nevertheless indications are that an active lifestyle tracks through from childhood into adulthood with regular PA patterns being established in early life (Armstrong & McManus, 1994). Research by Hallal et al., (2006) also found strong correlations between PA in adolescence and adulthood. Since it is generally accepted that the onset of many chronic diseases lies in childhood, preventative strategies such as PA should commence early in life in order that PA becomes a way of life (Stromme et al., 2001). Therefore greater efforts should be made to capitalise on PA within the school setting (Hills et al., 2014).

1.2.2 Poor levels of physical activity in children and adolescents

It is well documented that PA is an extremely important behaviour related to a number of health outcomes in both children and adolescents (Ekblom & Astrand, 2000; Hallal et al., 2006), yet evidence suggests that many children and adolescents do not participate in sufficient PA of the type and intensity to incur health benefits (Cale & Almond, 1992). Current PA data from the BHF (2012) found that in children aged 5-15 years only 21% of boys and 16% of girls met the recommended levels of PA, a decrease since 2008 when 28% of boys and 19% of girls met the guidelines. In 2008, 61% of men and 71% of women aged over 16 years failed to meet the minimum adult recommendations for PA. (National Obesity Observatory, 2012). Estimates for the annual costs to the NHS as a result of inactivity are between £1 billion and £1.8 billion (Chief Medical Officer, 2009). Physical inactivity is now identified as the fourth leading risk factor for global mortality, being responsible for 3.2 million or 5.5% of all deaths (WHO,

2011). In the UK inactivity is responsible for one in six deaths, the same number as smoking (Health and Social Care Information Centre, 2014). It is estimated that adults who are physically active have a 20-30 per cent reduced risk of premature death; furthermore, people who are physically active can achieve up to a 50 per cent reduced risk of developing major lifestyle diseases: stroke, diabetes, cancers and coronary heart disease (Department of Health, PA, Health Improvement and Prevention, 2004 cited in Thirlaway & Upton, 2009). However, achieving a physically active lifestyle begins in childhood, yet there has been a marked decline in the amount of PA children enjoy in their spare time (Almond, 2004). This is even more prevalent during adolescence (Twisk, 2001), when a major decrease in PA levels is often observed. Therefore attention should be paid to children's PA behaviours to help prevent this cessation (Bélanger-Gravel & Godin, 2010).

1.2.3 Physical activity in schools

Although it is frequently assumed that PA is an integral part of growing up, numerous studies show that children and adolescents are often physically inactive and compulsory school involvement often fails to translate into leisure time PA (Kristjansdottir & Vihjalmsson et al., 2001). English schools are at the bottom of the European league in terms of time allocated to physical education in both primary and secondary schools. Current studies indicate that children today are probably less fit than children a generation ago (Harsha, 1995). A modern society has been created, in which as a nation we are faced with the real possibility that the first generation of children of the new millennium could be the first since the rise of the industrial revolution to have a shorter lifespan than their predecessors, unless there is a shift towards healthier lifestyles (Department of Health, 2007; IOFT, 2006). There are a number of factors that have caused this steady decrease in activity in children namely lack of active transport, time, loss of freedom to play outdoors, excessive sedentary behaviour including screen time activities such as television viewing and interaction with computer games. School takes up approximately 40% of students' waking time and should present the greatest opportunity for students to be active. This is especially so during the winter months when daylight hours for PA are during the school day. Therefore the school day should be an ideal environment for students to accumulate sufficient PA beneficial to health (Fox 2004; Cale & Harris, 2006). The role of

school PE is both to educate and to ensure children are physically active for sustained periods of time (Department of Education, 2013). Yet in many schools, the crowded school curriculum with an intense focus on academic achievement has led to priorities for PE being low compared with academic subjects (Annesi, 2006). There is also a lack of school leadership support with head teachers simply not addressing the advantages of PA in schools (Almond, 2004). Moreover, lack of funding and resources coupled with poor quality teaching are also barriers to PA promotion in schools (Hills et al., 2014). In primary schools PE is often conducted by non-specialists, yet even when a PE specialist does take a primary class only 10-36% of the lesson is spent in moderate to vigorous PA which is what children require in order to gain maximum health benefits from exercise (Waring et al., 2007).

In schools, PE curriculum time has been squeezed to make way for the more academic subjects of English, Maths and Science, as school league tables play a more important role in schools than the physical and emotional wellbeing of students. PE and healthy cooking are no longer seen as a priority as they have no impact on league tables in schools, which are seen to be deemed important in pupil retention. Due to the increasing demands on schools to provide basic education, after school time should represent the greatest opportunity to increase PA in children (Dzewaltowski, 2008), yet few children engage in after school activities (Reilly et al., 2006). Therefore, given the high prevalence of overweight children and low levels of PA, a greater understanding of PA behaviour is an important process in developing effective strategies to target the causal processes of behaviour change to increase after school PA (Bauman et al., 2002; Bélanger-ravel & Godin, 2010). Identifying ways to increase and sustain active lifestyles among children and young people represents a priority for health promotion interventions (Brooks et al., 2006).

1.2.4 Interventions and the potential role of social marketing approaches

It is important that early intervention is implemented so that children develop the tools in which to make healthy lifestyle choices relating to PA, together with being given positive PA experiences. These experiences need to be reinforced throughout childhood to lower a child's health risk and prevent unhealthy behaviours from forming (Hamilton et al., 2013). Furthermore, increasing

awareness of the health benefits of PA may also help to reverse the misconceptions of PA levels and encourage behaviour change among children (Corder et al., 2010). However, finding ways in which to encourage and empower children into taking part in long term sustained patterns of PA is not an easy task. However, there is one strategy that has been around for the last few decades namely social marketing and is used as a multi-faceted tool to change the behaviour of specific target groups for social good (Gordon & Moodie, 2009). This has been a response to research in the social sciences that has demonstrated that information alone is not sufficient to change behaviours.

Social marketing combines the principles of commercial marketing, borrowing heavily from traditional marketing approaches; with health promotion attributes and brings together the ideas, attitudes and healthy lifestyle changes to bring together an effective social marketing strategy (Dann, 2010). In combining these ideas social marketing aims to discover ways in which the specific behaviour can appeal to the target audience (Evans, 2008). This is so that it is seen as interesting and desirable and moreover the benefits of changing the behaviour will outweigh the perceived personal and social costs in changing the behaviour.

Social marketing based strategies for health communication are increasingly being used to facilitate and support health behaviour change and have been adopted by the government as a successful way to change the behaviour of individuals in order to improve the personal welfare of specific target audiences, which in turn improves society as a whole (Barr & Prillwitz, 2014; Gordon et al., 2006a; Raftopoulou et al., 2010). Change4Life is a public health social marketing campaign that has been developed for the government to change health behaviour. It began in January 2009 and initially focused on the health behaviours of children 0-11 years in a bid to tackle the causes of childhood obesity, mainly through changes in dietary behaviours but also through PA. In recent years it has sought to tackle the health of other sections of the population namely middle-aged adults (Department of Health, 2010). Whilst Change4Life is an excellent initiative, it relies heavily on parents to be proactive in accessing the information relating to the programme. Particularly in Devon it is the researcher's observation both as a researcher, teacher and parent that Change4Life is not very well advertised to parents and therefore parents and children are not able to

access the valuable information that Change4Life presents. Furthermore, information on Change4Life appears not to infiltrate through to the schools in Devon. There have been a number of other successful local social marketing campaigns that have taken place throughout the UK but to the researcher's knowledge none of these have been school based in Devon.

Yet, the school arena is an important vehicle in which a social marketing campaign to increase PA could be used. The vast majority of children in the UK attend school and therefore the government are able to access both children and parents in a bid to increase PA via a school based social marketing campaign. Successful social marketing campaigns could potentially highlight the beneficial effects of PA together with encouraging children to engage in physical activities. Therefore this thesis will examine and discuss integrating social marketing with PA research in order to make a novel contribution to the literature that already exists on social marketing and PA in schools, albeit that they are currently separate entities and have yet to be combined.

1.3 Research Focus

It is against this backdrop of children's PA that this thesis will build on existing research using a mixed methods design which incorporates the theories of theory of planned behaviour (TPB), social-cognitive theory (SCT) and socio-ecological model (SEM).

1.3.1 Aims and Objectives

This research aims to enhance current knowledge of PA in school children through using a mixed-methods approach. The research further aims to explore the implications of this approach for developing social marketing campaigns in schools to promote behaviour change.

Using the theoretical lenses described above this will be achieved by the following objectives:

1. To describe and explain the PA choices of school children.
2. To use quantitative research methods to investigate the motivations and barriers to PA thereby reducing sedentary activity and switching to a more active lifestyle.

3. To use in-depth qualitative research methods to explore the views of both students and teaching staff in relation to PA.
4. To explore the potential and implications for a social marketing approach to enhance PA amongst school aged children

1.3.2 Research Questions

More specifically this research asks the following questions:
1. What influences, motivations and barriers to participation do school children identify?
2. How is PA perceived and experienced by school children?
3. In what ways do individual, socio-cultural and environmental/political factors impact on the PA of school children?

1.4 Structure of the Thesis

Chapter Two provides a literature review of the area of PA research. The literature review will enable the reader to gain an overview of the vast amount of research that other researchers have undertaken into the area of PA. Focusing particularly on children and adolescents, this literature review discusses the beneficial effects of PA. It focuses on key research which will be highlighted throughout. This review develops the rationale for the series of studies in this thesis.

Chapter Three provides a literature review focusing on the theoretical perspective of PA behaviour change. This chapter reviews the theoretical models used within this thesis namely theory of planned behaviour (TPB) (Ajzen & Fishbein, 1980), social-cognitive theory (SCT) (Bandura, 1977) and socio-ecological model (SEM) (McLeroy et al., 1988). TPB has been used widely in understanding PA behaviours and is therefore an appropriate model to ascertain the beliefs, attitudes, social influences, barriers and self-efficacy of the school children. The SEM addresses the components of (individual, social environment, physical environment and policy); the relationship between the multiple levels of influence and PA (McLeroy et al., 1988). This chapter moves on to review social marketing and its' role on behaviour change. This review further develops the rationale for social marketing within the context of schools. More specifically it

focuses on social marketing that has been undertaken in relation to PA behaviour change.

Chapter Four provides a methods section in which it details the respondents who are school children aged between 7 and 15 years. The methods section details each study in turn. The first focuses on the quantitative study whereupon questionnaires are used, and the internal consistency of the research data checked. The questionnaire provides information on the PA and sedentary behaviours of the children and examines the beliefs, attitudes, social influences, barriers and self-efficacy of the school children. Based on the results from the questionnaire research the respondents are segmented. This chapter further details the qualitative element of the research. The next study uses the method of focus group interviews in order to elicit in depth information regarding the PA behaviours of the respondents. The chapter then moves onto the next part of the research where individual interviews take place with the school staff. Finally the chapter discusses the ethnographic research that takes place in the schools, more specifically participant observation. This chapter also highlights the PhD process together with the limitations and strengths of the research.

Chapter five will give the results of the quantitative analysis of the questionnaire study. This chapter also showed the analysis that took place to segment the participants into similar groups. This enabled focus group interviews to take place with groups of participants who exhibited similar activity levels, sedentary levels, health beliefs/attitudes towards PA coupled with similar social support.

Chapter six gives the results of the focus group interviews with the school students, the results of individual interviews with the teachers/head teachers and the results of the ethnographic research conducted in the schools.

Chapter seven discusses the results in detail in a summary of the research findings. A discussion of the theoretical and applied implications of the research is presented. This also looks at the implications for policy and practice for social marketers together with recommendations for inclusion into a social marketing campaign. Final conclusions of the PhD thesis are provided in chapter eight.

CHAPTER 2

UNDERSTANDING AND PROMOTING PHYSICAL ACTIVITY AMONGST CHILDREN AND YOUNG PEOPLE

2.1 Introduction to physical activity – literature review

Following on from the introduction to this thesis, this chapter reviews the literature on participation of PA in school aged children. The purpose of this chapter is to discuss the wider literature which is relevant to the present study. It will be argued that rates of PA in the UK are low despite evidence showing that PA is beneficial to health and wellbeing. This will be achieved initially by focusing on the current guidelines and the statistics in relation to PA engagement; gender differences in PA participation; the measurement of PA. The focus will then turn to discussing the benefits of leading a physically active lifestyle such as obesity prevention, preventing cardiovascular disease and metabolic disorders, psychological wellbeing and the treatment of depression. Next attention turns to the determinants and correlates of PA participation and school physical education. The chapter concludes with a rationale for the research project and explains why it is necessary to explore new and different ways of engaging children in PA.

For school-age children daily PA is essential for the promotion of health, growth and well-being (Strong et al., 2005). In adults, activity can prevent against the health risks of obesity such as diabetes, cardiovascular disease, hypertension and certain cancers, among others. PA confers its own health benefits above and beyond what it can provide for weight control. Physical inactivity is recognised as an important determinant for chronic disease (Twisk, 2001). Physical inactivity remains one of the top 10 causes of disease and disability in the UK (Newton et al., 2015). Many chronic adulthood diseases are now appearing in childhood such as type 2 diabetes, obesity and depression (Ahrens et al., 2006; Loke, 2002; Reilly, 2005). Whilst the benefit of being physically active in children has been vague, it is possible that an active lifestyle tracks through from childhood into adulthood (Andersen & Mechelen, 2007; Twisk, 2001). Research by Hallal et al., (2006) found strong correlations between PA in adolescent and adulthood (adjusted prevalence ratio 1.42; 95% CI: 1.23; 1.65). The effect of adolescent PA on the level of activity during adult life was higher in women than men. The adjusted prevalence ratios for those who engaged in PA in adolescence were 1.51 ($p<0.001$) for women and 1.35 ($p=0.004$) for men. Since it is generally accepted that the onset of many chronic diseases lies in childhood, preventative strategies such as PA should

commence early in life in order that PA becomes a way of life (Hallal et al., 2006; Healthychildren.org, 2015; Stromme et al., 2001). Furthermore, increasing awareness of the health benefits of PA may help to reverse the misconceptions of PA levels and encourage behaviour change among children (Corder et al., 2010).

2.2 Current Physical Activity Guidelines

Researchers agree that maintaining a physically active lifestyle is beneficial to children. In response to this, guidelines have been drafted to determine the amount of PA required for health. Whilst effort has been put into the development of PA guidelines for children and adolescents the scientific evidence, both biological and psychological on which these guidelines are based are still weak (Twisk, 2001). The amount and type of PA undertaken during childhood that is appropriate for optimum health and the treatment of health problems is debated and so health professionals are unable to achieve consensus statements and guidelines in PA that are backed by a strong evidence base related to positive health outcomes (Hallal et al., 2006; Katzmarzyk et al., 1998; Livingstone et al., 2003; Riddoch & Boreham, 1995; Steinbeck, 2001; Stromme et al., 2001). Nevertheless, thresholds that determine whether PA is beneficial to health enable researchers and those involved in promoting PA to evaluate whether children are engaging in sufficient PA to be beneficial to their health. Furthermore, having guidelines enables researchers and health promoters to distinguish those not engaging in sufficient PA and focus their attention on increasing their activity levels.

2.2.1 Review of physical activity guidelines

For health purposes, the recommended guidelines of PA for adults, children and adolescents are regularly reviewed and updated by government and non-government health organisations after consultation with experts in PA (Haskell et al., 2007; Pate et al., 2005; Strong et al., 2005). The latest guidelines were updated in 2011 (as detailed in table 1) (Health & Social Care Information Centre, 2013) and in the UK it is recommended that children should engage in moderate (i.e. bike riding, playground activities) to vigorous intensity PA (i.e. fast running, football) for at least 60 minutes and up to several hours every day. Vigorous intensity activities, including those that strengthen muscle and bone

(i.e. hopping/skipping, gymnastics/tennis) should be incorporated at least three days a week. Furthermore, all children should minimise the amount of time spent being sedentary (sitting) for extended periods (Department of Health, 2011). However, PA assessment for children and adolescents is not easy and is still a big challenge (Armstrong and Welsman, 2006).

Table 2.1: Current guidelines published by the Department of Health (2011) suggest the following recommended levels of physical activity:

• Under-fives: 180 minutes (three hours) each day, once a child is able to walk.
• Children and young people (5–18 year olds): 60 minutes and up to several hours every day of moderate to vigorous intensity physical activity. Three days a week should include vigorous intensity activities that strengthen muscle and bone.
• Adults (19–64 years old) and older people (65+): 150mins (two and half hours) each week of moderate to vigorous intensity physical activity (and adults should aim to do some physical activity every day). Muscle strengthening activity should also be included twice a week.

2.3 Physical Activity Levels in Children

The extent to which children adhere to PA recommendations is unclear because surveys with objective measurements of PA are not available, and also different methods and instruments may affect results (Hardman & Stensel, 2003). Regrettably, studies and health surveys have indicated that many children do not meet the recommended PA levels (Economos, 2001; Westerstahl et al., 2005). A report by Kopelman et al., 2004 found that in England, almost one third of males and two-fifths of females did not achieve the recommended weekly PA levels. Since 2004 that figure has not improved and PA levels have decreased further. The Health Survey for England (2014) shows in self-reported levels on PA levels in children aged 5-15 yr, that only 21% of males and 16% of females meet the government's recommendations for PA as

opposed to 28% in males and 19% in females in 2008. With 79% of males and 84% of females not meeting the minimum recommendation children are being exposed to health risks. Of particular importance the data showed the percentage meeting the recommendations peaked at age 8-10 yr in boys (26%) and aged 5-7 yr in girls (23%), rapidly declining with age, decreasing to 14% in boys and 8% in girls aged 13-15. By comparison, a UK study examining patterns of levels of PA using accelerometer to measure children of 11 years from the Avon longitudinal Study of PA (ALSPAC) found much lower levels of MVPA; the median time spent in MVPA was 20 min d^{-1} with males accumulating 25 min d^{-1} and females only 16 min d^{-1} (Riddoch et al., 2007). However, the large differences could have been due to the cut points used or the criterion for which MVPA was defined.

However, whilst there is conflicting data as to how much children meet current PA guidelines there is however consensus among researchers that PA declines with age, especially in females (Riddoch & Boreham, 1995), males being more active compared to female counterparts (Riddoch et al., 2004). In adulthood PA levels decrease further. The National Health Service Information Centre, (2011) found that only 6% of males and 4% of females met the government's recommended PA level of 30 minutes of moderate intensity activity five times a week and 32% of men and 33% of women were sedentary for 6 or more hours on a typical weekday.

2.3.1 Gender Differences in Physical Activity

In studies measuring the PA in males and females, it is consistently found that males are more active than females (Ness et al., 2007; Rowlands, et al., 1999; Rowlands et al., 2008; Trost et al., 2002). Rowlands et al. (2008) investigated PA differences between weekdays and the weekend in children 9-11 years in the South West of England. It was found that the frequency, duration and intensity of bouts is greater in males than females and females accumulated more activity sporadically than males. Duration of bouts was greater on weekdays than on weekend days, hence children are more active on school days. This shows that the school's influence did not have an impact on PA levels in children outside of the school environment. The same was also found in central England in a study by Duncan et al., (2007) who conducted research in 208 British primary school

children, mean age 9.3 years over 4 consecutive days – 2 weekend and 2 weekdays. Males attained significantly higher mean steps per day than females which were higher weekdays than weekends (13,827 and 10,334 for males and 12,263 and 11,748 for females). 29.7% of males and 46.7% of females achieved or exceeded the health related cut off points for health and the percentage of children failing to meet this was higher in overweight and obese children. It should be pointed out that the discrepancy in females achieving a higher percentage than males is that for males the cut off was 3000 steps/day greater than for the females. In this study, however, females were more active than males on a weekend as males activity levels dropped more than females on the weekend.

2.3.2 Socio-economic differences affecting physical activity

The PE and Sport Survey, 2008/09 found a link between the level of participation in PE and School sport, eligibility for free school meals, multiple deprivation and the proportion of children in the school from an ethnic minority backgrounds. Schools with lower levels of participation in PE/school sport tend to have relatively high proportions of children who are eligible for free school meals, multiple deprivations or are from ethnic minority backgrounds. Schools located in relatively deprived already and those with a relatively high proportion of pupils from ethnic minority backgrounds have a tendency to have less numbers of club links than other schools. Whilst the survey did not collect data based on gender, it did however differentiate between mixed and single gender schools. The data found that mixed and male only schools are more likely to participate in 3 hours of PE per week than those in female only schools with only 33% of female only schools participating in 3 hours of PE per week. However it is worth noting that female only schools represented only 3% of schools across the UK.

Opposing results were found in a study by Trayers et al. (2006) who investigated PA levels from an inner city British primary school in an area of deprivation and found that 100% of pupils achieved PA guidelines and found levels of activity to be comparable with children from other populations' i.e., affluent areas. There was also no difference between weekday and weekend activity levels. As the research was conducted in one geographically defined area during the spring and summer, it can be assumed that the results may not be generalizable to other

groups of children and the activity levels may not be representative of the whole year. This is due to children being more likely to play out during the spring and summer months due to it staying light for longer and the temperature being higher in spring and summer. Due to cost implications it is therefore less likely that parents from inner city schools in areas of deprivation would have the finances to pay for indoor after school physical activities during the winter months.

2.3.3 Overestimating physical activity levels of children

The UK now has a culture of convenience that is PA unfriendly. "It is disturbing that many schools and parents don't recognise that PA should be a high priority for children." (Almond, 2004, p9). Many parents also overestimate the PA levels of their children. A study by Corder et al. (2010) assessed awareness of PA levels among British school children aged 9-10 years and their parents. PA was measured using an accelerometer in a cross-sectional study of 1892 children from 92 Norfolk schools. Inactivity was defined as being >60 min d^{-1} of moderate to vigorous PA. In all, 39% of females and 18% of males were inactive. A total of 80% of parents of inactive children wrongly thought that their child was sufficiently active. This was particularly so with parents of children with a lower fat mass index ($p<0.001$), who assume that their children are adequately active. Children also overestimated their PA level with 40% of inactive children overestimating PA levels**.** Key findings in the Health Survey for England (2007) showed that only one in 10 children aged 11-15 suggested that recommended activity levels should be 60 minutes or more each day, yet most children perceive themselves as being either very or fairly physically active compared with children their own age (90% of males and 84% of females respectively) Moreover, in 2013 most individuals (90 per cent) did not know the current guidelines for PA in this country (Health and Social Care Information Centre, 2013).

2.4 Measurement of physical activity

Furthermore, the challenges of measuring PA in adults is fraught with problems but more so in children as they have more complex and multi-dimensional activity patterns, for example PA in children can either be planned or incidental (Department of Health, 2004; Reilly, 2006; Steinbeck, 2001). In order to identify

the determinants and health related outcomes of PA, valid methods of assessing PA are required that are reliable and practical to administer (Armstrong & Welsman, 2006; Dishman & Buckworth, 1996). Despite there being more than 30 different methods of measuring PA including both subjective and objective methods, there is currently no valid method of measuring activity levels that is feasible for use in large studies (McArdle et al., 2010).

Randomised controlled studies in children are difficult to carry out, both because the participants are minors and also because children who are constantly growing are difficult to study (Andersem & Mechelen et al., 2005; Malina & Bouchard, 1991). Therefore studies may lack either internal validity or wider applicability (Vogels et al., 2007). In addition the results of different studies are often difficult to interpret and compare, because of the diversity of methodological approaches and differences in data analysis and reporting, and the adoption of varying definitions in what constitutes an appropriate level of activity and inactivity is seldom quantified directly (Livingstone et al., 2003; Reilly, 2006; Steinbeck, 2001). Techniques for measuring PA can be grouped into two main categories: subjective, e.g., self/proxy report and observation, and objective, e.g., physiological measures such as heart rate monitors, direct and indirect calorimetry and accelerometers (McArdle et al., 2010).

2.4.1 Subjective measures

Observation studies can provide unique and invaluable information about activity, type and context but cannot measure intensity and can also hinder spontaneous activity patterns if they are aware that they are being observed (Hastie & Hay, 2012). Questionnaires and diaries are often the instruments of choice in both small and large scale studies of habitual PA in children and adolescents as they can assess multiple activity dimensions: frequency, type, duration, context and intensity (Livingstone et al., 2003; McArdle et al., 2010). However, there may be problems of recall with some participants overestimating their activity, particularly with younger children, and if completed by a parent and/or teacher validity can be limited (Rowlands et al., 2000).

2.4.2 Objective Measures

Objective measures are an alternative measurement of PA levels as they may provide a more accurate assessment of PA in terms of time spent in activity and the distribution of exercise intensities. However, due to the costly, invasive and time consuming nature of objective measures they are generally only conducted on very small numbers of participants at any one given time. Objective measures include direct and indirect calorimetry, heart rate, doubly-labelled water and motion sensors, i.e., pedometers and accelerometers (McArdle et al., 2010). Studies that use objective methods report lower levels of activity, especially when cardiovascular fitness criteria are applied (Tudor-Locke et al., 2011)

2.5 Benefits of an Active Lifestyle in Childhood

PA in childhood has a range of benefits which in themselves justify the promotion of PA including healthy growth and development, maintenance of energy balance, psychological well-being and social interaction (Hallal et al., 2006). A study conducted by Hallal et al. (2006) concluded that PA in early age such as childhood or adolescence may help to improve healthy lifestyle choices in adulthood which may reduce the risk of developing some of the chronic diseases such as cardiovascular and metabolic diseases. A study by Sanchez-Lopez (2009) examined the differences in quality of life between active and sedentary schoolchildren, analysing the differences by gender on weight differences. 1073 children aged 11-13 years took part in the study, the quality of life scores of active children were significant compared to the scores of sedentary children. Whilst BMI made no difference to the scores, females had better mean scores than males thereby suggesting that active children have better quality of life and that gender differences favouring males diminish or even reverse to favour active females.

2.5.1 Psychological Well-being

PA and exercise has been found to enhance psychological well-being children (Biddle & Mutrie, 2008; Hassmen, Koivula and Uutela, 2000). However, the relationships between psychological well-being and PA in children are not clear, and are affected by similar research problems to that of physical health such as the assessment methods (Livingstone et al., 2003). However, there is evidence

that PA is important for children's psychological well-being and that PA interventions can have a generally positive impact on the mental health of young people in particular with regard to self-esteem, self-perceptions of competence and body image. Children with lower PA levels have more symptoms of psychological distress than more active children (Department of Health, 2004; Stromme et al., 2001).

Having high self-esteem leads to positive qualities such as social skills, leadership, adaptability, independence, life satisfaction, successful achievements in education and work (Fox, 2000). Furthermore, high self-esteem is also associated with beneficial behaviours such as not smoking, healthy eating patterns, lower suicide risk as well as participation in sport and exercise (Torres & Fernandez, 1995). A review by Ekeland et al., (2005) that examined 23 trials found a positive correlation in the short term on self-esteem in children and young people and concluded that PA may be an important measure in improving children's self-esteem. The interventions did incorporate a variety of physical activities including play and walking to schools, although the results of the review were limited due to the small number of participants, the length of the studies and the lack of studies with a low risk of bias and so long term self-esteem could not be established.

However, a study that looked at the benefits of physical education and sport in schools found that physical education and sport in schools had the potential to make significant and distinctive contributions in the development of the physical, lifestyle, affective, social and cognitive domains in a child's life and furthermore that physical education and sport could also make distinctive contributions to the development of children's fundamental movement skills and physical competencies (Bailey, 2006). When appropriately presented physical education can support the development of self-esteem, social skills and social behaviours (Bailey, 2006). A study by Taras (2005) found evidence to suggest that short-term cognitive benefits of PA during the school day adequately compensate for time spent away from other academic areas, although there are few studies in this area and more are needed to assess the relationship between PA and academic performance within the school environment.

2.5.2. Depression and anxiety in children and youth

In children and youth, depression impacts on growth and development, it can affect school performance, family and peer relationships (Biddle & Mutrie, 2008; Fox, 2000). In 2004, 12% of young people aged 11–16 years had a clinically diagnosable mental illness (Office for National Statistics, 2004), conduct disorders (almost 7%) and emotional disorders (5%) were the most common among this age group. Generally, mental illness affects males more than females. Tomson et al., (2003) assessed the relationship between childhood depression and PA in 933 children aged between 8-12 years and results suggested a relative risk for depressive symptoms was 2.8 to 3.4 times higher for inactive compared to active children. Furthermore, the review by Larun et al. (2006) found that whilst exercise may reduce mean depression in the general population of children and young people, the studies were of low methodological quality and they were highly heterogeneous with regard to the population, intervention and measurement instruments investigated. However, the authors concluded that there was a small effect in favour of exercising in reducing anxiety scores.

PA as a treatment for depression in adults has produced conflicting results (Artal, 1998; Bodin, 2004; Brosse et al., 2002; Dunn et al., 2001; Harris et al., 2006; Paluska et al., 2000; Salmon, 2001; Stathopoulou et al., 2006). Nevertheless, in the event that PA does not have a treatment effect on clinically depressed patients, studies have still shown PA to have a preventative effect on depression, or in mildly depressed patients may prevent against the development of more severe depressive symptoms. Moreover, the 18 year longitudinal study by Camacho et al. (1991) suggested that physical inactivity during childhood puts adults from normal populations at risk for depressive illness whilst children who take part in higher physical levels are at lower risk of later depression. This was further supported by Jacka et al. (2008) who found that lower levels of self-reported PA in childhood may increase the risk of self-reported depression in adulthood by 50%. Therefore, in view of the proposed elevated risk for depressive symptoms in inactive children and adolescents and enhanced psychological well-being in active children it is suggested that it is worthwhile to promote PA with a view to helping establish lifetime PA habits as it may serve to prevent depression in adulthood.

2.5.3 Physical activity and bone health

Childhood weight-bearing PA is recognised as an important determinant for bone health during childhood and adolescence (Bouchard et al., 2007). There is a plethora of research suggesting that bone conditions such as osteoporosis is a paediatric issue and can be preventable with bone loss minimised in adulthood by participating in weight bearing and resistance type PA in childhood (MacKelvie, 2003; Vincente-Rodriguez, 2006). Both males and females rapidly gain bone mineral density in childhood and adolescence, especially around the ages of 12 in females and 14 in males. It has been reported that 26% of adult total bone mineral content occurs during puberty over a 2 year time period (Bailey et al., 2000 cited in Kohrt et al., 2004). In particular, exercises that produce high physical stresses on the bones (such as jumping, skipping, dancing and aerobics) during the years of the growth spurt have a beneficial effect on bone mineral accretion and can help to increase bone mineral density by 5-15% and protect against osteoporosis in later life (Reilly, 2005).

Moreover, MacKelvie et al. (2003) in a randomised controlled trial in females found that high-impact, circuit based jumping intervention over 2 school years comparing bone mineral content in 10 year olds, caused greater gains in bone mineral content in the intervention than in control females of between 3.7 and 4.6% dependent on the bone measured. This correlates with other research by MacKelvie et al. (2001) who found an intervention group completing jumping activities of 10 min, 3x per week of females between 8.7 and 11.7 years in early puberty gained higher bone mineral content than the control group (between 1 and 3%). In comparing the studies, as the weekly exercise amount was the same, it can be concluded that as participation in weight-bearing exercise continues bone mineral content increases. A more recent study by McKay et al. (2005) was conducted to ascertain change in bone mass in early pubertal children. There were 51 children and 71 controls with a mean age of 10.1 years involved in “Bounce at the Bell”, 10 counter movement jumps x 3 per day (3 min per day) for 8 months and it was found that the intervention children were found to have significantly greater bone mineral content. A study of female gymnasts 8-17 years old found that the gymnasts had up to 24-51% higher bone mineral content than the normally active controls, thereby providing further evidence of

sustained skeletal benefits from impact-loading exercise, throughout the pubertal years (Nurmi-Lawton et al., 2003). Whilst the studies found variability in magnitude, the discrepancies may not only be related to the exercise type (intensity, frequency, duration) but also to the characteristics of the participants (gender, age, maturity, diet) and the bone region assessed (cortical vs trabecular) (Naka, 2005).

The increase in lean mass is the most important predictor for bone mineral mass accrual during pre-pubertal growth throughout the population. As skeletal muscle is the primary component of lean mass, participation in PA may not only have a direct osteogenic effect, but also an indirect effect by increasing muscle mass and hence the tensions generated on bones during pre-pubertal years. Therefore, commencing PA prior to the pubertal growth spurt stimulates both bone and skeletal muscle hypertrophy to a higher degree than that observed in sedentary children (Vincente-Rodriguez, 2006). The research shows that in order for PA to impact on bone mineral content the exercise needs to be specific and be load bearing, therefore from a UK health perspective it should be recommended that children and adolescents participate in 3 hours per week of physical activities that generate relatively high-intensity loading forces such as gymnastics, jumping, aerobics, ballet and moderate intensity resistance training and participation in sports that involve jumping and running in order to gain an osteogenic effect (Vincente-Rodriguez, 2006). Weight bearing PA should be timetabled into PE lessons if children are to benefit from this peak period in their lives to be physically active.

2.5.4 Physical activity and cardiovascular health

With regard to cardiovascular health, cardiovascular disease is a general term that describes disease of the heart or blood vessels and includes stroke, peripheral vascular disease, heart failure, coronary artery disease, heart attack, hypertension and atherosclerosis (Wallis et al., 2000). Cardiovascular disease is not a disease of childhood but some children do have certain risk factors for cardiovascular disease including high blood pressure and high cholesterol levels. Atherosclerosis is also laid down in childhood. It has been suggested that there may be an inverse association between the risk factors and childhood PA. Children with lower activity levels are more likely to have risk factors for

cardiovascular disease; those that do regular PA are more likely to have higher levels of aerobic fitness and a higher HDL cholesterol level (Department of Health, 2004; Harsha, 1995).

Regardless of adiposity, adolescents with higher cardiorespiratory fitness have been found to be at a lower risk of cardiovascular disease (Martins et al., 2010). A study that examined the changes over time in cardiorespiratory fitness and BMI in 15621 children aged 9-11 years over a 6 year period found that BMI increased and cardiovascular fitness decreased over the same 6 year period even among children in the fittest third (Stratton et al., 2007). Furthermore, other studies have found that some of the chronic diseases such as cardiovascular and metabolic diseases that appear in adulthood are developed in childhood (Parsons et al., 1999). In terms of risk factors for cardiovascular disease, the primary role of PA may be an indirect one, that of helping to prevent excess weight gain during childhood, or helping overweight children to lose weight, as there is no evidence to suggest that adolescents participate in sufficient exercise to prevent cardiovascular disease, even if Department of Health guidelines are adhered to.

Results of a study by Kraut et al. (2003) found that there is a significant relationship between adolescent cardiorespiratory fitness and cholesterol, BP, and glucose levels with adolescent body fatness only moderately related to select CVD risk factors. However, as children and adolescents very rarely have lifestyle-related diseases such as clinical hypertension, diabetes, osteoporosis or cardiovascular disease, so the normal markers for morbidity and mortality used by researchers are not evident. Notwithstanding, children and adolescents can have high levels of a range of risk factors for disease for example obesity, raised blood pressure, adverse lipid profiles, or low bone mineral density which can be used instead, the use of risk factors as markers provides a less robust analysis (Stromme et al., 2001).

Studies by Harsha (1995) and Thomas et al. (2003) found that the relationship between fitness and cardiovascular risk factors in children are very similar to those in adults and those children who perform better on standardised fitness tests have more favourable body composition and lipid profiles. Another study

by Hussey et al. (2006) investigated the relationship between the time spent in specific intensities of activity and inactivity, cardiorespiratory fitness and body composition in children. A total of 224 children aged 7-10 years from 12 schools participated in the study and time spent each day in moderate and vigorous intensities of activities were calculated. Males were found to take part in about twice as much vigorous and hard activity as females (53.2 to 75.4 min) in males compared with (33.1 to 40.9 min) for females, respectively. In both males and females there were significant negative correlations between fitness and body mass index and waist circumference. However, even if there is no direct impact, by encouraging PA throughout life and instilling exercise behaviour, the susceptibility of these diseases can be modified (CMO, 2009). It has been found that active children are also less likely to smoke, use alcohol/binge drink, take drugs or be involved in other substance misuse, therefore PA is a useful method for risk reduction of these unhealthy behaviours, behaviours of which are found to be risk factors for chronic disease including cardiovascular disease (Nelson et al., 2006; Canadian Association for Health, Physical Education, Recreation and Dance, 1998).

2.5.5 Physical activity and obesity

The prevalence of obesity is increasing at an alarming rate in many parts of the world and is such a serious problem that the World Health Organisation (WHO) has described it as a ‘global epidemic’. Around two-thirds of the population of England are overweight or obese. NHS Digital, (2016) reported that the percentage of the adult population who are obese in the UK has increased from 13% in 1993 to 26% in 2013 for men and from 16% to 24% for women, and similar trends have occurred among young people. The proportions that were overweight including obese increased from 58% to 67% per cent in men and from 49% to 57% per cent in women. Obesity has grown by almost 400% in the last 25 years and on present trends will soon surpass smoking as the greatest cause of premature loss of life (Department of Health, 2008).

Statistics have shown levels of obesity among children have risen over the past 20 years. In 1995, 11% of boys and 12% of girls aged 2-15 were obese (HSE, 2014). Whilst in 2014, Health Survey for England found 19% of males and 16% of females to be obese. Prevalence of overweight and obesity in males and

females aged 2 to 15 is 32% and 31% respectively. More alarming, recent data from the National Child Measurement Programme in 2014/15 show that around a third (33.5%) of the children measured were either overweight or obese. This was higher than in 2012-13 (33.3%) and also higher than in year 6 in 2006-07 when 31.6% were deemed to be overweight or obese, which is an increase in the figures reported in 2008-2009 (HSCIC, 2014).

The Foresight report estimates that by 2025, 47% of men and 36% of women will be obese, in other words today's children will become tomorrow's obese adults if nothing is done to educate them into healthy lifestyle behaviours (The Health Information Centre, 2010). Based on figures from The Health Information Centre, (2010) levels of inactivity are correlated with obesity. For males on weekdays the proportion who spent 4 or more hours doing sedentary activities was 35% of those who were not overweight or obese, 44% of those classed as overweight and 47% of those classed as obese. In females the figures were slightly higher at 37%, 43% and 51% respectively. Epidemiological tracking suggests that the risk ratio of an obese infant or pre-schooler becoming an obese adult is estimated to be 1.8. However, after adjustment for parental obesity the odds ratio for obesity in adulthood associated with childhood obesity ranged from 1.3 for obesity at one or two years of age to 17.5 for obesity at 15-17 years of age (Loke, 2002). Based on the existing prevalence and trend data, and the epidemiological evidence linking obesity with a range of physical and psychosocial health conditions, it is reasonable to describe obesity as a public health crisis (Seidell cited in Crawford & Jeffrey, 2005). In 2004 the government set 2010 as the target for halting the rise in obesity; however, this wasn't met and the government recognises that more needs to be done in order to meet this target (Postnote, 2003).

Overweight and obesity are now major causes of preventable health problems in the UK and apart from being associated with adult obesity; childhood obesity is itself a major health problem (Dietz in Anderson, 2003). The incidence of both non-alcoholic fatty liver disease used to be rare in children but is increasing, and so too is type 2 diabetes increasing in adolescents in the UK, although the numbers are small, 2% for diabetes (The Health and Social Care Information Centre, 2016). As physical inactivity and obesity are known to be a

major risk factor for type 2 diabetes in adults, the emergence in adolescents may be due to obesity and decreased activity levels observed over the past 30 years (Department of Health, 2007).

The Harvard Growth study that followed 508 children through 24913 person years, accumulated over 55 years, concluded that overweight in adolescence increases the mortality from coronary artery disease, stroke and colorectal cancer, and increases the morbidity from these diseases including gout and arthritis (Loke, 2002; Reilly, 2005). Whilst not paediatric diseases, most if not all of the medical complications seen in adulthood may begin their manifestation in overweight young people (Gluckman, 2005). Although some people are genetically more susceptible to obesity than others (Walley et al., 2006), the underlying proximal cause of obesity is an imbalance between energy intake and energy expenditure with a downward shift in total energy expenditure (Hardman & Stensel, 2003).

Twin studies suggest that approximately 50% of the tendency towards obesity is inherited (Kleiss, 2001). Although the role of genes in the regulation of body fat is now established, it is safe to assume that the rising prevalence of obesity has not been due to genetics, but it can be attributed to environmental factors rather than genetic factors. Studies have shown that ready access to highly palatable, energy dense foods, increased portion sizes, carbonated drinks and frequent snacking and fast foods have replaced regular meals in an environment where parental time pressures have increased together with a decrease in school/workplace and leisure PA, and increase in sedentary activities most likely accounts for the increase in overweight and obesity worldwide and strongly impacts on overweight and obesity in childhood (Ahrens et al., 2006; Farooqi, 2005; Ness-Abramof et al., 2006; Sabin et al., 2003; Smithers et al., 2000). Furthermore, increased obesity levels may also be due to in part to increased snacking and meal portion sizes while watching television (Coon et al., 2001). A case control study undertaken by Baba et al., (2006) found that with a family history of obesity together with reluctance to exercise, current and recent past sedentary lifestyles each significantly increased the risk of obesity in both males and females.

However, average recorded energy intake in Britain has declined as obesity rates have escalated. The implication is that levels of PA and hence energy needs, have declined even faster (Prentice & Jebb, 1995). This is further substantiated in research by Reilly and Dorosty (1999), who suggest that physical inactivity is largely responsible for the increase in childhood obesity rather than energy increase, as they found that between 1967 and 1992, energy intake in children in the UK aged between 1.5 and 4.5 years decreased by 20%, whereas overweight and obesity increased. Therefore, the evidence would suggest that a diet both high in fat and simple carbohydrates coupled with low levels of PA are strong contributory factors to the increased prevalence of overweight and obese children.

Studies have shown that inactivity is associated with increased risk of weight gain and obesity, but causality remains to be established and further trials are needed to identify the extent to which PA in children and adolescence is modifiable and provide rigorous tests of the hypotheses that increased PA reduces obesity risk (Livingstone, 2003; Must & Tybor, 2005; Reilly, 2005; Steinbeck, 2001). Although obesity represents an archetypal complex multi-factorial disease it arises as a result of behavioural, environmental, socio-cultural and genetic factors which may influence individual responses to diet and PA (Farooqi, 2005).

2.5.6 Establishing physical activity in early life

Lifestyles and habits established during childhood, adolescence and young adulthood can influence a person's health throughout their life. There is much evidence to indicate that PA should start as early as possible in childhood, as active children are likely to be more active when they become adults (Currie et al., 2004; Strong et al., 2005). Hallal et al. (2006) concluded that PA in childhood and adolescence may improve healthy lifestyle choices in adulthood in order to help lower the risk of developing chronic diseases. Moreover Martins et al., (2010) found that regardless of adiposity, adolescents with a higher level of cardiorespiratory fitness are at a lower risk of cardiovascular disease in adulthood. Furthermore, it has also been highlighted that some chronic diseases such as cardiovascular and metabolic diseases that occur in adulthood were in fact developed in childhood (Parsons et al., 1999). For

example, up to 79% of obese adolescents remain obese in adulthood (CMO, 2009) and therefore weight status during adolescence is indicative of adult weight status (Matton et al., 2006).

The odds of being overweight in adulthood were 9.53 times greater compared with normal-weight adolescent females coupled with a pattern of less activity rather than activity that tends to continue from youth to adulthood. PA is the only component of total energy expenditure that can be voluntarily modified and increasing energy expenditure is usually an important component of childhood obesity treatment (Maffeis & Castellani, 2006; Norwicka, 2007). Interventions using programmed activity have resulted in clinically significant decreases in body fat and body mass index in obese children (Doak et al., 2006; Steinbeck, 2001).

A further and important benefit of childhood PA for adult life is the establishment of activity as a lifetime habit and there is strong association to show that by the time young people leave secondary school their attitudes to PA are predictive of PA in adulthood (Harro & Riddoch, 2000; Sacker & Cable, 2005; Tammelin et al., 2003). It is generally accepted that being an adolescent positively influences behaviour as an adult (Sacker & Cable, 2005), yet the adolescent period seems to be critical with regard to PA, and yet activity is reported to decline dramatically during the transition from adolescence to adulthood (Kristjansdottir & Vihjalmsson, 2001; Telama, 2000 cited in Tammelin et al., 2004; van Mechelon et al., 2000). Research conducted into the influence of childhood and adolescent PA patterns on adult PA has been inconsistent; one reason for this is the estimation of historic PA during childhood and adolescence which creates differential memory distortion (Taylor et al., 1999). Future research should focus on refining methodologies for PA to make it more sensitive to the different dimensions and contexts of activity in different age-groups (Livingstone et al., 2003).

2.6 Sedentary Lifestyles

There is, however, only marginal evidence that participation in PA tracks through from childhood to adulthood and there is relatively little direct evidence linking physical inactivity to children with childhood health outcomes

(Department of Health, 2004; Livingstone, 2003; Twisk, 2001). Few studies have examined the many ways young people can be inactive and there is conflicting evidence over the impact of sedentary behaviour on levels of PA (Marshall et al., 2002). In fact it may be that those individuals that spend the majority of time engaging in sedentary activities despite engaging in small amounts of PA may still be at just as great a risk from chronic disease. Also whilst television and associated media (i.e. gaming) are often thought to cause an increase in sedentary activities, evidence suggests they are unlikely to be displacing PA and current studies have shown there is no relationship between PA and television viewing (Smith et al., 2008; Taveras et al., 2008). Being sedentary could have important implications for health, irrespective of the amount of children meeting the PA guidelines. Some researchers have suggested that there is a relationship between sedentary behaviour and being overweight independent of the level of PA, and that the effects of sedentary behaviour may build up over the course of a childhood (Fleming-Moran, 2005; Hancock et al., 2006; Owen et al., 2009). Furthermore, it has been suggested that the sedentary behaviours are multiple and diverse (Biddle et al., 2009; Gorely et al., 2007).

Currently, little is known about the factors underlying habitual PA in young people and further research is required in this area in order to fully understand the effects of being sedentary, independent of PA involvement (Biddle et al., 2004; Biddle et al., 2009). Furthermore, recommendations need to be put forward on the amount of time children and adults spend in sedentary time. Whilst sedentary time is discouraged by the government, there are no guidelines on the amount of sedentary time (Department of Health, 2011). In the US, periods of inactivity of more than two hours duration are discouraged by The National Association for Sport and Physical Education (NASPE) (Corbin et al., 2004).

A wide range of economic, environmental, social and cultural factors influence an individual's lifestyle and are likely to have contributed to the sedentary lifestyle that many children have. Although it is impossible to establish a direct causal link between environmental/cultural factors and the rise in childhood obesity/inactivity levels, work and leisure time have changed at all stages of life,

resulting in a major shift in PA patterns. Increasing affluence is associated with a decline in energy expenditure and a predisposition to a sedentary lifestyle, increased car use, energy saving appliances and urbanisation (Biddle et al., 2009)

2.7 Correlates (determinants) of physical activity

To optimally promote PA it is important to understand the determinants of PA among children and adolescents. Correlates of PA include intra-personal (e.g., biological, social and psychological) and environmental factors (Biddle, Gorely & Stensel, 2004, Sallis et al., 2000; Sterdt et al., 2013). Many psychological, cognitive and emotional factors such as self-efficacy, outcome expectations, barriers, general self-esteem, body image, self-motivation and the desire to be active have all been studied as potential predictors of exercise in young people (Sallis et al., 2000). Environmental factors include cost, cold weather, time spent indoors, availability of facilities, travel to facilities and neighbourhood in which the children live (Sallis et al., 1992). Social and cultural determinants of PA include socio-economic status, ethnicity, family support, social support from others and the influence of peers and parents (Sallis et al., 1992) and correlate with children's participation in PA (Raudsepp, 2006).

2.7.1 Socio-economic status

Socio-economic status (SES) may also have an impact on PA participation for example those from lower SES backgrounds may have limited access to facilities that promote and enable PA participation (Hanson & Chen, 2007; Hume et al.; 2005). PA has been found to be lower among adolescents from low, compared with high socio-economic background (BHF, 2012; Dishman et al., 2004; Kristjansdottir & Vilhjalmsson, 2001). This could be due to a low income restricting participation in high-cost sports. PA can be financially difficult to access, for example, through membership of sports clubs or gyms which can inhibit socially disadvantaged adolescents from becoming active (Ferreira, 2006). Even chargeable after school sports facilitated by the schools can be out of financial reach to low income families, particularly where there is more than one child in the family and/or a single parent family. However studies have provided mixed results with some suggesting that there is no relationship between SES and PA participation (Kelly et al., 2006; Thomas et al., 2006).

2.7.2 Parental physical activity

Parents with a low educational level may themselves be inactive and thus provide an unfavourable role model for their children and many do not see PA as being an essential ingredient in childhood (Tuinstra et al., 1998; Vilhajalmsson & Kristjansdottir, 2003 cited in Westerstahl et al., 2005). Although, Sallis et al. (2000) suggest that there is no clear association between the social variables of parent and peer modelling and children's PA. However, for working parents, transportation to physical activities after school pose a problem for children who are dependent on parents to transport them and are therefore not able to attend. This is where it is advantageous to encourage children to participate in lifestyle activities such as walking to school and outdoor play.

McElroy (2002) suggests that there are positive parental links with parents instilling perceptions of competence in their children. Results of a review by Steinbeck (2001) advised that there was a six-fold increase in the activity of children if both parents were active. Furthermore, King et al. (2008) have shown adolescents who received parental encouragement together with exercising with a friend engaged in significantly more PA compared to those that weren't encouraged.

In a review of 150 studies on environmental correlates of youth activity, variables of the home and school environments were associated with children's PA. Most consistent positive correlates of PA were father's activity, time spent outdoors and school PA related policies, support from significant others, mother's education level, family income and non-vocational school attendance (Raudsepp, 2006). A study by Raudsepp (2006) found that father's explicit modelling was the strongest predictor of adolescent PA predicting 13.5% of the total variance. However, explicit modelling was stronger in males than females, whereas with females fathers' and mothers' logistic support was significantly higher in females than males. Whilst economic status of the parents was not a significant predictor of PA, the study did find social class to be a predictor of PA which could be because parents from higher social classes are more educated as to the benefits of a physically active lifestyle, yet social class and economic

status do not always correlate, as in Estonia for example teachers are of a higher social class but earnings are in a low economic class. The study was also conducted in one specific city in Estonia and so could not be generalizable to the population. Another flaw with the study is that the method used to assess PA level was questionnaire research and this could have had an impact on PA levels with children and parents tending to exaggerate levels. Accelerometer measurement would have been more accurate. A further limitation of the study was that only families with both parents resident in the family unit were included in the study, with single parents being excluded. Similar results in a study by The Health and Social Care Information Centre, (2016) also found that among males aged 2 to 10 yr, more children met the PA recommendations for children if their parents met the adult recommendation. However, among the females, the activity level of parents made relatively little difference to the proportion meeting recommendations, but those who had parents with low activity levels were considerably more likely to be in the low activity category themselves. This could be due to a number of factors including economic, whereby the parents had insufficient funding to take part in activities and may not be due to lack of education. This knowledge on parental influence should be built upon when promoting PA.

2.7.3 Decrease in active travel

With the levels of car use doubling in the last 30 years, levels of walking and cycling have fallen drastically (Department of Health, 2008). Increased car use has resulted in children walking and cycling less. In the last twenty years the rates of primary school children in England who were driven to school have doubled while the proportion of children who travelled to school by foot or cycle has decreased sharply (DfES, 2003). The amount of cars on the road taking children to school means that parents fear for the safety of those children who walk to school (Rowlands, 2007). In 1975/76, 61% of 5-15 year olds travelled to school on foot and only 11% by car. By 2005/06 46% travelled on foot and 30% by car, car use having more than doubled (Department of Transport, 2007). In 1985/86, 21% of 5-10 year olds journeyed to school alone; by 2005 this figure had fallen to 6% (Department for Transport, 2006).

Town planning in recent years has favoured the car user (Department for Transport, 2010) and walking is now seen as “the mode of transport for those who have no alternative” (Kopleman et al., 2004). The exception to this is in the capital city London that has numerous cycle routes. These findings are further substantiated by Parsons et al. (1999) who reviewed trends in automobile use in the United Kingdom between 1985 and 1992 and found a significant decrease in children’s walking and cycling: for children up to age 14 years, walking decreased 20% and cycling decreased 26%. Only 5% of males and 2% of females use their bicycles as a form of transport in the UK and 30-40% are taken to school by car compared with 9% in 1971.

Although, in the Health Survey for England (2008), almost two thirds of children aged between 2 and 15 had walked to or from school on at least one day in the past week (63% of males and 65% of females). Walking to school can make a significant contribution to children’s activity and can contribute to 8-14 minutes per day of moderate to vigorous intensity activity (Cooper et al., 2003). In a study looking at aerobic fitness and mode of travel to school in 6085 English Schoolchildren in the East of England, it was ascertained that children that regularly walked or cycled to school significantly increased the odds for being categorised as fit and were significantly associated with higher mean aerobic test scores, with those children who cycled having higher scores than pupils using other transport modes (Voss & Sandercock, 2010).

The likely cause of this is that town planning in recent years has favoured the car user and many parents feel that walking or cycling is a dangerous mode of transport, probably due to the large numbers of children being driven to school (Kopleman, 2004). This was also substantiated in a study by Panter et al. (2010) of 2064 children from schools in Norfolk, who found that both parental attitudes and environmental perceptions were associated with children’s active commuting behaviours, in that children receiving peer and family support and living in a supportive environment were more likely to walk or cycle to school. In a study by Alton et al. (2007) of 473 children in 6 primary schools situated in Birmingham, those that walked more (198 high walkers) preferred healthier modes of travel, were less likely to worry about strangers and less likely to report no parks or sports grounds nearby.

As travel plans reduce car journeys to and from schools in 60-90% of schools (Cross Government Obesity Unit, 2008), schools now put together a travel plan in a bid to increase sustainable modes of travel to school and encourage children to walk or cycle. Therefore more needs to be understood regarding the effectiveness of safe routes to school or elements such as the walking bus scheme, cycle routes, cycle storage/improved access and traffic-reduction schemes and extra-curricular sport and exercise programmes (Fox & Harris, 2003 in Mckenna & Riddoch, 2002). In the eventuality that either walking or cycling to school do not burn off sufficient calories to incur a major impact on a child's weight, walking or cycling to school can nevertheless promote good exercise behaviours and children and adolescents who walk or cycle to school are more likely to meet activity guidelines than those who travel by car or bus (Davison et al., 2008). In the Russian Longitudinal Monitoring Study, adding in and then omitting commuting to school resulted in an 8% difference in activity levels (Tudor-Locke, 2002).

2.7.4 Active play

Moreover, in some areas parks and playgrounds are sited a long way from housing so that children are driven to these amenities as opposed to walking. These reports suggest that children are becoming less physically active with modernisation (Kopleman et al., 2004). A lack of safe places to play or exercise in the local community has impacted on childhood PA participation as parents feel it is no longer a safe environment to allow children to play unsupervised (Burniat et al., 2002). Although a study by Wilkin et al. (2006) that investigated PA in children both in Plymouth and Glasgow found that PA participation in children was the same (to within <0.3%) and was therefore centrally rather than environmentally regulated (meaning a child's classic biological feedback loop, with a set point individual to the child, that controls his/her activity independently of external factors). The data collected by use of an accelerometer was set in both the home and at school, a fivefold variation in timetabled PE explained less than 1% of the total variation of PA and daily activity was unrelated to time spent watching TV.

Listening to music, socialising with friends, reading and homework are all examples of sedentary activities that take up a significant percentage of a young person's free time (DCMS, 2008). Screen-based entertainment i.e. television, playing computer games or social networking has also increased significantly. It has been estimated that in 11-17 year olds volume of media viewing is 35-40 hours per week (Biddle et al., 2004). This figure is on the low side when compared to research by Khunti et al. (2007) that investigated PA and sedentary behaviours of South Asian and white European children in inner city secondary schools in the UK. Responses were obtained from 3601 (76%) of eligible pupils. Comparisons were made between South Asian and white European children. White European children were more likely to walk to and from school compared to South Asians there was no difference in activity levels between the two groups. Almost half (46%), of respondents spent four or more hours per day watching television or playing electronic games. Low levels of activity in females were found during school breaks.

2.7.5 Television viewing and other media

Whilst television viewing and the use of other electronic media are often blamed for increasing inactivity and obesity among young people, studies suggest that there is little or no relationship between PA and television viewing and that there is in fact time for both (Biddle et al., 2009; Smith et al., 2008; Taveras et al., 2007). Robinson, (1999) cited in Wadden & Stankard, 2004 suggested that there are three mechanisms that may link television viewing and obesity: reduced energy expenditure by displacing PA; increased energy intake through eating while viewing, perhaps promoted by food advertising, and decreased resting metabolic rate which occurs while watching television. Gortmaker & Colleagues, (1996) cited in Wadden & Stankard 2004 conducted a study of 746 children aged 10-15 years, in which they reported an association between the prevalence of being overweight and television viewing. In this study, the odds of becoming overweight were 4.6 times greater than those children watching over 5 hours of TV a day than for those watching 0-2 hours a day.

2.8 School based physical activity

The purpose of this study is to look at social marketing in order to encourage and increase PA participation in school children. However, prior to using

schools as a vehicle for a social marketing campaign to encourage sustainable PA participation, it is essential for this literature review to focus on PA within the school.

2.8.1 PE

The school environment, is the most widely available resource for promoting PA, it has the potential to influence PA participation in children and moreover during PE lessons to influence self-efficacy in children with regard to participation in sport.

Physical education also has the ability to promote social competence, moral development and emotional stability together with self-esteem, which is often chosen as a positive outcome of PE (Fox, 1992). Indeed, the current national curriculum states that Physical education can promote social competence, moral development and emotional stability, with self-esteem widely chosen as a worthy curricular end-product (Fox, 1992).

> *'Competence in physical activity and the sense of enjoyment brought about by being active and successful engenders a sense of confidence and self-esteem in students and enables them to become increasingly independent. This confidence encourages them to get involved in physical activity for its own sake and as part of a healthy lifestyle choice'.*

(http://curriculum.qcda.gov.uk/key-stages-3-and-4/subjects/physical-education/keystage3/PE_and_the_national_curriculum_aims.aspx?return=/search/index.aspx%3FfldSiteSearch%3Dconfidence%26page%3D1)

Furthermore, from an early age, positive experiences and physical competencies received through taking part in PE, with positive and motivational teaching staff, can greatly develop self-esteem and self-efficacy which can have a powerful effect on lifetime habitual PA participation (Bailey, 2000; Fox, 1992). Thus enabling that the national curriculum's aims of preparation for life and participation are achieved through PE by ensuring:

> *" It should provide opportunities for pupils to become physically confident in a way which supports their health and fitness; Access a broad range of opportunities; Develop the confidence*

and interest to get involved in exercise, sports and activities out of school and in later life; Get involved in a range of activities that develops personal fitness and promotes fitness, promoting an active, healthy lifestyle; Take part in competitive sports and activities outside school through community links or sports clubs and continue to take part regularly in competitive sports and activities outside school through community links or sports clubs"

http://www.afpe.org.uk/advice-on-new-national-curriculum/new-national-curriculum

However, physical education can also be a double edged sword in that whilst producing positive results in some children, in others is can also be perceived to be torturous for some children leading to a negative experience, especially in those children with low physical competences with teaching staff who place high importance of success (Lagerberg, 2005; Whitehead & Corbin, 1997). However, this in part could also be due to the national curriculum which emphasises the desire to excel in competitive sport as quoted below:

"A high-quality physical education curriculum inspires all pupils to succeed and excel in competitive sport and other physically-demanding activities. Develop an understanding of how to improve in different physical activities and sports and become more competent, confident and expert in their techniques and apply them across different sports and physical activities. Understand and apply the long-term health benefits of physical activity. It should provide opportunities to compete in sport and other activities build character and help to embed values such as fairness and respect and to learn how to evaluate and recognise their own success."

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239086/SECONDARY_national_curriculum_-_Physical_education.pdf

It has been suggested that PE focused on competitive team sports may contribute to the decline in PA observed during adolescence (Fairclough et al., 2002) Many adults who do not participate in PA attribute this to negative

experiences they had as children, particularly while they were at school (Stevens, 1996).

While it is acknowledged that it is not the sole aim of the PE lesson to provide children with an opportunity to be physically active, it is an important aspect. Moreover, secondary schools could provide adolescents with a greater range of lifelong PA such as health related physical activities that can be taken into adulthood (Hills et al., 2014). This was the case with the study 'Girls Active' which was designed to empower teenage girls aged 13-16 years by allowing them to enjoy PA on their own terms. It allowed girls to come up with ideas on what they would change in their school in order that they would want to participate in a sporting activity of their choosing. Based on data from the Youth Sport Trust, 2006 the scheme allowed girls to have more fun as the activity was new, interesting and not repetitive and moreover the girls enjoyed PE when no one was mucking around in the lesson. The school setting can therefore help children achieve the recommended one hour's PA per day and also encourage children to become more physically active. This is due to the school occupying a good deal of time with children; in term time, including weekends, the school can influence the behaviour of children for about 40-45 % of their waking time; this is second only to the time spent in the home.

However, an observation study by Waring et al. (2007) (which is deemed to be the most accurate measurement of PA by Sirard & Pate, 2001) questioned the use of primary schools as an ideal setting for meeting the government's activity target, given the funding and commitment to promoting PA. Looking at minutes of PA taking place by pre-adolescents (5-11 years) in primary schools the study found that schools were not delivering to their potential to fulfil the government's targets; children were only moderately active for 11.8% of the time observed; some children also failed to record any appropriate levels of PA in a lesson. For the majority of children, during a 36 minute PE lesson the mean minutes of moderate activity were 5 minutes and the mean of vigorous activity 1.5 minutes, with the females being lower than the average amounts.

Recently, it was stated that pupils should spend at least 50% of time in PE being physically active (AfPE, 2013; OFSTED, 2013) Moreover, OFSTED

(2013) recently expressed the concern that PE lessons lacked sufficient physicality. Furthermore, in a review of 40 studies of adolescent females, between 27% and 47% of available learning time consisted of moderate-to-vigorous PA (MVPA) (Fairclough and Stratton, 2005a) – all below the 50% recommended guideline. It was concluded that this was due to the lesson being games based as opposed to health related activity lessons and further recommends that a review of PE delivery be taking place to ensure sufficient activity during PE lessons. A culture of games based PE fails to acknowledge increasing trends of young people towards participation in lifestyle and recreational activities (Green, 2002).

Another study by Fairclough and Stratton (2005b), found greater levels of PA during PE lessons amongst British secondary school children (11-15 years). The study used objective measures, showing that the children were, on average, active at a moderate and vigorous level for 34.3% of the lesson. This equated to 17.5 minutes of moderate and vigorous intensity PA during an average lesson length of 50.6 minutes. Whilst falling short of the guidelines the amount of activity during the PE lessons were far higher than in the study conducted by Waring et al (2007) in a primary school where children were only active for 11.8% of the time. However, it could be argued that the measurement used in Fairclough and Stratton's study was an objective measure whereas Waring's study used observational method which is far more subjective.

Although, a recent study by Hobbs et al. (2014) using both objective (accelerometer) and observational (SOTG-PE – a newly validated specialist tool for observing PE) methods. Of the 112 females aged between 13 and 14 years, MVPA averaged 12.4 minutes of a 60 minute lesson (20.8%) of available learning time. Again this study fell short by 17.4 minutes of the recommended 50% of activity during PE lessons. Regardless of method used during studies all children and adolescents studied fell short of what is needed to optimise physicality during PE lessons. Furthermore, reduced training hours for primary school teachers on PE and a greater emphasis on numeracy, literacy and SATs tests equates to teachers being unable to provide the quantity and quality in PE required to foster positive attitudes in PA (Waring et al., 2007).

2.8.2 Use of the school day outside of PE lessons

2.8.2.1 Breaktime and Lunchtime

Waring et al. (2007) also acknowledged that the free time available within school during break and lunch time was being underutilised in the context of promoting PA (Waring et al., 2007), yet breaktimes/lunchtimes provide valuable opportunities for pupils to participate in additional activity. The study acknowledges that the school should be the ideal setting to promote PA and long term healthy behaviours given that out of school children may or may not wish to find opportunities to exercise for 60 minutes per day (Cale & Harris, 2001). This research was further substantiated by Ridgers et al. (2005) who conducted research in order to assess PA during morning, lunch and afternoon break times in 18 schools in the northwest of England. 149 males and 147 females aged 6-11 years were randomly selected. The children followed their normal daily routine and were monitored using heart rate telemetry. The data revealed that males engaged in higher levels of moderate to vigorous and vigorous PA than females during break times (26 and 20 minutes respectively). It showed that 15.9% of males and 11.1% of females engaged in moderate to vigorous PA for over 40% of the playtime available. Furthermore, studies cited in an article by Ridgers et al. (2006) indicate that playtime activity can contribute between 5-40% of recommended daily PA levels when no interventions have been utilised, and is one of the best ways for children to expend calories. Similar results were also found by Stratton (2000) thereby suggesting that school break times are an excellent opportunity for pupils to engage in up to 50% of recommended PA per day.

Although, a study by Barnett et al. (2009) examined the association between PA opportunities at school and participation in PA outside school PE classes among 1267 9 year old children within 69 schools and found that there was no main effect of school-level PA opportunities on PA frequency; however, overweight males attending high-opportunity schools were significantly more active than those attending low-opportunity schools. It is felt that many social challenges need to be addressed if schools are to become the setting that will facilitate meeting the government's targets (Rowe et al., 2004).

2.8.2.2 Extra-curricular activities

In the UK extra-curricular PE (the provision of activities outside of the formal PE curriculum, most often after school) is seen as significant in laying the foundations for lifelong participation in sport and PA among young people. This period directly after school may in fact be critical in the accumulation of daily PA with 40% of non-school PA occurring in the 3 hours proceeding school with both adolescent males and females spending between 18 and 21 minutes being active during this time (Atkin et al., 2008). Trost et al. (2008) also found that children who attend after school programmes accumulated more minutes of moderate to vigorous PA during this period (approx. 20 minutes), with activity levels greater during free play than organised activities.

Despite these findings, involvement in extra-curricular PE is relatively low, peaking in the final year of primary school and decreasing substantially throughout secondary school, particularly in females (Smith et al., 2007). However, the research evidence suggests that about one third (at secondary level) and about one half (at primary level) of school aged children in the UK participate in extracurricular activities.

Research by Penny & Harris (1997) took a critical look at extra-curricular PE provision in state schools in England and Wales and they found extra-curricular provision served to reinforce the stereotypical views about who can and should participate and offered limited opportunities and experiences to only a minority of students and also that not just teachers, but parents, students and 'wider society' play a wider role in reinforcing or challenging these views. The research found that extra-curricular provision is dominated by traditional team games, invariably has a competitive focus and is also 'gendered' with schools providing more activities for males than females.

However, in later research examining young people's participation in extracurricular physical education, a study by Smith et al. (2007) in North-West England and North-East Wales in a cohort of 1010 15-16 year olds attending seven state schools found that extra-curricular PE provision in all schools retained a focus on competitive sports alongside partner recreational sports and individualised activities. The research found that the schools influenced

participation, particularly in females through the diversification of sports and physical activities provided by the schools. The research also confirmed previous findings that young people's reported levels and forms of participation in different sports and physical activities in extracurricular PE varied significantly and differently according to gender and to some extent social class.

The type of sports and physical activities a school provides appears to be the critical factor in understanding differences in participation. This was also evident in research by Daley (2002) which suggests that the number of pupils taking part in extra-curricular activities outside of formal PE have always been low and will continue to be despite upward trends in the 1990s; the study also found that males were involved in extra-curricular activities on more occasions and for longer periods of times each week than females. Most pupils are given the opportunity to participate but choose not to, this is particularly so with secondary school aged females with extra-curricular participation.

Early experiences of PA greatly impact on long term PA participation and therefore curricular and extra-curricular activity is paramount in schools; extra-curricular activities can be a fundamental link between curricular PE and young people's participation in sport and PA in their leisure time (Green et al., 2005) and yet as indicated by the research, the wide variation in the quality of PA mean that some children do not acquire the PA experience that is conducive to lifelong PA participation, hence the previous government's pressure on education to increase PA within the school environment (Kirk, 2004).

Outside of school hours The Taking Part Survey (2008/2009), found the most popular sports activities in children aged 5 to 10 years to be swimming, diving or lifesaving with 43% participating in the previous four weeks, followed by football at 37% and cycling at 26%. As the cycling is 26% it is interesting to note that cycling doesn't convert into cycling to and from school. In the 11-15 age group the most popular sport was football at 53%, basketball at 29% and swimming, diving or lifesaving at 28%. It is possible to assume that swimming is more popular in the 5 to 10 age group due to the large numbers of children attending swimming lessons. Until 2010 free swimming was available in some local authorities. A study by Pringle et al. (2009) examined the effects of free

swimming on engagement and moderate to vigorous PA in young people. It was found that there was a reduction in the number of children not meeting the PA guidelines. Over half of those not meeting guidelines improved at least one moderate to vigorous PA category and over half of children (1164 females and 1011 males) met moderate to vigorous PA guidelines post intervention. Free swimming has therefore been shown to be an effective intervention to increasing PA levels in children.

2.8.3 School Physical Activity: Current Trends

Recent surveys and literature reviews of children's PA levels in schools have established a number of key findings. In October 2009 the PE and Sport Survey 2008/2009 was published. In total 21,464 of schools that take part in the School Sport Partnership programme in England took part in the survey between May and July 2009. Approximately 50% of pupils from the three types of schools were surveyed, namely: primary; secondary and special schools. The survey covers PA both as part of the curriculum and also after school sports activities. The survey found that 51% of pupils took part in at least 3 hours of sport in a typical week. Rates were similar in school years 1 to 9 but fell substantially in years 10 and 11 to just 31 minutes in years 12 and 27 minutes in years 13. In years 12 and 13 physical education is not part of the national curriculum.

There are minimal differences in participation rates in different regions with the lowest being the South East and the highest jointly being the South West and North West at 52%. In a typical week the average number of minutes spent on curriculum time PE across years 1-13 was 115 minutes. In years 10,11,12, and 13 percentage of pupils spending at least 120 minutes on curriculum PE were as follows: year 10 – 63%; year 11- 60%, year 12 – 23%, year 13 – 20%. In primary schools the number of minutes was 125, special schools 142 minutes and falling to 105 minutes in secondary schools. Schools in Scotland, Wales and Northern Ireland and Wales are falling short of achieving the two hours curricular PE. Schools provided an average of 18 different physical activities to pupils and had links to an average 8 sports clubs. The vast majority (at least 4 in 5) schools provide football, dance, gymnastics, athletics, cricket, rounders', swimming and netball. Following success in the Olympic cycling 50% of

schools surveyed now offer cycling in schools. The survey also showed that many apparently 'minority' sports such as softball, martial arts, mountaineering, sailing, boccia, rowing, boxing, squash, baseball, fencing, handball, circus skills, yoga and trampolining and lacrosse are provided in reasonable proportions of secondary schools, but in relatively small proportions of primary schools. Cheerleading, an alternative PA in schools is offered by 58% of secondary schools. A total of £2.4 billion was committed until 2011. Swimming, multi-skill clubs and cycling are provided in higher proportions in primary than secondary schools. As part of the national strategy on youth sport, 450 school sport partnerships will be formed incorporating all state maintained schools and 356 further education colleges in a drive to raise participation levels.

With regard to intra school competitive activities 28% of pupils across years 3-13 took part 3 times or more during the year and 12 times or more for key stages 3 and 4 in intra-school competition during the academic year. A total of 99% of schools held at least one sports day or equivalent. Having smashed its goal for pupils to engage in at least two hours of PE per week, following the London 2012 Olympics, the Government launched an ambitious new PE and Sport Strategy for Young People to create a world-class system as part of the legacy of the Olympics, and as part of that it aims to offer all 5 to 16 year olds 5 hours of sporting activity per week. Schools will play a major role in the provision of this, but community, sport and youth clubs will also have a key role and be co-ordinated by 49 county sport partnerships. At present 31% of pupils participate in community sports, dance or multi-skill clubs with links to the school, highest participation is in years 2 to 6 of primary school. The government clearly aims for five hours a week to be a reality rather than a recommendation (Department of Health, 2009). In order for this to become a reality the challenge is going to be in not only providing school based PE but in persuading children and their parents to take part in PA in their leisure time.

2.9 Encouraging physical activity in children

As the previous sections have outlined, the promotion of PA in children is a public health priority in the UK. It is clear that health promotion strategies need to be in place that promote and maintain PA from childhood, through to adolescence and into adulthood. Prevention is clearly the goal and therefore it

is essential to market physical activities in order to try to engage all children and support behaviour change in both diet and PA. Interventions aimed at increasing PA in children have used a variety of strategies: enhancing physical education, increasing active community, decreasing television viewing and risk factor specific training (Bouchard et al., 2007; Pate et al., 2005). However, finding an intervention appropriate to the target audience can often be challenging. Effective programmes and policies are needed at global, regional and national levels to limit the problem of inactivity among children and adults if the current pandemic of obesity is to be put on hold (Suter, 2006).

There is no evidence to suggest that strategies implemented over the last 10 years have had an impact as childhood obesity has continued to rise (Metcalf, Henley & Wilkin, 2012; Wang et al., 2006). Systematic reviews including documents published by the National Institute for Health and Clinical Excellence (NICE, 2007), have identified the main consequences of obesity in childhood and also the most beneficial strategies for the management of obesity. These have included providing cycling and walking routes, cycle parking, safe play areas, traffic calming measures, congestion charging and have recommended that sedentary activities during play time in nurseries and schools should be minimised. NICE guidance advocates sustained interventions that address diet, PA and support for behaviour change. It has been developed with the aim to inform PCT's healthcare professionals, schools, businesses, local authorities and the general public on 'what works' and best practice for the prevention and management of obesity (Buttriss, 2006).

Furthermore, in 2009, NICE published guidelines on the promotion of PA in children and young people (NICE, 2009). It identified multi-component school and community programmes as a key opportunity for PA and highlighted the need for school head teachers with the support of the board of Governors to deliver such programmes. Recommendations include education on the benefits of a physically active lifestyle, to motivate children to engage in PA; provide opportunities for the development of children's perceived self-confidence and finally policy and environmental changes within schools in order to provide a supportive environment for PA such as the inclusion of additional opportunities for PA during playtimes and out of hours.

With adequate and sustained investment, health marketing (social marketing) shows promise to affect the attitudes and behaviours of children (Huhman et al., 2007). Moderate amounts of physical activities can be achieved in a variety of ways and are not just the preserve of the sports enthusiast. Children can select the activities that they enjoy and that fit into their daily lives for example swimming, running, dancing (Taylor et al., 1999). Some activities will be done by the children without them being aware such as stair-walking especially in secondary schools on more than one level. However, in a 2 year randomised trial called Project Active, researchers compared increased activity through both lifestyle activities and traditional structured exercise programs and found that after 24 months there was no significant difference in increase in VO2 max between the two groups (Hardman & Stensel, 2003).

2.10 Promoting physical activity

The contribution of the school as a vehicle for PA and public health promotion is an important one as schools have a vital role to play in helping children and adolescents become more active by promoting PA (van Sluijs et al., 2007). Furthermore, school environments usually have the resources of equipment and staff coupled with opportunities both within and outside the curriculum to reinforce health promotion strategies such as encouraging PA participation. Some researchers have found that the majority of children's daily PA takes place during the school day, i.e. the journey to and from school, physical education, 'playtime' and extra-curricular activities (Fairclough, Butcher & Stratton, 2009; Mota et al., 2003). Schools can motivate and promote children to be physically active throughout the school day and outside school hours. Schools are one of the few settings where the full socio-economic status is represented in attendance (Fox et al., 2004) and where sustained exposure to healthy messages and health expertise can be achieved. Schools can make a difference by providing clear and consistent messages that guide children and their caregivers toward achieving recommendations for PA and the development of recreational skills that support lifetime activity.

2.11 Chapter summary

In conclusion, in light of well documented health benefits of PA which are known to have a prophylactic effect on disease, death and disability, promoting regular PA is a public health priority (Kuntzleman, 2002; Sherwood & Jeffrey, 2000). The available evidence from prospective observational studies suggest that increased PA and decreased sedentary behaviour can help to protect against relative weight and fatness gains over childhood and adolescence and can improve the risk factor profile of cardiovascular disease, although how much is required for optimal health requires further research (Eisenmann et al., 2005; Froberg & Andersen, 2005).

There is a plethora of evidence suggesting that PA can have a positive impact on children's current and future health. Health and PA behaviours can and should be maintained from an early age. Research studies of the determinants and efficacy of interventions to prevent the decline in PA during childhood and adolescence (particularly in females) are needed. Changing inactive lifestyles and levels of inactivity presents a tremendous public health challenge. Engaging young people in a new way of thinking about sustainable active lifestyles via the use social marketing may be the most effective way to promote and change PA habits and lifetime fitness activities in order to control health care costs, reduce disease incidence and improve the overall quality of life (Cale & Harris, 2006; Department of Health, 2004; Kuntzleman, 2002).

The more importance placed on PA in childhood, the more PA becomes a lasting source of enjoyment and fun (Hallal et al., 2006; Sacker & Cable, 2005; Tammelin et al., 2003; Tudor-Locke, 2002). Overall, there is strong rationale for promoting PA to children (National Institute for Health and Clinical Excellence, 2007). Schools have been identified as environments in which healthy PA behaviours can be adopted as there are a number of opportunities where children can accumulate healthful levels of PA. Indeed, the importance of schools to provide and promote PA is more important now than in previous decades when children accrued considerable amounts of PA as part of their daily living. Yet there remains a lack of consistent evidence of successful longitudinal interventions in UK schools (Metcalf, Henley & Wilkin, 2012). This could be because researchers do not revisit schools to assess the longer term

sustainability of interventions. Another issue with sustainability is that social and environmental factors can cause a return to previous low level behaviour after the intervention period (Gauvin, Levesque & Richard, 2001). It is anticipated that social marketing strategies within the school setting are needed to influence the way children and adolescents live, tackle inequalities, socio-cultural, political, environmental barriers and gender differences in PA participation (Department of Health, 2004). Extensive changes at many societal levels are required to halt and reverse the trend of the growing epidemic of physical inactivity to prevent chronic ill health and subsequent morbidity (Ahrens et al., 2004).

There are a number of issues highlighted in this chapter that have implications on PA such as lack of PA during PE levels, looking at the decrease in PA once students attend secondary school. In particular how the school environment can be both a barrier and facilitator to PA. Clearly, the school and other physical and political environments cam impact on PA and it is these areas alongside the social support students may or may not receive that will be investigated within this thesis. Therefore the next chapter will focus on theoretical models implemented in PA research alongside investigating social marketing as an approach for offering new and practical insights into promoting PA in schools. The literature discusses evidence of social marketing campaigns, particularly those that have been successful in changing health and PA behaviour.

CHAPTER 3

SOCIAL MARKETING AND BEHAVIOUR CHANGE: EXPLORING SOCIAL MARKETING AND THEORETICAL PERSPECTIVES AS AN APPROACH TO PROMOTING POSITIVE CHANGE

3.1 Introduction and aims of chapter

This chapter will explore the complex and evolving field of understanding behaviour change and the various theoretical perspectives that have been adopted for examining human behaviour. Moreover, it will provide an overview of social marketing as a potential approach for implementing behaviour change programmes. Organisations and individuals have explored new methods of developing messages and campaigns that promote health, and employ behaviour change and have found innovative ideas to present health behaviours for social good (Talbert, 2008). Influencing behaviour is a complex issue that can be achieved in different ways using numerous theories. In order to understand children's PA, theories and models have been adopted from health psychology and applied in the context of PA. This chapter will initially outline the political context underpinning behaviour change. The chapter will explore three key theoretical frameworks for understanding behaviour and promoting change which were used as the bedrock of this thesis TPB (Ajzen, 1985); SCT (Bandura, 1977) and SEM (McLeroy, 1988). It is important to explore these theories, as they were utilised in both the quantitative and qualitative studies. A requirement of social marketing campaigns is the use of theory to research the population a social marketing campaign intends to target (French, 2017). Building on a critical appraisal of the theories, the chapter will then examine the potential role of social marketing and its applicability in promoting school based PA behavioural change. In doing so, it will address the stakeholder, policy makers and partnership working of social marketing. Not least, the chapter will consider the problems and ethics associated with social marketing campaigns and seeks to review the growing evidence-base of social marketing in the area of PA examining campaigns that researchers have applied in the UK and in the USA to promote PA.

3.2 Political context underpinning behaviour change

Every big health challenge (physical inactivity, obesity, drug misuse, smoking, infection control, sanitation and family planning) that governments from around the world are faced with contain significant behavioural elements. Within all the health issues mentioned there is a need for individuals to behave in a way that protects or supports their health (French, 2017). Recently central government has paid attention to the role that individual behaviour change can play in

affecting changes in areas such as health, well-being, and the environment (House of Lords Science and Technology Committee, 2011; Jones et al., 2011a; Jones et al., 2011b; Whitehead et al., 2011). In recent years the government has sought to use a range of approaches drawn from consumer behaviour studies and marketing research to focus shifts on the individual behaviour of citizens when implementing policies such as carbon reduction. One such theory is that of "Nudge" (Thaler & Sustain; 2008) which has received considerable attention from the government since 2010 and is a way of changing behaviour that is:

> "any aspect of the choice architecture that alters people's behaviour in a predictable way without forbidding any options or mere nudge, the intervention must be easy and cheap to avoid, nudges are not mandates. Putting the fruit at eye level counts as a nudge, banning junk does not" (page 8).

Therefore, nudges are designed to prompt choices without getting people to consider their options consciously. However, despite the popularity of nudge-based approaches amongst man policy makers, this approach has been criticised for adopting a neo-liberal, paternalistic approach in that they are directive and controlling as opposed to seeking to empower personal and community decision making (French, 2011; Jones, 2011a). Furthermore, Nudges do not take into account the determinants of the issue being addressed, in the case of this research that would be physical inactivity. Nudging people into PA participation will seldom be enough to result in population-level improvements as experience has shown that interventions are needed that address the social causes of disease together with the economic and environmental causes (French, 2017).

Therefore, when nudges are insufficient to change the behaviour of individuals then the government has to look to another approach to positively influence the behaviour of individuals. One such approach is that of social marketing, a more in depth approach to behaviour change, that seeks to develop and integrate marketing concepts with other approaches to influence behaviour that benefits individuals and communities for social good (French, 2017). Within the last two decades, the maturing social marketing field has enjoyed a period of unprecedented expansion in the UK and United States (French et al., 2010). This growth has partly occurred as a result of the increased capacity for research funding and a practitioner skills base and the setting up of the National Social

Marketing Centre in the UK (Gordon & Moodie, 2009). Whilst social marketing has been present in one form or another for approximately 40 years it is only recently that social marketing has been rapidly adopted by the government, public sector organisations and the NHS. Following an independent report in 2006 entitled It's Our Health!, the report set out strategic and operational recommendations on how social marketing could be applied to improve the effectiveness of health promotion at both local and national levels (French et al., 2010). The report formed part of the Department of Health's white paper 'Choosing Health': 'making healthier choices easier' also contends that campaigns must be based on "an understanding of what different population groups need taking into account why people make the choices they do" (Department of Health 2004, p 23). In recent years policy makers, practitioners and health professionals have all adopted a keen interest in research and practice of social marketing (Gordon et al., 2006b). The government has now recognised, and embraced the value of social marketing as a tool used to build public awareness and change behaviour in its endeavour to promote health and social good. In 2008, the Department of Health launched 'Ambitions for Health: a strategic framework for maximising the potential of social marketing and health-related behaviour'. This report sets out how the Department of Health planned to embed a social marketing approach to change behaviour and improve health; work in partnership across governments, with the industry and voluntary sector in order to support the changes needed and to further embed social marketing into all health improvement programmes (French et al., 2010). Since that framework was launched, marketing has been increasingly used by governments and public sector organisations, not only for promoting services such as free flu jabs, promoting public transport but also to promote behaviour changes such as recycling, smoking cessation, "five a day" approach to healthy eating. The government also launched 'Change4Life' in 2009 which is probably its' biggest social marketing campaign to date (Raftopoulou et al., 2010).

Moreover, social marketing has played a critical role in guiding the Framework for Environmental Behaviours (Defra, 2008) and also Sustainable Lifestyles Framework (Defra, 2011). Therefore, social marketing is now a policy driver in delivering behaviour change initiatives at both national and local scales through Defra funded initiatives. Furthermore, social marketing has been at the forefront

of changing travel behaviours. In the United Kingdom, social marketing has been firmly embedded as part of the policy agenda of the government (French et al., 2010). Behavioural change is complex and whilst policy makers have used nudge theories, these are problematic in that they seldom do enough to result in population level improvements (French, 2017). Social marketing has therefore been regarded as a further approach to changing behaviour of segments of the population. However, social marketing must be underpinned by a theoretical perspective so theories that are relevant to PA behaviour change need to be explored. Traditionally social marketing theory and practice has been driven by numerous individual based models such as TPB (Azjen, 1985) and SCT, (Bandura, 1977) and these theories are used to gather data and inform a social marketing approach. However, using individual models alone does not account for the complexity of PA behaviour change. Engaging a multi-level model such as the SEM (McLeroy, 1988), adopts a broader perspective that encompasses not just individual behavioural influence but also addresses the social, physical and political determinants of that behaviour (Hastings & Donovan, 2002). This next section 3.3 will review: TPB (Azjen, 1985); SCT, Bandura, 1977 and SEM (McLeroy, 1988), the theoretical models employed within this research, all of which can inform social marketing policy and practice.

3.3 Theoretical approaches to understanding behaviour change

Theories are an organised set of knowledge that helps to explain or predict a particular phenomenon, in this case PA participation. Within public health, theory can aid with policy and programme development both in assessing need through to designing and implementing interventions (Naidoo & Wills, 2005). As highlighted, developing interventions to encourage PA behaviour change presents challenges as PA is a complex behaviour that is correlated with many demographic and psychological variables (Baranowski et al., 1998; Trost et al., 2002 and Bauman et al., 2002 cited in Delahanty et al., 2006 p 700). Many previous reviews of correlates of PA in children have revealed inconsistencies in the factors pertaining to their PA behaviour (Sallis et al., 2000). Furthermore the studies reviewed were not based on theoretical frameworks (Bélanger-Gravel and Godin, 2010). When research is linked to practice it allows practitioners to use theoretical frameworks to understand how they help their practice and how empirical evidence can further inform a greater understanding of theoretical

constructs (Naidoo & Willis, 2005). Theory based PA interventions have been shown to give a greater insight of behaviour by appropriately explaining and predicting subsequent behaviours than atheoretical interventions (Baranowski, et al., 1998; Dishman & Duckworth, 1996). This is due to theoretical frameworks providing key assumptions about factors that need to be taken into account when undertaking research or ensuring that an intervention will achieve the desired outcome. Nevertheless, there are limited theoretical based studies conducted on children and adolescents.

The complex psychological, cognitive, behavioural, social, biological and environmental influences on involvement in PA merely highlight the difficulty of singling out one perspective, theory or approach in attempting to understand this area of research. Moreover, social marketing is a multidisciplinary framework that incorporates components from a range of academic and practical domains, drawing on tools and theories as appropriate. One of the criteria for an appropriate campaign is the use of behaviour change theories in the initial research. As the basis of this research is to review PA behaviour of school children with a view to implementing a social marketing campaign in schools, this section will discuss the theories of behaviour change that are applicable to facilitating a school based social marketing campaign. Theories of behaviour change; TPB (Ajzen, 1985) and SCT (Bandura,1977) were used in constructing the initial questionnaire to ensure that the variables used were appropriate for PA research and are discussed in 3.3.1 and 3.3.2 respectively. Furthermore, in order to understand environmental inter-related influences affecting an individual's PA behaviour, the social ecological model (McLeroy et al, 1988) as discussed in 3.3.3 was the theory utilised to drive the qualitative research which when combined with a social marketing framework could be innovative in a school based setting to increase PA among school children.

Theoretical and empirical studies have found that the determinants of PA participation in PA lie in individual attitudes, social support and the provision of facilities. Several socio-psychological models and different theoretical frameworks have been designed to understand and predict behaviour change such as health belief model (Janz and Becker, 1984), protection motivation theory (Rogers, 1983), theory of reasoned action (TRA) (Ajzen and

Fishbein,1980), theory of planned behaviour (TPB) (Ajzen, 1985), transtheoretical model of change (Prochaska, 1992; DiClemete, 1982), socio-ecological model (SEM) (McLeroy, 1988 and many others (Thirlaway & Upton, 2009).

These predominantly psychological models and frameworks are applied to explore the determinants of an individual's participation in PA by explaining how expectations, judgements, beliefs and intentions lead to the enactment of PA behaviours (Hagger et al., 2001). However, few are available to predict maintenance of exercise participation (Stigglebout et al., 2005). Two prominent theoretical models used in PA research are the TPB (Ajzen 1985), a flexible framework and when used in conjunction with SCT (Bandura, 1986) predicts PA intention and behaviour (Biddle & Mutrie, 2008). In a review of literature to change PA behaviours using interventions, Hillsdon et al. (2005) found that interventions based on theories of behavioural change were associated with longer lasting changes than interventions with no such theoretical underpinning. The reason for this is that behaviour change theories focus specifically on the different influences affecting PA behaviour meaning that interventions can be tailored to take into account specific needs. However, whilst psychological models of TPB and SCT can provide insight into individual behaviours they lack insight into the wider fields of the social, physical and political environments. Research shows that the social, physical and political environments also impact on the ability or likelihood of individuals participating in PA (Glanz & Rimer, 1995; Sallis et al., 2008; Salmon & King, 2010). SEM is a dynamic way of presenting those environments and is a prominent model used in understanding health behaviour and was therefore the model applied to the qualitative research (McLeroy, 1988). To help understand those environments the SEM helps to identify opportunities to promote participation in PA by recognising the multiple factors that influence an individual's behaviour (Reifsnider et al., 2005; Salmon & King, 2010). For example as will be noted further in this chapter, efforts to change behaviour are more likely to be successful when the multiple levels of influence are addressed at the same time (McLeroy et al., 1988).

Therefore, for the purpose of this study TPB, SCT and SEM will be focused on, (Ajzen 1985, 1991; Bandura, 1977; McLeroy et al., 1988). Studies focusing on TPB (Duncan et al., 2012; Foley et al., 2008; Hagger et al., 2001; Hausenblas et

al, 1997) SCT (Gao 2012; Hagger et al., 2001; Samson & Solmon, 2011; Thiralway & Upton, 2009) and SEM (McLeroy et al., 1988; Stokols, 1996; in the context of PA will be reviewed. However, the most effective model for using or modifying factors to promote PA remains unclear and no consensus exists (Dishman, 1994; Maddux & DuCharme, 1997).

SCT and TPB as suggested by Rhodes et al. (1999) were used to guide this study in initially investigating the exercise behaviours of school children and were taken into account when designing the questionnaire as TPB and SCT highlight the individual attitudes, beliefs, motivations, barriers and self-efficacy as the keys to engagement in PA as a previous study demonstrated the usefulness of both theories in health related behaviour including that of PA (Bélanger and Godin, 2010). SEM as suggested by Casey et al. (2009) was used to guide the qualitative study and highlights that the social, physical and political environments were factors that could be just as important at affecting PA participation as individual factors and therefore should be addressed.

These theories identify several constructs that correlate with regular exercise behaviour such as exercise attitude, perceived behavioural control, self-efficacy, perceived social support and perceived benefits/barriers to continued activity (Rhodes et al., 1999). However, it should be noted that this research is not seeking to test the TPB and will not be subject to analysis whereby the results of the survey explain intention to exercise. It was sufficient to use the information to define the focus groups and was therefore not necessary to seek out participant intention to exercise. Although, the specific influences on behaviour; attitudes, subjective norms, perceived behavioural control and self-efficacy were further discussed in detail during the focus group interviews as these individual influences form part of the individual factors of the SEM. Moreover, the benchmark criteria for a social marketing intervention require that behavioural theory be used to inform and guide development and so this research project contains theory based research to assist with any future development of an effective social marketing campaign (Bélanger-Gravel & Godin, 2010), as TPB, SCT and SEM may lead to identification of the necessary targets for a social marketing intervention to positively affect children's PA behaviour (Hagger et al., 2001).

3.3.1. The Theory of planned behaviour

The TPB is a belief based theory and is a revision of the theory of reasoned action. TPB was intended to explain all behaviours over which people have the ability to exert self-control. (Fishbein & Ajzen, 1975). TPB has been used extensively and successfully as a theoretical framework to predict and explain a wide range of health behaviours and intentions including PA, smoking, drinking, health services utilization, breastfeeding, and substance use, among others.

TPB (as shown in Figure 3.1) represents a person's values and expectations in engaging a certain behaviour forms their behavioural, normative and control beliefs, which in turn influences their attitude, subjective norm and perceived behavioural control towards their intention and finally to their behaviour (Ajzen,1985;1991). Attitude, subjective norm and perceived behavioural control can be assessed directly by asking respondents to rate each construct on a set of scales (Ajzen, 2006)

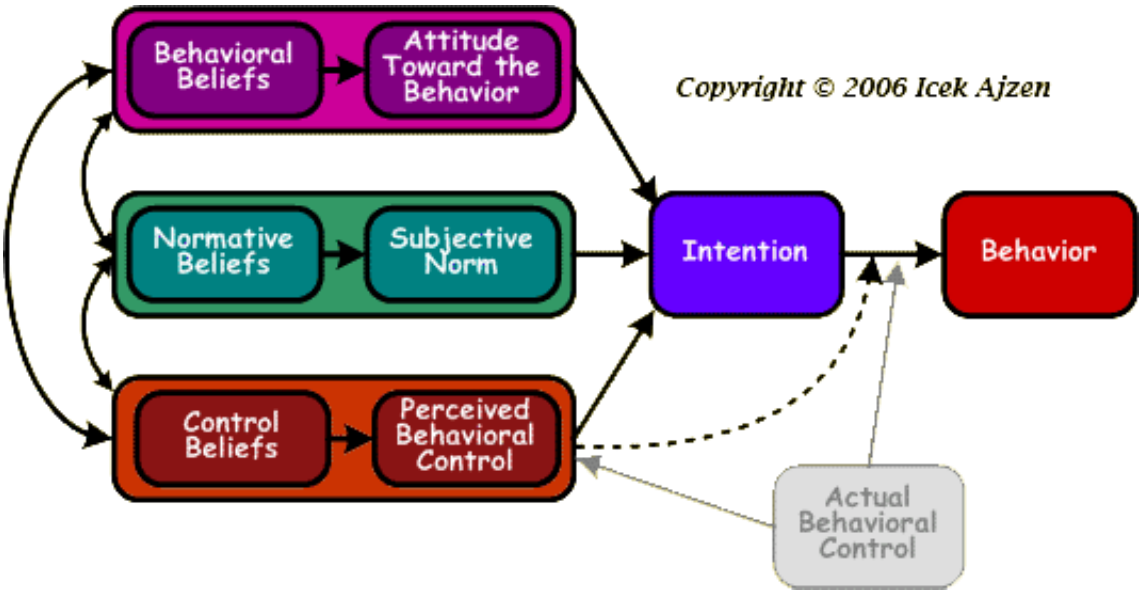

Figure 3.1 the theory of planned behaviour (Ajzen, 1985, 1991, 2006)

Behavioural beliefs and how a person feels about certain behaviours drive a person's attitude towards the behaviour. For example, with regard to exercise this could be represented by positive beliefs such as improving health or negative expectations such as discomfort following exercise, which will affect the consequences of taking part in the behaviour i.e., improving health outcomes.

Normative beliefs are based on whether significant others think a person should engage in the behaviour. The support given by the significant other aids motivation to comply and therefore forms the person's subjective norm. An example of this would be encouragement by a parent/carer to engage in a particular PA or being accompanied by a friend to engage in the activity. Control beliefs are the basis of perceived behavioural control and arise from a person's evaluation as to how hard adopting the behaviour will be and also on barriers such as resources, skills and opportunities to participate in the behaviour (Ajzen 1985; Francis et al., 2004). It should be noted that whilst perceived behavioural control has affinity with self-efficacy, a construct of SCT, it is not synonymous (Terry & O'Leary 1995).

3.3.1.1. Theory of planned behaviour in physical activity and exercise research

TPB has been used extensively as a theoretical framework for explaining PA and exercise behaviour among numerous populations (Abraham & Graham-Rowe, 2009; Hagger et al., 2002; Hasuenblas et al., 1997). TPB is used to explain PA choices through its direct and indirect measures. TPB has been corroborated by numerous meta-analytic reviews across a range of behaviours and more specifically in exercise (Chatzisarantis et al., 2007; Hagger et al., 2002). This frequent use of TPB and its positive application in explaining PA behaviours make it an excellent choice for this research. Regarding exercise, a meta-analysis by Hausenblas et al. (1997) concluded that the effect size of attitude and perceived control components on both intentions and exercise behaviour was great, whereas the effect size on normative beliefs (subjective control) was much weaker. Moreover, Hausenblas et al. (1997) concluded that a direct relationship between attitudes and exercise could be found independent of intentions to exercise.

Similarly, in a study by Blue et al. (2001) on exercise among blue collar workers, workers attitudes towards exercise, perceived behavioural control explained intention but yet again, subjective norm (normative beliefs) was not a significant predictor of intention to exercise. However, the study was limited to a specific sample and therefore could not be generalised to other adults or to children. Nevertheless, it can be argued that normative beliefs (social support from others)

did not have the same impact on exercise as individual attitudes and beliefs. This would suggest that studies focusing on adults found that social support from others did not outweigh individual determinants of attitudes and beliefs toward exercise.

Whilst fewer empirical studies have been conducted using TPB to examine PA behaviour in children and adolescents there is some evidence indicating that TPB may be a useful framework to explain the cognitive influences of children's PA behaviour and intentions as evidenced by the following studies (Craig et al., 1996; Foley et al., 2008; Hagger et al., 2001). This was demonstrated in a study by Foley et al. (2008), involving 645, 10-13 year olds that found subjective norm, attitude and perceived behavioural control accounted for 56% of the variance in intention, with perceived behavioural control accounting for 13% of the variance in behaviour (Foley et al., 2008). In addition, in a study involving primary aged children 9–12 years who were not yet in high school, Martin et al. (2007); Rhodes et al. (2006); and Trost et al. (2002) found that intention was the principle determinant of PA among children.

Furthermore, Hagger et al. (2001) conducted a study on 12-14 year old high school students to examine the construct and predictive validity of the TPB in children's PA. The study also investigated how previous experience influence children's PA intentions, attitude, subjective norms and perceived behavioural control on intention and also the intention on behaviour. The study provided support for the construct validity of the measures used to assess TPB variable and also showed that children base their intentions to engage in PA behaviour mainly on their attitudes and past behaviour. This study is further confirmation that attitudes, which incorporate past behaviour, affect children's intention to take part in PA. It could be argued that students' had positive self-efficacy towards engaging in PA as students that gain positive experiences from engaging in PA may lead to self-efficacy of individuals which in turn means they are more likely to engage in future PA. Overall, the findings from Hagger et al. (2001) suggest that establishing patterns of PA behaviour amongst children could be enhanced by attitude based intervention strategies.

The findings from this research were similar to findings in research by Craig et al. (1996) who also found that attitude was the strongest predictor of intention while subjective norms had no influence. Other research has found subjective norms to be very important in children (Godin & Shepherd, 1986). It may be that the age of the children had an effect on subjective norms as it is suggested that subjective norms become more negative with age (Godin & Shepherd, 1986), therefore, whilst subjective norms may not be found to be as important as intention to exercise as attitude, nevertheless, some studies have still found subjective norms to be important to intention to exercise children.

In particular, Martin et al. (2007), found that children with positive attitudes to PA, felt in control and had perceived support from significant others i.e., teachers to engage in PA participation expressed greater intention to engage in moderate to vigorous PA compared with children reporting less positive cognitions and this accounted for 45% of the variance and gender was not significant. This finding supports the work of Motl et al. (2002) cited in Martin et al. (2007) who also found attitude and subject norm were predictive of children's intentions to be physically active.

However, in contrast, a study by Duncan et al. (2012) involving 197 13-14 year olds of lower than average socio-economic backgrounds perceived behavioural control emerged as the only significant predictor of exercise, explaining 3.7% of the variance of PA behaviour, it may be that perceived behavioural control is more important for children from lower socio economic backgrounds that others of the same or similar age as financial barriers are likely to be greater in adolescents from lower socio-economic backgrounds.

Studies have shown that people who perceive the benefits of exercise are better able to sustain PA levels over extended periods than are those who do not (Caserta et al., 1998 & Sullum et al., 2000 cited in Nies & Kershaw, 2001, p 245). It should be noted that the relationship between exercise beliefs and exercise behaviours is reciprocal (Neupert, 2009). Resnick and Spellbring (2000) in a study focusing on older adults aged 81±7.2 years identified that beliefs about exercise, benefits of exercise, past experience, goals, personality and unpleasant sensations associated with exercise all impacted upon adherence.

A study by Leslie et al. (1999) assessed social support and its association with PA in a large sample of college students and found that those reporting low levels of social support from either family or friends were 23-55% more likely to be insufficiently active for health benefits than those with higher levels of social support. Likewise a US study found that high levels of PA were highly correlated with high levels of social support with women approximately twice as likely to be active on at least 30 minutes per day, 5 days or more if they received high levels of support (Eyler et al., 1999). As social support was deemed important by numerous studies, albeit with different members of a person's social network, the participants in this study will be given the opportunity to address these in the study with particular emphasis on support from family and friends.

Research conducted in child and adolescent populations, using the TPB constructs has shown differences in cognition, behaviour and emotions between children and adolescents, suggesting that this is as a result of the magnitude of the contributions of each cognitive construct changing with age and gender which influences cognition and beliefs (Lenroot & Giedd, 2006; Mummery, Spence & Hudec, 2000).

A clear conclusion that has emerged from TPB research is that it doesn't account for all determinants of intention and behaviour and for which researchers have added modifications to the theory (Hagger et al., 2002). Self-efficacy is one such concept that has been used in addition to the TPB. Whilst self-efficacy is similar to that of perceived behavioural control, Armitage and Conner, 2001 maintain self-efficacy and perceived behavioural control are two different concepts and not interchangeable with self-efficacy. Therefore they can be used in studies alongside one another.

3.3.2. Social cognitive theory

Bandura's social-cognitive theory is one theoretical perspective on understanding and predicting exercise behaviour (Bandura, 1977) as it emphasises the triadic reciprocal determinism in the interaction between people, behaviours and their environments (Bandura, 1986). SCT argues that the environment affects behaviour by constraining and changing beliefs (Bandura, 1997). Central to SCT

and the most important sub-theory stemming from it is the concept of self-efficacy, an important self-belief and confidence in one's ability to perform a specific behaviour in a given setting (Bandura, 1986). More specifically Bandura (1977, p3) defines self-efficacy beliefs as "people's judgements of their capabilities to organise and execute courses of action required to attain a desired outcome". Bandura's theory of self-efficacy has been the most extensively used theory for investigating self-confidence in sport and motor performance (Feltz, 1988). Self-efficacy and self-confidence are often used interchangeably, but self-efficacy has a positive correlation with confidence, in that the greater an individual's personal efficacy, the more positive their confidence is (Hurley, 1991). Furthermore, it is important that when taking part in PA the experience for the participant is a positive one as this will help to foster self-efficacy.

Therefore, people will be more likely to engage in behaviours that they believe they can successfully perform and avoid behaviours in which they perceive they will be unsuccessful in (Samson & Solmon, 2011). Self-efficacy is thought to be shaped by past and present behaviour and by the social environment through observation in others, persuasion and verbal support (Bandura, 1986). An individual's self-efficacy perceptions help shape their efforts, affective experiences and enjoyment of physical activities especially those of higher intensities (Samson & Solmon, 2011). Self-efficacy is the one consistent factor that positively relates to behaviour change (Hurley, 1991).

The stronger an individual's self-efficacy and outcome expectations, the more likely they will be to initiate and persist with a given activity, especially when faced with potential barriers, providing the participant has sufficient incentives to act on self-precepts of efficacy and possess the requisite sub-skills (Bandura, 1977; Bandura, 1986; Barnett et al., 2007; Feltz et al., 2008; Hurley, 2001; Piazza et al., 2001; Nies & Kershaw, 2002). In the context of PA; individuals will only take part in PA if they value the activity and believe that they will be successful at performing the activity. Furthermore, females who maintain self-efficacy for overcoming barriers to PA when faced with perceptions of decreasing social support (for example with parents or peers) would be more likely to sustain PA during adolescence (Dishman et al., 2009). Moreover, self-efficacy beliefs are important because the belief that an individual can exercise, even given

constraints and impediments is associated with a greater likelihood of doing it (Bandura, 1997).

Self-efficacy has been empirically validated in a variety of contexts and behaviours such as alcohol use, responsible sexual behaviours and healthy eating (Glanz et al., 2008, cited in Samson & Solmon, 2011). Intervention studies that recognise the importance of self-efficacy and perceived behavioural control are more likely to result in sustained behavioural change (Thirlaway & Upton, 2009). Participants with high levels of self-efficacy are generally more likely to pursue challenging events, persevere with setbacks, cope with pain whereas participants with low self-efficacy are more likely to avoid challenges and give up when faced with setbacks (Lewellyn et al., 2008).

3.3.2.1 Self-efficacy and its role in physical activity research

Research examining the relationship between self-efficacy and PA behaviours persistently predicts self-efficacy beliefs (Samson & Solmon, 2011). A study by Hagger et al. (2001) supports Bandura's evidence that self-efficacy operates as a motivator during exercise. A non-standard structural questionnaire equation model demonstrated that self-efficacy coupled with attitude were strong predictors of exercise intention, but perceived behavioural control was not. The study concluded that young people with positive attitudes and high self-efficacy are more likely to form intentions to participate in PA. Past behaviour affects young people's PA intentions and so the study suggests that those involved in PA promotion such as physical educators and sports coaches should provide an appropriate environment for young people to participate in physical activities that foster competence and personal improvement (Hagger et al., 2001).

Greater levels of PA also correlates with greater self-efficacy as in the research conducted by Annesi (2006) found that in a study of preadolescents in an after-school PA program engaging in PA increased self-efficacy over a period of 12 weeks. Therefore, positive levels of self-efficacy not only increase PA but engaging in PA increases self-efficacy levels. The research found that engaging children in after school activities may not only improve physical health and psychological factors but also increase PA outside of the specified program. This

is because as the PA of the child increases so too will the self-efficacy to engage in other activities away from school.

Further support for a social cognitive approach was research conducted by Gao (2012) investigating urban Latino school children's PA via the completion of questionnaires and accelerometer measurement. The relationship between PA was positively correlated with self-efficacy, social support and physical and social environment with social support emerging as the significant contributor to daily PA levels. However, physical and social environments failed to predict PA levels. This may be that physical and social environments are beyond the control of the individual, are unpredictable and so could have either a positive or negative effect on PA.

In a study evaluating the effects of a SCT based intervention to increase leisure time PA among adolescents it was found that in the treatment group SCT increased levels of moderate physical exercise. The intervention group increased their physical exercise by 2.05 days over the intervention time frame meaning that 18.9% of students met recommendations for moderate PA via leisure time PA alone (Hortz & Petrosa, 2006). This is a substantial increase considering that a review on PA interventions found only a 4 min per day increase (Metcalf, Henley & Wilkin, 2012). However, what is not known are the effects in the long term following the cessation of the intervention time frame.

Furthermore, in a review of the literature by Samson & Solmon 2011 that examined literature on self-efficacy for PA within the sport and exercise domains it was found that there was clear evidence of the relationship between self-efficacy beliefs and PA behaviours. In particular, the research demonstrated the predictive power of efficacy beliefs. The outcome of this study thus shows that self-efficacy is important for an individual to adopt as once adopted an individual is more likely to engage in future PA (Glanz et al., 2008). Moreover, in regard to past performances numerous studies have documented the correlational relationship between self-efficacy beliefs and past experiences albeit positive or negative experiences. A major attraction of self-efficacy theory is the relative ease with which it can be modified to promote behaviour change or engagement in PA (Glanz et al., 2008)

Significant results were also found in a study conducted by Wu & Pender (2002) that examined the relationships among interpersonal influences of social supports, norms, and behaviour specific cognitions of self-efficacy, perceived benefits/barriers and competing demands and PA among Taiwanese adolescents. The study found that self-efficacy was the most important predictor of PA, that interpersonal influences, when considered in total, had a weak and non-significant direct effect on PA but had indirect effects on PA through perceived benefits and perceived self-efficacy. When interpersonal influences were considered separately, family i.e. parental influences showed no effects on PA and yet peers did have a significant direct effect on PA and indirectly through perceived self-efficacy. As 95% of the subjects were aged 13 to 14 years, this could be a factor in the influence of subjects to value peer friendships in favour of parental relationships. This study lends some support to the results of a study conducted by Garcia et al. (1995) on youth aged children who found the effects of social support and social norms for exercise on exercise behaviour were mediated through behaviour-specific cognitions (i.e. benefits/barriers). Similar results were found in studies with adolescent females that social support from peers was related to increased self-efficacy for overcoming barriers to PA and smaller declines in PA during the period of adolescence (Beets et al., 2007 and Dishman et al., 2009 cited in Samson & Solmon, 2011). Therefore it can be argued that the results of a number of studies assessing self-efficacy in relation to PA, suggest that social support from peers positively affects self-efficacy which in turn leads to increased PA. It can therefore be suggested that ensuring social support of a target audience would be beneficial to any social marketing campaign.

Further support to this was also found by Dishman et al. (2004) and Ward et al. (2006) who both evaluated the events of the Lifestyle Education for Activity Program (LEAP) a comprehensive school based intervention which emphasised changes in instruction and school environment. This study whilst not labelled as a social marketing campaign had components of a social marketing campaign namely being based on variables derived from the social-cognitive theory (SCT) as mediators of change in PA among black and white adolescent females. The study involved 1038 females in the control group and 1049 females in the

experimental group. The results encouraged the use of self-efficacy as a targeted mediator variable in interventions designed to increase PA among females as self-efficacy partially mediated the effect of the intervention on PA, although it was not known how self-efficacy regulated thoughts and behaviours. Furthermore, the study found that self-efficacy can also be influenced by reinforcement history, observational learning, persuasion and perceived exertion.

Self-efficacy was addressed together with proxy efficacy for after-school PA in a study by Dzewaltowski et al. (2008). The research demonstrated that males could be more confident that they could be physically active compared to females, although there were no differences in gender in regard to proxy efficacy. Children who perceived greater PA opportunities after school had greater confidence in being physically active and had greater confidence that they could influence both parents and school staff to provide PA opportunities. SCT does however posit that environmental opportunities are a precursor for PA and was consistent with the finding of Dzewaltowski et al. (2008). It was also found that children attending schools with higher socio economic status and from low ethnic minorities had greater influence from parents to provide PA opportunities compared to children attending from greater ethnic minorities with lower socio economic status.

Furthermore, a study by Dishman et al. (2009) that looked at self-efficacy and its ability to overcome PA barriers over a four year period found self-efficacy when combined with social support predicted less decline in PA than self-efficacy alone that did not mitigate declines in self-efficacy among females with a perceived reduction in social support. PA remained low in females with low self-efficacy regardless of change in perceived social support. Self-efficacy has also been shown to be a predictor of PA in populations that face many barriers to PA, predominantly due to lack of facilities and cultural limitations such as the low importance placed on exercising over activities such as housework or homework although few studies have been conducted in on immigrant groups. A study by Taymoori et al. (2010) found a positive effect of self-efficacy on PA participation of a group of Iranian females who face multiple barriers to an active life.

Further support to this research is given in a study by Martin et al. (2011) in predicting PA in 10-14 year olds. The results found that the best predictors of PA were self-efficacy, classmate social support and gender. Therefore, this study will assess the self-efficacy and social support of the participants in relation to their PA behaviour. In contrast, a study by Ramirez et al. (2012) while it supported the ability of SCT constructs of self-efficacy, outcome expectations, social support and goals to predict PA in children, only a small account could be accounted for by the model and Ramirez et al. (2012) deemed it critical to integrate SCT with other models such as TPB to explain and change PA and other health behaviours.

3.3.3 Socio-ecological model

Whilst traditionally, social marketing has been driven by individual behaviour change models, there are some social marketers that have begun addressing the SEM, although research into its application in social marketing is limited (Collins et al., 2010; Lindridge et al., 2013). Application of the SEM to social marketing campaigns is appropriate where the campaign is encouraging people to take greater responsibility for health related decisions (such as engaging in PA). It is being suggested that when SEM is used with social marketing it can produce effective long term sustained patterns of PA, although their practical applications remains uncertain (Lindridge et al., 2013). Many of the challenges that are faced (such as physical inactivity, obesity and smoking) are complex behaviours that cannot effectively be remedied simply by focusing solely on the individual (Stokols, 1996). An explanation of this is that many of the behaviours an individual may exhibit are beyond the control of the individual whose behaviour the social marketer wishes to change (Hastings, Macfayden & Anderson, 2000). Moreover, school based PA initiatives have not always encompassed all the levels within the SEM. Cale & Harris (2006) recommend that “to increase the likelihood of PA interventions being successful and leading to sustainable behaviour change, an ecological framework is used to address the multiple levels of influence of PA and to explore the potential of every aspect of the school to promote PA” (p412).

SEM is rooted in ecological theory proposed by Bronfenbrenner in 1979. Ecological approaches provide a framework for understanding the complex

interplay between the many personal, social and environmental influences on behaviour (Bronfenbrenner 1979). SEM developed out of the work of a number of researchers (Bronfenbrenner 1979; McLeroy et al., 1988; Stokols, 1996; Sallis et al., 1998). Bronfenbrenner's work saw the influences on behaviour as a series of layers, where each layer had a resulting impact on the next level. He described these layers as being like being a series of Russian dolls, where the innermost level represents the individual, which is then surrounded by differing levels of environmental influences (Bronfenbrenner 1994). Bronfenbrenner, 1979 contended that our behaviour is influenced by forming relations with each other and with the physical environment.

SEM is being considered as an alternative to traditional individual behavioural theories as there is a need to address an individual's inter-relationships within their environment or social marketing programmes to achieve the aim of delivering effective behaviour change. SEM of health seek to explain how environments in which people live and work offer opportunities for individuals to engage in health promoting behaviours such as PA but also where there are constraints to engaging in healthy behaviours (Sallis, et al., 2008; Stokols, 1996). SEM takes into consideration the multiple levels of influence on PA participation (Bronfenbrenner, 1979; McLeroy et al., 1988; Reifsnider et al., 2005). By addressing the multiple levels of influence at the same time, strategies to change behaviour can then be implemented. Identifying opportunities to promote participation in PA by recognising the multiple factors that influence an individual's behaviour is likely to successfully change behaviour (Sallis et al., 2008) SEM therefore highlights the complexity of PA and influence on decision making.

The SEM approach is appropriate because it recognises that human behaviour is difficult to change, especially in an environment that does not support change. In order to increase PA, efforts need to focus not only on the behaviour choices of each individual but also on factors that influence those choices (McLeroy et al., 1988). Research shows that the social, physical and policy environments impact on the ability or likelihood of individuals participating in PA (Glanz & Rimer, 1995; Sallis et al., 2008; Salmon & King, 2010). SEM helps to identify opportunities to promote participation in PA by recognising the

multiple factors that influence an individual's behaviour (Reifsnider et al., 2005; Salmon & King, 2010). Efforts to change behaviour are more likely to be successful when the multiple levels of influence are addressed at the same time (McLeroy et al., 1988). Despite SEM being shown to be a useful model in evaluating children's health behaviour at multiple levels, there is paucity of literature that applies the model to children's PA behaviour, especially within the school context (Hyndman, 2012; Moore et al., 2010). In this thesis SEM provides the qualitative research with a theoretical model and SEM was therefore used to address the qualitative data. SEM was used to highlight the importance of recognising intrapersonal, interpersonal, organisational/settings, community, environment and political influences and the relationship between the multiple levels of influence with a view to developing effective solutions to improving PA in schools (McLeroy et al., 1988). The model also compliments and encompasses the TPB and SCT which were utilised in the quantitative data.

3.3.3.1 Components of the social-ecological model

There are a number of versions of SEM, which use slightly different classifications of environmental influences as can be seen from the models below. Generally, SEM is made up of the individual (intrapersonal), social environment (interpersonal), physical environment (organisation/community) and policy components (see Figure 3.2). As can be seen from this model factors affecting behaviour are shown in layers which then influence each other. Individual level is the centre of the model and includes characteristics such as age, gender, education, skills, attitude and knowledge which can affect the likelihood of engaging in PA. The social environment includes interpersonal interactions with family, friends, teachers, coaches, peers or colleagues and can impact on the behaviour of the individual. PA is then performed in the physical environment and includes both natural and man-made environments such as parks, leisure centres, sports facilities and schools. Political environment refers to the rules and regulations and include national and local policies (such as school policies) that can affect PA As can be seen from the second more detailed diagram, specific to PA the physical environment and policy have been merged together (see Figure 3.3).

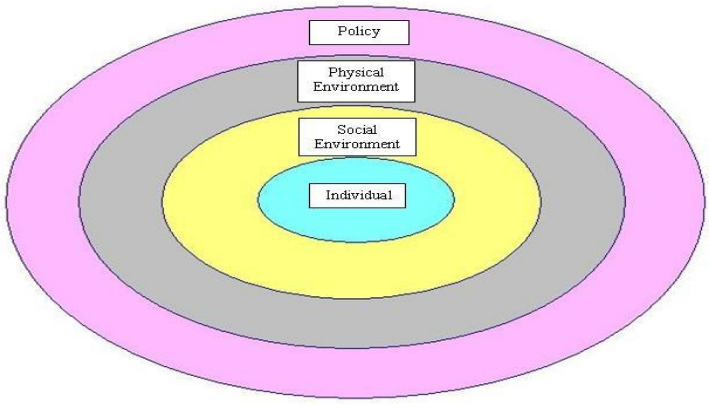

Figure 3.2 Social-ecological model (Victorian Curriculum Assessment Authority, April 2010 p3)

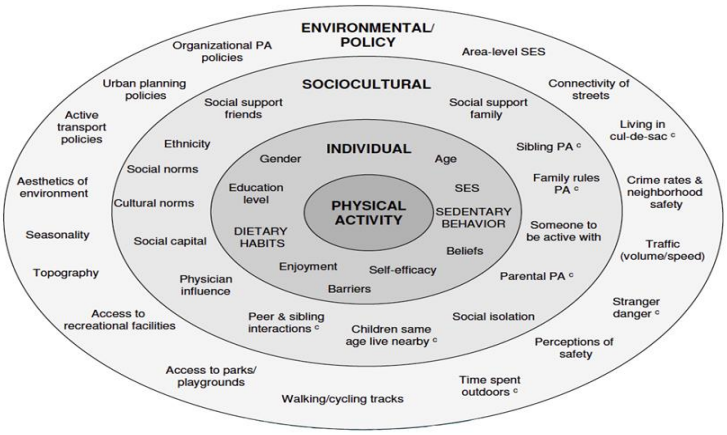

Figure 3.3 Socio-ecological model focusing on PA behaviour (adapted from Salmon & King, 2005)

No single factor on its own will lead to behavioural change for all people, or even one person. Behavioural change is a complex process and involves the interaction of a number of variables. For example, an individual's social environment of family, friends and school are embedded within the physical environment of geography and community facilities (such as afterschool clubs, local leisure facilities) which is in turn embedded within the policy environment of different levels of government or governing bodies (this could include the national curriculum and free swimming policy or other policies governing resources and infrastructure). All levels of the SEM impact on the behaviour of the individual (Stokols 1996, p. 291). The SEM represents this concept as a series of overlapping circles, with each circle representing a different layer or component of the model. The model shows that no single behaviour on its own will lead to behavioural change for all people or even one person. In the model

below which is specific to PA, whilst the circles do not overlap it demonstrates that there are a number of factors that account for PA behaviour (see Figure 3.4). The model in Figure 3.4 shows, the thematic analysis with themes similar in nature but distinct to that undertaken in chapter 6.

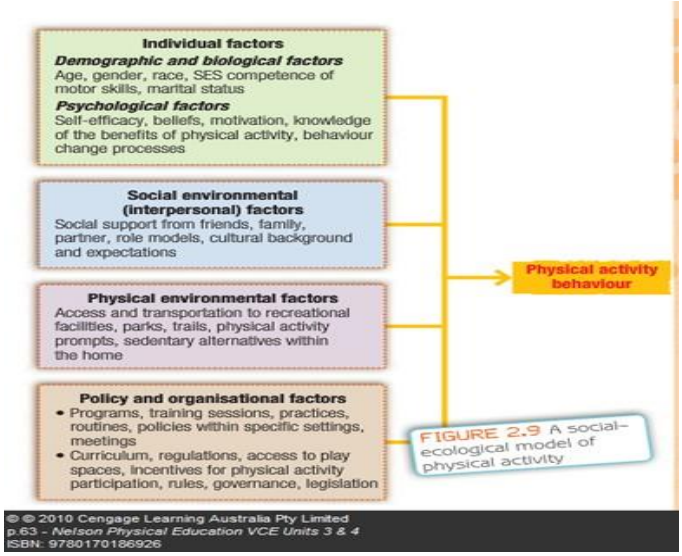

Fig 3.4 A social-ecological model of PA (Nelson Physical Education VCE Units 3 & 4 p63)

There are however, limitations of the social ecological model, whilst the model can identify environmental and political factors, environmental and policy changes can take a long time and be costly to implement and so in not being able to change the environment can mean that it can be more difficult to change PA behaviour. Moreover, simply building fitness facilities does not mean that people with automatically become more physically active, hence individual factors can be more influential than the physical environment. Furthermore, educational and incentive programs to motivate people can be expensive and time consuming.

3.3.3.2 Socio-ecological model and its role in physical activity research

SEM has been the model of choice by researchers to address health behaviours. Despite the importance of applying SEM to evaluate children's health behaviour at multiple levels limited studies are available on PA, particularly studies from the UK. Whilst the model has not been used extensively in PA research, nevertheless it has been seen to be successful in highlighting the barriers and

facilitators to PA participation and based on the barriers and facilitators some studies have used interventions to successfully change the PA behaviour of participants.

One such intervention was a randomised control trial by Tehrani et al., 2015, which focused on improving women's PA. The model addressed PA behaviour affected by 4 levels of personal, social organisational and political factors. There were no significant differences in any of demographic characteristics of the groups. Data collection included a researcher made questionnaire based on the constructs of SEM and the international PA inventory. The case study was an intervention was made on attitude and awareness of participants at individual level using educational multi-media based on SEM. In order to assess efficacy of the intervention after 3 months data was collected using the same tools as at pre-test. The results revealed that following the intervention mean weight in the case study reduced from 67.2 kg to 66.3 kg but increased in the control group from 63.0 kg to 63.1 kg. There was also a decrease in BMI with a significant difference between the two groups showing that the participants had lost weight following the PA intervention. In the case study group mean awareness and mean attitude towards PA increased. Following intervention there were significant differences between the mean scores in the perceived social, physical and political support of the two groups were observed, with increasing mean scores in the intervention group. Overall the study found that the women who received intervention according to SEM showed a significant increase compared to the control group.

This study therefore indicates that to perform health based behaviours, development of social, physical and political support are essential. This study used quantitative data; however had the study used qualitative data which would have given a greater insight into the factors affecting PA the intervention may have led to greater PA of the women, although PA in itself was not measured. Furthermore, as the study was assessed after 6 months, longevity could not be ascertained. Nevertheless despite the limitations it appears that interventions based on SEM can positively affect PA of women.

Mehtala et al. (2014(conducted a systematic review on PA interventions in childcare settings on children aged 2-6 years old. Studies were reviewed that had carried out interventions designed to promote PA in children. Fourteen of the 23 studies found increases in PA levels or reductions in sedentary time although modest. Overall, the findings of the review indicate that children's PA remained low and did not approach the 180 $min^{-}d^{1}$ criteria. Intervention strategies on an intrapersonal level found that playground space was associated with higher post-test PA levels in boys than girls, independent of the intervention condition. On an interpersonal level children were more enthusiastic and moved vigorously when teachers joined in with activities. The review suggested that teachers' experience and personal characteristics may play an important role in increasing PA among children. On an organisational level more space per child and an additional structured outdoor play time was associated with more PA during recess. Overall the review yielded very few high quality interventions and the inclusion criteria of the review was that the studies only had to have one intervention component of SEM which could account for PA levels remaining low post intervention. Among the studies reviewed the use of specific PA in-service training for teachers found positive results. It was suggested that a more intensive multi-level and multi-component intervention based on a comprehensive model are needed.

Metzler et al. (2012) established a new curriculum for schools programs in the USA namely Health Optimising Physical Education (HOPE). This program was designed to increase PA in school children. SEM was used to design a program as it recognised the importance of surrounding environments for the promotion of PA and other health enhancing behaviours in school children. Metzler et al. (2012) felt that the potential benefit of community and public policy changes to increase PA participation is great, although they recognised that that they are the most difficult levels of intervention implementation because they are typically beyond the control of individual PE teachers and the furthest away from the individuals who are targeted for behaviour change. Nevertheless, some teachers can have a say in school policy decisions that affect PA participation. The model did in fact use strategies from all SEM model components, although how successful the implementation of the model was is unknown.

Research by Casey et al. (2009) used a SEM to enhance exercise and PA among 34 girls (aged 12-18 yr). Focus groups were implemented to carry out the research in four secondary schools. The results showed that adolescent girls were positively influenced by outcome goals i.e., when sports or physical activities were fun but also engaged in sports for health benefits (intrapersonal). Participation was enhanced when perceived self-competence (self-efficacy) was high. However, lack of success or lack of peer recognition was seen as deterrents to participation. When the activities involved being with friends and when they were supported by families and teachers through role modelling and positive feedback (interpersonal) students were more likely to participate in activities, this approach was generally effective in increasing PA in girls. In addition, organisation supports were also effective in increasing PA with the school environment being perceived to provide both positive and negative influence on the girls' participation in sport and PA. Negative feedback from teachers' in particular male teachers was seen as having a negative influence on school sports and PE because they were too competitive. Community and sports clubs were also identified as being even more competitive which due to the girls' perceived lack of competence led to negative participation. Lack of opportunities due to the rural location also restricted participation in sports. However, had the research been conducted with both boys and girls it may be that the barriers and facilitators to PA would have been different. When exploring the most effective strategies for PA participation both genders should be incorporated into research to ensure that everyone is catered for within the school environment.

Furthermore, other studies have addressed the evidence for interventions targeting at least one level of influence of the SEM. Pratt et al. (2015) looked at increasing population levels of PA and deemed that at intrapersonal level individually adapted behaviour interventions were effective at increasing PA levels among overweight/obese Latino adults. At intervention level there was strong evidence for recommending non-family support strategies among adults in high-income levels. At community/organisation level several combination approaches were applied and found to be effective. At physical/policy environmental level strategies showed sufficient to strong evidence for recommendations such as point of decision prompts, the creation of or enhanced access to PA combined with activities in organisation outreach. Whilst this study

provides sufficient evidence for the validity of the model the study did not trial the strategies on children and so the results may be different in school children.

Whilst SEM has intrapersonal, interpersonal, physical and political factors, it would appear from the literature that in interventions to change behaviour policy changes are the least focused on. In a review of studies carried out by Soderland (2017) on PA interventions with Hispanic women with type 2 diabetes it was found that intrapersonal interventions such as education, training, skills enhancement and cultural training were all implemented to increase PA participation. On an interpersonal level, improving skills of social support using Hispanic health workers and encouraging support by family members increase PA participation. At a physical level, the studies reviewed focused on interventions consisting of modifications to community services and training of community residents. Health professionals and community residents facilitated programs at various community locations which improved PA levels, although not all community based programs were associated with significant PA outcomes. In regard to policy none of the studies in the review included interventions directed at policy levels, yet the authors acknowledged unsafe neighbourhood environments as a major barrier to PA. This is clearly a failing of the studies as participants need protected places for exercise and so all the components of SEM need to be focused on in order for interventions to be successful in the long term. However, it could be argued that change at policy level is the hardest component to implement which could account for studies carrying out interventions at intrapersonal and interpersonal levels before embarking on the physical or policy environments.

Furthermore, Giles-Corti et al (2002) conducted a study to assess the effects of individual factors and social and physical environments on the level of PA, which showed that physical environment directly affects the level of PA followed closely by individual and social factors that also increase levels of PA. SEM has also been used to address barriers and facilitators of participation in children with additional needs. Obrusnikova and Cavalier, (2011) conducted a study looking at barriers and facilitators of after school PA in 14 children aged 8-14 years with autism spectrum disorders. The study used a mixed approach of: digital photography; an online questionnaire and semi-structure interview. They found

that multiple factors affected PA participation which was mainly intrapersonal, interpersonal and physical environment factors. Intrapersonal barriers included sedentary activities such as video games whereas individual sports such as swimming was seen as a major facilitator. Lack of peer exercise partner (friends or siblings) was seen as a both a major barrier but also a major facilitator to being physically active. In terms of physical barriers and facilitators, inclement weather was the strongest barrier with direct exercise equipment (bike or scooter) being a major facilitator to PA. However, physical and community factors were also consistent with previous research by Sallis et al. (1997) that found physical or community environments rich in PA resources such as equipment or supplies, swimming pools, parks, playgrounds, PA programs and transportation seemed to facilitate participants engagement in PA after school. Overall, the most common perceived factors were intrapersonal in nature, citing interest in sedentary activities (those involving technology). This study therefore suggests that regardless of the low number of students in the study and the disability of the participants the barriers and facilitators to PA were consistent with other studies conducted in school children without disabilities (Gyurcsik et al., 2004, 2006).

Similar results were found in a study by Hyndman et al. (2012) that addressed facilitators and barriers to non-curricular PA participation using SEM. The study utilised focus groups and drawings to explore the broader influences on children's PA behaviour beyond the primary classroom (n=47, ages 9-11 yr) and secondary classroom (n=29, ages 11-13 yr). The two main themes that emerged from the focus group discussions in relation to interpersonal factors were outcome goals (e.g., health and social benefits such as 'fun') and task goals (e.g., focus on improvement or skill). For secondary students relaxation was occasionally perceived to act as a barrier for secondary students to be physically active and in primary schools safe places were perceived as boring. For interpersonal factors peers and teacher roles models were seen as the most influential factor report. Although for younger students sharing space with other students was seen as a barrier to PA as the students didn't feel safe. Consistent with other studies (Sallis, 1997; Obrusnikova & Cavaliar, 2011) it was found that there was a need for greater provision of a variety of playground equipment particularly adventure type equipment, natural play environments to run around in were also seen as being important. There were no main facilitators for secondary school PA in the

form of the physical environment, rather spending time in the student lounge watching television was a barrier to PA. However, the students did state that they would like to spend time in the gym on rainy days and to also have the opportunity to play basketball.

3.3.3.3 Socio-ecological model when applied with social marketing

A number of years ago, calls to adopt 'a broader perspective that encompasses not just individual behavioural perspective but also the social and physical determinants of that behaviour' were made (Hastings & Donovan, 2002, p4). Collins et al. (2010) contend that using a socio-ecology model as a theoretical framework contributes to the development of social marketing strategic planning. They advocate that social marketing should be expanded beyond an individual model of behaviour change to addressing influences at multiple levels and tailoring interventions to affect changes at multiple levels thereby having a multifaceted programme. However, since that paper was written, it would appear that little PA behaviour change utilising SEM has been conducted within social marketing. Further work is therefore needed within social marketing to test the use of SEM as an alternative behaviour change model, moving away from individualistic models generally implemented within PA social marketing campaigns.

A study by Lindridge et al., 2013 addressed SEM in the context of a social marketing campaign in order to bring about health behaviour changes. The study addressed Childsmile a social marketing campaign which aspires to provide care for every new born to four year olds in relation to children's oral health improvement. Utilising SEM within a social marketing campaign of the Childsmile tooth brushing scheme increased from 52.7% (n=482) to 94.7% (n=540). Childsmile used qualitative research of parent focus groups and eight mini-groups of health professionals and those involved in pre-school education. The group revealed that a social marketing strategy needed to overcome cultural, personal and structural boundaries found within the SEM. Furthermore, identifying SEM factors such as social structures, environment, laws and policies of institutions and were taken into account when devising a social marketing plan. The success of this study was attributed by interviewing parents and stakeholders, identifying and understanding the variables in SEM and using this

model combined with social marketing. Identifying and overcoming components of SEM can lead to positive behaviour change.

3.4 Social marketing and behaviour change: exploring social marketing as an approach to promoting positive behavioural change

The method in which some of these behaviour change theories have been used is through the lens of social marketing as previously highlighted in 3.1. This section will further discuss social marketing as a framework for behaviour change and more specifically the role it can play in changing PA behaviour. It will also outline social marketing campaigns focusing on PA. It has been documented that the more fully a social marketing has been adopted into the planning and provision of a behaviour change campaign, the more successful adoption of the behaviour change is (Donovan & Owen, 1994). However, it should be noted that not all social marketing programs set out to influence behaviour change, as the literature may indicate. Social Marketing campaigns may in fact be preventative in nature i.e. an anti-drugs campaign with the aim of preventing a young person from taking drugs would clearly want to discourage behaviour change. Social marketing is not a theory itself, it is a framework or structure utilising other bodies of knowledge such as psychology, sociology, communications theory and marketing in order to understand how to influence the behaviour of target populations (Gordon et al., 2006a). Only by understanding and empathizing with the consumer can marketers develop strategies for solving a problem or satisfying a need or want (Lee & Kotler, 2011).

Social marketing is based on the adaption of contemporary marketing theory and practice in order to guide and aid social change campaigns (Dann, 2010). A distinction between commercial marketing and social marketing is that commercial marketing is usually based on the needs experienced by the consumer whereas social marketing is based on the needs of consumer as identified by a health expert. Although, social marketing campaigns still have to be carried out in accordance with the needs of the consumer (Donovan & Owen, 1994). Utilising contemporary marketing theory, psychology and sociology, the process involves “consumer” orientated research, objective setting, identification of barriers and, consequently strategies to enable the consumer to change behaviour (Formoso, 2007).

Fundamentally, social marketing is about understanding the triggers to make positive life choices and giving encouragement that will enable the public to take positive action in a bid to improve their lives and the lives of others. Social marketing is not to benefit the organisation conducting the social marketing and it is this that distinguishes social marketing from commercial marketing (Gordon et al., 2006b). The most challenging aspect of social marketing is probably its reliance on voluntary compliance from the public rather than legal, economic or coercive forms of influence (Kotler et al., 2002). Although, an individual may have an economic influence over their behaviour, an example of this is the cost of smoking. In a number of cases social marketers are unable to promise immediate gains or direct benefits. In the case of behaviour change of ill health or injury prevention, behaviour change is only based on the assumption that continuing to participate in a particular behaviour may impact on a person's health in the future and therefore many individuals will not want to change their behaviour for something that may or may not happen. Therefore, to quote Andreason, 2002, "social marketing can be applied in any situation in which a socially critical individual behaviour needs to be addressed for a target audience" (pp3-13). This provides social marketing a wide domain. Social marketing argues that marketing ideas can be borrowed in order to promote healthful behaviour (Hastings et al., 2006).

Social marketing has adapted commercial marketing theories and practices to assist with social change campaigns (Dann, 2009). The uniqueness of social marketing principles with its distinctive and unique techniques, some of which are derived from the commercial marketing sector, coupled with health education, popularises positive ideas, changing attitudes and empowering individuals to change behaviours (Talbert, 2008). In this regard in order to target individuals with particular marketing mixes specific to the needs of individuals, social marketing uses segmentation as a tool for understanding and promoting behaviour change in groups of individuals (McKenzie-Mohr, 2000). In summary "social marketing…….underscores the importance of strategically delivering programs so that they target specific segments of the public and overcome the barriers to this segment's engaging in the behaviour (McKenzie-Mohr, 2000, p594).

3.4.1 Components of social marketing

Andreasen (1995) defines social marketing as “the application of commercial marketing technologies to the analysis, planning, execution and evaluation of programs designed to influence the voluntary behaviour of target audiences in order to improve their personal welfare and that of society” (p7). However, to simplify this definition French and Blair-Stevens (2010) define social marketing as “the systematic application of marketing, alongside other concepts and techniques, to achieve specific behavioural goals, for social good” (p1). This is one of the newest definitions of social marketing, although there are many other definitions of social marketing. (Dann, 2010). Such an array of definitions could cause problems with regard to the legitimacy and value placed on social marketing as an effective behaviour change tool. Andreason (2006), proposed that the lack of consensus on the definition of social marketing could be a possible barrier for social marketing’s future development. However, considering that they are all similar in nature and all mention behaviour and marketing, meaning that behavioural theories are used together with strategic marketing methods such as the four Ps of marketing (place, price, product and promotion), then too much emphasis should not be placed on the definition itself but should concentrate more on the benchmarks within the social marketing framework.

In order to ascertain whether a PA initiative can be determined as a social marketing campaign, The National Social Marketing Centre (Ainsworth, 2010) drew up a list of 8 criteria to determine a campaign’s consistency with social marketing. Following this criteria and ensuring a campaign contains all 8 components can help the social marketer to develop a successful campaign whist also ensuring it meets the criteria to be classified as a social marketing campaign. The 8 criteria followed an independent review that examined social marketing methods and approaches and further built on Andreasen’s 6 point benchmark criteria from 2001 (Andreasen, 2002). The 8 criteria are as follows:

1. **Customer Orientation – Conducts good market and consumer research and uses data from different sources to develop a thorough understanding of the audience.**

2. **Behaviour – Uses strong behavioural analysis to focus on behaviour with specific behavioural goals.**
3. **Theory – Is behavioural theory-based and informed.**
4. **Insight – Is used to develop a deeper insight by focusing on what 'moves and motivates'.**
5. **Exchange – incorporates an 'exchange' analysis. Knowing what the person has to give in order to receive the benefits proposed. The social marketer has to maximise the perceived benefits and minimise the perceived costs associated with the advocated change.**
6. **Competition – incorporates a 'competition' analysis to find out what competes for the time of the audience.**
7. **Segmentation – Uses a developed segmentation approach (not just targeting).**
8. **Methods Mix – Identifies an appropriate 'mix of methods' incorporating the marketing mix and intervention mix.**

The additions and variations to Andreason's (2002) original benchmark criteria is the addition of theory and exchange; however it could be argued that theory is incorporated within behaviour and that exchange sits within the methods mix under price, whilst although not monetary in exchange the person still has to give in order to receive the benefits proposed. Furthermore, it could also be argued that a campaign need not necessarily demonstrate all the principles in strong measure to be identified as a 'social marketing campaign'. Some will indeed have higher doses of advertising than others, with others requiring a deep understanding of behaviour. However, a campaign purely focusing on advertising would not be considered social marketing (Andreason, 2002). To date, not all social marketing campaigns have followed the new social marketing benchmark criteria (as detailed in Appendix B) as this was devised in 2010. Therefore, campaigns detailed in 3.4.5 in this literature review will not have used the new criteria in its current form and should have followed the six criteria put forward by Andreason, (1994) and which it could be argued are more concise than the eight and is more than adequate as a successful framework for a social marketing campaign.

3.4.2 Growth of social marketing

Despite being little known in circles outside of government and policy makers, social marketing can trace it origins back over 40 years. Social marketing is viewed as the weapon of choice to overcome one of the toughest public health problems of the day: obesity, of which PA is an important component in reducing obesity (Department of Health 2013). Social marketing, a technique concerned with the analysis of the social consequences of marketing policies, decisions and activities, has grown from a fledgling discipline to being recognised as an established means of eliciting behaviour change (Gordon & Moodie, 2009). In the late 1960's and early 1970's, the use of marketing techniques to plan and implement campaigns for social change increased (Donovan et al., 1994). This was due to health professionals, psychologists and sociologists realising that they were not particularly successful in communicating health messages and were therefore not being successful at motivating or facilitating behaviour change. Whilst media-based PA promotion campaigns were successful in increasing awareness, knowledge and even motivation among target audiences, this did not transfer into producing significant behaviour change (Graham & Graham, 2008). In this regard, a review of 28 PA media-based interventions discovered that whilst message recall was generally high, PA participation beyond the short term was minimal (Marcus et al., 1998).

Public health professionals also realised that there needed to be a move towards individuals taking responsibility for their own behaviour in order to elicit good health, thereby preventing the onset of chronic disease. Hence the assistance was sought of marketing advertising and marketing professionals (Donovan & Owen., 1994). The birth of the term 'social marketing' arose from an article discussing the application of commercial marketing principles in social and health issues and was first referred to as 'social marketing' in 1971 by Phillip Kotler and Gerald Zaltman. The difference between commercial marketing and social marketing is that the commercial marketer benefits from a campaign usually to persuade a group or individual to purchase goods or services.

Whilst social marketing campaigns are for social good and beneficial to the individual for whose behaviour it is trying to change (Evans, 2008). It should be noted that the definition of social marketing does not include cases for which the

beneficiary is the social marketing organisation (Andreason, 1994). Arguably though, social marketing campaigns run by government or public sector organisations are beneficial to the government as for example with campaigns promoting healthful behaviours, the aim being to not only prevent chronic disease thereby reducing the cost to the health service, but also to ensure its political agendas are met (Walsh, 1994). Therefore, in this regard the government is no longer an impartial, external party, but plays the role of initiator and benefactor.

Moreover, older style health education programmes were limited to focusing on a relatively small percentage of the population, i.e., high risk groups were missing substantial proportions of the population (Donovan & Owen, 1994). Therefore, epidemiological evidence suggesting that to initiate small changes within large segments of the population led to substantial population wide health gains and therefore to a rise in the use of large scale social marketing campaigns that made use of marketing practice (Rose, 1985). Social marketers do however face challenges such as there being a large number of health issues and the bombardment of media channels all competing with the population's attention (Evans, 2006). Therefore it can be argued that for this research using schools as a vehicle for a social marketing campaign is a way of reaching large numbers of the child population and gaining their attention on a daily basis

There is now an abundance of evidence to suggest the growing interest in social marketing research has been conducted in many domains such as environmental and health improvement. (Gordon et al., 2006b). Whilst there are systematic reviews that have demonstrated social marketing interventions as being successful in changing food consumption and substance misuse behaviours (Stead, 2007) there is still little research existing in the field of social marketing for PA behaviour change.

3.4.3 Areas using social marketing

Over the past 20 years, throughout the UK and United States, various social marketing campaigns have been launched to try to ensure compliance with health beneficial behaviours such as ensuring children receive immunisations, sexual transmitted diseases are minimised, more children are breastfed, domestic violence is decreased and smoking reduced. Key challenges such as

environmental concerns, chronic disease, epidemics such as rising obesity rates that are costly both to the public purse and private sector organisations have brought about an increased interest in social marketing. A reduction in poverty, increased education, increased wealth, increased choices and growth in lifestyle expectations have led to these new 21st century challenges. The above challenges are all concerned with behavioural choices such as over consumption of natural resources, smoking, excessive alcohol consumption and overeating. Coupled with this there are also huge social and economic challenges associated with persistent and growing inequalities between regions (WHO, 2008b).

Social marketing is now used to influence a number of health behaviours and uses wide ranging health promotion strategies such as mass media, interpersonal and other modes of communication (Evans, 2006). According to French (2010, p2) 'Social marketing, with its emphasis on understanding people as the starting point for developing interventions, is a powerful tool that needs to be more systematically applied'. In fact, social marketing can be applied in any situations whereby a socially critical individual behaviour in a specific target audience needs to be addressed (Andreason, 2002). Furthermore, social marketing is a good tool that ensures the hard to reach communities are met, health inequalities dealt with and interventions specifically targeted to tackle high areas of deprivation that traditional campaigns have problems reaching (Meredith, 2009).

3.4.4 The importance of partnership working in social marketing

As many health issues are influenced by both social and individual behaviours, social marketing has recognised that policymakers, private sector and third sector organisations need to be targeted and consulted in order to elicit behaviour change (Truss et al., 2010). Partnerships can potentially lead to innovative strategies for disseminating health messages and influencing positive behaviour change (McKinnon, 2007). In particular, in a bid to successfully tackle health issues and in particular health inequalities, effective working partnerships between private, public and the third sectors need to implemented and maintained. All three sectors have key roles to play in empowering people to choose positive behaviours. The public sector is reliant on the private sector for provision of goods and services to meet consumer's needs. In turn the private

sector relies on the public sector in creating a profitable and stable customer base. The public sector is also reliant on third sector voluntary organisations to complement public sector initiatives in the supply of volunteers and programmes, not to mention the importance voluntary organisations have in developing community cohesion and often have already in place good community relationships with the community that for the public sector might be deemed as the 'hard to reach' population (French et al., 2010).

In 2004, a survey by the Global Corporate Citizenship Initiative demonstrated that over 90% of the chief executives surveyed believed that the world's development challenges could not be met without partnership (World Economic Forum, 2005 cited in French et al., 2010). However, it is not sufficient for the government to put forward empty gestures and initiatives without seeking and ensuring effective partnerships that are cohesive all the way down to the consumer including ensuring that the funding is available for all partnerships concerned to implement the initiatives. Nor is it appropriate to just passively give out funding to initiatives.

In 1998, Gillies conducted research into the effectiveness of alliances and partnerships for health promotion and found that in 43 studies reviewed, notwithstanding whether the studies were controlled trials, comparison groups of pre and post-testing of impact all the studies clearly demonstrated that partnership initiatives to promote health across boundaries of professional and non-professional and with public, private and voluntary sectors do work. The results demonstrated that the greater the community is represented and involved, the greater the impact and the more sustainable the gains. However, they only work if the needs of the intermediaries enlisted to promote higher levels of participation in PA are also met and included in the exchange process as they too want value in return for their efforts. An example of this are Campaigns such as "Change4Life" that have been successful as this has involved partnership working which will be discussed in 3.4.5.3.

In a tabulated review of the effectiveness of alliances and partnerships on health promotion by Gillies (1998), the outcome predominantly focused on behaviour change effects of individuals, the reported change effects ranged from 3 to 20% of the populations involved in the interventions. According to psychological

theories of health related behaviour change, the outcomes were in the expected range. Although the evaluations reviewed by Gillies (1998) looked specifically at behaviour change, partnerships and community programmes can affect the wider context of behaviour change. The review suggested that the greater the level of local community involvement and partnership working in the practice of health promotion, the larger the impact on behaviour change. However, as the indicators for success primarily focused upon individuals the evaluations were unable to capture adequately the extent of the impact of collaborative health promotion initiatives. Therefore the effects of alliances and partnership should be incorporated into evaluations.

3.4.5. Social marketing campaigns relevant to physical activity and health

Social marketing-based interventions are being adopted all over the world to tackle a growing range of behavioural issues. A growing number of programmes have demonstrated their effectiveness in countries such as the United States, Canada, Australia and New Zealand and Europe. However, the United Kingdom has been at the forefront in firmly embedding social marketing into the government policy agenda (Truss et al., 2010). In a bid to stem the rise of inactivity rates and the rise in the growing obesity epidemic particularly in children, a variety of interventions aimed at increasing PA in children have used a variety of strategies including enhancing physical education, increasing active community, decreasing television viewing and risk factor specific training (Bouchard et al., 2007; Pate et al., 2005). Media based PA promotion has also been used successfully in increasing awareness, knowledge and even motivation among target audiences but rarely have these campaigns produced significant behavioural change (Graham and Graham 2008).

Also, whilst numerous health interventions have been undertaken on a small scale in both primary and secondary schools, some of which have had short term success at engaging children in physical activity there is little evidence that sustained patterns of physical activity following cessation of interventions (Fox et al., 2004) With adequate and sustained investment, health marketing shows promise to affect the attitudes and behaviours of children (Huhman et al., 2007). Moderate amounts of physical activities can be achieved in a variety of ways and are not just the preserve of the sports enthusiast. Studies cited in an article by

Ridgers et al. (2006) indicate that playtime activity can contribute between 5-40% of recommended daily PA levels when no interventions have been utilised and is one of the best ways for children to expend calories. Children can select the activities that they enjoy and that fit into their daily lives for example swimming, running, dancing (Taylor et al., 1999). Some activities will be done by the children without them being aware such as stair-walking especially in secondary schools on more than one level. However, in a 2 year randomised trial called Project Active, researchers compared increased activity through both lifestyle activities and traditional structured exercise programs and found that after 24 months there was no significant difference in increase in VO_{2max} between the two groups (Hardman & Stensel, 2003).

Nevertheless, short term success in such campaigns has given credibility to the use of schools as a place to instigate social marketing campaigns in a bid to encourage sustainable patterns of PA (Cavill et al., 2008). The National Healthy Schools was one such programme that was put in place in schools to provide a support structure to ensure that schools have the plans and policies in place for a more active lifestyle for the whole school population. A vast majority of primary schools in the UK have now achieved the health status of being a 'Healthy School'. PA falls into the healthy school remit equating to the school requiring to be seen as an active school i.e., the school must have an up to date travel plan (81% of schools now have a travel plan) (Department For Transport, 2010), a certain number of PE lessons must be undertaken by the children each week and after school activities must be made available to the students. However, after school sports activities will not lend themselves to all pupils in the schools and there is no evidence to suggest that healthy schools status increases the PA of the least active students in schools. Therefore more needs to be done to encourage and accommodate those pupils who are not particularly sporting or wish to engage in competitive sports into other forms of PA with a focus on a programme tailored to the needs of specific groups of students, in particular, the least active students in schools.

There are also a number of PA interventions which are similar in nature to social marketing campaigns like 'A girl can','Let's get moving' and 'Get inspired', albeit that not all are specifically aimed at children. These campaigns may have been

effective in engaging individuals into PA; however, it is beyond the scope of this thesis to examine them. Whilst these interventions clearly contain a number of elements that can be seen in a social marketing campaign, they do not contain all the benchmark criteria set by The National Social Marketing Centre to be a social marketing campaign. A review by Stead et al. (2006) stated that for a campaign to be classified as a social marketing campaign, it would have to contain all the elements put forward by Andreason (1994). Therefore, interventions that contain some components of social marketing, designed to positively affect PA behaviour have been included in earlier sections of this literature review. This review will highlight campaigns from both the UK and the USA. Whilst there are UK studies, it appears that there is a general bias in the field towards research from the USA which prevents conclusions being drawn from UK research and so there are far more resources available detailing studies from the USA (Whitehead & Biddle, 2008). Two campaigns from the USA have been included as being relevant to this research as these were both successful large scale PA campaigns which the UK could acquire knowledge from. In particular, VERB focused solely on PA of children and would therefore be a useful campaign to study when carrying out PA research for a future school based social marketing campaign focusing specifically on PA. Whilst Change4Life is a large scale social marketing campaign, it did not focus entirely on PA which makes VERB an important social marketing campaign to detail.

3.4.5.1 Food on the Run

In the USA in 1998-2001 an adolescent nutrition and PA social marketing campaign in high schools, Food on the run was set up to increase PA and healthy eating in teens. The goal of the campaign was to prompt and motivate high school students into advocating for health food and PA options and advance policy and environmental changes that promote healthy eating and PA options in the school and surrounding community. The campaign's target audience was primarily high school students; a secondary target audience was aimed at family members, school staff, community leaders and policymakers. Campaign materials were produced and given out in the school and the television and radio public service announcements were made throughout the school year. Posts and displays were placed all around the school. In order to evaluate the project, a 13 item survey was conducted asking about awareness of the various

components of the ‘simple solution’ campaign. Students were surveyed pre and post campaign, awareness and exposure was measured and it was found that 94% of students were familiar with the campaign. There was also a significant increase from baseline of students recognising the slogan. Overall 87.9% of students reported they planned to eat healthier snacks, 78.8% planned to eat more low fat foods, 95.5% intended to eat more fruits and vegetables; 92.4% planned to move their body at least 30 minutes per day and 90.9% planned to be more active. Student advocates reported statistically significant increases in advocacy activities each year from 1998 to 2001. Such an increase was not seen in the general student body. Student advocates of Food on the Run student advocates were successful at increasing the number of healthy food and PA choices at participating high schools. Lessons can be learned from Food on the Run particularly in regard to the types of activities that were offered in schools and also the community involvement and political changes that took place within the city to encourage participation in PA. This included extending the availability of leisure facilities. In order to increase access to and promote PA, numerous activities were made available to students including: started a hiking club; making a dance class available and beginning an intramural basketball league. The campaign also involved the community which included: promoting the use of community PA resources; petitioned the city for bike lanes and encouraged families to be active. Based on the information available (as it is not known what behavioural change theories were utilised in this research) it could be argued the campaign initially focused on individual behaviours such as the attitudes and beliefs of the students which can be found in the TPB and are necessary in understanding the target audience. Furthermore what is apparent from the research is that the campaign utilises the social ecological model to focus on changing the environmental and political areas that impact on the PA behaviour of the students. Findings would show that taking into account the individual factors of the TPB when combined with SEM is effective in promoting/changing behaviour.

However, a limitation of this study could be the short length of time the study ran for as it only ran for approximately 2/3 years and information about the participants is only available until 2001 a year after the campaign finished. It is not known if in fact the students did actually change their behaviours in the long

term. However, it could be argued that even if not all, but some of the students changed their behaviour, then based on the figures of those that plan to change their behaviours, the campaign will have been successful at not only raising awareness of nutrition and PA behaviours but in changing the behaviours of some high school students. Following cessation of the campaign it was felt that it should be continued through future school years to ensure continued repetitive exposure of the message and address the latest high school student population (Takada, 2010).

3.4.5.2 VERB

As this research is focused on PA in children, this literature review will address the VERB campaign as this is widely recognised among social marketers as a successful campaign to promote PA participation in children. The VERB campaign which was conducted between 2002 and 2006 directed at 21 million children aged 9-13 years and included a variety of media advertisements. The campaign had a brand name of VERB with the intention of becoming a brand name for children's PA. To quote Asbury (2008) "A branding approach allows multiple attributes of the product or service to be associated with the overall brand, allowing advertisers to highlight different product features through diverse messaging." (S183). This has been the case with Change4Life in that it had Swim4life, Bike4life, Play4Life to name but a few. As with commercial marketing brand affinity leads to product loyalty and therefore in this case of both Change for Life and VERB, young people are more likely to take up activities associated with the brand that they have come to know as being good and positive.

The VERB campaign was set up to increase and maintain PA among 'tweens' (youth aged 9-13). The campaign encouraged tweens to be physically active everyday through increasing knowledge and improving attitudes and beliefs about tweens' regular participation in PA; increasing parental and influencer support and encouragement of tweens' PA; heighten awareness of options and opportunities for tween participation in PA; facilitate opportunities for tweens to participate in regular PA; increase and maintain the number of tweens who regularly participate in PA. Messages were used that sought to improve children's beliefs regarding the appeal and positive effects of PA, coupled with the use of highlighting the children's self-efficacy in order to overcome barriers

relating to the participation in PA. VERB was marketed through television advertising supplemented with community and school directed efforts in year 1 and further expanded in year 2, with activity promotion kits being delivered to community and schools across the USA. The kits were designed to expand opportunities for kids to be active. The VERB website also directed children to find local activities. The campaign was multi-faceted and also offered opportunities and support for active and rewarding participation, including community based activity events; activity start-up kits; innovative teaching materials; 'street teams' to engage tweens at events, small grants to support PA in school, contest, competitions and sweepstakes. The campaign also partnered with companies who were facilitating the PA of tweens, namely media companies and it was acknowledged that these companies were critical to VERB's success and the companies' role was leveraged to great benefit (McKinnon, 2007).

Huhman et al. (2007) conducted an evaluation of the VERB campaign using a nationally representative cohort of 2257 parent-child dyads. The evaluation used the Youth Media Campaign Longitudinal Survey (YMCLS), a telephone survey to assess the campaign's effectiveness (Huhman et al., 2005). The survey measured free time PA, organised PA on the 7 days prior to the telephone interview and PA on the day before the interview; activity levels were calculated in sessions (Potter et al., 2008). As with the theoretical framework being applied in this thesis such as TPB and SCT it is suggested that VERB applied both theories to their social marketing campaign. Specifically, VERB aims to change tweens': subjective norms which is the belief that important others improve/disapprove of the behaviour; beliefs which focus particularly on the benefits of PA; self-efficacy which is confidence about being physically active and finally perceived behavioural control which is how strongly tweens believe they can engage in PA regardless of having barriers to overcome (Huhman et al., 2004) The YMCLS accessed psychological dimensions of PA: outcome expectations, self-efficacy and social influences which were aligned with the messages expected to be on the VERB advertising. However, recall can be problematic as it is not always the most accurate measurement of PA as participation times can be exaggerated or forgotten. In order to be as accurate as possible the survey used YMCLS as it has acceptable reliability and validity for measuring PA (Welk, 2005 cited in Huhman, Potter, Duke, Judkins, Heitzler,

Wong (2007). To further ensure accuracy the measure was significantly correlated with data from a detailed activity log ($r = 0.67$ and $r = 0.46$ respectively). The overall response rate following three data collection points was 32% which is an acceptable and comparable response rate for large scale telephone surveys. Overall the research found that children aware of the campaign reportedly engaged in significantly more PA than children unaware of VERB. Among children aware of VERB 61% reported PA on the day before interview and 3.9 weekly sessions compared to 46% and 3.0 weekly sessions for those unaware of the campaign. Furthermore, children that had received a higher dose of VERB advertising showed a mean score of 2.315 compared to 2.086 for a normal dose and was significant at $p<0.05$. The effects of the campaign were also considerably stronger after year 2 than year 1 thereby showing that longevity of a campaign has an effect on sustained patterns of PA. This was also demonstrated in years 3 and 4 of the campaign.

In years 3 and 4 significant findings were also found that the level of exposure to VERB by tweens was associated with PA on each of the psychosocial variables. In 2006 28% of children had unprompted recall of VERB with 47% having prompted recall of VERB, therefore total awareness was 75%. Again, as with the previous years, significant dose-response associations were found for tweens. The more frequently they had exposure to the campaign the greater they believed in the benefits of PA, together with an increase in their self-efficacy to be physically active, and social influence on PA. Therefore, this would suggest that consistent daily exposure such as in a school environment is an effective way in which to target children's PA. For the children who were originally targeted by the campaign commencing in 2002 at baseline, positive dose response associations were found for free-time PA outcomes in 2006. As frequency to exposure increased, the 13-17 teenagers reported free time PA sessions ranging from 2.02 sessions for those unexposed to the campaign compared to 4.9 sessions for those exposed every day. Fewer effects were found in the final year; although significant dose-response associations still persisted for free time PA. It could be argued that few effects in the final year were due to the children become young adults and competition for their time being far greater as their lives changed (National Social Marketing Centre, 2010). The campaign was also cost effective as producing it on a national scale resulted in low cost per child for producing

behavioural changes that contribute to increased patterns of PA and which in the long term should cut costs to the health bill (Huhman et al., 2007). The VERB campaign represented a significant achievement as it demonstrated good working relationships could be formed between the government, private industry and local community to positively affect PA behaviours and attitudes of US youth.

Overall, it can be assumed that the success of the campaign was due to successful working partnerships combined with the multi-faceted nature of the campaign including branding and an excellent and wide ranging marketing mix. Asbury et al., (2008) believe the success to be contingent on the branding of positioning of the product i.e. how PA was positioned in the mind of tweens. Tweens and parents were widely exposed to the VERB message, the campaign ensuring that they were exposed to the campaign both at school, in the community and at home. Not only that, success can also be attributed to the variety of physical activities that took place that were sponsored by VERB to ensure that tweens were not only exposed to health messages, but exposed to the activities themselves that they participate in.

3.4.5.3 Change 4 Life

The largest social marketing campaign to be launched in the UK was the Change4Life social marketing campaign, launched in January 2009. The campaign is aimed at several audiences and initially involved the changing of eight separate behaviours of: 5 a day; sugar swaps; me size meals; snack check; cut back fat; meal time; 60 active minutes; up and about using a range of partners and stakeholders. Change4Life has similarities to the US VERB PA social marketing campaign except Change4Life is focusing on a total of eight behaviours, only two of which are PA related behaviours (Huhman et al., 2005). As with VERB, Change4Life utilised behavioural theory in its social marketing approach, although it is not clear from the Change4Life documentation which specific theory was utilised. However, it is clear that parents were questioned using a questionnaire as to their knowledge, attitudes and beliefs, which would be consistent with TPB (Department of Health, 2009). Whilst qualitative research was conducted with stakeholders (interviews) it would appear that only quantitative research was conducted with parents which would suggest that the research lacked in depth knowledge of the target audience. Change4Life used

segmentation (which will be discussed in chapter 4 of this thesis as being an appropriate method of targeting specific sub-sections of the population) in order to divide the population into six segments with the campaign focusing on four segments. Some 200,000 at risk families were included in the postal and a more expensive version of the customer relationship management programme which consisted of four separate packs of additional information and resources. Of these 200,000, 44,833 (1 in 4.5) families were proven to still be interacting with Change4Life six months after joining.

To ensure that Change4Life is thoroughly evaluated 7% of the budget is allocated to research monitoring and evaluation of the campaign, with national partners required to evaluate their own activity. Results of the campaign found that advertising awareness reached 87% in March 2009, with logo recognition at 86% (compared to a baseline recognition level of 9%). The monitoring survey indicated that a quarter of all parents surveyed claimed they were taking action as a direct result of seeing Change4Life communications, although this evidence is based purely on verbal interviews. It was found that 71% of GP's were aware of the campaign, which should help with promotion of the campaign to patients. Over the first year, 413,466 families joined Change4Life. Whilst Change4Life surpassed all its targets for awareness and responses to a questionnaire How are the kids?, (that parents sent in to be given healthy eating, PA advice, complete with children's activities) there is still as yet no evidence of sustained behaviour change, particularly with regard to sustained patterns of PA. Although, there is a tracking study which interviews 300 mothers with children aged 0-11 years every month, discussing health behaviours. Three in ten of those mothers who were aware of Change4Life claimed to have made a change to their children's behaviours as a direct result of the campaign. Encouragingly 20% of mothers claimed their children did all eight behaviours at the end of the first year, a rise of 4% from the baseline of 16%. This figure also showed seasonality, increasing steadily throughout the year (18% in spring, 20% in summer and 24% in the autumn, dropping slightly in the winter) (Department of Health, 2010). This change could be attributed to the PA behaviours with children doing more activities in the summer and maybe walking or cycling to school at the start of the new school year and joining more after school activities before dropping back in the winter as the weather becomes colder and novelty of new after school

activities wears off. Clearly there is a need to look at more than a year's worth of data to look for sustained behaviours. Evidence would also suggest that lasting effects can only be obtained with sustained intervention. Future statistics from the child measurement programme will give a clearer indication of the overall success of Change4Life when it addresses rates and levels of obesity. Lessons were however learned from the evaluation and these were: to ensure that PA professionals have resources available to use with their population groups to promote PA, the products needing to be tailored to meet the needs of the different partners; before a campaign/intervention is launched, sufficient time has been allocated to informing and engaging key groups in the local area; ensure that supportive materials and further information is given to participants as soon as they show interest in engaging with the project; when devising a marketing strategy ensure that free distribution channels such as GP surgeries are used as they generate more interest and are cost effective when compared to paying for newspaper or magazine inserts (BHF National Centre, 2010).

Change4Life built a coalition of partners from the commercial sector, non-governmental organisations and other government departments such as the NHS and schools. In the Change4Life campaign this coalition was paramount in achieving public awareness of the Change4Life brand. For example, primary schools generated 50,000 sign ups and the NHS ordered 6 million items of Change4Life materials. Asda and Tesco worked with government to promote and encourage sales of healthy foods. Halfords promoted and supported the campaign by offering fixed priced bikes under the 'Bike4Life' sub-brand (Department of Health, 2010). This benefits commercial partners as it helps to increase sales; promote products; increase market share of the target market i.e. children and families; strengthen brand position, company reputation and corporate image and meet corporate social responsibility targets.

Schools have a major role to play in initiating children in being aware of the campaign and many schools have taken on board the healthy eating and PA aspects of the campaign. In the voluntary sector sports clubs have played a role in promoting the PA aspect of the campaign. However, there were nevertheless still health inequalities in Change4Life. One example of this was the failure to fully

fund free swimming for children across the country resulting in health inequalities in those boroughs that were financially unable to fund free swimming.

3.4.6 Smaller scale UK social marketing campaigns

A number of social marketing campaigns for PA have taken place on a small scale throughout the UK. These campaigns have all met the Benchmark Criteria put forward by the National Social Marketing Centre (French et al., 2010) and are detailed below. However, the campaigns used alternative theories to the theories of TPB, SCT or SEM utilised within this thesis, although it is beyond the scope of this research to examine those. Although all theories have their own unique merits and the theories used in the following studies may have been deemed to be more suitable to campaigns with adults.

3.4.6.1 Woodside Gets Active

Woodside Gets Active was a 3 month campaign aimed to increase PA among parents and children run on a small budget of £15,000. The campaign used a mix of methods to facilitate behaviour change including that of segmenting the audience. The campaign was successful in that leisure centre visits increased by 8,000 compared to the same time in the previous year. Average leisure centre visits increased from 8.5 to 125.2 per registered person during the campaign period. Success of the campaign could be attributed to the mix of methods to prompt and facilitate behaviour change, with the campaign not solely relying on raising awareness. There was a health event in local schools with all partners to launch the programme, weekly guide walks scheme, promotion of free swimming lessons, 50% discounted membership to local fitness centres, exercise classes held at convenient times for all abilities and umbrella PR and media activities. Qualitative research which included focus groups, talking to parents outside the school gates and attending school assemblies was carried out together with quantitative research in the form of a questionnaire to gain understanding of the attitudes of children and parents. Although, due to poor literacy of the participants trying to get questionnaires completed was difficult. However, it was felt by the locals that there was a range of barriers preventing them from being active. By ensuring that facilities were available, this enabled people to move from being aware of the messages to actually changing behaviour and practically engaging in activities, which suggests that in order for behaviour to change there

needs to be incentives given and facilities provided. However, the downside of this campaign was that its longevity was only 3 months and therefore it is not known if the campaign led to sustained patterns of PA (Twigg, 2008). The campaign also had a brand name of Woodside Gets Active which was used on posters and literature.

3.4.6.2 Activmob

A study name Activmob began on the South East Coast by Kent County Council in 2006 and is still ongoing. The aim of the project is for residents to get active and stay active; make PA part of everyday life or start new 'Activmobs'. This received a budget totalling £300,000. This project was different in that it supported groups in organising themselves to be active and did not prescribe activity. Activmob was set up to enable people to be active in their everyday lives. Following secondary research whereby researchers examined the local demographic and health data, researchers undertook ethnographic research whereby they spent an hour with residents on the Parkwood estate on an activity they currently did. Whilst qualitative ethnographic research with residents can give insight into the PA, as the research was conducted with residents that were already active, in depth knowledge into those residents least active may have been omitted. However, workshops were also held with local stakeholders in order to brainstorm ideas for motivating individuals to increase activity. The project grouped participants into 3 segments. The scheme provided a website in which people could link to existing mobs or start a new group. It also offered practical advice and motivation on being active. Mob motivators used their own motivational skills to encourage others. Whilst this campaign was very much based on participants motivating each other there were nevertheless incentives such as discounts on facilities, childcare and travel to mobbers (the participants) on completion of their well-being cards. Although incentivising the campaign did not work and so the scheme is reliant on the other non-financial benefits of the scheme such as the social aspect of the scheme. Also this scheme was reliant on participants having access to the internet which instantly deters anyone from joining who does not have access to the internet or is computer illiterate. It can also be assumed that the participants needed to already possess a significant amount of self confidence in order for them to initiate joining a group and also overcome competing factors. Even so, the campaign had 18 active groups, 241

active mobbers, 15 mobs in development that was hoping to reach a further 200 potential mobbers. Due to the nature of recruitment and peer group motivation this campaign is likely to be successful in achieving sustainable patterns of PA (Lemon, 2009).

3.4.6.3 The People's Movement

Another local PA social marketing campaign was The People's Movement that was formed to generate sustained increase in levels of PA across Sheffield. A quantitative method of research in the form of surveys was carried out to assess the PA behaviour of the participants. These gave insight into the numerous barriers of the participants including; individual, social, physical and political. Although SEM was not specifically used in this research, segmentation found two distinct groups of participants and influencers, the influencers included parents (social) and town planners (policitical) which shows that there is a need to incorporate SEM into social marketing campaigns. People's Movement aimed at helping the community of Sheffield achieve the government's recommended weekly activity targets, the campaign used a variety of methods to achieve behaviour change including personalised activity plans, free local events such as weekly walking activities and opening access to a range of discounted sports and fitness facilities. The campaign also had an online forum allowing people to search a wide range of activities. To ensure that the people of Sheffield knew about the activity campaign the campaign was advertised in the press. The advertising was given to an external marketing agency in order to create a stylish look and tone and brand name that would appeal to the widest possible audience. The campaign had a budget of £20,000 per annum. The campaign was longitudinal in that phase one ran from 2004-2007 and phase two from 2008-2010. Due to the success of the campaign neighbouring towns of Doncaster, Barnsley and Rotherham have joined forces to create a regional PA social marketing campaign. The campaign gained 10,000 hits to its website, the young person's site attached to the main site received 3,454 hits since the launch of the young person's site in 2007. Over 100 local sporting organisations registered with the site. The campaign also ran Active Sheffield Challenge Awards 2007 and received 200 nominees, selected from a larger set of entrants, who got active as a result of the programme. The awards were given out to families, young

people, older people and schools. The campaign met all benchmark criteria of the National Social Marketing Centre (National Social Marketing Centre, 2010).

3.4.7 Review of UK social marketing health interventions

As part of the National Social Marketing Strategy for health's plan to produce a marketing strategy focusing on health improvement in England Gordon et al (2006a), conducted a series of literature reviews to investigate the effectiveness of social marketing as a tool for health interventions. Despite this review being conducted by the National Social Marketing Strategy for health improvement in England the review did in fact look at social marketing campaigns within the US which could be due to limited studies in the UK (particularly in regard to PA) that meet the Benchmark criteria to be classified as a social marketing campaign. During these literature reviews three areas were examined: nutrition, PA and substance misuse, although only the PA interventions will be focused on for the purpose of this literature review. Only interventions that met all Andreason's, (2002) six benchmark criteria were included in the review. Interventions were found via searching eight electronic databases which would therefore have limited interventions to those that had had an academic paper written on them. Nevertheless, 22 studies out of the 110 articles were found to meet the criteria in the PA search. Of the 22 studies, 14 were community based, 6 were school based, 1 used the media and 1 was implemented in a workplace setting. Only 8 out of the 21 studies had positive results that provided reasonable evidence that social marketing can improve exercise behaviours, with 6 having no results and 7 having mixed results. Overall there was strong evidence that social marketing can influence knowledge related PA.

Furthermore, success of a social marketing intervention is not necessarily linked to the efficient application of marketing strategy. Negative or mixed results may be due to the intervention trying to change strongly held values and attitudes and particularly in the case of PA (Robin, 1974), the interventions with negative or mixed results could have been those targeting hard to reach groups. Of 11 studies that sought to influence psychosocial variables such as self- efficacy, 6 found a positive effect with 5 having no effect. One of the studies based in a school was the San Diego Family Health Project (Caballero et al., 2003), that showed self-efficacy among the treatment group to be significantly higher than

the control group thereby showing reasonable evidence of social marketing's effect on psychosocial variables. Fourteen studies reported some physiological outcome results, however these were limited to four studies in terms of impact with only four studies having positive results, although in a Rhode Island City study (Gans et al., 1999) CVD rates were reduced with the intervention group compared with the control group and whilst BMI significantly increased with the control group no increase was seen among individuals in the intervention condition. Overall, whilst there is weaker evidence that exercise based social marketing interventions can improve physiological outcomes, physiological outcomes can take longer to manifest than changes in behaviour or self-efficacy and therefore physiological outcomes such as a reduction in BMI or cardiovascular risk factors are more likely to be found in longitudinal studies.

Six of the social marketing PA interventions were aimed at effecting policy or environmental outcomes, yet they did not take advantage of SEM. The policy and environmental outcomes were difficult to measure, although changes such as the formal adoption of the PA programmes by schools and the construction of walking paths, leisure facilities and the formation of policy goal groups in intervention settings did take place. Whilst the outcomes were not measured, it can be viewed as a positive outcome given the number of changes in only 6 studies. Furthermore, the CATCH intervention (Luepker et al., 1996) took an environmental and policy approach to enrich PA and this led to an increase in student's PA participation both in and out of school. This was successful, as following the intervention policy, changes were maintained (Gordon et al., 2006b).

3.4.8 Problems and ethics in social marketing

There are numerous problems that occur in social marketing that can often be difficult to address such as the market being harder to analyse than with commercial marketing as there is less good quality second hand data, therefore the data that is available does not always aid with identifying critical segments (Goldberg, 1995). First hand consumer research that is not for commercial gain is often difficult to secure funding for and adds to greater cost of a social marketing campaign. Ethics is an important area to address in social marketing, given the sensitivity of some issues that social marketing addresses (Donovan &

Henley, 2010). For example, it can be harder to offer pleasant substitutes: a preferred alternative for the smoker would be a safe cigarette. A safe cigarette doesn't exist and the only alternative the social marketer can offer are nicotine supplements that can be unpleasant and still require a great deal of will power on the part of the smoker (Fox & Kotler 1980). Moreover, reaching the market segment the social marketer wishes to target is problematic as the segment usually consists of those most negatively predisposed to the product or concept which is opposite to commercial marketing situations (Goldberg, 1995). Furthermore some would suggest that it is unethical for the state to intervene in the private lives of citizens (Truss & White, 2010).

Social marketing often addresses deeply held values and therefore involves shifting values, not just in individuals but of whole communities which can take time, usually involves risk taking on the part of the programme developers and therefore finding positive evaluations will take longer, which can then inhibit further funding (Morris et al., 2009). Furthermore, proof of effectiveness is often unobtainable particularly when assessing long term effectiveness of campaigns such as in schools where tracking individuals is difficult as a year group of students leave school every year. Although the principles behind a social marketing programme are transferrable, social marketing requires a multifaceted, multicomponent approach which puts the consumer at the centre of every intervention and designs messages, services, products and activities to target the specific consumer group. This complexity of interventions makes proving effectiveness difficult as conventional procedures for establishing evidence require comparison and synthesis of results from interventions that are easily replicated and measured.(Stead & Gordon, 2010). Social marketing has also been accused of inadvertently stigmatizing those that they are trying to help by holding individuals responsible for changing their own behaviour, rather than investigating institutional or societal factors that may determine the behaviour of the individual (Brenkert, 2002; Faden, 1987; McLeroy et al., 1987 cited in Raftopoulou et al., 2010). An example of this is encouraging an individual to lose weight without considering wider socioeconomic and community factors that might affect the individual's ability to lose weight and maintain lower weight (Bombak, 2014 cited in Eagle et al., 2017). This holding of individuals responsible can be used by governments to avoid certain ethical, moral and

political problems, such as the problems caused by structural changes (Peattie & Peattie, 2003); for example it may actually be cuts in funding that limit resources that enable individuals to change their own behaviour, as with the case of PA and the cutting of funding for free swimming. A campaign to encourage swimming will be ineffective if the individuals it is targeted to do not have access to affordable swimming facilities. Furthermore, some mass media interventions such as promoting weight loss can be coercive and portray people with high body mass levels in a negative way which is not conducive to effecting behaviour change and rather than empowering the individual to lose weight can leave them with feelings of self-blame and low self-esteem (Carter et al., 2011 cited in Eagle et al., 2017)

3.4.8.1 Funding cuts

Funding cuts can also affect many other sporting resources such as after school clubs. The government's announcement that it would dispense with school sports coordinators who bridge the gap between sports in primary and secondary school. They often put on sporting events in primary schools to encourage PA participation, which may have been detrimental to PA among young people, as lack of a co-ordinator will likely result in sporting events and extra-curricular activities not being made available. Furthermore, while large scale campaigns such as VERB and Change4Life have been successful they are also costly campaigns and may represent a financial challenge for governments especially during unfavourable economic climates. Lack of publicity of Change4Life within Devon, suggest that a change in Government in 2010 had a negative effect on the campaign with the campaign receiving less funding (Department for Health, 2010). In this regard smaller local PA social marketing campaigns that have a smaller budget may be received more favourably and have a greater chance of continued implementation by local authorities and fund holders.

3.4.8.2 School campaigns

Difficulties can also arise with school campaigns and as such interventions generally rely on the enthusiasm and assistance of the teaching staff to implement the intervention (Goldberg, 1995). Some teaching staff may be enthusiastic for the intervention such as PE teachers, although this may not necessarily be the case if this means extra work for them, particularly if other

colleagues who are ambivalent or negative are not prepared to input into the running of an intervention. This is especially the case with the increasing workload and other competing additional duties that teaching staff have. Therefore it would be reasonable to suggest that in order to truly implement a social marketing campaign in a school to its full potential then it is imperative to socially market the intervention to all school staff prior to the intervention being run in the school.

3.4.8.3 The influence of commercial marketing

Another problem discussed by Wymer (2010) in a paper is the concern that traditional social marketing campaigns may be ineffective against the constant bombardment of commercial marketing activities that create an environment that encourages and maintains unhealthy behaviours. Research by Story and French (2004) has found that the food industry has intensively targeted children with marketing, albeit some of it passive rather than direct, and has resulted in a decline in children's health. Social marketing has typically worked to alter an individual's perceptions and attitudes with social marketing messages aimed at changing internal behavioural influences of the individual (Kotler & Lee, 2008). The complex environment with multiple internal and external influences on behaviour may impact heavily on some individuals leaving them insufficiently influenced by social marketing campaigns (Evans, 2006). Wymer, (2010) believes that under certain circumstances, social marketers need to ameliorate the negative environmental influences that deteriorate public health and wellness, particularly in regard to tackling obesity which is a worsening worldwide major public health concern. For example, persuading fast food restaurants to use oils with less saturated fat, or ensuring healthier foods are given more shelf space in supermarkets, or displaying the healthy products in a more prominent space so that shoppers are more likely to notice and purchase them (Goldberg, 1995). Hoek and Gendall (2006) recommend that social marketers take an atypical approach, seeking regulatory change before concluding with education campaigns targeted to individuals. An example of this would be to lobby the government to ensure that schools have sufficient staff to manage additional sports clubs or ensuring that sports facilities outside of school are affordable. In order for social marketers to make substantial improvements in public health and

welfare, then they need to widen the boundaries of social marketing and tackle the negative influences that reinforce undesirable behaviours (Wymer, 2010).

3.4.8.4 Ethical considerations

With regard to the ethical considerations associated with social marketing, social marketing faces distinctive ethical challenges which are not usually faced by the commercial sector. These challenges are generally in regard to the rationale behind social marketing to a specific audience and the aim of the campaign coupled with the effects this may have on the target audience as it may or may not be a positive one (Brenkert, 2002). Commercial marketing has often been accused of manipulating its audience into buying goods and services that they would not buy without persuasive media campaigns encouraging them to do so (Fox & Kotler, 1980). However, tighter advertising controls and regulations have been put in place to limit advertising, specifically in regard to advertising to children to limit their manipulation, especially where unhealthy behaviours are being advertised, such as confectionary advertising during children's programmes. However, some would argue that social marketing is also manipulative and attempts to socially control citizens, albeit for social good, to influence the behaviour change of its audience (Laczniak et al., 1979; Truss & White, 2010). Social marketing whilst it is meaning to do good can have unforeseen repercussions, and create discord with other influences (Hastings & Domegan, 2014). Ethical dilemmas arise in social marketing as marketers focus on behaviours that are illegal, taboo or are culturally sensitive. Resulting from this is that the social marketing solution to change these behaviours requires difficult and stressful behaviour change options for participants. An example of this is giving up addictive substances can cause severe physiological and psychological repercussions. This can also be the case with children who are under the jurisdiction of their parents. There is the implicit assumption that providing a social marketing campaign can intrinsically motivate then the individual will increase their PA, however this does not take into account the interpersonal, physical or political environments of the individual. For example, a child may want to partake of activities outside of the normal school day but a parent prevents this from happening thereby causing distress to the child. In regard to PA, encouraging participants to join a gym can add financial implications to families and can especially impact on vulnerable and hard to

reach target groups whereby the campaign disempowers the participants, the opposite of what the social marketer is aiming to achieve. Participants need to feel empowered in order to change their behaviour. (Hastings, 2007). Therefore care needs to be taken by social marketers on how PA is marketed to the least financially affluent families. Segmenting the marketing helps to alleviate a 'one size fits all' approach and tailor campaigns to specific subsections of the population. Furthermore, who decides what a dangerous lifestyle is and how people should live i.e. deciding that correct life choices should be that of non-smoking, moderate or not drinking, not being sedentary, vegetarian or non-processed meat eating? (Hastings, 2007). It can also be argued that whilst partaking of PA is beneficial to the health of a child, PA can also have unintended effects such as the dangers associated with bike riding/certain sports or overuse injuries from some physical activities. However, Fox & Kotler 1980 would argue that providing social marketing is making a strong case in favour of the behaviour without altering or distorting the facts in any way, and then the approach is not manipulative. However, maybe there is an argument that people should have the right to decide their own risks without being coerced into an alternative behaviour.

3.4.8.5 Fear appeals

A number of researchers have conducted studies looking at fear appeals in social marketing. Such fear appeals are based on the assumption that behaviour change will result from fear induction. A meta-analysis by Witte & Allen, (2000) found that evidence supports a linear model of fear arousal, in other words, the more fear the greater persuasion to change behaviour. Research conducted by Hastings et al. (2004) looking at fear appeals in social marketing and found that fear appeals (such as HIV/AIDS campaigns of the 1990's) can lead to chronic heightened anxiety among those at most risk, complacency among those not directed targeted and increased social inequity from those that are most likely to respond to a fear campaign such as those within a higher socio-economic grouping compared with those in the lower groups who are less likely to respond.

Alternatively, rather than fear appeals, positive reinforcement aimed at good behaviour would be a more effective way to change behaviour. It is worth noting that in research by Pechmann et al. (2001) the research did favour fear appeals, however it looked at studies conducted in laboratories and therefore different

results may have been found in field research; this is due to the respondents being put in artificial situations and therefore it could be argued that they are likely to react differently than in a natural setting as they can choose to ignore ads whereas in a laboratory, the respondents will be instructed to look at a specific ad and will not have competition from other ads. Furthermore, conclusions drawn from one particular target group may not be applicable to other target groups, as studies have suggested that fear appeals are likely to work differently with for example adults compared to young people who see themselves as immortal (Chaudhuri, 1996; Pechmann et al., 2001). This is particularly the case with children who do not see danger let alone the effects of physical inactivity later in their lives. Several studies have been based on perceived effectiveness of fear messages rather than observed effects (Hastings et al., 2004). Also, respondents may state that fear appeals are highly motivating, stating they wish to change their behaviour, but then subsequent research fails to reveal any behaviour change (DeJong & Wallack, 1999). Therefore, it is not known if fear appeals can be considered truly effective; even if the research is correct in the short term there is still no evidence for the long term. Therefore, any fear based ad that specifically uses the force of fear to manipulate human behaviour raises questions of ethics. Whilst the majority of children will feel immortal and therefore unaffected by a fear appeal, there may be some children that could be frightened by fear appeal and therefore become distressed causing psychological stress.

Field research conducted by Brennan & Binney (2010) looking at fear, guilt, shame appeals in social marketing found from the results of a qualitative study of income support recipients using a social marketing campaign designed to increase compliance with income reporting requirements. The study found that negative appeals with this group were more likely to invoke inaction rather than the active response of compliance. A total of 120 participants were interviewed for the study and whilst the participants were more likely to recall advertisements using fear as a major appeal they were not influential in terms of behaviour and the person did not see themselves as having/being the problem therefore they did not change their behaviour. This study is consistent with other studies, some using highly graphic and emotionally charged advertising (such as pictures on cigarette packets) resulted in emotional trauma leading to escape from the message, rather than engage with it (Brennan & Binney, 2010). This was due to

the sheer volume of guilt messages being sent out with participants feeling guilty as a result of not doing the behaviours. Those that needed to change their behaviour were most likely to have disconnected from the message and would justify their behaviour instead, for example speeding is acceptable if you do it "safely". One participant viewed guilt as a destructive emotion and therefore did not feel that guilt appeals would be motivating. This study found that positive emotion appeals in social marketing campaigns had the greatest potential for motivating behaviour change (Brennan & Binney, 2010). Overall the study found that for fear campaigns in social marketing to be successful the size and scope of the problem that social marketers want the participants to achieve must be within the attainment of the individual (Hastings et al., 2004). However, in view of the evidence it can be argued that fear appeals are unethical with no substantial evidence as their effectiveness particularly in children

3.5 Chapter Summary

In this chapter, the literature on TPB, SCT and SEM were reviewed together with discussing social marketing in relation to health behaviour change. The second part of the chapter specifically focused on PA interventions and social marketing campaigns to engage children in PA.

In order for the Department of Health targets to be met and increase the number of children participating in PA, new methods to initiate behaviour change to facilitate healthy lifestyles need to be researched and implemented. It is now well established that theoretically informed interventions are imperative for the successful deliver of behaviour change campaigns to increase PA (Buchan et al., 2012). This research makes the case for replacing the practices of conventional social marketing research with approaches that are more socially aware, intellectually rigorous and that focus on the physical and political environment. Social marketing with its interactions between people and institutions is a complex social phenomena. Social marketing strategies have traditionally used behavioural theories that focus on individual influences such as TPB to carry out quantitative research. While these approaches have greatly enhanced an understanding of the key determinants of PA behaviour and whilst quantitative research used when researching with these theories has certain benefits it is not particularly capable of unravelling the complexity of PA behaviour. It is these

complexities involved in behaviour such as PA that renders the current linear phase stage approach to understanding this behaviour incongruous (Buchan et al., 2012). Therefore, in order to understand the multiple levels of influence involved in PA behaviour, qualitative research is required for multifaceted phenomena using a theoretical framework such as the SEM as demonstrated in section 3.3. Encouraging PA through utilising the SEM to identify potential targets and leverages for change which when used under the social marketing framework should have the potential to be effective than using SEM alone of using individual theories in social marketing. This model could prove to be beneficial to social marketers in developing social marketing strategies. SEM not only incorporates the TPB but it also utilises SCT (self-efficacy) when analysing the individual factors in SEM. In addition to addressing individual and social factors the SEM investigates both the physical and political factors that affect not only individuals but communities as a whole. A social marketing strategy can assist public health researchers make evidence based information clear and appealing (Formoso, 2007). However, campaigns such as VERB and Change4Life whilst they both had a positive impact and were deemed successful, social marketing campaigns of this magnitude are expensive; require a national base of support, extensive partnership working meaning that this requires extensive communication with the voluntary and private sector which was critical to the success of VERB (McKinnon, 2007) and was of paramount importance to the sign ups of Change4Life, (Department of Health, 2010) together with a well-conceived formative and summative evaluation.

Changing PA behaviours of children is not an easy task but as the evidence suggests interventions that have vigorous engagement with social marketing principles are likely to have more success (French et al., 2017). Whilst social marketing campaigns can change health behaviours the immediate effects are often small (Hornik, 2002). An example of this is the VERB campaign where the effects of the campaign were considerably stronger after year 2 than year 1 thereby suggesting that in the case of social marketing campaigns, to be successful in encouraging PA they require longevity and therefore social marketing should be not be seen as a “quick fix” to the problem of physical inactivity. Although smaller scale local programmes such as Woodside Gets Active was deemed to be successful after 3 months as leisure centre visits

increased. However, as the campaign was only run for 3 months it is not known if the campaign led to sustained patterns of PA as short term interventions tend to not lead to long term sustained patterns of PA (Twigg, 2008). Unfortunately, funding challenges faced by short term local campaigns mean that they have a limited lifespan. More funding should therefore be allocated to local social marketing campaigns which can focus on the specific needs of the local community. Therefore in terms of PA behaviour change long term campaigns such as Change4Life which has now been running for 7 years and VERB which ran for 4 years appear to beneficial to long term patterns of PA behaviour change. Social marketing provides a promising framework for improving PA at the individual level and at wider environmental and policy levels.

Nevertheless despite the challenges facing social marketers and facilitators of a social marketing campaign, a well-run multi-faceted social marketing campaign should have a positive impact on attitudes towards PA by surrounding children with engaging messages and promoting opportunities for PA participation both in schools and in their daily lives, thereby resulting in sustained patterns of PA. Therefore, schools are one arena where children can be immersed with engaging messages and given opportunities to engage in PA. Following the success of social marketing campaigns, discussed within this chapter, this thesis will consider the feasibility of a school based social marketing campaign which utilises the SEM by researching the factors affecting PA participation within that model. Whether social marketing provides an effective means of bringing about behaviour change remains that of an empirical question which needs to be engaged with further. In the next chapter the methodological underpinnings of the research will be discussed, and the value of using a mixed methods approach highlighted.

CHAPTER 4

RESEARCH METHODOLOGY

4.1 Scope of this chapter

This chapter sets out the methodological framework and study design in which the research was undertaken building on the discussions and theoretical approaches in the field of PA (chapter two and chapter three). Initially the chapter sets out the details of the research philosophy, overall methodology and the merits of using a mixed methods approach in PA research. The chapter reiterates the aims of each study, prior to focusing on the quantitative, qualitative and ethnographic methodologies employed in this research (Section 4.2). The chapter will also establish the researcher positionality and incorporate the challenges involved in mixed methods data collection.

Discussion moves on to focus on each individual study commencing with study one which focuses on using a quantitative approach and assesses the merits of using a quantitative approach, the chapter continues with study one by outlining: the participants; procedure and study instrument which for this study a self-administered questionnaire was constructed to analyse the factors of interest (See section 4.3.3), reliability/validity of the questionnaire; piloting and finally the process of data analysis is explained which is interpreted in Chapter Five. The chapter then details the qualitative methods employed in both study two and study three of the research, assessing the merits of qualitative data prior to detailing information on the participants; procedure; setting; and study instruments, which for study two was a series of open ended questions that were asked in a semi-structured focus group (See section 4.4.4) and for study three open ended questions that were asked in semi-structured interviews; validity/reliability; piloting and also details of how the data will be analysed. Finally the chapter addresses study four which centres on an ethnographic approach, discussing its appropriateness. This section details the setting; procedure, reliability/validity and the analysis of the ethnographic data. The chapter therefore provides an abstract evaluation to the differing approaches and design of each study used in studying the underlying factors shaping PA participation of school children

4.2 Methodology

The research in this thesis uses mixed methods and as such draws on both interpretivist and positivist approaches as will be explained below. This is

because the thesis was attempting to derive quite different insights by using two types of data i.e., the first being quantitative and second qualitative and so both paradigms were required in order to answer the research questions. As Guba and Lincoln (1994) explain, paradigms are belief systems based on ontological, epistemological, and methodological assumptions. A paradigm can be described as a set of "basic beliefs that guides action, whether of the everyday garden variety or action taken in connection with disciplined inquiry" (Guba, 1990, p.17). While no one paradigm is or can be incontrovertibly 'right', the assumptions inherent within each paradigm (interpretivist and positivist) have implications for this research and thus can influence the research questions and mixed methods research undertaken in this study. Positivism is an epistemological position that advocates the application of the methods of the natural sciences to the study of social reality and beyond (Bryman, 2008). Positivists argue that by carefully and objectively collecting data that can be measured scientifically laws can be determined that predict and explain human behaviour (Kitchin & Tate, 2000).

Alternatively, when addressing interpretivist approach, development of interpretivist philosophy is based on the critique of positivist philosophy and is a contrasting epistemology to positivism. It is predicts the view that a strategy is required that respects the differences between people and the objects of the natural sciences. An interpretivist approach requires the researcher to grasp the subjective meaning of social action as is based on a naturalistic approach of data collection such as interviews and observations (Bryman, 2008). In this research it was also assumed that no one philosophy could explain PA behaviour and that it was far more complex than could be answered simply by only looking through an interpretive or positivist lens. This thesis argues that the whilst positivist and interpretivist philosophies are very different, drawing on both positivist and interpretivist philosophy will yield a wealth of data which will contribute to some of the PA studies that have tended to be more quantitative in nature. It was assumed that as no one research method previously employed in PA research had produced long term improvements in PA participation as discussed in chapters 1 and 2. This research should look at wider issues that may be preventing sustained increases in PA participation.

The empirical research methodology was designed around investigating the key decisions made by different clusters of school children using eight case study schools in the Exeter area (Thomas & Nelson, 2001). There are many different approaches to the design of social research projects (Moore, 2006). In this thesis, the methods most appropriate to the research questions were chosen that represent both the positivist and interpretivist approaches. This research is deemed to have ecological validity as the methods employed within this research design emulates the real world (Thomas & Nelson, 2001). As no single research method was suitable to thoroughly examine the complex research question, a mixed methods approach was applied as it was identified as the most effective approach to address the research aims and objectives. Mixed methods research is a type of research in which a researcher or team of researchers combines elements of qualitative or quantitative research approaches in order to integrate the findings and draw inferences (Teddlie & Tashakkori, 2009). Mixed methods research has emerged as an alternative to the dichotomy of qualitative and quantitative traditions (Silverman, 2000). There is no one overriding research method used when investigating PA although quantitative methods are more likely to be used when measuring PA levels, whereas when investigating the rationale for participation qualitative methods would be the most likely method used as they can give a deeper insight into the reasons behind participation (Teddlie & Tashakkori, 2009).

Using a combination of quantitative and qualitative research methods together has created much debate in the research community (Ritchie & Lewis, 2003. Critics will contend that the methods should not be mixed together in one research project as it is felt that the approaches are too different in their philosophical origins and therefore it is not possible to mix paradigms because they are incompatible with each other (Cresswell, 2007). Other writers maintain that they are not contradictory and therefore can be applied in the same research (Kirk & Miller, 1986; Silverman, 2000). However, mixed methods research has been advocated in recent years as an approach that is able to combine the strengths of quantitative and qualitative approaches whilst minimising the weaknesses of both. By using combined methods this thesis allowed a broad and flexible approach to address research questions. In so doing, this avoided some of the limitations connected to using the approaches individually which

were overcome by the ability to achieve convergence of results; overlapping facets that emerge on closer inspection; identify and examine contradictions thereby uncovering the best set of explanations to the observed phenomena (Creswell & Plano Clark, 2011; Greene et al., 1989). Brannen (2004) has suggested "if the generation of knowledge is understood with reference to the procedures and processes involved in doing research as well as to the ideas that underpin the framing of the research questions, then the issues of two competing paradigms of qualitative and quantitative research recedes into the background" (p324). Despite debate in the literature, mixed methods has emerged as a separate orientation in the past 20 years, even being referred to as the third methodological paradigm alongside qualitative (interpretivist) and quantitative (positivism) paradigms (Andrew & Halcomb, 2008;Teddlie & Tashakkori, 2009).

In this thesis, a mixed methods approach was identified as the most effective approach to address the research questions. The initial research utilised TPB and SCT to consider the PA levels of students which traditionally uses quantitative analysis. However, the innovation in the thesis is the use of SEM so this thesis used qualitative research for the subsequent studies. Furthermore, collecting both quantitative and qualitative data enabled the comparison of children's PA in primary and secondary schools from different perspectives and to use the qualitative data to develop a complete understanding of children's motivations to participate in PA than would be obtained by collecting either type of data separately (Cresswell & Plano Clarke, 2011). Moreover, health research encompasses a variety of disciplines and perspectives and is an "evolving and dynamic process" (Gillis & Jackson, 2002 p275). Within health promotion research Gillis & Jackson, 2002, p280 suggest "a rich repertoire of approaches is required". Surveys, focus groups and interviews can all contribute to health promotion research and therefore qualitative or quantitative methodologies may be appropriate for PA research (Gillis & Jackson, 2002).

Quantitative research which fits within a positivist paradigm was used initially as it was necessary to gather the data from a fairly large number of participants for which quantitative research is able to measure quantities i.e. PA levels, examine comparisons between numbers of children from different schools, predictions and deal with numerical data without contamination by the researcher (Bryman, 2008;

Hale & Graham, 2012; Gratton & Jones, 2007). From a theoretical standpoint using a quantitative approach allows the researcher to compare the results with other existing quantitative studies (Gratton & Jones, 2007). This may enable the research to make generalisable conclusions about the population and to make a contribution to policy formulation on PA particularly in Devon. Thereby quantitative research is useful as the use of empirical techniques on a large sample size enables the researcher to make generalisations which may provide valuable data to both policy makers and individual schools (Andrew & Halcomb, 2008). Using quantitative research also enabled the research to be analysed and evaluated using the same techniques as in previous research conducted in this genre of study (Gratton & Jones, 2007). However, in this research exploration could not be adequately understood by experimental and statistical based evidence (Creswell 2007, Silverman, 2000). Therefore, the remaining studies were all qualitative by nature, albeit using different qualitative research methods (Thomas & Nelson, 2008). Qualitative research fits within an interpretivist paradigm, as it is a diverse activity that emphasises the subjectivity of both the researcher and the participants (Denzin & Lincoln, 2005). Qualitative research was used, as the studies were concerned with exploring, in as much detail as possible, further and detailed information on the issues raised in the initial questionnaire research that were not quantifiable. Social marketing requires that the researcher has a deep understanding of the target audience which cannot be gained from quantitative research. Therefore the study requires research of a qualitative nature in order to gain deep and meaningful insights into the attitudes, beliefs, and barriers that drive or deter the target audience from participating in PA (Blaxter et al., 1996; Gratton & Jones, 2007). Furthermore, qualitative research is particularly useful for identifying unanticipated phenomena and influences and also for understanding the process in which events and actions take place (Creswell, 2007)

Whilst the distinction between quantitative research and qualitative research is ambiguous there are, however, useful meanings of classifying quantitative and qualitative research (Bryman, 2008). Quantitative research is an umbrella term that encompasses a series of positivist approaches to research in the social sciences but is also used in education, psychology and the health sciences (Flick, 2007). Whereas, qualitative research consists of a set of interpretivist practices

that attempt see the world clearly, and endeavours to answer questions about how social experience is created and given meaning (Denzin & Lincoln, 2005). Therefore, qualitative research can be described as an interpretivist form of social inquiry that attempts to understand phenomena through accessing the meanings that participants assign to them (Hastie & Hay, 2012). As Jayaratne (1993) states qualitative research can "support and explicate the meaning of quantitative research" p117). Qualitative research is indeed useful when seeking to understand the beliefs, values, feelings and motivations or individuals or groups of individuals (Hastie & Hay, 2012). It is therefore deemed to be an appropriate method for this research, albeit that various discourses are demonstrated in different disciplines (Flick, 2007). Qualitative methods (focus groups, semi-structured interviews) allowed students and teachers to express their in-depth opinions of children's PA. It is clearly impossible to do justice to the richness and complex reality of PA participation without trying to understand the personal perspectives of those involved. Since qualitative research typically aims to understand the meaning of experiences within social context, the inductive nature of qualitative research allows for the experiences of the participants to emerge rather than the pre-determined hypothesis testing of quantitative approaches (Allender et al., 2006). This argues strongly for a qualitative approach as unlike other research approaches, qualitative research attempts to answer research questions holistically (i.e. in context). Mack et al (2005 p1) describes how a qualitative framework contributes to the understanding of complex social phenomena:

> *"The strength of qualitative research is its ability to provide complex textual descriptions of how people experience a given research issue. It provides information about the "human" side of an issue – that is, the often contradictory behaviours, beliefs, opinions, emotions, and relationships of individuals. Qualitative methods are…effective in identifying intangible factors, such as social norms…whose role in the research issue may not be readily apparent".*

Therefore, qualitative methodology was selected as the most appropriate form of methodological inquiry to capture everyday experiences and perspective of both school children and their teachers. Indeed, the strength of in-depth qualitative research is that it should be able to capture the difference between school

systems, infrastructure, environment and social norms and the effects on individual PA.

Whilst a quantitative approach is often employed in social marketing, qualitative research is valuable to social marketers because it provides insight into the consumer's mind (Hastings, Angus, & Bryant, 2011). This is because qualitative research has the ability to generate "rich data" about intangible factors that provide a context for PA behaviour such as feelings, thoughts, intentions, barriers, motivators, culture, and social norms (Aaker, Kumar, & Day, 2007). Furthermore, a challenge in social marketing is effectively targeting consumers with a suitable call to action. Segmenting the audience defines homogeneous subgroups for messages and product design and identifies consumer segments for targeted service delivery and communication channel strategies (Lefebvre & Flora, 1988).

Therefore, as the focus of this thesis is on investigating the use of a social marketing approach to foster sustained PA behaviours of school children it was felt advantageous to group the participants into cluster groups in order to ascertain the beliefs and values of a specific group of students that all met similar criteria (see 5.5.3). Mixed methodologists advocate the use of whatever methodological tools are required in order to answer the research questions (Teddlie & Tashakkori, 2009). In order to achieve specific cluster groups the participants were surveyed; following analysis of the survey data the results enabled the researcher to group the participants accordingly. Initially the mixed methods approach used a quantitative analysis of fixed response options using a self-report questionnaire in the first instance, followed by small focus groups that consisted of approximately 4-6 children per group (Bryman, 2008; Tashakkori & Teddlie, 2003). Figure 4.1 sets out the methodological process involved in this research.

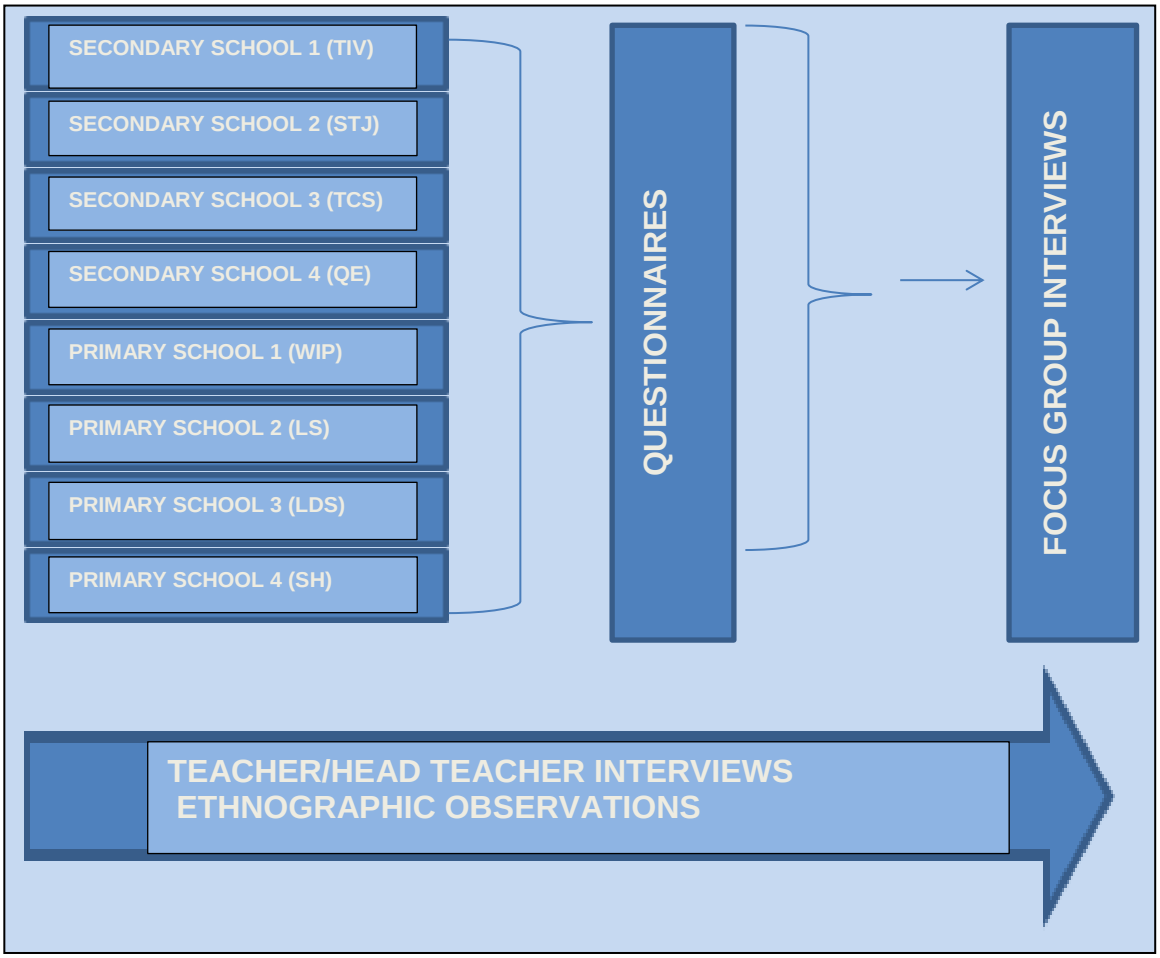

Figure 4.1 Primary data methodological process

The mixed methods approach employed in this study will also add to the expansion of the initial outcomes from both the questionnaire and focus group research by adding breadth and scope to the project in the form of the ethnographic data and the individual interviews (Moore, 2006; Tashakkori & Teddlie, 2003). Ethnographic data was also collected and interviews were conducted among head teachers and teachers, the ethnographic data enriched the results by giving an added dimension to the research and gaining deep insight into not just the student participants but the school and staff which could not have been gained purely from the quantitative research or other methods of qualitative research (Moore, 2006). The role of ethnography is to look at life through the lens of another in order to articulate different aspects of the PA picture in schools in the form of a narrative.

Schools from different types of geographic location and demographics from both the secondary and primary sector were used, this yielded wider data on

background variables including socio-demographic composition and geographical context. Four methodological stages were employed by this research and they are as follows:

1. A survey of school aged children to investigate their patterns of PA to and within the school setting. This survey will also explore their motivations and barriers for adopting more active practices in these contexts; a critical distinction will be made between habitual lifestyle PA and sports based activity.
2. From this data, a values and lifestyles segmentation model was developed to explore the properties, motivations and barriers to PA-based behavior change for different clusters of school children. This yielded 4 clusters. Four focus group interviews of each cluster were then carried out in each school.
3. In-depth interviews were also held with key stakeholders from or relevant to each school, including the head-teacher, PE teacher or classroom teacher together with a whole study ethnography in schools across Devon to determine the potential for exploring a social marketing approach to encouraging PA behavior change.
4. Finally, key ideas were developed and suggestions made for inclusion into a possible social marketing campaign with the schools on the basis of the data gathered from stages 1-3, which would aim to use targeted branding and marketing techniques to encourage PA behaviour change.

4.3. Research Design – Study 1 – Questionnaire Research

Habitual PA can be assessed by different subjective instruments such as self-recording questionnaires, or PA recall. A self-recording questionnaire was the method of survey research used in the first study, a common denominator of social research (Bourque & Fielder, 2003; Fink 2003a; Moore, 2006). A survey is a system that collects information to describe, compare or explain the knowledge, attitudes and behaviour of people (Cohen et al., 2004; Fink, 2003d). This method was chosen as using a self-administered questionnaire was time efficient and inexpensive and was relatively simple to administer (Cohen et al., 2004; Moore, 2006; Peterson, 2000). It also enabled the researcher to capture information from a large number of respondents, in a standardised, easily analysable quantitative form, which would not have been achievable via methods such as interviews or focus groups (Bryman, 2007; Coolican, 1999; Gillham, 2004, Moore,

2006). By conducting questionnaires there was no interviewer bias, as the researcher was able to be objective and detached from the participants under investigation (Coolican, 1999; Gillham, 2004; Gratton & Jones, 2007).

The questionnaire was designed to capture specific variables identified in the PA literature review (chapter two, sections 2.3, 2.6, 2.7, 2.8) as being pertinent to exercise participation. The elicitation protocol also included closed questions on behavioural, normative and perceived control beliefs; a content analysis to determine the beliefs that are most salient for this population and the development of structured items. The questionnaire was completely structured so that all participants were asked the same questions in the same order (Peterson, 2000). Closed questions were used entirely in the questionnaire, due to the mixed age groups of the children; some would have had difficulties answering open questions, particularly with regard to writing down the answers (Bourque & Fielder, 2003; Gratton & Jones, 2007). Also open questions on a questionnaire require more physical and mental effort to answer and are more difficult and time consuming to analyse (Gillham, 2004). Therefore, having closed questions that require less physical and mental effort to answer means that the questionnaire can be answered in less time and fewer questions are likely to be left unanswered (Coolican, 1999; Bourque & Fielder, 2003; Peterson, 2000). Furthermore, due to the sample size closed questions were deemed more appropriate particularly in regard to analysis of the questionnaire. The reason for this is closed questions are useful in that they can generate frequencies of response that are amenable to statistical treatment and analysis particularly in regard to comparing responses to other groups in the study (Cohen et al., 2004; Oppenheim, 1992).

However, an optional open question was also added to the conclusion of the questionnaire to give the respondents the opportunity to write a free response and to add any comments they felt were relevant to the survey (Bourque & Fielder, 2003; Cohen et al., 2004). It was essential to develop the questionnaire in order that it would yield worthwhile information that could be analysed and used as a standalone study but also to facilitate the focus group study (Bryman, 2008; Gillham, 2004).

4.3.1. Participants

Multistage cluster sampling was initially used which is a sampling technique combined with other sampling techniques such as random sampling (Blaxter et al; 1996; Bryman, 2008; Trochim, 2001). Combining different sampling methods achieved a variety of probabilistic sampling methods to fit the social research context being studied (Cohen et al., 2004; Trochim, 2001). Opportunistic cluster sampling was the chosen method of sampling used as it uses naturally occurring units such as schools with each school being classified as a cluster and was determined by the availability of the schools rather than formal power analysis (Araújo-Soares et al., 2009, Cooligan, 1999; Fink, 2003c; Trochim, 2001). The research was conducted in Devon a county in the South West of England. Eight case study schools from Devon were chosen for the study to take place. It was decided to involve schools in order to conduct the research on school children from the ages of 7 to 16 years. The target population was divided into 3 key stages, Key Stage 2 focuses on children aged 7-11 years, Key Stage 3 focuses on children aged 11-14 years and Key Stage 4 focuses on children 14-16 years. The only criteria for eligibility in the study was that the children were between the ages of 7 and 16 years, attended full time school, be willing to answers the questions and were able to answer the questions in the questionnaire either independently or with assistance in writing the answers (Bryman, 2008; Fink, 2003a).

The key stages follow the format that is used by the Education Authority to distinguish groups of children within both primary and secondary schools. Key Stage 2 is children in primary school and Key Stages 3 and 4 are children from secondary schools. Different types of secondary schools participated, one was a rural school, one was in Mid Devon in a small town, one in a seaside town in South Devon and one was within the City of Exeter. Four primary schools were also used. Questionnaires were given to students to answer during class time as they were far more inclined to answer the questionnaire than having to take it away and return it. This therefore helped immensely with increasing the response rate of this study (Fink, 2003d; Gillham, 2004). Approximately, 200 questionnaires were given out to each school, a total of 1600. This sample size was chosen as it was thought to be a sufficient sample. Time and cost and accessibility to the participants also prevented a larger sample from being

conducted (Bryman, 2008). This was followed by criterion-based (stratified random) sampling which was used in the selection of the subjects from the 8 schools chosen in the cluster samples (Fink, 2003c; Gratton & Jones, 2007; Thomas and Nelson, 1996). This was to ensure that a number of students are questioned from each of the year groups (Bryman, 2008; Cohen et al., 2004). However, from each of the year groups students were randomly selected (Cohen et al., 2004; Trochim, 2001).

4.3.2. Procedure

The ethics committee of the College of Life & Environmental Sciences at the University of Exeter approved procedures for data collection. The schools were initially contacted by e-mail to ask if they would like to participate in the study. A follow up telephone call was also made to the school if no e-mail response was received, during which full details regarding the purpose of the study were given (Denscombe, 2001). A self-completion instrument (i.e., the questionnaire) was group-administered either by the researcher or school teaching staff to the students (Bourque & Fielder, 2003; Fink, 2003a; Trochim, 2001). Questionnaires to all 8 schools were given out within a 2 week time period of each other to enable consistency among completion of the questionnaire (Bourque & Fielder, 2003). Either the researcher and/or teaching staff were present with the students whilst the students themselves completed the questionnaire, although the researcher did not influence the responses of the participants and teaching staff were also asked not to influence the students in answering the questionnaire.

Group administration was the method used in administering the questionnaire to the participants (Bourque & Fielder, 2003; Trochim, 2001). The questionnaire was given out directly to students by school staff and completed during the lesson in order to elicit a greater response rate than if the questionnaire was either e-mailed or posted (Cohen et al., 2004). It is also a cheaper, quicker, simpler method of contacting participants and carries a higher response rate than an e-mail or postal questionnaire (Fink, 2003d). Although the questionnaire was given out in a group each person was expected to complete the questionnaire without consulting other persons in the group. However, the supervisory person was available to provide introductory instructions, answer questions and monitor

the extent to which the questionnaires were completed (Bourque & Fielder, 2003).

The questionnaire was given out on paper to be completed in pen rather than being a computerised questionnaire as it made the questionnaire simpler to administer by the schools as not all classrooms have access to computers and would have been more difficult for students to complete due to differing computer literacy levels (Bourque & Fielder, 2003; Fink, 2003d). It was emphasised in the presented information sheet that completing the questionnaire was purely voluntary and that completion of this questionnaire would be most beneficial to the researchers looking at PA and therefore the researcher was interested in opinions, ideas and experiences of the participants (Bourque & Fielder, 2003; Denscombe, 2001; Gratton & Jones, 2007). The researchers contact details were given to the participants should they have any questions. Clear Instructions were given to the participants for each question and instructions were highlighted in bold alongside the questions (Bourque & Fielder, 2003; Peterson, 2000). Transitional instructions were also given at the start of the each section, giving the participants summary information on what the questions in that section were to achieve (Bourque & Fielder, 2003).

In an effort to improve response rates a follow-up e-mail reminder was sent out to the school contact if the schools didn't e-mail to say that the questionnaires had been completed (Gillham, 2004). Prior to commencement of the study a pilot study of the questionnaire was undertaken. This piloting process has been identified as essential as it allows greater reliability, validity and practicability of the questionnaire (Oppenheim, 1992; Morrison, 1993; Wilson and McLean, 1994). It allowed for the questionnaire to be checked ensuring that sufficient information was obtained from the responses. Any deficiencies in this regard were subsequently addressed and the refined questionnaire distributed to the group (see section 4.5.3 that discusses piloting the questions and then section 4.5.5 on piloting the questionnaire).

The participants involved in piloting the questionnaire were excluded from the group to eliminate the fact that prior knowledge of the questionnaire might modify subsequent responses. It was estimated from the pilot study that the semi-

structured questionnaire would take approximately 20 minutes to complete. On receipt of the questionnaires each was numbered in order to ensure anonymity for the respondents.

4.3.3. Instrument

Constructing the questionnaire was the most delicate and critical of all the research activities in this study (Peterson, 2000). Drafting the questions and designing the layout of the questionnaire were the key stages of constructing the questionnaire (Bryman, 2008; Gillham, 2004). In designing the questionnaire the process began with formative research via the literature review, aims and objectives to form key topic areas (Bourque & Fielder, 2003; Fishbein & Ajzen, 2010). Working with one topic area at a time, draft questions were formed on each of the key topics, some of which were eliminated in order to not have too many questions or were deemed unnecessary (Gillham, 2004).

Some of the questions on PA were adapted from pre-existing questionnaires such as Fels PA Questionnaire for Children (Treuth et al., 2005), Quantification de L'Activite Physique en Altitude chez les Enfants (QAPACE) (Barbosa, 2007), The PA Questionnaire for Older Children (PAQ-C) and Adolescents (PAQ-A) (Kowalski (c) et al., 2004), Children's Leisure Activities Study Survey (CLASS) (Telford et al., 2004) and Godin Leisure-Time Exercise Questionnaire (GLTEQ) (Godin & Shephard, 1985). Other questions were taken from questionnaires on self-efficacy and the theory of planned behaviour, unfortunately there was no one instrument already in existence that would cover all the information needed by the researcher (Bourque & Fielder, 2003).

TPB was used as a basis for the questionnaire as it was hypothesized that the three determinants of the TPB i.e., attitude towards the behaviour; subjective norm and perceived behavioural control would each demonstrate unique contributions to the overall PA participation of the participants. The sections of the questionnaire that utilised TPB i.e., behavioural beliefs (attitude toward the behaviour), normative beliefs (subjective norm) and control beliefs (perceived behavioural control) was constructed according to the guidelines 'Constructing a TPB Questionnaire', written by Ajzen, (2011) and Constructing Questionnaires Based on the TPB – A Manual for Health Services Researchers by Francis et al.,

(2004). The questions were worded so as to be purposeful in that the participants could readily identify a relationship between the intention of the questions and the objectives of the survey (Fink 2003a).

Asking questions that provided valid and reliable information for investigating the research topic was the most pertinent part of the research (Peterson, 2000). Therefore, it was important to ensure that the questionnaire was worded correctly, avoiding complex wording and any possibility of ambiguity in order that the maximum number of questions be answered by the respondents (Bryman, 2008; Gratton & Jones, 2007; Moore, 2006).

The criteria used to ensure effective questions were that the questions were brief, relevant, unambiguous, specific and objective (Bourque & Fielder, 2003; Peterson, 2000). With regard to the brevity of questions Payne's (1951) rule was followed that each question should consist of 20 words or less and have no more than three commas in, thereby keeping the questions simple leading to less confusion over the question and ensuring that the question is not answered before the participant has read it (Payne 1951 cited in Peterson, 2000). The majority of the questions followed this rule, although it was necessary to enclose a couple of longer questions to ensure that questions were answered correctly by the participants (Fink, 2003a). Questions of a personal or sensitive nature were kept to a minimum to avoid the participants feeling that their privacy was being invaded and therefore being left unanswered (Peterson, 2000).

The questionnaire was word processed and designed to look uncluttered (Gillham, 2004). After reviewing, the draft was visually packaged to appeal to children; the font used was Kristen ITC so that it would appeal to children. The questionnaire had to be written and designed so that it was accessible to all children in the intended population i.e. accessible to the reading level of the youngest children in the survey to increase the probability that the lowest level of the study participants' verbal ability was not exceeded (Hastie & Hay, 2012; Peterson, 2000). The questionnaire was structured so that it would be easy to read and write in the responses, so that ideally every question was answered (Bourque & Fielder, 2003;Trochim, 2001). It was also structured to facilitate the

efficient transfer of responses in the statistical programme SPSS version 19 (Blaxter et al., 1996; Peterson, 2000).

The questionnaire contains 5 sections of closed questions written in a standardised format (Fink, 2003a). The closed questions comprised of dichotomous questions, Likert scales and multiple choice questions. Dichotomous questions were used to obtain demographic and behavioural information when there were only two possible answers (Peterson, 2000). The question response options contained sufficient choice to capture the likely range of responses to given statements (Bourque & Fielder, 2003). The answer alternatives to the questions were mutually exclusive and collectively exhaustive (Bourque & Fielder, 2003; Peterson, 2000). It was important to use a variety of question styles to prevent the monotony of answering the same question type which may then not elicit true responses (Bryman, 2008; Gillham, 2004). Each potential research question was screened and evaluated prior to being included in the questionnaire (Peterson, 2000). The highly structured closed questions are useful in that they will enable comparisons to be made across both sample groups and the questions being specific enable easier evaluation (Bryman, 2008; Peterson, 2000). The questionnaire was divided into 5 logical sections with the following headings:

Section A – Background Information. This section contained the initial questions. Host factors (classification questions) were assessed in this section including: gender, age, school, school year and socio-economic status of parents. Socio-economic states were assigned during the study in accordance with the National Statistics Socio-Economic Classification Manual (Office for National Statistics, 2002) and 2000 coding index (Office of National Statistics, 2000). The three-class version of the classification was used: (1) managerial and professional occupations; (2) intermediate occupations and; (3) routine and manual occupations. Ethnicity of the participants was not asked as the majority of students in all the schools taking part were white British and therefore it was not seen to be appropriate to ascertain this information. Also, due to the age of some of the respondents and the large number of possible ethnicity options, some respondents may have been unable to answer this question correctly as they may not have known which option to tick.

Questions in this section elicited categorical and numerical responses, of which the categorical answers were inclusive and exhaustive (Fink, 2003a). Questions will also be asked with regard to mode of travel to school. Responses were given as ordered groupings.

Section B – Activity Levels Now. This was the commencement of the substantive section of the questionnaire (Peterson, 2000). The children were asked details on current activity levels both within and out of the school arena. The questions on physical activities were adapted from a number of questionnaires including the Self-administered PA Checklist (SAPAC) instrument in Ward et al., (2007, p239) which was adapted from Sallis et al., 1996, Fels PA Questionnaire for Children (Fels PAQ) (Treuth et al., 2005), Quantification de L'Activite Physique en Altitude chez les Enfants (QAPACE) (Barbosa, 2007), The PA Questionnaire for Older Children (PAQ-C) and the PA Questionnaire for Adolescents (PAQ-A) (Kowalski (c) et al., 2004), Children's Leisure Activities Study Survey (CLASS) (Telford et al., 2004) and Godin Leisure-Time Exercise Questionnaire (GLTEQ) (Godin & Shephard, 1985). The responses were set out in a grid and the responses fell into categories. An almost inclusive list of possible physical activities was presented to the participants. The advantage of using a long list of activities is that it would probably remind respondents of activities that they may have forgotten. The two questions on activities which had multiple choice answers in that the participants would make all the activities they took part in or would like to take part in (Bourgue & Fielder, 2003). A residual 'other' category was given to allow for an increase in flexibility of responses. This section also asked a question on intention to participate in particular physical activities taken from constructing a theory of planned behaviour questionnaire (Ajzen, 2011; Ajzen & Fishbein, 1980; Francis et al., 2004).

Section C – Beliefs/Benefits of PA. This section addressed the beliefs and knowledge about the benefits generally of PA, the questions of which are worded according to the attitudes from constructing a theory of planned behaviour questionnaire (Ajzen 2006; Ajzen & Fishbein, 1980; Francis et al., 2004). The knowledge questions were worded in a way as to be non-threatening so that the participants would feel comfortable

answering them (Fink, 2003d). This section will also ask questions regarding the importance of PA. Questions were asked on a 5 point Likert scale in order of importance (Likert, 1932 cited in Coolican, 1999). The Likert scale was the chosen method of scaling used as it has been widely used in behavioural research (Bryman, 2008; Peterson, 2000). Each question consisted of a declarative statement followed by 5 responses: strongly agree, agree, neither agree nor disagree, disagree and strongly disagree. The questions were set out in a table (Blaxter et al., 1996). Questions were also asked with regard to the perceived benefits of PA. Scales were labelled using words as opposed to numbering so as to prevent against the participants picking their favourite number and/or just filling a number without reading the questionnaire (Peterson, 2000). This method produced ordinal data (Fink, 2003b).

Section D – Social Support. Questions will be asked in regard to normative beliefs i.e. the influence on exercise participation of friends, relatives and significant others (such as teachers or sports coaches). Questions for this section were taken from the questionnaires using the TPB (Ajzen 2006; Ajzen & Fishbein, 1980; Francis et al., 2004). Questions on exercise as a means of socialising will also asked. A couple of dichotomous questions were asked in regard to friends and PA (Cohen et al., 2004). Questions were also asked with regard to the social support influences that would encourage greater participation in exercise.

Section E – Barriers/Facilitators to exercise. This section will ascertain the barriers and facilitators children have towards PA participation. The questions that addressed perceived behavioural control were constructed using the TPB (Ajzen 2006; Francis et al., 2004). The question will use a 5 point Likert scale in order to obtain responses as follows strongly disagree, disagree, neither agree nor disagree, agree, strongly agree (Field & Hole, 2007; Trochim, 2001). Questions and responses were set out in a table - See Appendix C (Blaxter et al., 2006).

Section F – Self-Efficacy. Questions on this section were utilised from a self-efficacy questionnaire by Ward et al., (2007, p243) which Ward et al., (2007) adapted from Motl et al., 2000. Questions on self-efficacy

were asked as they have the potential to moderate an intervention and therefore there is a strong rationale for assessing it. The specific self-efficacy beliefs included confidence about the given PA. Responses used a 5 point Likert scale to obtain responses i.e. strongly disagree, disagree, neither agree nor disagree, agree and strongly agree (Cohen et al., 2004; Field & Hole, 2007).

4.3.4. Reliability/Validity

Reliability refers to the measure's consistency in producing similar results at different but comparable times for example on retest (Bryman, 2008; Cohen et al., 2004; Coolican, 1999; Trochim, 2001). In quantitative research this would involve the researcher asking the question 'is a measure stable or not, and can the study be replicated' (Bryman, 2008). To check for reliability of the Likert scale approach to the question responses the scale questions were administered to two individual study participants at two different time points 2 weeks apart. Correlations between the responses quantified the Likert scale to be an acceptable rating scale, including the provision of a neutral response (Fink, 2003d; Peterson, 2000).

Validity refers to whether a measurement instrument is measuring what it intends to measure (Bryman, 2008; Coolican, 1999). Validity of the Likert scale was checked by examining the face or surface validity of the responses given in the questionnaire by checking responses given to see if they were representative or balanced. The whole questionnaire was also checked for reliability and validity again by using test-retest reliability (Fink, 2003a; Francis et al., 2004). A question on the barriers section was also added in and worded differently to the others to ensure that participants were not just going down the scale and ticking all the same responses (Cohen et al., 2004; Peterson, 2000).

Validity was also checked with the responses given in the interviews for accuracy (Bryman, 2008; Coolican, 1999). Face validity was also used to validate the questionnaire by asking questions such as does it seem to ask all the needed questions? Is the language used appropriate? (Bryman, 2008; Fink, 2003b). The researcher was also confident that the independent variables were at least responsible for the variations identified by the dependent variable (i.e. PA).

Internal consistency of the questionnaire was estimated by Cronbachs' alpha coefficient. The alpha values of 0.79 or above were considered satisfactory (Nunnally & Bernstein, 1994). The questionnaire also used questions from pre-existing questionnaires and adapted questions from other survey instruments thereby adding strength to the questionnaire as a valid and reliable survey instrument (Gratton & Jones, 2007). The QAPACE whose questions were adapted had been proved to be a reliable and valid resource for estimating PA participation (Barbosa et al., 2007).

A study to ascertain the validity and reliability of the Fels PAQ was conducted by Treuth et al., (2005) and found it to be moderately reliable for all age groups of children. Crocker et al., (1997) and Kowalski (a) et al., (1997) supported the PAQ-C as a reliable and valid measure of general PA levels. Whilst Kowalski (b) et al., (1997) provided support for the convergent validity of the PAQ-A. In regard to the CLASS questionnaire reliability and validity studies found reliability to be adequate, however validity relative to accelerometry was not as satisfactory (Salmon et al., 2002; Telford et al., 2004).

The GLTEQ was also shown to produce reliable and valid results with children (Sallis, 1991; Sallis et al., 1996) and with children and adolescents (Sallis et al., 1993). A number of studies have assessed the TPB as a valid and reliable model for explaining self-reported activity and activity intention. One such study was that of Rhodes et al., 2006 that examined predictors of leisure-time PA intention and behaviour in 9-11 year old children who completed measures of the TPB and PA behaviour using the PAQ-C and found that overall TPB predicted changes in PA and PA predicted changes in TPB constructs. Intention and perceived behavioural control were significant contributors to the direct prediction of behaviour and subjective norm and perceived behavioural control was also a significant predictor of intention.

A study by Saunders et al., (1997) used a cross-validation design to assess the reliability and validity of psychosocial questions i.e. social influences, self-efficacy and beliefs on children's PA and found support for the use psychosocial questions some of which were used in the questionnaire. Brickell et al., (2006) conducted a study to examine the Validity of TPB in predicting exercise and

found that theory of planned behaviour intention was significantly correlated with perceived behavioural control, attitude and subjective norm. Furthermore, they found that behaviour was significantly correlated with TPB intention, and perceived behavioural control. Therefore, the findings from Brickell's (2006) study support the validity of theory of planned behaviour in predicting exercise behaviour at a sufficient level to confer health benefits.

4.3.5. Piloting

Considerable refinement of both the questions and questionnaire was finalised (Moore, 2006). Piloting the questions was an important aspect of the questionnaire design and is distinct from piloting the questionnaire in its entirety (Bourque & Fielder, 2003; Fink, 2003d; Gillham, 2004). The questions were pretested both on academic peers and children from the key stages to ensure that the participants understood the question and also that they can and will answer the question (Fink, 2003(a); Peterson, 2000). Once the questionnaire design was completed and the questionnaire had been redrafted on numerous occasions, after proof reading, prior to commencement of the study, a pilot was undertaken (Bourque & Fielder, 2003; Bryman, 2008). This piloting process had been identified as essential as it allows greater reliability, validity and practicability of the questionnaire (Oppenheim, 1992; Morrison, 1993; Wilson and McLean, 1994).

Piloting the questionnaire is essential as misunderstandings cannot be corrected once the questionnaire has gone out and therefore was used to ensure that the questionnaire was worded clearly, was unambiguous and understandable to the intended participants (Gratton & Jones, 2007; Moore, 2006). Piloting is imperative as question wording can have a major effect on answers which would result in the responses being inaccurate or unclear (Gillham, 2004). Therefore, the layout generally, instructions and wording of each item was checked for comprehension (Brandl-Bredenbeck & Kampfe (2012; Cohen et al., 2004). Following piloting ambiguities and difficulties in wording were eliminated from the questionnaire and the questionnaire redrafted (Cohen et al., 2004).

Piloting allowed for the questionnaire to be checked ensuring that sufficient information was obtained from the responses. Any deficiencies in this regard

were subsequently addressed and the refined questionnaire used in the main study. The participants involved in piloting the questionnaire were excluded from the group to eliminate the fact that prior knowledge of the questionnaire might modify subsequent responses. From the pilot, it was estimated the questionnaire would take approximately 20 minutes to complete. Results from the pilot were checked for misunderstandings in the questionnaire, and checked to ensure that they could be analysed and the information produced from the questionnaire would produce invaluable data (Gillham, 2004).

4.3.6. Data Analysis

On receipt of the completed questionnaires each questionnaire was allocated a serial number commencing with three letters relevant to the school the questionnaire was from and printed onto the front cover of the questionnaire. This serial number was used in the data file to allow for anonymity of the questionnaires whilst still being able to relate each questionnaire to the school of origin and thereby analyse the data according to the different schools (Denscombe, 2001).

There are a number of software packages that can be used to analyse quantitative data (Moore, 2006). For the statistical analysis of the questionnaire, this was conducted using the Statistical Package for the Social Sciences (SPSS) version 20 and 21 for Windows with alpha set 0.05 (SPSS, 2011). Initially all questions in the questionnaire were coded and a labelled coding grid set up in SPSS (Cohen et al., 2004). The questionnaires were not pre-coded due to the age of the participants, as a participant may have ticked their favourite number rather than their preferred answer. The raw data was checked for errors. Internal consistencies of the scores produced by the instrument were examined using Cronbach's Alpha (1951).

Descriptive statistics were obtained for background information, activity levels now, beliefs/knowledge of PA, social support and barriers to participation and given as percentages and frequencies (Fink, 2003b). Data was summarised as means, standard deviation, Chi Square, t-tests and ANOVAs were also used to distinguish differences in results between gender, age, socio-economic status and school.

The questionnaire data was used as a tool for the purposes of grouping the participants into clusters. Whilst the questionnaire could have been analysed in much greater depth, detailing various correlations between the various factors it was not the intention of the thesis to create a large quantitative chapter. Detailed quantitative results are not required of a social marketing campaign and has already been outlined the main purpose of this research is to assess the beliefs of the participants in order to carry out a social marketing campaign in schools. Therefore it was deemed unnecessary to have a detailed quantitative results chapter but yet of great importance to focus on providing a detailed qualitative results chapter as it is this rich narrative that gives a thorough insight into the beliefs, behaviours and barriers to participating in PA. It is this rich narrative that will be vital to a social marketer when putting together a school based social marketing campaign.

The data was also checked to ensure the preliminary analysis had been implemented satisfactorily by looking for any underlying errors or unexpected results (Moore, 2006). The open ended question on the questionnaire was transcribed into a word document and then coded into categories (Moore, 2006). Alongside a series of univariate measures, the survey questionnaire was subject to cluster analysis. The main aim of cluster analysis is to group objects based on individual characteristics, which are determined according to natural relationships within the data (Hair et al., 2010). The clustering process produces groups that on the one hand have high internal homogeneity; whilst at the same time have high external heterogeneity. Input variables were chosen by the researcher based on specific correlations and were not empirically calculated (Hair et al., 2010). These decisions therefore require good researcher judgment as they ultimately determine the characteristics of each cluster. However, these selections are also recognised as a weakness of the approach, as there's no statistical foundation upon to draw inferences from a population sample (Hair et al., 2010).

Cluster analysis was identified as a suitable exploratory method of analysis for achieving the research objective of identifying different groups of physically active children based on their beliefs and attitudes towards PA. There were two

stages in the Cluster Analysis process. The first stage was to identify the clusters through determining which variables to include based on the research objectives and in relation to theoretical, conceptual, practical considerations and the final number of clusters. Second, the final cluster solution was examined for differences. Hierarchical Cluster analysis was carried out using Ward's method in order to form 4 clusters of participants (Aldenderfer & Blashfield, 1984).

4.4. Research Design – Study 2 – Focus groups

This study builds on findings from the quantitative research of the questionnaire survey which informed the researcher as to what was happening, it was important to ascertain why this was happening in the form of qualitative research (Moore, 2006). Focus group interviews are often combined with quantitative research such as surveys, as focus group interviews are a more personal form of research than questionnaires (Flick, 2007; Trochim, 2001). Focus group interviews were conducted with clusters of respondents in order to gain a deeper understanding of the factors pertaining to exercise participation; to discover what lies beyond the responses given; to allow the respondents to provide answers they might have given had they been free to respond; to identify salient barriers to PA; and can capture the specificity of the situation (Denscombe, 2001). It was decided to use focus groups as opposed to interviewing individual students interviewing as group interviews are more time efficient and having the social support of their peers can empower students, giving them the stimulus and confidence to talk and share their views, especially considering that the topic area is not a sensitive subject (Barbour, 2008; Fink, 2003d; Flick,2006; Hastie & Hay, 2012). Focus groups were also used in SEM research focusing on PA and health promotion research. As SEM is the model underpinning the qualitative research then focus groups would appear to be an appropriate method. Focus groups can also encourage participation of individuals who would otherwise be reluctant to talk about their experiences (Kitzinger, 1995). Any participants who were anxious or nervous were given reassurance prior to the focus group interview taking place (Ennis & Chen, 2012).

In depth interviewing in groups allows the researcher to understand the experience of the respondents and the meaning they make of that experience (Seidman, 1998). However, semi-structured focus groups are also best used

when collecting both structured information and information about attitudes and beliefs (Gratton & Jones, 2007; Moore, 2006). The focus groups provided access to the context of the respondent's behaviour and provided a way for the researcher to understand the meaning of that behaviour (Seidman, 1998).

The focus groups were of a semi-structured nature so that they followed a specific line of questioning but also allowed for the discovery of new insights that was also relatively easy to interpret and analyse (Gratton & Jones, 2007, Morgan, 1998; Peterson, 2000). The semi-structured focus group was designed to have a number of interviewer questions prepared in advance that were designed to be sufficiently open, subsequent questions were improvised immediately following the responses given (Fink, 2003a; Gratton & Jones, 2007; Wengraf, 2012). Whilst the semi-structured approach allow the discovery of new ideas, insights and emergent important themes, the groups will still follow the same questions to ensure that consistent comparisons between the groups can be made between key questions (Gratton & Jones, 2007, Morgan, 1998).

4.4.1. Participants

The target population were be divided into 3 key stages key stage 2 focused on children aged 7-11 years, key stage 3 focused on children aged 11-14 years and key stage 4 focused on children 14-16 years as per the participants in study one.

A quota sampling strategy was used to choose the focus group participants according to the goals of the project (Bryman, 2008; Fink, 2003c). The sample was chosen this way to enable the most productive discussions in the focus groups (Morgan, 1998; Tashakkori & Teddlie, 2003). The participants were specifically picked in this way as the goal of using the focus groups is to gain insight and a deeper understanding of the attitudes and beliefs of the participants. The target population for the focus groups were children who were picked following analysis of the questionnaire data in which a lifestyles segmentation model was formed in which 4 clusters were derived from. The clusters were as follows:

1. High PA levels (15 hrs +); low levels of sedentary and inactive behaviours (less than 25 hours); good social support, positive attitudes

to PA; strong health beliefs; no or few barriers; high levels of self-efficacy.

2. Moderate activity levels (5-15 hrs); fairly low levels of sedentary behaviour (25-50 hours); has social support; fairly good attitudes to PA; fairly good health beliefs; few barriers; good self-efficacy.

3. Low activity levels (0.1-5 hrs); moderate to high sedentary and inactive behaviour (50-100) some barriers; low social support; low levels of self-efficacy.

4. Inactive (0 hrs); high sedentary behaviour (100+); lack of social support; multiple barriers; low levels of self-efficacy.

The children were picked using stratified random sampling from the clusters to form focus groups (Fink, 2003c). The clusters consisted of similar PA and sedentary levels and of similar attitudes, beliefs and preferences. This segmentation strategy led to the focus groups each being relatively homogenous (Flick, 2006). By keeping the compatibility of the participants similar this assisted with group dynamics and also assisted to avoid social desirability as the participant within each group should have more or less the same attributes (Trochim, 2001). Groups also lend themselves the ability to make comparisons between the groups (Barbour, 2008).

According to Morgan (1998), having similar participants in the group means the participants spend less time explaining themselves to each other and more time discussing the issues. Within each focus group the children were known to one another which also assisted with group dynamics, albeit none were close friends so as to negatively affect the group by simply agreeing with each other without expression individual opinion. Each group contained approximately six participants this was to ensure that all participants were given sufficient time to answer all questions and express themselves fully, whilst allowing the researcher to gain an in-depth understanding of the views of the participants (Barbour, 2008). Some groups were smaller than this i.e. one group only had two participants, due to non-attendance of the participants (the participants were either off school ill or in the case of the secondary schools the school wouldn't let them attend the group or the participants decided not to attend). Six schools took part in the focus group and for each school there was one group per cluster

therefore 4 groups per school, a total of 24 groups. Six focus groups per cluster was deemed to be more than adequate in order to avoid the groups becoming repetitive and also this was the point at which it was felt that theoretical saturation had been reached (Bloor & Wood, 2006; Glaser & Strauss, 1967).

As a thank you for taking part in the focus groups the students were offered either a London Olympic 2012 frisbee or wristband, whilst the teaching staff knew this would be offered to the participants, the participants did not. It was a thank you for taking part as opposed to an incentive as it would have been unethical to offer the frisbee/wristband as an incentive to take part in the focus groups.

4.4.2 Setting

All the focus groups took place in the school setting, usually in a class room or small room that the participants were familiar with and non-threatening (Moore, 2006). This was to put the participants at ease in a supportive environment (Ennis & Chen, 2012). As the focus groups are semi-structured and the purpose is to explore the participants thoughts and feelings it was important to create an environment where the participants could share their thoughts, feelings and experiences (Morgan, 1998). The only downside to conducting the focus groups in the school were that some of the places given by the schools to hold the groups were not always the quietest and some of the participants had to be requested to speak up so that they could be heard on the digital voice recorder. An Olympus DS-40 digital voice recorder was used, using a good quality recorder meant that despite background noise all participants could be heard.

4.4.3 Procedure

In qualitative research the researcher is the primary instrument for data collection and analysis and therefore how the researcher conducts the focus groups is of paramount importance (Hastie & Hay, 2012). The researcher conducted the focus groups in a non-authoritarian conversational manner in order to create and maintain an informal environment, however, it was necessary to maintain direction and control the group to ensure that there was sufficient time for the group to answer all questions. (Cohen et al., 2004; Flick, 2006; Gratton & Jones; 2007; Trochim 2001). Discussion was focused with participation and input from all members of the group encouraged. Language used to address the

participants was appropriate to the target audience, i.e. applicable to the age group of the children being interviewed (Cohen et al., 2004; Krueger, 1998). The researcher aimed to create a liberal climate that facilitated the members to contribute openly about their experiences and give their opinions (Cohen et al., 2004; Flick, 2006; Trochim, 2001). In addition, the researcher conducting the focus groups was also: knowledgeable of the subject; made clear the purpose of the research; allowed the participants to say what they want and in their own way; was sensitive, empathetic and also took account of not just what was said but how it was said; being able to recall earlier statements and relate them during the interview; clarifying, confirming and disconfirming the interviewee's statements with the interviewee; questioning to check the reliability, consistency and validity of what was being said (Kvale; 1996)

Standardisation of administration meant that all the focus groups were conducted in the same way and the same initial list of questions were used (Denscombe, 2001; Trochim, 2001). The researcher therefore had to keep the interview at a conversational level whilst guiding the participants to answer all the initial questions. In doing so interviewer effect was avoided (Oishi, 2003; Trochim, 2001). Generally, the questions were clear, single dimensional and jargon free and any questions not understood by the participants were explained fully (Krueger, 1998). Instructions were given from the interviewer to the participants that the interviewer wanted to hear points of view of all the participants and that although the interviews were being recorded assured the participants that everything would be anonymised and their remarks treated in utmost confidence (Moore, 2006). At the beginning of the focus groups prior to the questions being asked background information was given to the participants on the purpose of the study and the importance of the viewpoints of the participants to the study (Flick, 2006; Trochim, 2001). Giving background information to the participants was to minimise tacit assumptions (Krueger, 1998). At the beginning of the interviews each person briefly introduced themselves stating their name and age, and again it was stressed that no names would be used in the research (Flick, 2006; Moore, 2006). On conclusion of the interview the researcher thanked the respondents for their time (Trochim, 2001).

4.4.4 Instrument

The questions that were asked in the focus groups evolved from the questionnaire and the responses will expand on the information already given in the questionnaire. The focus group interview questions were based on the TPB and SCT and SEM (Ajzen 1985; Bandura, 1977; McLeroy et al., 1988) which was used as the model for the determination of the behaviours in focus. The questions were formed and an interview script devised (see Appendix E) (Hastie & Hay, 2012). Questions were asked to the focus group participants rather than using a topic guide (that is a list of topics or issues) as using a topic guide would lead to inconsistencies among the questions and make the comparative analysis between the groups difficult if not impossible (Krueger, 1998; Trochim, 2001). The questions enabled the participants to give a free response in their own terms to explain and qualify their responses and avoid limitations of pre-set categories of response (Fink, 2003a; Peterson, 2000).

The open ended questions allowed the research to capture the authenticity, richness, depth of response, honesty and candour which is a hallmark of qualitative data. It was important when preparing questions for the focus groups to pay particular attention to the ordering of questions. The questionnaire investigated the perceived advantages/disadvantages of PA, sources of support and encouragement, and barriers/facilitators to PA participation. For example, non-threatening general questions were asked during the initial stages of the focus group with deeper discussion questions being reserved to later in the session when the group were likely to feel more relaxed, (this is also known as funnelling). However these were not left to the very end save they would need to be rushed due to time constraints (Barbour, 2008; Krueger, 1998; Peterson, 2000). The ending question allowed the participants to give their views and opinions on the merits of a social marketing campaign being conducted in their school, although in order for the participants to understand the question the term social marketing was removed from the question as it is doubtful the participants would have understand the concept of social marketing. The very final question gave the participants the opportunity to make any comments or add any further information to the study that the participants think may have been missed (Krueger, 1998; Oishi, 2003).

During the interviews sufficient time was given to all questions. The initial couple of rapport building questions were asked specifically to gain a quick response and make the participants feel comfortable identifying the characteristics that the participants had in common, giving them a sense of community as a group (Peterson, 2000). Following the opening question it was the introductory questions that began to focus on the topic area, while the transition questions made a connection between the research area and the participants (Krueger, 1998). A copy of the questions can be found in Appendix E. The key questions drove the study and required longer and deeper responses from the participants. Therefore, during the focus group generally and in particular with the key questions the researcher whilst asking questions listened intently to the participants in order not to miss any cues to further question or probe on particular responses (Barbour, 2008; Krueger, 1998).

The use of probing (open-ended probe questions) was found to be an effective technique for eliciting additional information or to clarify a response (Peterson, 2000). Although probing was used sparingly so as not to elicit an excess of information on trivial matters or spend too on a particular question and risk running out of time to complete all questions, sometimes therefore it was necessary to move the group onto the next question (Flick, 2006; Oishi, 2003). When conducting the questioning, initially all questions were asked without providing any cues and then if necessary follow up questions with cues to prompt additional discussion were used (Krueger, 1998). At times the researcher gave overt encouragement as the respondents completed their responses (Trochim, 2001). The questions were also asked in a similar order to that of the initial questionnaire to assist with triangulation of the data (Krueger, 1998).

4.4.5 Piloting

Due to the nature of focus groups it wasn't possible to have a pilot group of the focus groups, although the true pilot test would be the first group and if this was unsuccessful then the questions would have had to be revised before continuing (Krueger, 1998). In order to minimise the risk of the first focus group not achieving the goal of the research, a number of drafts (see Appendix E) of the questions were devised and piloted with children of a similar age to the

participants before the final number of questions was produced (Bloor & Wood, 2006).

4.4.6 Reliability/Validity

Questions taken from the focus groups were piloted too with children to check for reliability of the focus group questions (Bloor & Wood, 2006). Triangulation with the other data methods was used to check for validity of the research (Bloor & Wood, 2006). Validity was also improved through the researcher having a thorough understanding of the research subject (Denzin, 1989). To assist with reliability the focus groups used the same standardised procedure in each of the schools. Questions used in the focus groups were also standardised regardless of the perceived level of exercise or sedentary behaviour of the participants stated in the completed questionnaires (Coolican, 1999). The researcher used the same wording, the same context and the same emphasis when asking the questions so as to ensure reliability of the research instrument (Cohen et al., 2004). Triangulation was used to promote the credibility of the qualitative research (Hale & Graham, 2012). Triangulation provides validity, congruence and an overall holistic view of the phenomena being studied (Denzin, 1989). This study used across method triangulation as it used both quantitative and qualitative methods of data collection in the form of questionnaires, focus groups, interviews and observations.

4.4.7 Data Analysis

In order to represent the spoken discourse in the text, the data from the interviews was firstly transcribed using both the researcher and a transcription company Devon Transcription (Bloor & Wood, 2006). Some of the transcribing was undertaken by the researcher in order that they would be familiar with the data prior to analysis (Barbour, 2008; Denscombe, 2001). However, both transcribers used the same style of transcription (Flick, 2006). The transcriptions were transcribed verbatim in order to conserve the originality of the data and go back to it at a later date should it be required (Barbour, 2008).

The transcriptions once transcribed were also randomly checked for accuracy. Analysis and reporting of the transcriptions were conducted by the researcher to ensure thorough analysis as the researcher is familiar with the larger project

(Morgan, 1998). The transcriptions were thoroughly and meticulously read to ensure that as much as possible of the empirical data collected is interpreted unbiased and accurately, subsequent re-readings of the data involved the 'reading between the lines' to look for implied meanings contained therein (Denscombe 2007; Oishi, 2003).

The transcriptions were also listened to whilst reading them in order to immerse the researcher in the data to capture any significant gestures, emphases or expressions (Kitzinger & Barbour, 1999; Moore, 2006). Inductive content analysis involved using analytic induction as suggested by LeCompte and Priessle (1993:254) cited in Cohen et al., (2004) by scanning the data to generate categories of phenomena, and seeking relationships between the categories. The transcripts were annotated to identify the points where they touch on the aims, objectives, themes and issues (Moore, 2006). The empirical material was also coded using a colour. coded 'open coding' framework in order to categorise the data (Flick, 2006). In this case the findings were meaningfully categorised consistent with a social-ecological perspective and themes were classified under the SEM headings of individual (intrapersonal), social (interpersonal) physical environment and policy as outline in section 3.4 (Gratton & Jones, 2007; McLeroy et al., 1988, Peterson, 2000). The full thematic framework is attached in Appendix G. By using this method to analyse the data it allowed for a broad coding scheme which allowed for the coding process to remain iterative while also drawing on the general structure provided by the SEM. Transcripts were then further coded into sub categories and given sub codes. These sub-codes were refined by using a constant comparative method that the researcher systematically referred back to the SEM to ensure accuracy.

Further analysis involved identifying relationships and emerging patterns between the codes, themes and categories of data, which were then compared and contrasted in order to highlight similarities and differences between the students. (Denscombe, 2001). The data was worked on until new insights had been exhausted from the data (Moore, 2006). By exploring the themes that emerged from the participant's comments, it was possible to create a detailed, rich and complex account of the data (Braun & Clarke, 2006*).* The narrative presents indicative quotations from the data that support the SEM themes and give an

indication of the narratives that emerged, and offered commentary as to how the themes relate to the research questions. However, it should be noted that the quotations are not designed to be representative in any quantitative sense (Creswell, 2007). Research conclusions were drawn from the focus groups, interviews, surveys and ethnographic notes which provided a method of constant comparison to identify key points to ensure reliability of the data in different stages of data collection (Silverman, 2000)

4.5 Research Design 3 – Individual interviews with stakeholders.

Following analysis of the focus group interviews, individual interviews took place with teachers, head teachers and school sports co-ordinators. The interview is a frequently used method of data collection in qualitative research and allowed the researcher to gain in-depth information about participants' and key informants culture and views about the research topic (Ennis & Chen, 2012; Tashakorri & Teddle, 1998). As a method of inquiry interviewing allows for a person's ability to make meaning through language as opposed to written responses as this should allow the respondents to be far more open than in a questionnaire (Gillham, 2004; Seidman, 1998). The interviews even though highly structured allowed for more flexibility in asking and answering questions than if the teachers had been presented with a questionnaire, allowing the researcher to deal with the topic in depth, thereby producing quality data (Blaxter et al., 1996; Denscombe, 2001; Gratton & Jones, 2007).

Interviewing the teachers will allow the researcher access to their behaviour, putting it into context and providing access to understanding their actions (Seidman, 1998). By conducting one to one focused interviews with teachers and head teachers it provided one to one interaction between the researcher and the interviewee, allowing for much greater clarification if the answer was either vague or unclear (Flick, 2006; Tashakorri & Teddle, 1998). This aided validity in that the data could be checked for accuracy and relevance as it was being collected (Denscombe, 2001; Gratton & Jones, 2007).

4.5.1 Setting

The interviews with the teachers/head teachers all took place in the school setting, either in the teacher's office or classroom (Oishi, 2003). This was felt to

be more beneficial than if the interviews had taken place over the telephone as with an in-person interview the researcher could see the participant's reactions to the questions and the interview was easier to record (Oishi, 2003). Being in familiar surroundings helped the participants to relax, as some of the teachers were quite apprehensive about being interviewed. An Olympus DS-40 digital voice recorder was used, using a good quality recorder meant that despite background noise all participants could be heard. Use of audio recording equipment allowed the researcher freedom to converse naturally thereby encouraging the greatest flow of information without having to keep stopping in order to take notes (Coolican, 1999).

4.5.2 Procedure

A semi-structured approach was taken with the individual interviews, this was because there were a number of questions that needed to be asked and so a structured approach did not waste time by straying from the topic and also resulted in data that was comparable between schools (Morgan, 1998; Peterson, 2000). The questions were logically ordered so that they flowed from one to the other, capturing the interest of the interviewee and generating a lively discussion (Morgan, 1998). The interviews were conducted in a social, interpersonal manner and not merely as a data collection exercise (Cohen et al., 2004). An atmosphere that allowed the participants to feel able to speak openly was given by the researcher in light of the researcher also being a supply teacher (Cohen et al., 2004). It was important for the researcher to conduct the interviews without the potential influence of the researcher's personal values, beliefs and experiences, which is also known as 'reflexivity' (Hastie & Hay, 2012). However, the researcher managed to keep the conversations active and motivated to enable the participants to discuss their thoughts, feelings and experiences (Cohen 2004). The researcher whilst having a set of questions also allowed the participants to bring up other issues relating to the topic area whilst being able to bring the participants back to the questions should they stray too far away from the subject matter (Denscombe, 2001). Prompting was occasionally used during the interviews with probing and checking of responses being used in the majority of questions. Questions were also structured to allow data from other informants to be correlated so as to inform trustworthiness (Denscombe, 2001; Ennis & Chen, 2012)

4.5.3 Participants

Participants were selected from the 6 schools and the heads of each had agreed to allow the interviews to take place (Denscombe, 2001). However, extensive negotiations with the school contact took place prior to the interviews taking place (Hastie & Hay, 2012). Despite sending out an e-mail to the staff at schools emphasising the importance of the study and their contribution together with a follow up e-mail and phone calls, there were difficulties with the teachers being willing to be interviewed. This resulted in interviews taking place with 8 teaching staff from 4 schools. However, as the interviewing took a great deal of time establishing access and contact with participants, interviewing, then transcribing and analysing the data it was felt that this was a sufficient number of participants and the research had more than likely reached data saturation (Glaser & Srauss, 1967; Seidman, 1998). All participants were given background information prior to the questions being asked and all consented to the interviews in the knowledge that they would withdraw from the study at any time.

4.5.4 Instrument

The semi-structured interview used only open ended questions that were derived from the previous data gathered in the questionnaire, the focus groups and the ethnography, SEM was used to develop the semi-structured interview guide (McLeroy, 1988) (see Appendix F). The type of questioning used was semi-structured adaptive questioning in that the questions were adapted dependent mainly on whether it was a primary or secondary school. The open ended questions enabled the participants to give a free response in their own terms and to determine the direction of the response. This avoided limitation of pre-set categories of response and allowed the participant his/her own individual view points in the interview (Peterson, 2000). Following this the task was to build upon and explore the participant's responses to those questions (Seidman, 1998). They were encouraged to answer most questions in regard to their specific school, also revealing what was on the mind of the respondents rather than that of what the researcher suspects is on the respondent's mind (Krueger, 1998).

A broad opening question was asked to begin the interview which may last longer in a less structured approach and so it was important to select an appropriate

opening question (Morgan, 1998). As with the focus groups, the questions were kept relatively simple in order to elicit a response that reached the core of the topic (Krueger, 1998). With regard to the teacher interviews, questions were worded in a language relevant to teachers (Oishi, 2003).

Whilst a pre-set of open-ended questions were used in the interviews, depending on responses the questions were not always asked in the same order, this was to ensure that the interview flowed (Oishi, 2003). A range of questions were asked with regard to their views on PA in schools and were relevant the teacher/head-teacher's school in question. Two of the questions that were related to promotional visuals were shown to the teachers (see Appendix H & I). The visuals were used to ascertain if the participants had seen the materials before or with regards to the Change4Life visual, if the schools had received the packs. A question was also asked in regard to enabling a social marketing campaign to be run across the South West and to also ascertain the range of facilities that are or could be put in place to enable delivery of a social marketing campaign in order for the campaign to have the biggest chance of success.

4.5.5 Reliability/Validity

Piloting was undertaken to aid with reliability of the individual interviews. Triangulation ensured that the information given corresponded with some of the information from the questionnaires and the focus groups (Coolican, 1999). Using field notes from the ethnography also allowed the researcher to check the validity of the interviews (Bloor & Wood, 2006). As the interviews conducted were of a semi-structured nature and a set of pre-interview questions had been designed this also gave the interviews external reliability in that the interviews could be replicated (Bryman, 2008).

4.5.6 Pilot Testing

A pilot test of the questions was carried out on a teacher, who was not in attendance at the one of the cluster schools. Performing a pilot of the interview was an opportunity to try out the questions before they were made final (Bloor & Wood, 2006; Bryman, 2008). The teacher was a secondary school PE teacher and was therefore an appropriate person to carry out the pilot interview with

(Fink, 2003d). All questions were answered appropriately and therefore there was no need to change or adapt the questions prior to the teacher interviews.

4.5.7 Data Analysis

Prior to transcription the interviews were listened to several times in order to provide a context for the emergence of specific units of themes and meanings. The data from the interviews was firstly transcribed verbatim using both the researcher and a transcription company Devon Transcription. The transcriptions were randomly checked for accuracy and also thoroughly and meticulously read to ensure that as much as possible of the empirical data collected is interpreted unbiased and accurately, subsequent re-readings of the data involved the 'reading between the lines' to look for implied meanings contained therein (Denscombe 2007). Notes and reflections were added in the margins alongside the raw data (Denscombe, 2001). The transcripts were highlighted and colour coded, reflections marked and similar phrases, patterns or themes identified (Bryman, 2008; Hastie & Glotova, 2012). Further analysis involved identifying subgroups between the themes and categories of data (Denscombe, 2001; Oishi, 2003).

Analysis of the data consisted of a multistage process, often referred to as content analysis, which is a transparent research method that seeks to quantify content in terms of predetermined categories (Bryman, 2008; Peterson, 2000). In this case the findings were meaningfully categorised consistent with a social-ecological perspective and themes were classified under the SEM headings of individual (intrapersonal), social (interpersonal) physical environment and policy as outlined in section 3.4 (Gratton & Jones, 2007; McLeroy et al., 1988, Peterson, 2000). The full thematic framework is attached in Appendix G. By using this method to analyse the data it allowed for a broad coding scheme which allowed for the coding process to remain iterative while also drawing on the general structure provided by the SEM. Transcripts were then further coded into sub categories and given sub codes. These sub-codes were refined by using a constant comparative method which the researcher systematically referred back to the SEM to ensure accuracy. Themes and categories were compared and contrasted in order to highlight similarities and differences between teachers, head teachers and different schools. The narrative presents indicative

quotations from the data that support the SEM themes and give an indication of the narratives that emerged, and offered commentary as to how the themes relate to the research questions. However, it should be noted that the quotations are not designed to be representative in any quantitative sense (Creswell, 2007). Research conclusions were drawn from the focus groups, interviews, surveys and ethnographic notes that provided a method of constant comparison to identify key points to ensure reliability of the data in different stages of data collection (Silverman, 2000).

4.6 Research Design 4 – Ethnographic Research

The term ethnography means a description and interpretation of a culture or social group, involving methods of inquiry (Bloor & Wood, 2006; Gratton & Jones, 2004; LeCompte & Preissle, 1993 cited in Cohen et al., 2004). As a methodology, ethnography deliberately does not have a fixed theoretical framework, but rather is informed by inductive reasoning, whereby the data comes before theory following which theory emerges from data (Berg, 2004). Ethnography is an anthropological, holistic approach used for studying groups in natural real world settings. It offers a conceptual framework to tie different pieces of qualitative information together in one coherent narrative i.e. empirical data is gathered from school children within the school setting and is a journey of discovery (Cohen et al., 2004; Flick, 2007; Trochim, 2001). A true reflection of the description and interpretation of the school setting is only achievable in context. By undertaking an ethnographic observation the researcher is fully able to appreciate the views and experiences of the students and teachers, focusing on their everyday behaviour (Bloor & Wood, 2006). According to LeCompte & Preissle, 1993: 31-2 cited in Cohen et al., 2004, “ethnographic research will allow for meanings to be accorded to phenomena by both the researcher and the participants; the process of research therefore is hermeneutic”. When using participant-observation as an ethnographic research method, the researcher enters into the world of the participants being studied (Wolcott, 2008). In this case, routine and normal aspects of students and teachers being studied were observed to discover how they understand PA in the context of the school setting, perceive their reality and the meanings they attach to PA and physical education (Denscombe, 2001). It was suggested by Fox and Biddle (1989) that it is important, when researching participation in physical education that the

researcher should go beyond the attitude towards PA itself, and evaluate the total physical education experience. It is also worth noting that as stated Hastie & Hay, (2012 p82) "as sites of social interaction, marked by relationships, institutional expectations, unique learning contexts and different engagement modes, physical education and sports settings provide challenging and complex sites for investigation."

There are a number of methods involved in conducting ethnographies (Trochim, 2001). For the purpose of this study the ethnography involved both an emic and etic perspective but focused mainly on the emic perspective, defined as 'a description of behaviour or a belief in terms meaningful (consciously or unconsciously) to the person within the culture' (Pike, 1954). Almost anything from within a culture can provide an emic account, that is, to observe the experiences of the people and understand things from the points of view of the participants in the schools rather than an etic perspective which is the researcher's perspective of the school culture (Gratton & jones, 2007). Although, when the approaches were combined the 'richest' view of society and school culture was understood. This was attained by examining social behaviours and cultural patterns and also examining readily available institutional documents, mainly through covert observation (Flick, 2006; Gratton & Jones, 2007). Triangulation was also used within the ethnographic research via observation, mini interviewing and document analysis (Bryman, 2008; Denscombe, 2001; Flick, 2007; Seidman, 1998). Angrosino (2007) maintains that good ethnography is the result of triangulation, using multiple data collection techniques.

Participant observation was mainly used for the ethnographic research (Bloor & Wood, 2006). As participants are in their natural setting, observation provide can provide more reliable information about events than questionnaires or interviews (Bryman, 2008). The degree to which the researcher "participates" in addition to observing varies according to the participants being observed. (Denscombe, 2001). In this research, the role of participant observation was that the researcher was able to carry out observations whilst undertaking the role of a school teacher. The ethnographies took place over a two year period (Hastie & Hay, 2012). Due to the researcher also carrying out another role alongside the observations the observations did not follow a predetermined framework and

were relatively open (Blaxter et al., 1996). During the observations the researcher recorded descriptive as well as reflective notes on what was seen, heard and experienced during the observations (Hastie & Hay, 2012). There was a degree of covertness; this took the form of personal observations in the schools' generally, however, the schools were made aware that the researcher was carrying out research in PA. Furthermore, when speaking to students and teachers alike, the researcher would explain to the students and teachers the nature of the research and the importance of their opinions, i.e., they were told of the importance of the research. (Hastie & Hay, 2012; Flick, 2006). Conversations occurred openly as the participants were more relaxed when talking as the researcher was seen as a fellow PE teacher who had an affinity with them and also they were not being recorded. Likewise, with school students they spoke openly, as again the researcher was not seen as being as authoritarian as permanent members of school staff and also I was not recording conversations. Throughout the whole process of ethnography no names of any students ever obtained, nor were any personal details taken from any participants thereby ensuring total anonymity (Denscombe, 2001; Flick, 2007).

4.6.1 Setting

Ethnography took place in random schools across Devon. Over a two year period approximately 20 schools, mainly secondary, although some primary schools were visited, very often where the researcher undertook supply work as a PE teacher (Coolican, 1999). Although, the researcher also observed from other areas of the school thereby carrying out systematic observation rather than being a 'participant observer – P E teacher'. Although the researcher was carrying out other tasks i.e. teaching whilst conducting the research, the research is still nevertheless evidence as the researcher was still immersed in the context, seeing, feeling, listening and engaging with the participants in their cultural space (Armour and Macdonald, 2012). This allowed the research to preserve the naturalness of the setting and not disrupt the situation (Denscombe, 2001). Secondary data was obtained mainly from internet sources such as the local government website or the website of the school and is readily available to the public (Bryman, 2008; Trochim, 2001).

4.6.2 Procedure

Initially, in each school visited, the researcher got an overall feel for the school and the ethos concerned with PA (Denscombe, 2001). Indirect measure, which is an unobtrusive measure and occurred naturally within the school setting was used in this study, therefore no formal measurement procedure was applied whilst undertaking the ethnographic research (Trochim, 2001). As part of the ethnographic process friendly conversations took place in the research field which could be described as mini interviews (Flick, 2006). Frequently the most informative interviews are the conversations that take place between the participants and the researcher and in this case added another layer of insight into my research (Ennis & Chen, 2012). The opportunities for the interviews always arose spontaneously, sometimes the participant was a regular field contact and rapport had been built between the participants and the researcher (Ennis & Chen, 2012; Flick, 2006). Sometimes only one question was asked and other times the participants imparted information without any questions being asked (Flick, 2006).

The researcher also spent time carrying out observations on the participants, observing behaviours and emotional reactions (Coolican, 1999). Observations allowed the researcher to gather data on the physical environment and its organisation i.e. the school; the organisation of the people, gender, characteristics of the groups and individuals; interactions that took place i.e. formal, informal, verbal, non-verbal; available resources and their organisation, pedagogic styles, curricula and their organisation (Morrison, 1993: 80). The data was documented in the form of fieldwork notes throughout the ethnography (Bloor & Wood, 2006; Denscombe, 2001). Notes were written down as soon as reasonably possible and gave descriptions of the events, behaviour, activities and the reconstruction of any dialogue (Cohen, 2004; Flick, 2006). Field notes contained reflective information based on the reactions to what I was seeing and hearing which were also documented throughout the research project (Bloor & Wood, 2006; Gratton & Jones, 2007).

4.6.3 Reliability and Validity

Reliability and validity was tested as the researcher would visit and revisit the schools at different time points during the year (Cohen et al., 2004). Validity was

also checked against other forms of directly measured data such as the questionnaires, interviews or other methods of the ethnographic data (Bryman, 2008; Trochim, 2001). The researcher also checked validity and reliability by looking at plausibility for example 'do the findings ring true' and is it an accurate account for the majority of the group being studied (Gratton & Jones, 2007). However, Hammersley and Atkinson (1983), offer some important points about how ethnographic information is processed:

> *The accounts produced by the people under study must be treated in exactly the same way as those of the researcher. They must neither be dismissed as epiphenomena or ideological distortions, nor treated as 'valid in their own terms' and thus as beyond assessment and explanation. …Rather, all accounts must be examined as social phenomena occurring in, and shaped by, particular contexts. Not only will this add to sociological knowledge directly, it will also throw light on the kind of threats to validity that we may need to consider in assessing the information provided by an account. (126)*

As the researcher conducted the research whilst working as a supply teacher in the schools where the ethnographies took place, this also eliminated the Hawthorne effect (Cohen et al., 2004).

4.6.4 Data Analysis

As suggested by Lincoln and Guba, (1985: p39-43) the data analysis of the ethnographic data is inductive rather than a priori and deductive. The researcher engaged in gaining a deeper understanding of what was observed and continually refined interpretations. Grounded theory (Glaser & Strauss 1967) was the theory used in the analysis of the qualitative data from the ethnographic research. The theory was derived from the data, systematically gathered and then analysed within the research process (Bryman, 2008). Grounded theory was used as it is accepted practice across a broad range of qualitative approaches including that of ethnographic research (Bloor & Wood, 2006; Cohen et al., 2004; Denscombe, 2001). Hand written field notes were edited and typed up into legible data (Hastie & Glotova, 2012). Thematic analysis was also used to code and categorise patterns found in the data, thematic analysis being a fundamental task of thematic analysis. Analysis of the data consisted of a

multistage process, often referred to as content analysis, which is a transparent research method that seeks to quantify content in terms of predetermined categories (Bryman, 2008; Peterson, 2000). In this case the findings were meaningfully categorised consistent with a social-ecological perspective and themes were classified under the SEM headings of individual (intrapersonal), social (interpersonal) physical environment and policy as outlined in section 3.4 (Gratton & Jones, 2007; McLeroy et al., 1988, Peterson, 2000). By using this method to analyse the data it allowed for a broad coding scheme which allowed for the coding process to remain iterative while also drawing on the general structure provided by the SEM. Transcripts were then further coded into sub categories and given sub codes. These sub-codes were refined by using a constant comparative method which the researcher systematically referred back to the SEM to ensure accuracy. The full thematic framework is attached in Appendix G. Following thematic analysis the research from individual schools was contrasted against other schools and comparisons made between them (Denscombe, 2001; Gratton & Jones, 2007). The observed behaviours will also be compared to the responses given in the questionnaires and interviews (Cohen et al., 2004). The results are presented alongside the other two qualitative studies of student focus group interviews and the teacher interviews into a thematic narrative presented in chapter 6. The narrative presents indicative quotations from the data that support the SEM themes and give an indication of the narratives that emerged, and offered commentary as to how the themes relate to the research questions. However, it should be noted that the quotations are not designed to be representative in any quantitative sense (Creswell, 2007).

4.7. Ethical Considerations

As this research involved children an application was made to the College of Life & Environmental Sciences Research Ethics Committee. This was carried out in order to gain approval for a research project involving children giving personal information. Approval was granted from the College of Life & Environmental Sciences Research Ethics Committee. In order to reduce the burden on participating schools, the case was made to the University Ethics Committee that parental permission need not be required, an argument that was accepted. For

those students therefore, voluntary informed consent was sought verbally from the students themselves and the schools were able to act as locus parentis.

4.7.1. Informed Consent

A consent form together with full written details of the study was given out with each questionnaire in order to obtained informed consent (see Appendix D) (Cohen et al., 2004; Gratton & Jones, 2007). The consent form also gave sufficient information about the research project to enable the research participants to make an informed judgement on whether to participate (Bryman, 2008; Peterson, 2000). All participants were also free to withdraw from the study at any given time (Fink, 2003d). Contact details were also provided on the form should potential participants have any questions or queries (Cohen et al., 2004). Due to the non-invasive nature of the study the head teacher was able to act as loco-parentis.

Full details of the research project were given to the school contact, which in turn was passed onto the head teacher of each school prior to the school's authorisation for the project to be conducted (Wright & O'Flynn, 2012). The schools were also advised that on completion of the research, they would be given a copy of the results to feed back into their school (Cohen et al., 2004).

4.7.2 Anonymity

It was also stressed to the school that data collected would be used anonymously, confidentiality would be kept at all times and the participants had the right to withdraw at any stage of the research (Wright & O'Flynn, 2012; Fink, 2003d). This meant that the names of the children would not be written in any project material with the exception of the initial questionnaires which would only be seen by the researcher and would be kept under lock and key thereafter. In the quantitative data set, names were replaced with numerical codes and no other data on the questionnaires could be linked to any specific child (Bryman, 2008; Wright & O'Flynn, 2012). All data raw data that included personal details is kept in a locked cabinet and only the researcher has access to any personal data. The questionnaires and data will be discarded when the research project is completed (Fink, 2007).

4.7.3 Sensitivity and respect for participants

All the participants were treated with respect. The questionnaire research and the interviews were scheduled and conducted with the students and teachers at times and in a place most convenient to them. The researcher made every effort to be sensitive to the children's needs. Focus group Interviews with the students were scheduled at times when the school felt that the students would not be disadvantaged in any way. Hence there were a few students who were not permitted to take part in the interviews as it would have been detrimental to their education. Interviews took place in relative quiet areas of the school such as the library or a classroom that wasn't in use so that while it was familiar to the students they were also guaranteed privacy. Interviews took place with the staff when they were free from duties and again there were some staff that due to commitments within school were unable to take part in the interviews. Due to the difficulties in obtaining signed parental consent it was deemed appropriate by the Research Ethics Committee that given the nature of the research the Head teacher of each school could give consent as locus parentis (Fink, 2007).

4.7.4 Lack of harm or unreasonable stress

The researcher who conducted all the interviews was CRB checked and held a current CRB certificate (Wright & O'Flynn, 2012). It was assumed that any teachers assisting with giving out the questionnaires were also CRB checked as this is a legal requirement of working in any school and therefore not necessary to ask the school for details of the CRB of the staff.

Sufficient care was taken to ensure that the participants would not be caused any harm or unreasonable stress by taking part in the research. Attention was given to any probes used during the interviews with the students. This was to ensure that when students did not answer a question or did not know what to answer after one or two probes, the question was not pursed any further and the interviewed moved onto the next question. The participants involved in both the focus group and the individual interviews were also given full information of the project and the opportunity to withdraw from the study should any participants not wish to take part in the interviews (Bryman, 2008; Cohen et al., 2004). Throughout the study, time was allocated to reiterate the aims of the study and to allow time for any questions from the participants. Participants were also told that

the interviews would be kept confidential and the names of the participants would not be revealed in the study and no information could be traced back to the participants (Cohen et al., 2004). There were no risks to the participants involved in the project and therefore the benefits of taking part in the research far outweighed the risks (Gratton & Jones, 2007).

In regard to informed consent for the ethnography, due to the nature of the ethnography it was not possible to obtain informed consent as the researcher came into contact with a wide spectrum of people therefore not practicable and too disruptive to gain consent. Gaining consent would also have compromised the research given that there was a degree of covertness with the ethnography (Bryman, 2008). However, ethical standards were at all times maintained, none of those studied suffered as a result of being observed, nor were any personal details recorded of participants (Denscombe, 2001). Furthermore, schools were aware that the researcher was conducting a PhD in PA alongside supply teaching. Also, teaching staff spoken to during the course of the ethnographic research were aware of the research and willing to discuss the teaching of PE. and PA. All field notes from the ethnography were anonymised (Flick, 2007).

4.8 Researcher's Reflections and Positionality

The PhD process was somewhat enjoyable, challenging and ultimately a rewarding experience. Whilst using a mixed methods design was advantageous in gaining in depth knowledge of PA in children and young people, it did create a rich body of data, which subsequently was time consuming to analyse. Data collection was also a significant challenge, due to the lack of cooperation from some schools, cancelling appointments and others just not responding after the initial consultation. This meant that in some schools teacher/head teacher interviews did not take place. One school also refused to allow students to give their names and so following segmentation, interviews could not take place.

The researcher's role working as a supply teacher in schools was advantageous in that it led to the opportunity to conduct ethnography in the form of participant observation; it did however delay completion of the thesis somewhat. Whilst this was supplemental to the other 3 studies it was nevertheless a positive addition to the research. Working in schools in Devon and very often within PE departments

was beneficial as it gave the researcher the opportunity to collect information from an 'insider's perspective' on information that was not depicted from either staff or students during the interviews. In part, because of the structure of the interview but in part because the teachers and students were far more relaxed, the informal atmosphere of just chatting led teachers and students to be far more open when giving their opinions.

The researcher implicitly recognised their participation as someone who participated in the daily life of the school but students were aware of the researcher's status as someone who was undertaking research for a PhD. The participants were informed that the researcher was a doctoral candidate and that the information they were giving would be used in a doctoral thesis. All questionnaires and interviews given or conversations the researcher had in schools' were given voluntarily. The teachers and students that the researcher had were open and frank and there was a willingness to discuss issues with the researcher. The researcher was able to integrate within the schools' which was aided by the researcher being able to dress and behave in a manner consistent with other teachers in the school and consistent with the job role that was to be carried out, i.e. if teaching PE then PE kit was worn. This enabled the researcher to assimilate into the school and be a participant observer. Due to the interpretive and subjective nature of the qualitative research the researcher may have had some influence over the data collected. Whilst it could be argued that there was potential bias within the study, due to the researcher also being a PE teacher, and could therefore compromise the objectively of the observations, it can also be argued that anyone conducting research is passionate about their subject and therefore it is deemed that there is no more bias within this research than if the researcher wasn't also a teacher. Furthermore, it is the nature of qualitative research to consist of subjective observations. Whilst conventional researchers may reject participant observation as a valid form of research in favour of quantifiable research, nevertheless it is perfectly feasible to produce quality research with participant observation. It is the researcher's opinion that the conclusions drawn from the ethnography are an accurate reflection of PA within schools and which in the large part have been confirmed by triangulation with the focus group and teacher interviews.

4.8.1 Researcher's personal motivation

The researcher had a long standing interest in PA, moreover that of engaging children to take part in PA for the benefit of good health and well-being. The researcher's early years and adulthood were spent engaging in lifestyle activity, play and individual sport and exercise. The researcher's interest was furthered when she undertook a first degree in PA and a subsequent masters' degree in PA and public health. Following this the researcher worked in secondary schools as a health advisor where the she saw first-hand a real need to encourage children to be active. This led to a desire to investigate further PA in children and to develop a long term strategy for increasing PA. The objective of this thesis was to contribute to knowledge in this area by exploring PA among school children, in particular to examine the school day and ascertain if it is feasible to use social marketing as a means to encouraging long term patterns of PA.

4.9 Limitations and strengths of the research

4.9.1 Strengths and limitations of the mixed methods research

This study has both strengths and limitations. In particular mixed methods research has the advantage of being able to validate the findings of the quantitative data via the subsequent qualitative data of focus group interviews, interviews and ethnography. In regard to the quantitative research instrument, in particular the reliance of self-report measures, it was felt that whilst the questionnaire was able to ask many questions as to the type of exercise and why the children exercised, participants can sometimes overestimate their activity (Armour & Macdonald, 2012). Therefore, future work following this would benefit from using multiple measurements and should include objective measures such as a pedometer or an accelerometer as this may produce more precise results in regard to the time the children spent engaging in PA and the intensities of those activities. Furthermore, the accelerometer has the potential to provide date relating to minutes accumulated in different activity levels (sedentary through to vigorous) (Rowlands, 2007). In qualitative research for example, focus group interviews and interviews can also be a limitation as some participants, particularly children may have trouble articulating themselves (Bryman, 2008). This is particularly the case with a power relationship that may exist between an adult/child when conducting the interviews. Although carrying out the interviews in focus groups should help to alleviate this. Another issue that was found with

focus groups was that the participants had a tendency to talk over one another making transcription difficult (Bryman, 2008). In regard to ethnography data which is subjective, each interpretive practice employed makes the world visible in a different way dependant on the researcher observing the participants and does not necessarily unveil the 'truth' (Denzin & Lincoln, 2005).

There were also further limitations with the qualitative research in that of external reliability and validity. A limitation of qualitative research is the fact that it is not generalizable to the larger population and therefore does not have external validity. In regard to external reliability, qualitative research cannot be replicated exactly because a researcher in another context will see and hear things differently (Armour & Macdonald, 2012; Bryman, 2008).

4.9.2 Limitations and delimitations

There were a number of limitations and delimitations in the studies. Limitations are shortcomings or influences that could not be controlled for in the research. There were also a number of delimitations which were those limitations imposed by the researcher namely time and cost (Thomas & Nelson, 2001).

One delimitation was that of only being able to conduct the study in eight school situated in a particular place and time, and as such can only be regarded in that context. It may have been beneficial to use a greater number of schools across the County of Devon or indeed across the South West which would have revealed a greater cross section of Schools. However, the researcher did manage a cross section across the eight schools and therefore responses may have reached saturation in any event. Of the schools studied there were very few ethnic minorities attending the schools and as a result the researcher was unable to explore ethnic-specific or cultural factors that might influence PA participation of the participants.

Replication across the whole of the UK could reveal differing results on beliefs, attitudes, barriers and self-efficacy due to the diverse ethnic minorities present in other areas of the UK (Bryman, 2008). However, it would still be viable to put in place a social marketing campaign in those schools albeit it would be designed for the specific clusters of children that would be revealed in the research carried

out in those areas. Replication of the results would have strong implications for the lobbying of changes within physical education in schools and to implement social marketing for PA across all schools.

It should also be noted that seasonal variations could have impacted on the levels of PA the children stated in the questionnaire, albeit mostly those interviewed said that their activity levels had not changed since the participants filled in the questionnaires. Maturation level or pubertal status of participants were not assessed, therefore, gaining details on body composition may have given greater insight into looking at size and self-image being a factor in engaging in PA.

The study was conducted in one geographically defined area during the summer months and therefore results may not be generalizable to other groups of children in other parts of the UK and the levels of PA may not be representative of activity levels during the rest of the school year. Furthermore, should the researcher had had more time, it may have been advantageous to interview the parents of the children interviewed as stakeholders to understand their beliefs and views on PA participation of their children (Bryman, 2008).

A limitation of the study is the time limits imposed by the schools both when the participants were completing the questionnaires and also time given to conduct the focus group interviews (Bryman, 2008). Some students were given insufficient time to complete the entire questionnaire. Therefore, given the tight timescales in schools it may have been advantageous to have reduced the number of questions in the questionnaire to just having sufficient questions to be able to segment the students. In a couple of the schools the focus group interviews had to be rushed and cut short due to the time constraints imposed by the schools thereby giving insufficient time for the researcher to probe the participants further. Another limitation was in gaining access to year 11 (16 year old) students to complete the questionnaire and focus group interviews; due to them studying for examinations it was not possible to gain access to them.

In another school it the researcher made numerous arrangements to interview the teachers but the school contact kept cancelling and therefore it was felt

inappropriate to continue pestering in order to obtain the interviews. It was surmised from the conversations that the teachers felt uncomfortable being interviewed.

4.9.3 Strengths

A major strength of this thesis is that it has contributed to the literature on PA behaviour and by converging quantitative and qualitative research together has enabled the researcher to make conclusions about PA in schools and suggestions for practice. The study used the TPB as the basis for the initial investigation and to underpin the PA quantitative survey. TPB is not only a recognised theory for designing a questionnaire relating to a person's behaviour but TPB has been used to predict intentions and behaviour in many contexts including PA (Ajzen, 1991; Gao, 2012). SEM was used to underpin and analyse the qualitative studies which allowed the qualitative research to explore a wide range of socio-environmental factors that affect participation. Moreover, behavioural theory is used within the benchmark criteria of a social marketing and is one of the key concepts and principles that are necessary in order to gain insight into people's lives. In addition self-efficacy was also used from the SCT an important factor when looking at an individual's motivation to be physically active. One of the strengths of this study is that of internal validity. The study has internal validity due to the research procedures with particular reference to the qualitative research of ethnography (Fink, 2007). Ethnographic observations were undertaken which gave a much deeper insight into PA within the school environment, which included interacting personally within the context and the participants which is the best way to determine the reality of the situation (Creswell, 2007). An additional strength of this study is its internal reliability. Great care was taken to record the interviews accurately and to distinguish between objective and subjective observation. Furthermore, multiple sources were compared and contrasted to provide triangulation (Angrosino, 2007). To triangulate the data and gain an in-depth exploration of PA in school children alongside the ethnographic observations qualitative interviews were undertaken with both students and teachers. Thus, the research uses both qualitative and quantitative methodologies to guide the psychosocial examination of decision making for PA behaviours.

4.10 Chapter summary

In summary this chapter has detailed the mixed methods of quantitative, qualitative and ethnographic research employed in this thesis namely a survey of school aged children, focus group interviews with the school students, individual interviews with teachers/head teachers and participant observation (see Table 1) The chapter also discussed the research positionality and highlighted the strengths and limitations of the study. The next chapter will outline the descriptive results from the survey and discuss the segmenting of the school students.

Table 4.1: Research Tools

Study	Research Tools	Date/period
Study 1	Physical activity questionnaire	July 2011
Study 2	Semi-structured focus group Interviews	June/July 2012
Study 3	Semi-structured interviews with teachers and head teachers	September 2012 to March 2013
Study 4	Ethnography – observations and conversations with students and teachers	July 2011 to July 2014

CHAPTER 5

QUANTITATIVE ANALYSIS OF SURVEY DATA (STUDY 1) AND STUDENT SEGMENTATION ANALYSIS

5.1 Introduction.

This chapter provides an overview of the quantitative data and is provided mainly to provide context for the qualitative chapter (chapter six). This chapter provides the basis for understanding the PA habits and the factors affecting participation in exercise. Therefore this chapter explores characteristics of the sample of students in the survey on the basis of activity levels, sedentary levels, social support, barriers and self-efficacy towards PA participation. This was an exercise in getting a global overview of the sample in order that the sample could form the basis of segmentation of the student participants. The foundation of a social marketing approach is audience segmentation based on beliefs, motivations and barriers to participate in particular behaviours.

In this thesis, the main reason for the quantitative analysis was to group the participants into clusters for the qualitative chapters. This would enable the writer to gain a richer understanding of the characteristics of the participants for a social marketing intervention to be planned and undertaken. This chapter has the following structure; initially commencing with the sample breakdown and composition of the sample (Section 5.3); demographic composition of the sample are outlined. The chapter then moves on to outline the descriptive statistics within the questionnaire (Section 5.4) in which the PA characteristics of the sample and sedentary activities are outlined. Data for each section in the questionnaire is then presented. Finally the segmentation analysis is outlined in (Section 5.5). This thesis aims to develop work on social marketing by providing an in depth qualitative understanding of motivations and barriers for participating in PA and therefore places primary emphasis on qualitative analysis and uses quantitative data to set the scene at the beginning of the analysis chapters.

5.2 Sample breakdown and representativeness

5.2.1 Sample administration

The questionnaire was administered over a two week period in July 2011. As described in the methodological chapters, this was undertaken in 8 case study schools either by the researcher or by school staff. In regard to the researcher led questionnaires, the researcher spent a day in school and moved from class to class giving out the questionnaires and collecting them back in again, without having any input into the answers the children gave. Where the questionnaires

were distributed by the school staff, the researcher handed them into the school's allocated staff member who distributed them to students during class time. Once questionnaires were completed, arrangements were made to collect them from the school.

5.2.2 Sample size, response rate and deficiencies

The sample was drawn according to the procedures set out in the methodological sections. The cluster procedure yielded 9 case study schools (1800 participants) out of a possible 351 state schools in the county of Devon in the South West of England (Schoolsnet, 2014). Of the 9 case study schools, despite all saying that they would participate fully, only 8 did. Therefore out of a possible 1800 participants, 200 were immediately eliminated. The response rate is shown in Table 5.1 below.

Table 5.1 Breakdown of sample construction, administration and response

Stage	N	'% of'Drawn Sample'	% of 'New Sample'
Drawing Sample			
Drawn Sample	1800		
Eliminated	200	11.1	
New Sample	1600	88.9	
Administration			
Delivered	1600		100
Collection			
Received	1134		70.9
Incomplete	10		0.63
Total usable	1124	62.4	70.3

As Table 5.1 shows the total usable questionnaires from the original sample was fairly high, and taking the eliminations into account the total usable sample of 70.3% is acceptable for the purpose of the research. Response rates for research conducted in the area of PA using questionnaires vary. However, a response rate of this magnitude in PA research using questionnaires is deemed to be a good response rate.

As shown in Table 5.1 above of the 1134 received back 10 could not be used due very few questions being answered. There were some missing variables in the remaining data set either because the respondents inadvertently missed out the responses or due to insufficient time didn't complete all the questions. It was considered by the researcher as these questionnaires contained valuable data within the answered sections of the questions they should be analysed.

5.2.3 Survey representativeness

A crucial aspect of any research project is that the researcher aims to reach a representative sample of the population of interest. The following sub-sections analyse the demographic composition of the sample. The sample aimed to reach a suitable cross-section of Devon's state school population. Given that the there are approximately 60,400 students between the ages of 7 and 15 the research aimed to gauge the opinions of around 2% of this combined age group. The actual number that completed the questionnaire to an appropriate standard for analysis (1124) means that this represents 1.86% of Devon school children aged 7 to 15 years (DfE school census return: 2011). Whilst the sampling procedure was random, the fluctuating response rates, the time of year when the sample took place, and the locality of the eight schools indicate that there may not be an equal spread of ages and parental occupations.

5.2.3.1 The age profile of the sample

Figure 5.1 below shows the age distribution of the subjects within the sample. The mean age of the sample was age 11.5 years with a standard deviation of 2.034. There were fewer children in the younger i.e. age 7 (2.2%) as the sample was given out to children in key stages 2, 3 and 4. The children in key stage 2 (year 3) were 7 years old at the start of the school year (Sept) and reached 8 years old throughout the school year until the end of the following August. Children aged age were 4.3% of the sample. As the questionnaires were given out towards the end of the school year in July most children had already turned 8 years old and 7 year olds from key stage 1 were not interviewed. With key stage 4 access to this age group was limited as some children in year 10 had not yet turned 15 and due to the GCSE demands of this age group fewer children were given the questionnaire by teaching staff. Therefore 15 year olds were only 7.4%

of the overall sample. Children aged 9–14 were between 11.3 and 17.3% of the sample.

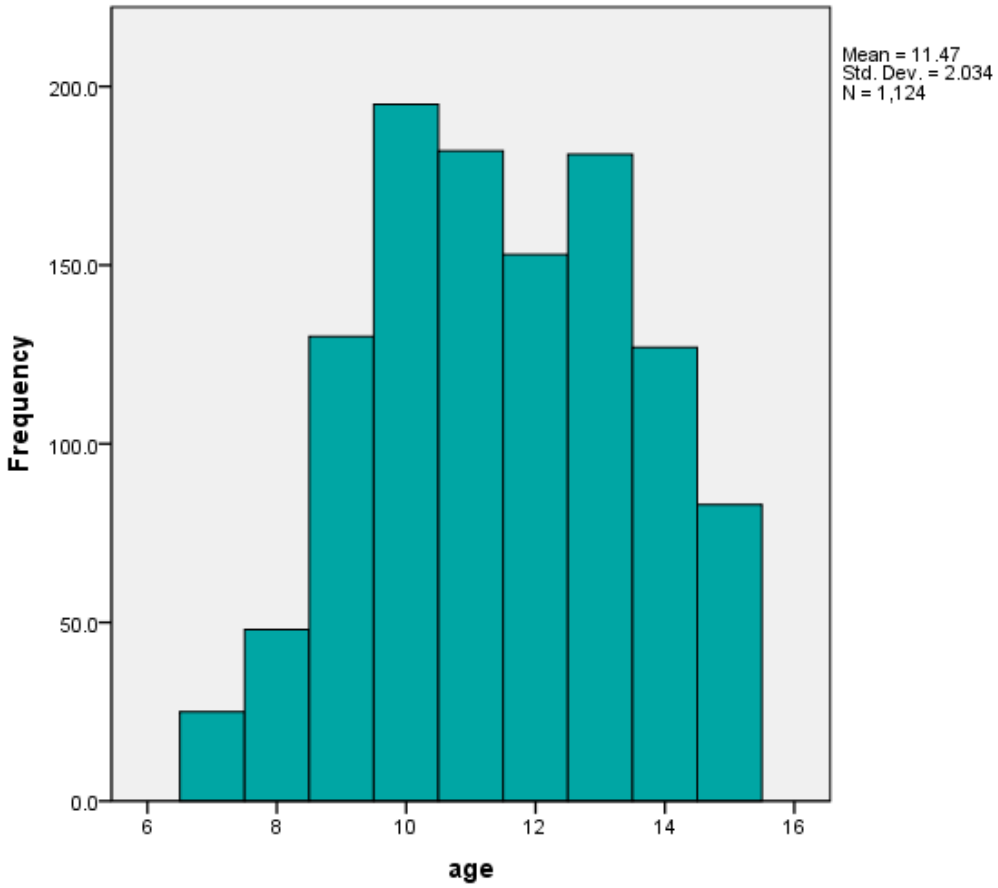

Figure 5.1 Age composition of the sample (frequency = no of students)

The sample of students was approximately divided evenly between secondary and primary schools. Schools LDS, LS, SH and WIP are primary schools, the age group of these students range from age 7 years up to age 11 years and total 559 students. Schools STJ, QE, TIV and TCS are secondary schools; the age group of these students range from age 11 to 15 years and total 565 students.

5.2.3.2 Gender composition of the sample

Figure 5.2 shows the male-female ratio in the sample. The split of the sample is almost equal, rejecting worries that due to the random sampling of the students within each school, one gender may have greatly dominated the sample over others. National statistics reveals that in Devon in state primary and secondary schools in 2011, 33,517 of the population of the age group studied are male, and

31,777 were female. This shows again a near equal split between males and females. 51.3% of the population were male, with 48.7% female. The sample in this study had slightly more males at 56% with 44% female.

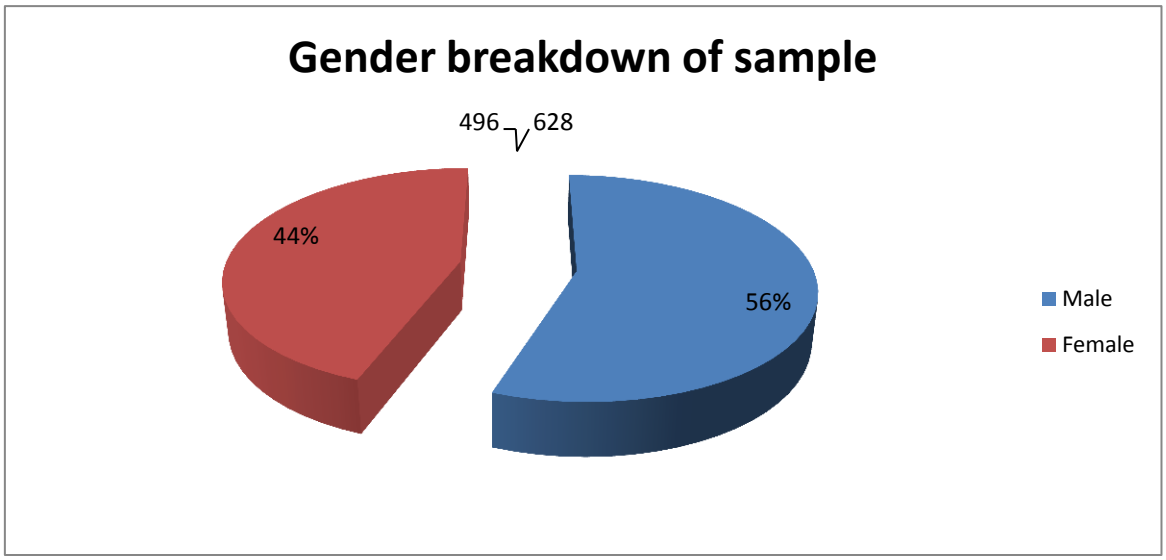

Figure 5.2 Gender breakdown of sample (Total 1114 students)

5.2.3.3 Composition of sample from each school

Table 5.2 shows the sample spread of students across the eight schools. The mix of males and females in each school are relatively equal with the exception of TIV which had over double the amount of males and females. It can be assumed that as the questionnaires were distributed by a male PE teacher, either more were distributed to the males or the males were more willing to complete the questionnaires. Based on the number of possible students in the age groups within the schools, overall from the total number of students across the eight schools 26% of students completed the questionnaire. The largest schools have a lower percentage of students participating but this was due to only 200 questionnaires being delivered to each of the schools regardless of size of the school.

Table 5.2 The division of students in the sample from each school

School	Total number of students in school (in age group sampled)	Total No of students in sample	% of students sampled out of possible sample	% of total sample	No of males	No of females
QE	1005	152	15	13.5	76	76
STJ	500	114	23	10.1	67	47
LS	159	145	91	12.9	74	71
LDS	328	140	43	12.5	74	66
SH	304	157	52	14.0	84	73
WIP	248	117	47	10.4	50	67
TIV	1085	139	13	12.4	86	53
TCS	715	160	22	14.2	117	43
Total	4344	1124	26	100.0	628	496

5.2.3.4 Occupation of the parents of the respondent's sampled

Figure 5.3 shows the socio-economic breakdown of the children's parents in the sample based on the occupations given by the respondents. Overall the sample shows that the majority of parents 46% were in routine/manual occupations, 21% of respondents either did not know their parent's occupation or SH school refused to allow the respondents to put down their parent's occupation despite being told that the parents would be unidentifiable in the sample and of that 21% 13% of responses were from SH school. Therefore, in reality only 9% were truly unknown. 19% of parents were in managerial/professional roles with 13.3% in intermediate roles.

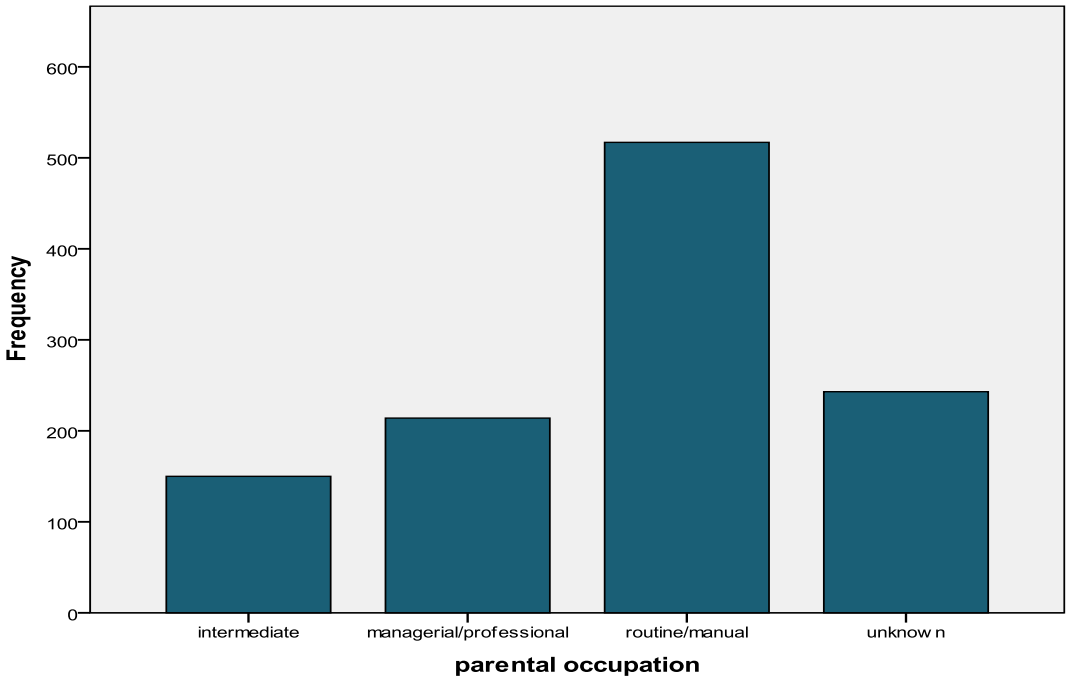

Figure 5.3 Socio-economic breakdown students as per parental occupation

5.3 Descriptive statistics

As this present research focuses on the opportunity for PA in schools it was pertinent to ask how active children and young people are in this particular setting. This section will outline the PA behaviour of the students, both in terms of activity levels, type of activities and sedentary behaviours. This enables the reader to understand the fundamental aspects of the data, namely the activity behaviour of the children.

5.3.1 Physical activity levels of students

5.3.1.1 Travel to school

Active travel to school can assist children in engaging in the recommended 60 minutes of PA per day and therefore is an important PA behaviour. Out of 1107 who responded to the question on active travel 842 (76%) of children walked or cycled to school with 265 (24%) never walked or cycling to school. Those children who reported that they walked or cycled to school were deemed active commuters and those who travelled by car or bus were deemed passive commuters. Figure 5.4 and Figure 5.5 shows active travel according to the gender and age of the students.

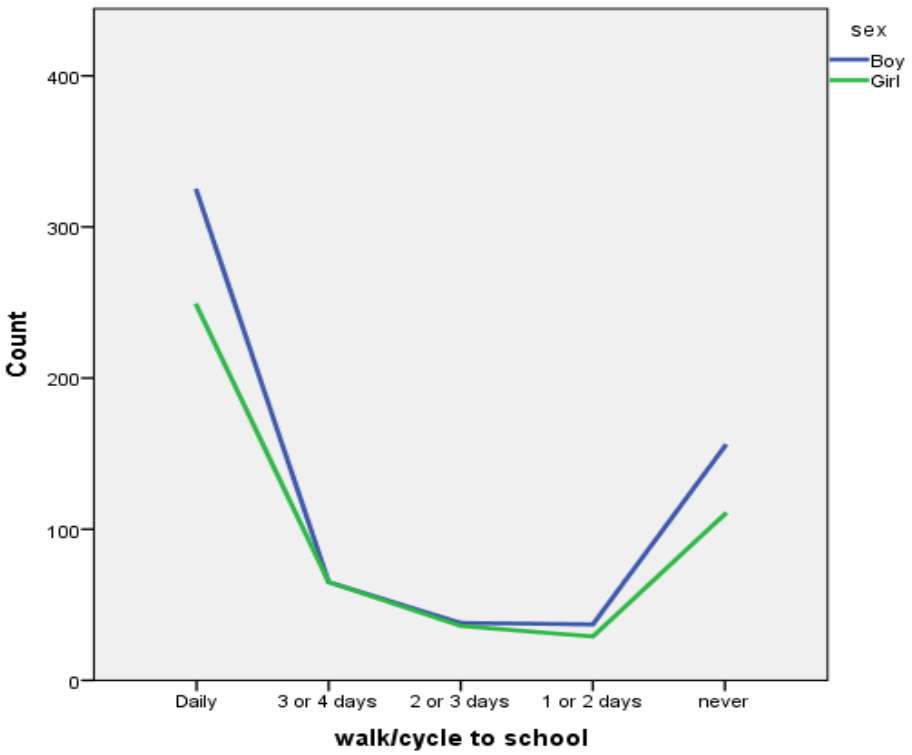

Figure 5.4 Active travel according to gender

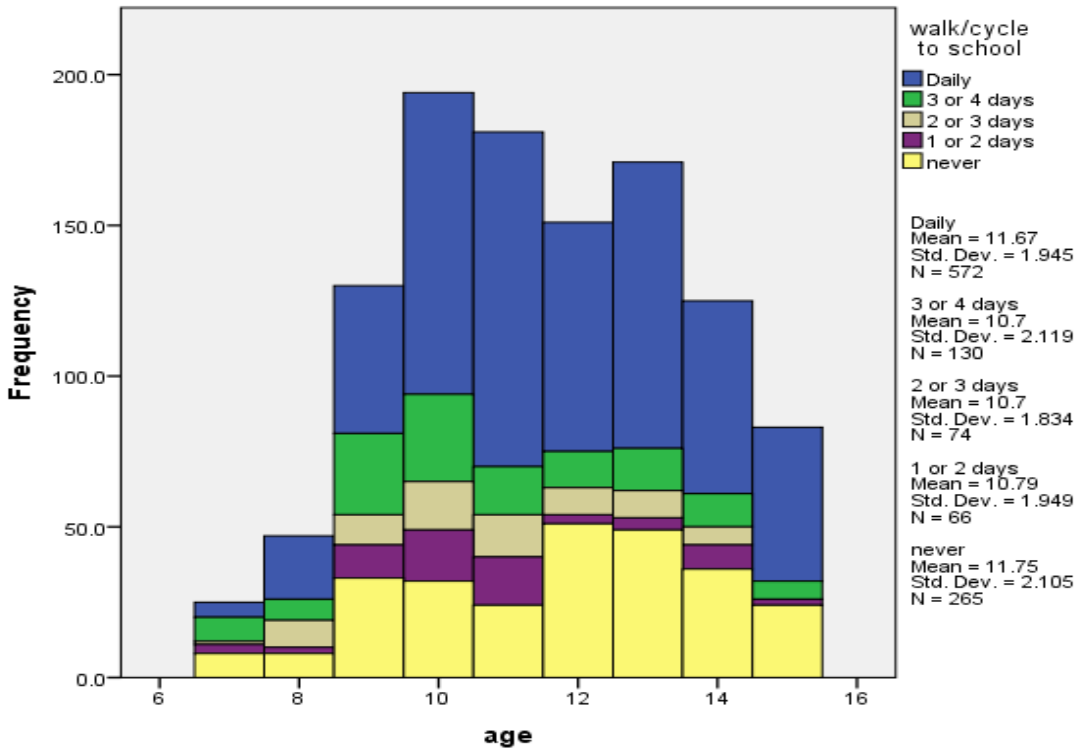

Figure 5.5 Active travel according to age

Males (29%) walked or cycled to school daily more than females (22%), a total of 51% actively commuting daily. However, there was a slightly lower percentage of males who never walked to school (22%). In regard to the age of the students the mean age of students who actively commute to school is age 11. The mean age of the passive commuters is also 11 years. The highest percentage of active commuters, who walked daily were aged 11 years and 15 year olds with 61% walking to school daily. The lowest number walking daily, were aged 7 years, whereby only 20% walked daily. A Chi-Square test revealed there was a significant difference of children walking or cycling to school between ages of the children x^2 = 104.402, (p=0.000). A large proportion of the 265 students that never walk to school 75 (28%) of students went to QE compared to the other 7 schools where between 6-14% of students never walked to school. However, QE is a rural school in Devon, where many children live in the outlying villages and due to the distance from the school have to get school buses to school and therefore walking/cycling to school is not an option.

5.3.1.2 Time spent in active chores

Active chores were those housework chores or jobs at home that were physically active (such as cleaning or gardening) that children take part. 18% of students didn't take part in any active chores with the remaining 82% of students taking part in a wide ranging number of hours between 0.05 hours and 38 hours. 56% of students reported taking part in up to 3 hours of chores. Only 42 students (6%) out of a possible 1124 gave the number of hours per week participating as more than 10 hours. It would seem very unlikely that children would participate in between 10 and 38 hours of active chores as has been suggested by some students. The likelihood is that the some children exaggerated their answers. As shown in Figure 5.6 there was little difference between males and females taking part in active chores. The mean time taken participating in chores per week for males was 2.5 hours and for females was 2.7 hours. Although, when the hours of active chores were grouped, the results showed the number of hours to be the same for males and females with a mean of 2.8. Results from an independent samples t-test found the difference between males and females to not be significantly different t(1109) = -0.199, (p = 0.842).

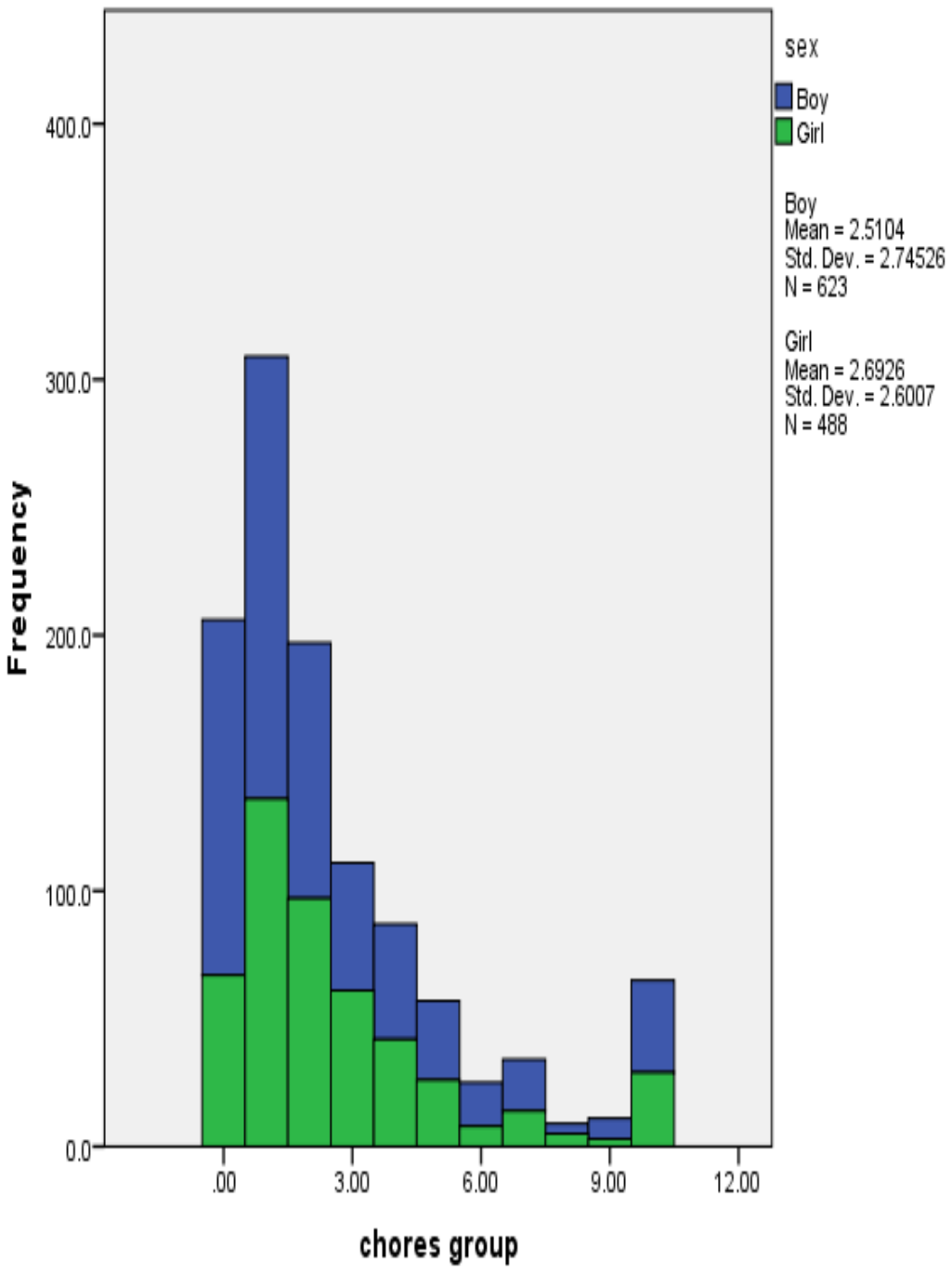

Figure 5.6 Chores according to gender

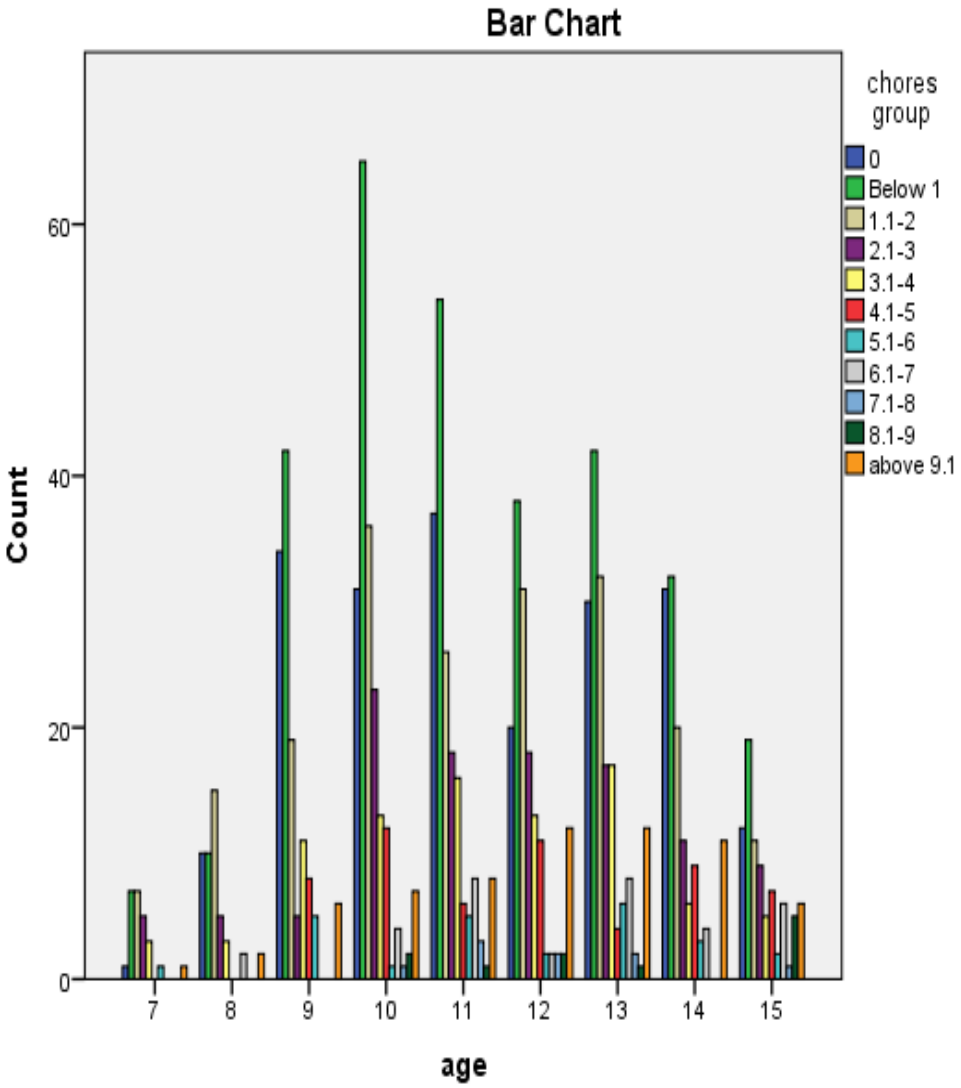

Figure 5.7 Chores according to age (the chores were grouped into blocks of 1 hour for example 1.1-2 hours is a group of students who do chores for between 1 and 2 hours).

With regard to the age of the students the means of number of hours and the age of students were similar across the age groups with the means ranging from 2.1 hours to 3.5 hours. The age group with the highest mean number of hours were students aged 15 with a mean of 3.5 hours. Analysis of variance revealed no significant difference between the ages ANOVA = F 8,1102 = 1,924 (p=0.053)

5.3.1.3 Physical activities engaged in per week

The total number of physical activities the students engaged in per week varied a great deal with some students not taking part in any PA. Out of the 1124 sample only 722 students answered this question. Of the sample who answered the PA

questions, the most commonly occurring answer was 0 with 117 (16%) of students not taking part in any PA. Whilst it may seem unbelievable for children to not take part in any PA per week, some children do manage not to do PE or in fact do very little activity during a PE lesson and then don't do any other PA outside of the school. Clarification of this inactivity was found during focus group interviews following clustering. Figure 5.7 shows the grouping of PA per week divided into males and females. Males were more active than females. The groupings in figure 5.7 shows the mean number of hours per week for males was 10 and for females was 7.8, meaning that the males engaged in 22% more PA than the females. When the figures were analysed without being grouped it shows a higher mean number of hours per week for males of 12, although for females it was 7.7, meaning that the males engaged in 30% more PA than the females. An independent samples t-test found the difference in PA between males and females to be significantly different $t(720) = 4.453$, ($p=0.000$). These results suggest that males are more active than females. Furthermore, 48% of students met the government's targets of at least 60 minutes of PA per day (min 7 hrs per week) Therefore 52% of the sample did not meet the government's recommended amount of PA per day.

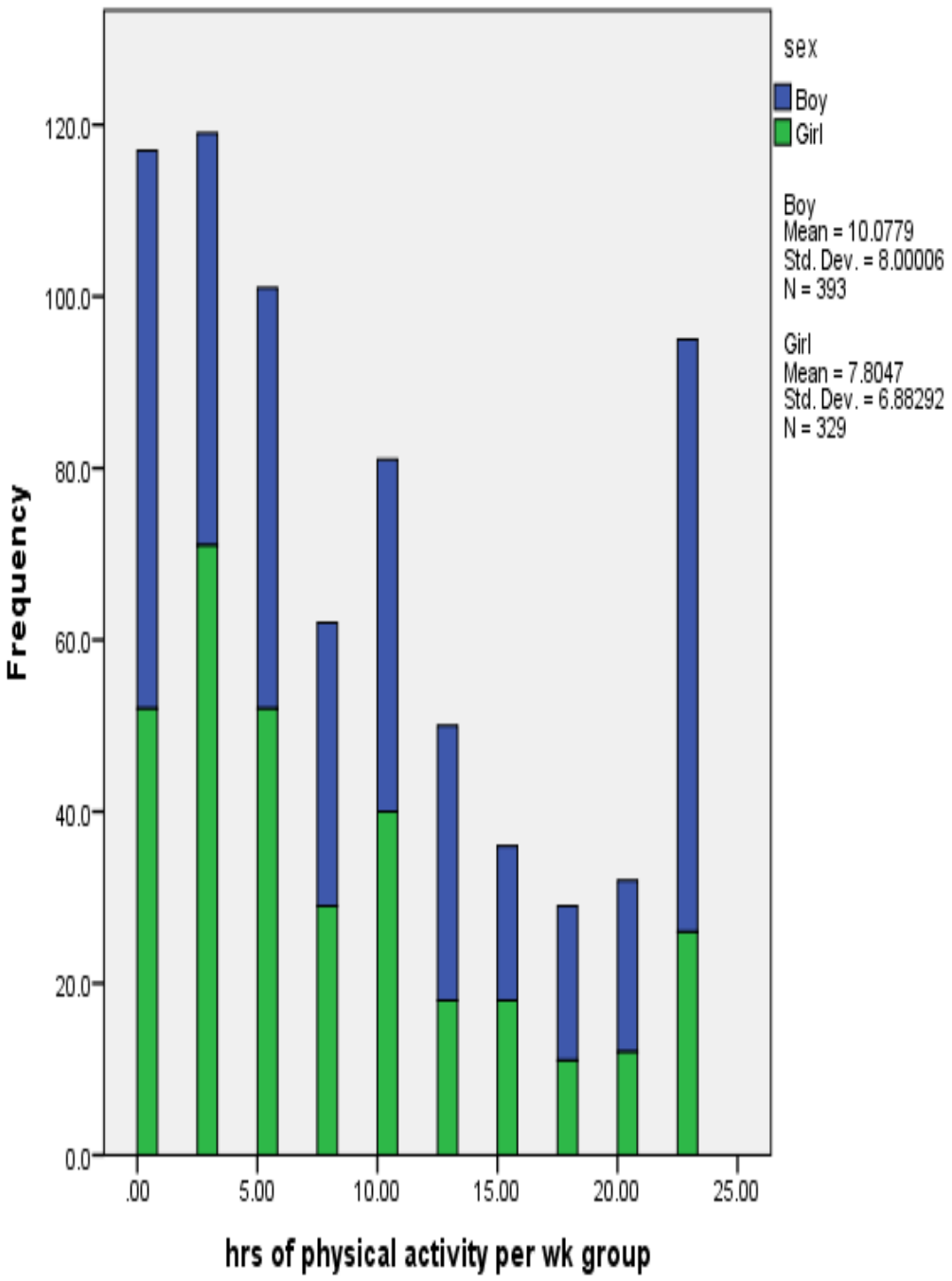

Figure 5.8 Hours of PA per wk. according to gender

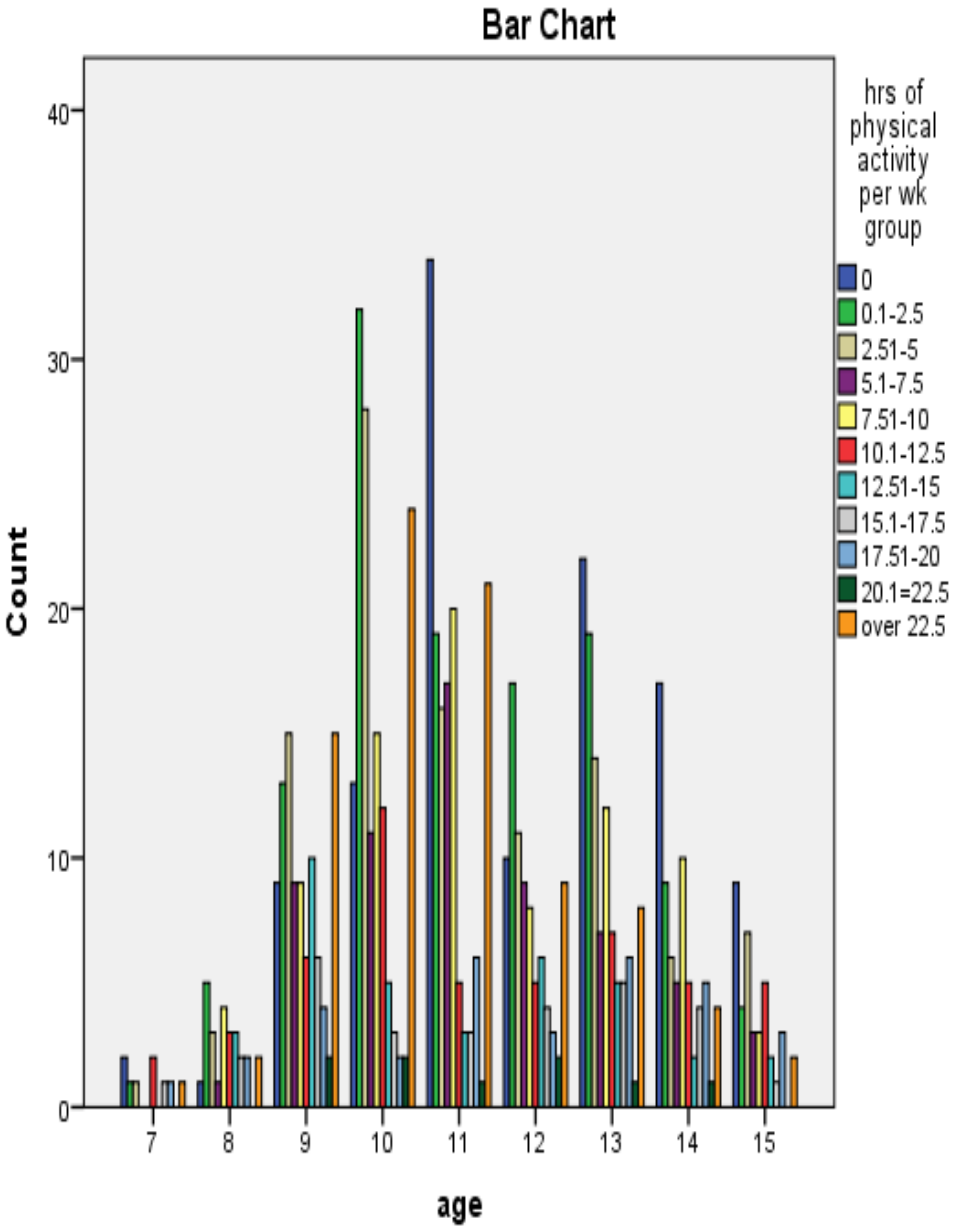

Figure 5.9 Hours of PA per wk. according to age (grouped into blocks of 2.5 hours from 0 hours, up to over 22.5 hours)

With regard to age Figure 5.9 shows the amount of PA students take part in regard to their age. The mean of amount of PA decreased with age, with children aged 15 on average taking part in 3 hours less activity than children aged 7 years. However, Analysis of Variance test revealed that there was no statistically significant difference between the ages of students and hours of PA participation per week ANOVA F 8,713 = 0.874 (p=0.538)

Socio-economic status also impacted on the average hours of PA per week. Whilst there was no significant difference between the groups, students from parents in managerial/professional jobs were active for 10 hours per week as opposed to those students whose parents were in routine/manual work who were active for 8.5 hours per week. Affordability and transport to access out of school clubs is the likely reason for this.

5.3.1.3.1 Type of physical activities student either take part in or would like to take part in

The students were asked to tick boxes on a variety of physical activities. They were asked to tick the following options: I usually do this (hours each week); I sometimes do this; I never do this. A further question was asked as to whether they would like to or are considering participating in a future activity and were: I intend to this activity in the future and I would like to do this activity in the future. Table 5.3 gives the numbers of the popular activities together with numbers taking part in the activity.

Table 5.3 Type of physical activities students take part in or intend to take part in.

Activity	I usually do this	I sometimes do this	I never do this	I intend to do this in the future	I would like to do this activity in the future
Cycling	216 (19%)	600 (53%)	305 (27%)	565 (50%)	293 (26%)
Running	344 (31%)	617 (55%)	160 (14%)	603 (54%)	244 (22%)
Walking	586 (52%)	422 (38%)	113 (10%)	657 (59%)	173 (15%)
Gym exercise	243 (23%)	465 (41%)	401 (36%)	457 (41%)	338 (30%)
Playground equipment	248 (22%)	502 (45%)	371 (33%)	426 (38%)	285 (25%)
Outdoor play	310 (28%)	502 (45%)	309 (28%)	442 (39%)	272 (24%)
Volleyball	30 (3%)	187 (17%)	901 (80%)	225 (20%)	405 (36%)
Basketball	82 (7%)	435 (39%)	603 (54%)	310 (28%)	392 (35%)
Baseball	121 (11%)	557 (50%)	442 (39%)	334 (30%)	373 (33%)
Football	331 (29%)	415 (37%)	374 (33%)	451 (40%)	270 (24%)

Rugby	117 (10%)	298 (27%)	706 (63%)	293 (26%)	359 (32%)
Swimming	226 (20%)	605 (54%)	287 (26%)	493 (44%)	331 (30%)
Hockey	41 (4%)	197 (18%)	882 (79%)	223 (20%)	395 (35%)
Netball	50 (4%)	228 (20%)	842 (75%)	253 (23%)	340 (30%)
Racket sports	153 (14%)	507 (45%)	461 (41%)	394 (35%)	317 (28%)
Other ball sports i.e. dodgeball	126 (11%)	515 (46%)	479 (43%)	354 (32%)	357 (32%)
Dance and aerobics	141 (13%)	237 (21%)	743 (66%)	270 (24%)	332 (30%)
Gymnastics	73 (7%)	231 (21%)	817 (73%)	240 (21%)	350 (31%)
Skateboarding	170 (15%)	341 (30%)	610 (54%)	325 (29%)	375 (33%)
Martial arts	102 (9%)	143 (13%)	875 (78%)	240 (21%)	372 (33%)
Cheerleading	30 (3%)	64 (6%)	1027 (91%)	155 (14%)	334 (30%)
Trampolining	163 (15%)	373 (33%)	585 (52%)	360 (32%)	349 (31%)

As shown in Table 5.3 the most participated activities that students took part in regularly are walking 52%, running 31%, football 29%, outdoor play 28%, gym exercise 23%, playground equipment 22%, swimming 20% and cycling 19%. They are all individual exercise type activities with the exception of football which is a team sport played with a ball. Whilst it is a team sport, the difference between football and other team sports is that it requires no equipment (except the ball) and can also be played with any number of players as a casual sport (kick about) with few rules, unlike other ball sports which require for more structure and rules to be played. Furthermore, the same activities of walking-59%, running 54%, cycling 50%, swimming 44%, exercise 41%, football 40%, outdoor play 39%, play equipment 38% and racket sports 35% were the physical activities that students intended to take part in. It is interesting to note that 35% of students intended to take part in racket sports yet, this is a sport that had a low number of regular participation (14%) yet 45% take part in this occasionally. The least popular PA was cheerleading with 91% of students never taking part in this and only 3% of students regularly participating. This is

possibly primarily due it to being a dominantly female activity and is not common among UK school children with few schools offering this as an activity. Other sports with few regular participants were volleyball 3%, hockey 4%, netball 4%, basketball 7%, gymnastics 7%, and martial arts 9%. The sports with fewest regular participants are those which are taught in schools, albeit for one term at a time, yet approximately one third of students would like to take part in these sports.

5.3.1.4 Sedentary activities per week

As well as assessing how active students were and the physical activities they enjoyed, it was also important to look at the sedentary activities the students took part in and moreover, how many hours they spent taking part in sedentary activities. There were six activities classed as sedentary activities: doing homework/reading; on the computer playing games (gaming); watching television; talking on the phone; listening to music or playing an instrument; hanging out with friends. The activity that students spent most time in was hanging out with friends (mean 8.9 hours per week ±14.4). Students spent time watching TV (mean 5.9 hours per week ±8.3) and computer games (mean 12.8 hours per week ±12.5). 5 hours per week ±14 was spent listening to music with the least number of hours spent doing homework (mean 2.4 ±4.3. and talking on the telephone 1.67 ±5.6).

The total time students recorded they spent in sedentary activities ranged from 0 to 500 with a mean of 30 hours. Whilst one student's amount of sedentary activities totalled 500, this was clearly exaggerated as there are only 168 hours in a week. Figure 5.9 shows the time spent in those activities by males and females. Slightly more males 52% than females 48% took part in sedentary activities overall. There was a significant difference between males and females in each individual activity they took part in with the exception of the television watching where there was no significant difference between the males and females. There was a significant difference between the ages of the students in regard to participating in sedentary activities determined by one way ANOVA ($F_{8,1092} = 7.309$ $p=0.000$). The significant differences occurred in that the mean amount of sedentary activities increased with age the mean age for 7 to 11 year olds was between 20-24 hours of sedentary activity per week. The mean age for

12 -14 years old was between 33 and 46 hours of activity per week, this decreased to 34 hours per week at age 15. The mean of the 7-11 year olds was 22 hours and for 12-15 year olds was 38 hours. Therefore, 7-11 year olds, which are primary school children, were twice as sedentary as 14 year olds who took part in 46 hours of sedentary activities. Computers (often used for gaming), hanging with friends, talking and music were the activities that were significantly different, increasing with the age of the students. There was no significant difference between homework, TV viewing and age.

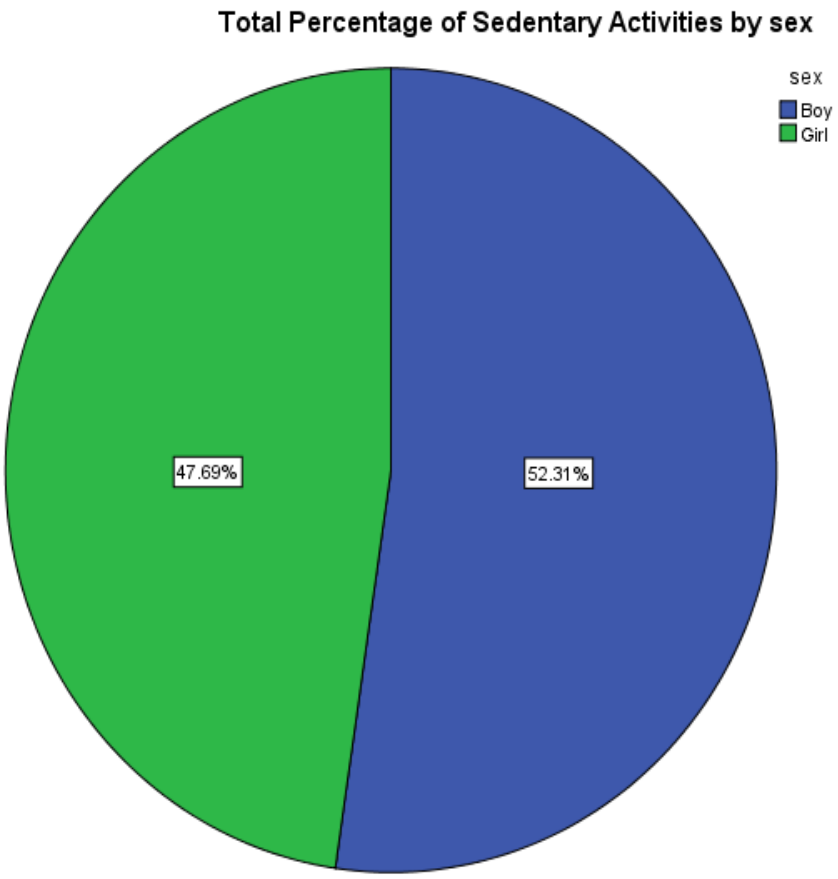

Fig 5.10 Sedentary activities according to gender (sex)

5.3.1.5 Differences between the eight schools surveyed

Table 5.4 shows the mean and standard deviation and significant differences between the eight schools surveyed according to age, gender, parental occupation, active travel to school, chores, physical activities and sedentary activities. Analysis of Variance (ANOVA) was the test used to determine the differences between the schools.

Table 5.4 Means, standard deviation (±SD) and significant differences (using ANOVA) between the eight schools

School	QE	STJ	LS	LDS	SH	WIP	TIV	TCS
Gender	1.5±.502**	1.4±.494**	1.49±.502**	1.47±.501**	1.46±.500**	1.57±.497**	1.38±.487**	1.27±.445**
Age	12.8±.94**	13.5±.77**	10.4±.674**	9.0±1.18**	9.9±.901**	9.6±1.06**	13.6±1.23**	12.9±1.12**
Parental occupation	2.2±.97**	2.6±.96**	2.3±1012**	2.4±.984**	3.9±.506**	2.8±.664**	2.7±8.38**	2.6±.942**
Walk/cycle to school	3.2±1.90**	2.5±1.74**	2.1±1.51**	2.5±1.65**	2.4±1.57**	2.1±1.47**	2.1±1.61**	2.2±1.68**
Active chores	3.6±5.08	3.8±4.36	2.5±3.11	2.4±3.55	2.6±4.17	1.9±2.71	3.6±4.45	3.1±4.59
Physical activities	8.4±10.2	9.6±13.6	10.7±13.0	10.9±13.7	13.3±16.4	8.2±9.6	6.7±5.9	10.7±15.3
Sedentary activities	33.3±35.7 **	48.4±57.5 **	20.9±28.2**	24.5±28.9**	23.3±24.9**	19.5±34.8**	30.0±41.0**	39.3±38.3**

**** indicates that there are significant differences between the groups at p<0.01 using an analysis of variance test**

Table 5.4 illustrates that there were significant difference between the schools and age, gender, parental occupation, walk/cycle to school and sedentary activities. In regard to gender there was surprisingly a significant difference this was due to some schools having more males than females taking part in the questionnaire. In regard to age there was bound to be significant differences between the schools as 4 were primary school and surveyed children between the ages of 7 and 11 and 4 secondary schools surveyed between the ages 11 and 15 years. In regard to parental occupation there was a significant difference between the occupations this was due to the demographic areas in which some of the schools were situated. In regard to walking/cycling to school, there was a significant difference between the schools this was due to one of the schools being located in a rural area and having a catchment area that included children who lived too far away to walk or cycle to school and where a school bus was allocated to those children. There were no significant differences between active chores and physical activities between schools therefore suggesting that parental occupation did not have a significant effect on PA behaviour of the students. Finally with regard to sedentary activities Analysis of Variance revealed there was a significant difference between the schools ANOVA F,7,1093 = 9.44 (p=0.000) between the schools with students in the secondary schools taking part in greater numbers of sedentary activities than students in the primary schools.

5.3.2 Summary

In summary, the findings presented in this section indicated that 53% of students met the government's target of >5 hours of PA per week. There was a significant difference in PA levels between males and females with males being more active than females. PA levels were also shown to decline with age. Lifestyle activities such as walking, cycling and outdoor play were some of the most popular physical activities that students took part in or intended to do in the future. Sedentary activities increased with age, with older students those aged 12-15 years spending more time gaming, talking on the phone, listening to music or hanging with friends than younger students aged 7 to 12 years. There were also significant differences between the schools on active travel due to one of the schools being in a rural location and also the parental occupation was significantly different again this is due to some schools being urban while others were in a rural location.

5.4 Key psychological variables

This next section outlines the key psychological variables and covers the section of the questionnaire that utilised the theory of planned behaviour and social cognitive theory. It will firstly describe the TPB items; the attitudes and beliefs (behavioural beliefs) of the students; social support (normative beliefs); barriers and perceived behavioural control (control beliefs). Finally self-efficacy will then be discussed.

5.4.1 Theory of planned behaviour and related variables

These questions related to the student's own personal feelings, beliefs and knowledge regarding PA and the reasons why they would want to participate in PA.

5.4.1.1 Attitudes and beliefs relating to physical activity (behavioural beliefs)

The first question asked "why do you do physical activity?" Several statements were suggested and were assessed using Likert scales, on a scale of 1 to 5 from strongly disagree to strongly agree. The means of each response are given in Figure 5.10. All the means averaged 4 which was "agree" with the exception of exercising makes me feel tired which had a mean of 3 'neither agree nor

disagree' and exercising helps me to be healthy which had a mean of 4.5, between agree and strongly agree. It is accepted that this statement should elicit a lower response than the other questions as this question was a negative statement in relation to exercise. The strongest statement for why do you do PA was "exercising helps me to be healthy". 651 (58%) of students strongly agreed that exercising helps them to be healthy. Overall 1000 (89%) of students either agreed or strongly agreed that exercising helped them to be healthy. The next strongest statement for reasons to exercise was "I enjoy PA" with 836 (74%) either agreed or strongly agreed. 803 (72%) of students gave "I have always done PA" as a reason for PA participation. The weakest statement was "exercising makes me feel really tired" with 534 (47%) of students agreeing or strongly agreeing with this statement. This statement also had the highest number of students strongly disagreeing/disagreeing 269 (25%) or neither agree or disagreeing with this statement 292 (26%). Furthermore, "friends/parents and brother/sister do" was not next weakest statement of reason for exercising with 287 (26%) either agreeing/disagreeing with 158 14% of students strongly disagreeing or disagreeing with this statement.

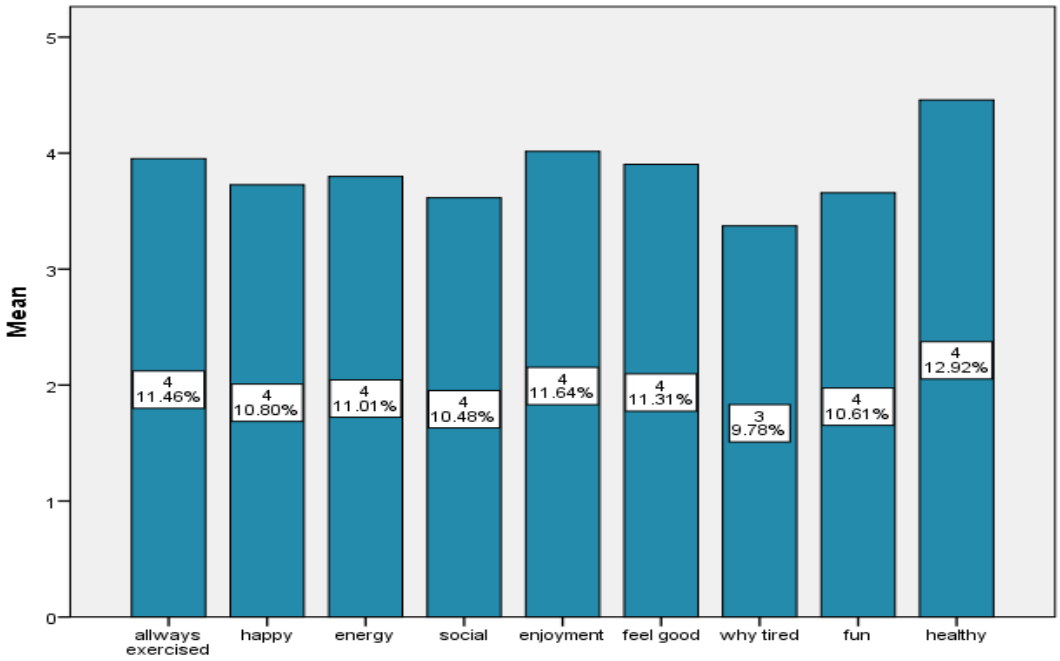

Figure 5.10 Means of the responses of why students exercise

The next question on beliefs and attitudes to PA asked 'how important do you think the following statements are'. These are given in the table below together with the means of each statement.

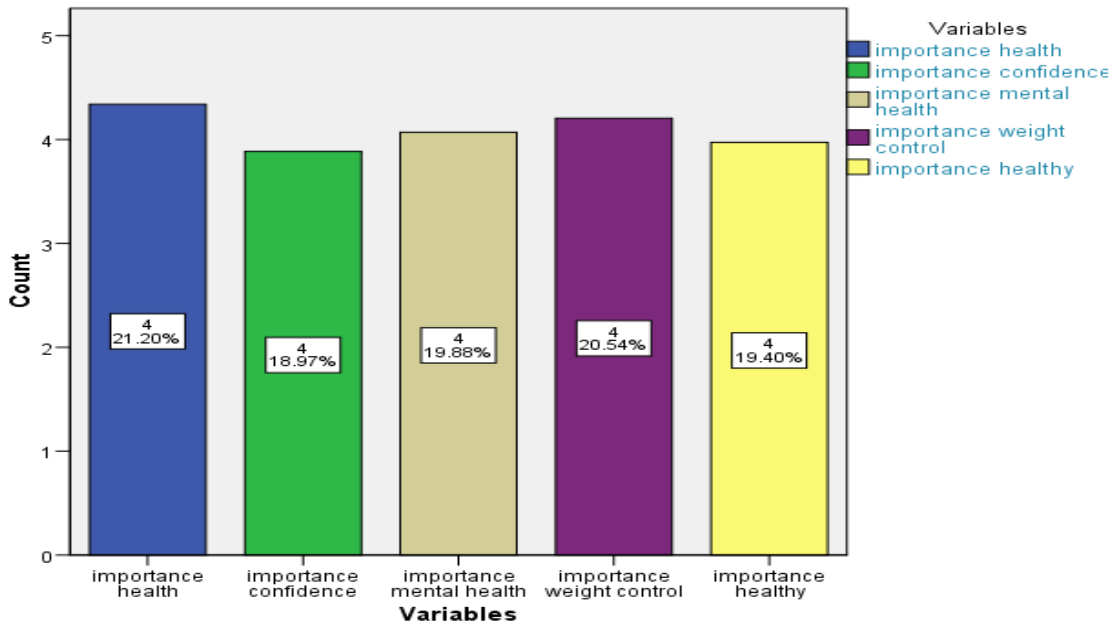

Figure 5.11 Means of the Importance of physical activity

Means of the importance statements were similar across all statements as shown in Figure 5.11. The lowest percentage mean, whilst it was still a mean of 4 which is agree with the statements was "it is important to take part in PA to maintain confidence". The confidence statement had the greatest number of students neither agreeing or disagreeing with this statement. There were no significant differences in the responses across males and females. In assessing the differences between the ages of students with importance statements Chi-Square test revealed no significant difference in the ages of students and their responses. In regard to the school attended by the students no significant differences were found between the schools with the exception of "I think I do enough PA to be healthy" Chi-Square was given as x^2 58.258 (p=0.001).In regard to the difference between the schools, the median results show that overall most students in the school LDS strongly agreed with the statement 'I think I do enough PA to be healthy'. Whereas with the other schools the median results were all agree.

This section looked at the student's beliefs and attitudes towards PA. The mean statistics of the importance of exercising and responses to why students exercise suggest that quite a number of students have strong beliefs towards the health benefits of PA.

5.4.1.2 Social support (Normative beliefs)

As social support has been found to be a predictor of PA among young people this section focuses specifically on the social support students received when taking part in PA. It also examines the social influences students receive that engage them in PA. Table 5.5 outlines the people that students take part in PA or sports with. The majority of students 59% didn't exercise alone, with only 41% of students exercising alone. A Chi-Square test revealed there was no significant difference between gender on exercising alone, with friends or with a sports group. There was also no significant difference between gender and either exercising or without family

Table 5.5 Who students partake exercise with

The students exercise:	Males N - %	Females N - %	Total N & (%)
Alone – Yes Alone – No	239 – 40 357 – 60	202 – 42 284 – 58	441 (41%) 641 (59%)
With family – Yes With family – No	273 – 54 323 – 46	259 – 53 227 – 47	532 (49%) 550 (51%)
With friends – Yes With friends – No	470 – 79 123 – 21	346 – 73 130 – 27	816 (76%) 253 (24%)
With sports group – Yes With sports group – No	269 – 45 327 – 55	193 – 40 293 – 60	462 (43%) 620 (57%)

The majority of students 816 (76%) took part in PA and outdoor play in order to spend time with their friends with 756 (71%) of students making new friends as a result of taking part in physical activities. The results show the importance of the relationship between PA and friends in young people. The Chi-Square test revealed that there was a significant difference x^2 6.307 (p=0.012) between gender, and taking part in physical activities to spend time with their friends. However, significantly more males than females x^2 8.301 (p=0.004) made new friends as a result in taking part in physical activities.

Students were also asked who or what encouraged them to take part in PA and sports. Figure 5.13 shows the means of responses. The means varied amongst the variables of encouragement. The strongest encouragement came in the form of family influences, with a mean of 3.94 closely followed by friends at 3.80. Of least encouragement to the students were television/magazines with a mean of 2.87 and medical or other health professionals with a mean of 2.65. The majority of students either strongly disagreed/disagreed that television/magazines encouraged them to exercise. In fact only 25% of students found encouragement to exercise through television/magazines. Medical or other health professionals were an encouragement to 31% of students.

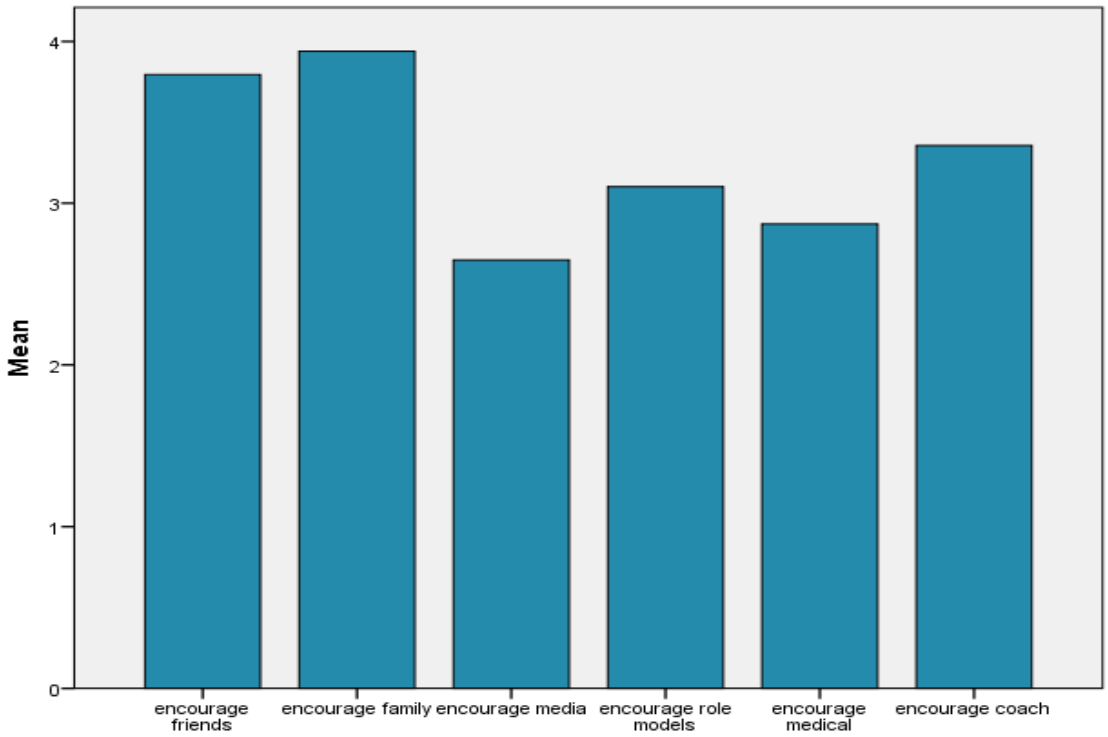

Figure 5.12 Means of student encouragement to exercise
(The mean score was the average of scores on the Likert scale of from strongly disagree (1) to strongly agree (5))

In regard to the differences in response between genders, more males than females were encouraged by role models and coaches. There were no differences between the other means. There were however significant differences between ages of the students in taking part in PA, the differences

were found in relation to being encouraged by family and media. The Chi-Square statistic for family was x^2 78.973 (p=0.000), with students in the age groups 9-14 receiving greater encouragement to be physically active than in the 7,8 and 15 year old groups. However, in the 7,8 and 15 year old age groups there were 10-15% more students than in the other groups that gave either agree/disagree as a response. For media the significant difference was x^2 74.696 (p=0.000), with 8 and 13 year olds receiving greater encouragement to be physically active than the other ages. With regard to the schools the students attend there were few significant differences between the schools and the means of the responses. There were significant differences (as shown by the Chi-Square statistic) with 'encouraged by television/magazines' x^2 72.917 (p=0.000) and 'encouraged by family $x^2$52.830 (p=0.003). The significant difference in family encouragement was found in the secondary schools of STJ and TCS where lower number of students either strongly disagreed or disagreed that they received family encouragement than in the other four schools.

Students were also asked if they would do more physical activities if they were encouraged by parents, teachers and friends. Students were asked to give either a yes or no answer. 71% of students would take part in more PA if they were encouraged by parents and 74% would exercise more if they were encouraged by their friends. However, there were fewer students who would take part in PA if they were encouraged by teachers with 54% of students saying they would take part in more PA if teachers encouraged them. The results differed with age, there being a significant difference over the ages in regard to taking part in PA if encouraged by friends, Chi-Square statistic x^2 17.831 (p=0.023) and parents $x^2$15.571 (p=0.049). The differences between age and friends were found in students aged 7 and 15 with these ages having a lower percentage than the other age groups 60% and 59% respectively. The difference between age and parents was found in the oldest students aged 14 and 15 with lower percentages of 58% and 63% respectively.

Gender and the encouragement of parents, teachers and friends was also assessed and it was found there was only a significant difference x^2 7.242 (p=0.007) with teachers with 51% of females compared to 42% of males saying they would take part in more PA if encouraged by teachers. Encouragement was

also assessed in regard to the school the students attend. In regard to the school students attend less secondary school students would take part in physical activities if encouraged by teachers than in primary schools. Secondary schools had the 4 lowest percentages, the lowest being 38%.

5.4.1.3 Barriers and perceived behaviour control (Control Beliefs)

The students were then questioned on the barriers that prevent them for taking part in PA. The majority of students appeared to have few barriers to PA. As shown in Table 5.6 the biggest barrier were facilities with 25% students reporting this to be a barrier (although 45% did not see it as such). Lack of skills was the second biggest barrier at 22%, although again 49% of students did not see this as barrier. The least problematic barrier was students not being allowed to take part in PA with only 11% of parents not allowing their child to be active as a barrier. 66% of students strongly disagreed that parents did not allow them to take part in PA.

Table 5.6 Barriers to physical activity

Barriers	**Strongly disagree/disagree**	**Neither agree/disagree**	**Agree/strongly agree**
Physical constraints i.e. a physical disability	**58%**	**19%**	**15%**
School i.e. teachers	**57%**	**21%**	**14%**
Family responsibilities i.e. looking after parents or brothers/sister(s)	**53%**	**19%**	**19%**
Parents not allowing me to do physical activity	**66%**	**15%**	**11%**
Friends	**52%**	**19%**	**18%**
Hostile social environment i.e. unfriendly groups or gangs	**52%**	**20%**	**18%**
Facilities such as cost (money) or transport to get to the activity	**45%**	**21%**	**25%**
Embarrassment/Shyness or showing your body	**49%**	**22%**	**20%**
Lack of interest in sports or physical activities	**51%**	**20%**	**20%**
Lack of skills i.e. you don't think that you could do the sport or activity	**48%**	**20%**	**22%**

5.4.2 Self-efficacy to carry out physical activity

The students were asked questions that related to their self-confidence and control in being able to carry of physical activities and were given a list of statements and asked how much they agreed or disagreed with them. Table 5.7 gives the percentages of students either strongly disagreeing/disagreeing, neither agreeing or disagreeing and agree/strongly agreed. Over 50% of all students either agreed or disagreed with the self-efficacy statements with the exception of tiredness whereby only 41% either agreed or strongly agreed with this statement. Clearly tiredness is one factor that cannot be overcome by the majority of students. In relation to differences between the schools , results from Analysis of Variance revealed that there were no significant difference between the schools apart from 'I think I can do physical activities even if they are difficult' ANOVA ($F_{7,1010} = 2.781$, $P = 0.007$), whilst the majority agreed/strongly agreed with this statement the results were significantly different between one of the primary schools (LS) whereby only 45% of students agreed/strongly agreed that they could do physical activities if they were difficult. It would therefore suggest that students have lower self-efficacy to take part in difficult activities than students in the other schools whereby overall the average was 63%.

Table 5.7 Self-efficacy to carry out physical activities

Self-efficacy	Strongly disagree/ disagree	Neither agree/disagree	Agree/ strongly agree
Other than when in PE lessons I have a choice on whether or not to do physically activity.	17%	19%	55%
I think I can do physical activities even if they are difficult.	17%	18%	63%
I think that I can do physical activities even if I have homework or other activities to do.	16%	22%	52%
I think I can do physical activities even if the weather is very hot or cold.	14%	21%	65%
I think I can be physically active no matter how busy my day has been.	15%	24%	52%
I think I can be physically active no matter how tired I may Feel	23%	27%	41%
I think I can be active even if my friends don't want me to or want me to do something else.	12%	21%	56%
I can be physically active on most days even if I could watch TV or play video games instead.	10%	19%	63%

5.4.3 Summary

The section of the survey revealed that approximately 50% of students had sufficient self-efficacy to overcome barriers to engaging in PA with the exception of tiredness where less students were inclined to take part in PA if they were tired. Facilities such as cost and transport were the biggest barriers to PA.

5.5 Segmenting the students into appropriate focus groups

The next section of the thesis explores the ways in which the PA characteristics of students can be examined in relation to different activity levels. As discussed in chapter four, segmentation as an approach attempts to define particular groups according to their behavioural commitments and can be used as the basis for social marketing interventions, based on segment characteristics, marketing approaches and setting specific behavioural goals. For this particular research, segmentation was used to broadly define activity groupings as the basis for undertaking detailed qualitative research to explore in much greater depth the motivations and barriers for PA.

Segmentation was achieved by using the statistical method of cluster analysis of data collected from the questionnaire data of 1124 respondents. Cluster analysis is a technique for classifying individual cases in an analysis with reference to their scores on a set of variables. It was appropriate to use this kind of technique because of the use of cluster analysis in previous studies to define segment groups. However, in this case, the main objective was to identify broad groups, before then proceeding to explore their properties using qualitative data. Clustering was based on the levels of PA reported in the survey and as such the cluster groups derived reflect the reported levels of PA behaviour.

5.5.1 Determining an initial cluster solution

There is no standard, objective selection used for determining the method used to identify the final number of clusters to be form and there is very limited guidance available (Hair et al., 2010; Mooi & Sarstedt, 2011). Deciding on the appropriate number of clusters, known as the ‘stopping rule,’ based on a priori criteria, theoretical foundations and common sense judgement (Hair et al., 2010).

5.5.2 Clustering algorithm

A hierarchical clustering procedure was selected based on the size of the sample, as this method is considered most suitable for smaller samples (Hair et al., 2010). Ward's method was identified as the most suitable clustering algorithm as it creates similar sized clusters and minimises within cluster differences (Hair et al., 2010). Ward's method combines objects until all observations are included in one cluster. It is also appropriate for use with ordinal data.

5.5.3 Cluster groupings

Four clusters were derived in the final solution, suggesting that PA participation was not simply a matter of either being active or non-active. In this research the cluster analysis grouped people into a spectrum of behaviours ranging from "highly active", "moderately active", "mildly active", "inactive". Following this the four cluster groups were then further characterised according to the following criteria set out in Table 5.8 below. Once the initial cluster groupings were reached further additional analysis took place through manually searching and reading of the questionnaires as some individuals were on the very edges of cluster groups and this subsequent manual analysis fitted them into the correct groupings.

Table 5.8 Cluster grouping criteria

Cluster Group 1	Cluster Group 2	Cluster Group 3	Cluster Group 4
Highly active (>15) per wk. Low levels of sedentary activities (<25 hrs) Strong health beliefs strongly agree/mostly agree with most physical activity beliefs/attitude statements Are encouraged to exercise (good social support)	Moderately active (5-15 hrs) per wk. Moderate sedentary activities (25-50 hrs) Good health beliefs/attitudes, mostly agree/ strongly agree with the physical activity beliefs/attitude statements, a number neither agree/disagree Most are encouraged to	Mildly active (0.1-5 hrs) per wk. High level sedentary activities (50-150) hrs per wk. Some agree with health beliefs/attitudes, a number neither agree/disagree Low levels of PA but would like to engage in PA, know that PA is necessary for good	Inactive (0 hrs per wk.) Very high levels of sedentary activities (>150 hrs) Very weak health beliefs/attitudes mainly disagree/strongly disagree Don't think exercise is necessary for good health No encouragement to exercise (social support)

Few barriers (although there are some) Good/strong self-efficacy	exercise (fairly good social support) Some barriers Fairly good self-efficacy although a few mixed results	health Hardly any encouragement to exercise (low social support) Some barriers Some self-efficacy	Very low or no self-efficacy Multiple barriers No or very low self-efficacy

As can be seen, the clusters were based on the number of hours of PA and sedentary behaviours. The other factors of health beliefs/attitude statements, social support, barriers and self-efficacy were trends of the majority in the cluster. Table 5.6 addresses these trends. Initially the clusters were grouped according to PA levels and levels of sedentary behaviour. Further analysis of the questionnaires characterised the clusters according to their beliefs/attitudes, social support, barriers and self-efficacy. This was carefully undertaken with most of the students in each cluster group meeting some if not all of the grouping criteria. There was in fact a graduation between the first 3 clusters with a significant break to the minority cluster 4, the “inactives”. *Clusters 1 and 2 were the most active and least sedentary*, received social support and tended to have the least amount of barriers and more positive health beliefs/attitudes characterised by towards PA participation than clusters 3 and 4. *Clusters 3 and 4 were the least active and most sedentary* and tended to have less positive beliefs/attitudes towards PA. Thus the cluster analysis demonstrates the variability in behaviour between the individuals, with at least four discernible groups and also suggests that those participants with greater social support, higher levels of self-efficacy, positive beliefs/attitudes took part in less sedentary activities and greater levels of PA.

PA levels, sedentary hours, the attitudes/belief questions, social support questions, barriers to exercise questions, self-efficacy were the variables used to characterise the cluster groups. These were all identified as suitable for characterisation and were imperative to form coherent groupings and understandings for the interviews. Attitudes and beliefs were also used as it is generally accepted for market segmentation purposes that preferences such as perceptions and attitudes produce clusters that are more homogenous than if

these had been left out (Mooi & Sarstedt, 2011). This becomes crucial to the cluster analysis as clusters should exhibit high internal (within-cluster) homogeneity and high external (between cluster) heterogeneity (Hair et al., 2010). Table 5.6 also has the number in each cluster group that were put forward to be interviewed in the 6 schools that enabled students to be interviewed.

Table 5.9 Final Cluster Sizes

Cluster	**'Highly Active'**	**'Moderately Active'**	**'Mildly Active'**	**'Inactives'**
Cluster Size	79	81	72	104
Cluster size put forward to be interviewed	31	32	28	31

5.6 Chapter Summary

In summary, the findings presented in this thesis indicated that 53% of students met the government's target of >5 hours of PA per week. There was a significant difference in PA levels between males and females with males being more active than females. PA levels were also shown to decline with age. Lifestyle activities were the most popular physical activities that students took part in or intended to do in the future. Walking was top of the list with 52% of students usually walking and 59% intending to do so in the future. Other popular activities were running, football, outdoor play, gym exercise, swimming and cycling. Having knowledge of the activities that students take part regularly and those that they either intend to or would like to take part in, in the future is worth knowing as it can be useful to the social marketer when designing a social marketing plan.

Sedentary activities increased with age, with older students those aged 12-15 years spending more time gaming, talking on the phone, listening to music or hanging with friends than younger students aged 7 to 12 years. The majority of students (57%) exercised with friends or family, with 76% of students exercising so that they could be with their friends. 71% of students made friends as a result of exercising. Health, enjoyment and fun were the main reasons students gave for exercising. Facilities such as cost and transport were the biggest barriers to PA. Whilst the questionnaire data gave some useful results in terms of PA

participation of students the most important reason for carrying out the questionnaire was to segment the students into 4 groups. The analysis revealed 4 distinct groups of students which form the basis for the rest of the thesis. The students in each group all had similarities to each other and gave the researcher a robust way of interviewing participants in chapter six. The cluster analysis and the innovative nature of the groups was therefore crucial for carrying out the qualitative interviews as the rich data from these interviews were of higher value to research that leads towards carrying out a social marketing campaign.

Chapter six moves on to presenting the results from the focus group interviews which interviewed each cluster group separately. This qualitative chapter utilises the quantitative data from this chapter to discuss the PA of the students in greater detail. Furthermore, Chapter six presents the narratives from the teaching staff at the schools, further enriched with the ethnographic data collected by the researcher across schools in Devon.

CHAPTER 6

UNDERSTANDING HEALTH AND PHYSICAL ACTIVITY: STUDENT AND TEACHER PERSPECTIVES

6.1 Scope of the chapter

This chapter provides more context and rich data that complements the material in chapter five. The data of this study was accessed by using qualitative research methods and this chapter presents the results from the open ended questions at the end of the questionnaire, semi-structured focus groups with the students, semi-structured interviews with the teachers and head teachers and the ethnographic data. These discussions with students, teachers and head teachers allowed for in depth open responses based on responses received from the quantitative data analysis. The students were put into one of four cluster groups as per Section 5.5 to enable conversations to flow freely during the focus group interviews to ensure that most students within the focus groups had similar activity levels (both physical and sedentary) and similar attitudes and beliefs towards PA. The results from the data are interpreted by presenting a series of themes and thematic narratives obtained from the analysis of the data (Creswell, 2007; Wolcott, 2008). The SEM was used to organise the results according to individual (intrapersonal), social (interpersonal), physical environmental and policy.

The SEM provides a multi-level framework in which to examine the range of factors that can influence PA participation of primary and secondary school students. The unique nature of this framework is one whereby the categories overlap into each other and as such some of the themes and subthemes will merge into other categories than the one listed in framework in Appendix G. Themes from the focus group discussions, teacher interviews and ethnography based upon this framework allowed comparisons to be made between primary and secondary school students'. Selections of student narratives have been incorporated into this chapter with gender, age, cluster group and school given at the end of each quotation. The most appropriate quotations were chosen relevant to the theme being discussed. However, there were many other students from the same cluster groups and from different schools that had similar quotations. Teacher/head-teacher interviews were conducted one to one using a semi-structured set of questions and focused on the views of PE, after school activities and a general PA environment within school. Again the gender and status of the teacher was also given together with the school. As a potential social marketing campaign conducted in schools forms the basis of this research,

questions were also asked as to the implementation of a social marketing campaign to enhance health and well-being and increase PA within schools.

The ethnographic research involved observational studies and general conversations with both children and teachers on PA provision within a number of schools across Devon. Observations were also made during PE lessons, in particular, the structure of the lessons, how active the students were and whether the students enjoyed their PE lessons and the knock on effect this would have on encouraging PA outside of the school environment. Therefore, the ethnographic research examined the social, physical and political school PA environment. The physical environment refers to the physical features of the school and examples of this are the school gym or outdoor play areas and are factors of the physical environment. In contrast the social environment targets the degree to which the teachers and head-teachers and student peers support PA. Whereas the political environment refers to the rules and regulations imposed by the school, local authority policies and finally government policies such as the national curriculum. This chapter will also explore the intrapersonal and interpersonal socio-ecological factors that influence participation levels and perceptions of PA and PE in schools. Arranging the themes under the overarching framework of SEM will be of assistance to a social marketer in the planning and delivery of a social marketing campaign centred in and around schools.

6.2 Themes arising from the analysis of the quantitative data

The analysis identified a number of themes and sub themes associated with different aspects of PA participation. Different aspects of PA were investigated during a typical week of the children's lives. These included active travel to school, break and lunch times, PE lessons, extra-curricular activities and out of school activities. Different facilitators and barriers emerged from the data as to the particular type of activity being analysed and therefore themes and subthemes cross over different activities. The themes from the data analysis were placed into categories consistent with SEM as outlined in section 3.4 and are individual (intrapersonal), social (interpersonal), physical environment and policy (political environment), the themes (Appendix G). The themes are highlighted in bold and are outlined in the sections that follow and incorporate the ethnographic observations formed by the researcher following regular visits to

numerous schools across Devon. Themes also in conjunction with a selection of direct quotations given by the students and teachers, illustrate ideas and relationships relating to PA participation.

6.3 Individual (Intrapersonal)

When addressing the themes that fall into the category of **individual (intrapersonal)** from SEM, there are two main themes that came from the data **biological** and **psychological**. **Biological** were **age, sex** and **socio-economic status** of the parents. Psychological themes were **attitudes, beliefs, self-efficacy, sedentary activities, motivation** sub themes of **competition, health, personal enjoyment**. Whilst these themes and sub-themes arose from the qualitative data, a great many of the individual themes are to be found in the quantitative data and are therefore addressed in chapter 5.

At the start of each interview all students within each cluster group (as defined in section 5.5.3) were asked to comment on their current activity levels i.e. had these changed since the students completed the questionnaire. Some students said that their activity levels had changed since they filled in the questionnaire, a year earlier. A commonality was that more students in the highly/moderately active groups had increased their activity levels than the students in the mildly active or inactive groups. Any student who said there had been a change was asked to say why their level had decreased/increased. Most whose activity levels had increased were in the two active groups, they had changed because they were doing more activities as illustrated by the quotations below:

> "a bit more as I do more gymnastics now" (female, 10ys, moderately active, LDS)
>
> "I would say that I do a lot more cycling, I used to do three hours now I do five hours (male,11 y, moderately active, WIP)
>
> "Yeah but I have done some new stuff I used to go swimming for only half an hour I am doing it for 45 minutes now" (female, 10 years, highly active, LS)

To try to understand why students increase their activity levels they were asked why the activity levels have increased and the reasons given as suggested by the

quotations below were for **individual** reasons such as **personal enjoyment**, the **physical environment** and **social (interpersonal)** factors:

> "I enjoy them more than I used to" (female, 11 y, moderately active, LDS)
>
> "I like being outdoors more" (female, 11 y, moderately active, LDS)
>
> "well most of these activities I do softball, rounders and basketball quite a bit more as I have moved into an area where I have a lot more friends that can play with me and stuff so it's a lot easier (female, 11 y, moderately active, WIP)
>
> "I've just joined more active groups like wind surfing and stuff outside of school" (male, 14 y, highly active, TIV)

Whilst some activity levels of the students had changed, the majority had remained the same as when they completed the questionnaire. **Age** was a biological factor in the increase of PA levels. For the most part it was the students aged 11 who are now in the last year of primary school whose PA levels had increased. This could be that once children reach age 11 and are due to move to secondary school they are given more freedom to go out and about with their friends. For example a student indicated that they were now living in an area near their friends and for others they are given the freedom to travel further afield to meet up with their friends, where they can take part in activities together. Cycling is one activity that as a child gets older they can go out on their bike on their own or with friends (without parents). As the children got older the relaxation of parental constraints played a role in the new found freedom of these children which was the same in the mildly active or inactive groups, activity levels increased due to parents allowing the children to walk to school and giving the children freedom away from parental constraints or from the constraints of afterschool clubs where children can be inactive. This suggests that students have more time after school and greater freedom to be with their friends as illustrated in the quotations below:

> "as I got older I found out that I had some more time because I used to go to afterschool clubs because my mum and dad work but as I got older they trust me so now I am allowed to stay at

> home for quite a long time, sometimes I go with my friends or go to a club or something" (female, 11 y, mildly active, LDS)
> "I hang out with my friends more now after school" (female,11 y, moderately active, LDS)

In one of the schools (LDS) the least active groups had stated that their activity levels had all increased because they were now walking to school and again **age** was the factor that they were now walking to school, these were the responses given as to why they were a bit more active:

> "Yes a bit more I walk to school more now" (female, 11 y, inactive, LDS)
> "I walk to school every day" (male,11 y, inactive, LDS)
> "I walk to school 4 times a week as my dad has a new job working nights" (female,11 y, inactive, LDS)

In the mildly active and inactive groups the activity levels had also increased for some students with them doing more activities, as well as walking more:

> "…..a little bit different because I do more sports and I walk to school" (female,11 y, mildly active, LDS)
> "I do swimming now every week" (female, 13y, inactive, TIV)
> "I've got really good, better at things and I think I have got better because I have got a bike since then" (meaning since the questionnaire was completed) (female, 10 y, mildly active, WIP)

Overall, in the inactive group the majority of responses for increased PA were the same i.e. they were walking to school. However, as well as walking to school in the mildly active group children were also doing more activities, for example one child was doing more sports, whilst another was doing more cycling. In some cases, whilst some students had stopped doing some activities they had replaced those activities with different ones suggesting that students like to vary physical activities. It is also suggested in the quotations from the students that **individual** factors of **age, motivation** and **self-efficacy** facilitated the students PA levels increasing.

Beliefs and Motivations towards physical activity are **Individual** subthemes from SEM and also from TPB. Children are personally motivated to be active for a number of reasons. Initially, children are physically active according to their parent's beliefs and instructions. However, as children grow their gain their own PA **beliefs and motivations**. **Health reasons** i.e., **physical health (weight control)** and **psychological health** were the two most common subthemes to emerge for being physically active. When asked what the main reasons for being active health reasons were given by some students such as staying healthy, as in the examples below:

> "I can, like, feel the difference in the breathing side of it. So, like the next time you exercise you might not be able to do……..you'll be able to do something more because you know you can breathe more" (female, 15 y, moderately active, STJ)
>
> "Because you, like, get fit in some activities, like running and that" (male, 10 y, highly active, LS)
>
> "Yes, just to increase like my heart strength and cardiovascular……my dad is a doctor and he rants on about that" (male, 14 y, highly active, TCS)

For other students' **weight control,** for example to stay in shape and to stay slim were the health reasons given for activity, a selection of the more unusual comments made by the students are detailed below:

> "Erm, you see all these stories about people being, like, obese and unfit. You just don't want to be like that because you risk your life and it's just not the way to be" (male, 14 y, highly active, STJ)
>
> "I do it because I want to lose weight because I feel that I am overweight……..yes, I mean I'm not the most active of people to be honest" (male, 14 y, highly active, TCS)
>
> "I think with females most of them in their generation they are like brought up with models and then they are like overweight so they are like making themselves do some fitness so they feel better about themselves" (female, 14 y, mildly active, TIV)

However, as the quotations below indicate there is more to being active than just for the **physical health** reasons such as to avoid become overweight/obese. The **psychological health** benefits were deemed just as important to students and that in turn led to **self-efficacy** to take place in other activities. Furthermore, other students also agreed that PA was important for mental health and well-being and said they would continue with sport when they had left school in order to reap the health benefits of participation:

> "I do sport because if I can improve on myself it just feels good. It's just good for my head. If I can do something good in sport, it just encourages me to do something good in any other thing" (female, 15 y, moderately active, STJ)
>
> "I think that after you've done something you always feel very good about yourself really" (female, 14 y, mildly active, TIV)
>
> "I do sport because if I can improve myself it just feels good. I don't know. It's just good for my head. If I can do something good in sport, it just encourages me to do something good in any other thing" (female, 15 y, moderately active, STJ)

Competition was also a driver for a few students in taking part in PA as the quotations illustrate, although this was not of particular importance to the majority of students in the focus groups. However, when carrying out the ethnography observations and discussions with students revealed that there was definitely a stream of students that took part in PA because of the competitive nature of some sports:

> "I want to be like semi-professional in water sports so that's why I do it and I enjoy it. Of the sports I do I enjoy it" (male, 14 y, highly active, TCS)
>
> "I'm really competitive, and I'm quite good at sports and on my school report it says I'm really good at defending and attacking" (male, 11 y, moderately active, WIP)
>
> "Erm, just to get better, really" (female, 10 y, mildly active, LDS)

A large number of students had the theme of **personal enjoyment** as the reason for being active as illustrated in the comments below:

> "Because I enjoy it, you get to spend time with your friends, to keep fit and it's fun and you enjoy it and like you don't just get trapped up in your house all day you get out and do something. Then when you go to high school you do sports there as well and so you get used to it" (female, 11 y, moderately active, LDS)
> "Well just for sports generally because the sports I do it's just for fun and I really do enjoy it" (female 10 y, moderately active, LDS)
> "Because it's fun and I do it with my friends and it'd save you just….it would get you more fit instead of just lounging around" (female, 10 y, mildly active, LS)
> "I like doing it because it's fun and you get better at it all the time so it should be good" (female, 11 y, highly active, LDS)

There were quite a number who exercised for both **fun** and to stay **healthy** as suggested by the students:

> "Well I think it's because later in life you really depend on what you liked when you were younger and it's more like when you remember how much you enjoyed it when you were younger and you keep using it and I think that sports helps you in life……..It gets you more active, it keeps your heart going (female, 9 y, moderately active, WIP)
> "It's like it's enjoyable at the same time so you are doing exercise, burning fat off and all of this but at the same time it's enjoyable" (male, 14 y, mildly active, TCS)
> "I do it because it's fun and I get encouraged and it keeps me fit" (male, 11 y, highly active, LDS)
> "Well, I do it for fun because it's just fun and as well because some sports with breathing and stuff…….because I have asthma it helps with my breathing" (female, 10 y, mildly active, LS)

Students who exercised for either **health** or for both **health** and **fun (personal enjoyment)** reasons suggested that they would still continue to participate in PA should the activity no longer be as much fun as they would still want to gain the health benefits. For a number of students the main reason for exercise was for

personal enjoyment and some of the students suggested in the event of the PA no longer being fun the students would either do less or cease exercising altogether as illustrated in the quotations below:

> "Yeah, I'll just stop doing it" (male, 10 y, moderately active, LS)
>
> "And for swimming as well, I quite enjoy it……swimming is a bit different. Enjoyment is quite a big thing, I think, else I wouldn't do it, I don't think quite so much. I'd be like who cares" (female, 13 y, inactive, TIV)
>
> "And I just enjoy it [would you still participate if you didn't enjoy it] probably not, no" (male, 14 y, highly active, TCS)
>
> "I am quite active, but if it's boring then I don't like doing it" (female, 8 y, inactive, LS)

Whilst exercise brings positive benefits, too much exercise can also have a detrimental effect on motivation to exercise in the future with particularly with participants who are involved in sports involving great amounts of exercise (usually 6 days a week) in regional or local squads/teams. Participants who train so intensely often give up PA altogether as with the participant who was an ex-swimmer.

Overwhelming the focus groups indicated that there were two main reasons for being active and they were either for **fun** or for **health** reasons with quite a number of students exercising for both reasons. Students wanting to exercise to look after their general health or body weight coupled with them enjoying the activity were the greatest motivators for sustained exercise participation. For a number of others, wanting to learn a new sport or participate in a sport were reasons given for exercise participation. Not least, exercising to be with friends was a motivator for some students and shall be discussed in more detail under the social support section of this chapter.

A **biological** factor of **sex** of the students affected physical activity with boys as they aged engaging in **sedentary** activities such as gaming. For some students, activity levels had decreased and this occurred across all the activity groups. Some whose activity levels had decreased gave reference to electronic games/equipment as the reason for a decrease in activity levels. Of those

students siting electronic games as the reason for this decrease the students were male, therefore **sex** of the students was the theme found to impact on a decrease in activity levels. The quotations below clearly illustrate this:

> "now it's more X-box" (male, 11 y, highly active, LS school and male, 14 y, moderately active, TCS)
>
> "I am less active because I've found other hobbies that don't include PA such as playing on the Ps 3 or just going out and sitting down with my friends" (male, 15 y, moderately active, TCS)
>
> "I got my PlayStation 6 months or so after I filled in this questionnaire so I play on that quite a bit more. That's about it just play on the PlayStation and revising for the assessments and stuff" (male, 14 y, highly active, TCS)
>
> "Play boxing on the PlayStation" (male, 10 y, mildly active, LS)
>
> "Xbox 360 and DSs" (male, 10 y, mildly active, LS)

Some students who responded with decreasing PA due to electronic games were of the opinion that if PlayStation and X-box didn't exist they would be more active:

> "yes, because you can just play for your friends on line. So instead of going out and playing football with your friends you still get to play with your friends still. You can play with your friends and you can still talk to your friends and stuff" (male,14 y, highly active, TCS)

Sedentary activities, which are all activities involving long periods of sitting such as homework, watching television, playing on electronic games, texting, talking to friends are all sedentary activities that can mean there is no time left to take part in physical activities. Sedentary activities can take up large proportions of a student's week as the results from the questionnaire data showed. Whilst they are not barriers to PA per se they act as a competing time barrier when the student finds there is not enough time to be physically active in a day due to time spent engaged in sedentary activities. As demonstrated above, gaming is a was found to be a common reason for students becoming less active, although as the comments from students on the time they spend taking part in sedentary activities show there are a number of other reasons also:

> "I think I spend most time on my phone" (female, 10 y, mildly active, LS)
> "Going around with my mates or just watching TV" (female, 15 y, inactive, TCS.)
> "I only watch TV at night at about 9pm and watch 3 episodes and some really bad days when it's really boring I'm on the computer and Facebook all day" (male, 11 y, moderately active, WIP)
> "I sit there and play with my X-box all day and I am still skinny" (male, 11 y, inactive, LS)

The comment above regarding playing with X-box and still being skinny clearly demonstrates the **beliefs** that children receive in regard to the benefits of PA. The quotation suggests that the only reason to exercise is to lose weight or stay slim and that as the student is already skinny then exercising would be a bad thing and playing on the X-box (which is sedentary) is not detrimental to his health. Clearly the student above has not been educated on the many health benefits of leading a physically active lifestyle

Electronic games i.e., X-box and Play station were frequently cited as sedentary activities, especially by secondary students. Although to offset the amount of sedentary time that electronic games takes up some students had positive **attitudes** towards PA as they also find time to be active as well, as indicated by the quotations below:

> "I do both, I do X-box and football, they are like my main sports" (male, 11 y, highly active, LS.)
> Play boxing on the Play station (male, 10 y, mildly active, LS)
> "And on the TV and on the computer most of the day but sometimes I do go outside and do on my bike and I just…..yeah I go outside" (female, 10 y, mildly active, LS)
> "Sometimes I do try and do that because when I am on consoles my mum gives me a limited time and then I go into the park on the skate ramp" (boys, 11 y, inactive, LDS)

Furthermore, whilst students spending hours on mobile phones texting and messaging is usually sedentary and therefore can have a detrimental impact on

being physically active, it can also be that mobile phones and texting can have a positive effect on encouraging students to go outside and be active. Friends can text one another and ask them to meet them outside as one female in the study demonstrated:

> "We do text each other to say like "will you come out?" and "will you come round my house and then we'll go to the park? or something" (female, 10 y, mildly active, LS)
>
> "Sometimes they text you and say oh I'm coming down to the park tomorrow would you like to come and play some rounders. "Yes and some people text lots of people and say do you want to come swimming with me for an hour or two. My friends used to come and call for me and we would play out in the back garden. So there was certain people who would organise it and then they would have a list of friends and they would call them up and say would you like to come swimming or would you like to come to my house, or to the park and then if they couldn't come you ask someone else and then as we are now getting older we are doing a lot more. Like when I was 9 I only went out once a week and now I go out every day. Before you had to go with your parents and now you can go with your friends" (female, 11 y, mildly active, LDS)

Homework can be another barrier to PA in all school years but particularly as student's progress through into the higher years in secondary school, whereby more homework is given as suggested by the student comments below. Although, the quantitative research found no significant difference between age and homework:

> "No I think it's more time. Because we're doing a project at the moment which is due in on Tuesday and it's got to be……." (female, 10 y, mildly active, LS)
>
> "Lots of homework" (female, 10 y, mildly active, LS)
>
> "I reckon barriers are money and school work; that's probably my two main" (male, 15 y, highly active, TIV)

The teachers/head teachers were asked their opinion on the PA and health in general of children within schools. All those interviewed felt that the PA levels of children were quite poor, regardless of **age** and that children did not participate in sufficient to incur the relevant health benefits nor did they meet the current government guidelines. They also felt that PA was in decline, although it was suggested by the teachers that some children full engage in PA and do "loads" in a week whilst other's virtually do nothing. These ideas were characterised in a number of different ways as suggested by the comments below. Moreover, it was also observed by the researcher and from speaking to students that a good number of children, particularly in secondary schools are insufficiently active and thereby do not meet the government guidelines.

> "I don't think there are as many children in the middle area where its general fitness and they have got a suitable healthy lifestyle……I think it would be split if you surveyed the children in that particular school you would find that there are some that massively over exceeded an hour a day…….whereas there will be a number of children who literally only do their two hours PE lessons and that is all they do for the whole week" (female secondary supply PE teacher, Devon)
>
> "I'd say it's not great, I'd say it's on the decline, the activity levels and I'd say health is an increasing concern…….nowhere near [government guidelines] they get two one hour lessons a week, take away changing and admin time and if you stop watched their real activity and added it up I'd say no" (female Secondary PE teacher, TIV)
>
> "Generally I think it's really poor. I think that kids these days don't know what getting out of breath feels like and it comes as a bit of a surprise when they do so yes, generally I think it's pretty knaff" (female, secondary PE teacher, TCS)

In summary, this section addressed the **individual** themes that affect PA in school children. Based on the interviews with the students, teachers and the ethnographic data the evidence suggests that the majority of students do not engage in sufficient PA to meet government guidelines. However, it was also found that there are extremes of PA with some students engaging in far more PA

than the guidelines recommend. This section also addressed the individual changes in the activity levels of students since completing the questionnaire which appeared to be related to the **age** i.e This section suggests that changes in activity levels indicates that whilst the activity levels of the majority of participants remained the same as when they were interviewed a year earlier, a year is a long time in a child's life and therefore some activity levels had changed either increased and in some cases decreased. There were many varying reasons for the changes in activity levels. What was evident from the interviews is that as students move towards their teenage years' **age** is a facilitating factor to PA as older primary students (age 11 yr) are given more freedoms to exercise with their friends and for some students this creates an increase in PA. Due to personal family circumstances students no longer had to go to afterschool care clubs and could instead go out and be active with their friends. However, **age** is also a barrier to PA as students get older students find sedentary activities that compete with their time such as electronic gaming devices. Technology such as 'gaming' seemed to be a major conflicting sedentary activity that led to a decrease in activity levels, particularly as the students got older and was also affected by the **sex** of the students i.e., males. Gaming technology has also evolved with students able to socialise and play with their friends on line without ever leaving their home and it would seem that his has now become a **cultural norm** within society. With this in mind, students now they are older are able to individualise their free time away from the constraints of their parents, yet they can do this without leaving their bedroom and so it is acceptable for parents to leave students communicating on their computers. There are many competing **sedentary activities** that inhibit students from being physically active. Computer games are especially attractive to students with students being able to communicate over the computer direct with their friends whilst playing a computer game further exacerbates students from being active as it alleviates the need to move out of the chair to meet up with friends. However, a positive effect of mobile phone use is the ability to be able to arrange at a moment's notice to meet up with friends to partake of physical activities. Some students do both computer games and physical activities, which clearly is the way forward to encourage students to engage in physical activities as well as not totally outlawing sedentary activities. All the teachers interviewed felt that PA was of paramount importance

to the health and wellbeing of young people and that on the whole students did not partake in sufficient PA to meet government guidelines.

6.4 Social (Interpersonal)

Social support has been found to be a predicator of PA participation among students (Garcia et al., 1995; Wu & Pender, 2002). The quantitative data in section 5.4.1.2 revealed that 75% of students exercised with friends and 49% with family. Social support was seen as important and therefore beneficial to future social marketers to investigate social support in more depth. The analysis of the data revealed various themes that fall into the social (interpersonal) category of SEM. These are **parental; sibling; peers/friends, teachers, coaches and other influences/modelling and cultural norms/practice.** The social influences were different depending on the type of activity the students took part in. Such influences could be positive or negative based on factors such as peer activity level, support and socialising. For some students parents influenced all the types of PA the students took part in, whereas for others parents only influenced walking to school or out of school activities.

Family either **parents** or **siblings** were found to be a major reason for students being active with some students taking part in activities purely because family did or that they were encouraged by **family** as per the quotations below. **Family** was an important theme to arise from the data in particular **parental** support was a more important subtheme than **sibling,** although **siblings** played a more minor role, although **siblings** tended to be a barrier rather than a facilitator. The data from this study provided evidence of the influential role of parental support in the development of children's PA. The quantitative research outlined that parental influence was influential to student's activity participation after friends. Different types of parental support (or lack of parental support) were identified as influencing children's PA participation for example the activity level of the parents themselves and if they feel that PA is important for their children's health and wellbeing; types of child-rearing practices and family psychological characteristics (such as expectations and encouragement). There were countless quotations regarding the importance of parental support, some of those are shown below. The most encouraging and active parents tended to be those parents of students from the highly/moderately active groups:

> "Yeah my dad always used to take me out jogging when I was little and makes me run up hills with him because he's a lumberjack, and stuff" (male,15 y, moderately active, STJ)
> "Yeah I go jogging with my mum after school each day just because I want to be healthy and do more stuff. I think that she's quite like….she does help me along because if I was by myself I might end up walking it, so she does kind of like, help" (male,15 y, moderately active, STJ)
> "My dad does jogging every Saturday" (male, 11 y. highly active LDS)

Siblings were also found to be of encouragement to students taking part in activities and again the students with sibling support were in the more active groups as the examples suggest:

> "It's probably my brother more than any of them….because he does loads of sports and he just tells me…….because if we go down the skate park or something, he would try to get me to do it and he wouldn't stop until I actually do it" (male, 10 y. fairly active LS)
> "It's just mainly because my sister is active so I just compete with her it's just competing with my sister that makes me active……..yeah, I think I would continue to be active but probably not as much [if his sister stopped being active] (male, 13 y, highly active, STJ)
> "It's just I wanted to start to swim and enjoyed it and just carried on. My brother did it. He is better than me and he still is and he was because he started before me. I looked up to him (male, 15 y, highly active, STJ)

It was mainly found in the 'inactive' groups of students that the families did not encourage the students to be physically active and neither were the families active themselves. For example those parents didn't involve themselves in PA with their children, nor were they active themselves as the quotations below describes. Although, there were some parents in the 'inactive' groups who whilst

they didn't take part in sports themselves and act as role models they did spend time taking part in physical activities as a family:

> "I think my mum likes me to get, like…..she is pleased I am doing swimming now because she tried to persuade me" (female,13 y. inactive, TIV)
>
> "Sometimes they are a bit active, but they complain at me, "come on, get motivated" and so I have to get motivated because they keep telling me to keep going" (female, 14 y inactive, STJ)
>
> "Yeah my dad cycles to work every day…….Yeah I go out with my dad sometimes" (female, aged 10 y. mildly active LS)
>
> "When I have got football club, my grandad tells me what to do to get better, how to improve" (male, 11 highly active WIP)

Family responsibilities such as younger **siblings** to look after or parents not allowing the students to participate i.e., **parents** being too busy to take the students to the activity or lack of self-efficacy i.e., the student doesn't feel confident in taking part in physical activities were also barriers to PA, Whilst friends can be a source of encouragement to taking part in physical activities, they can also be a barrier if they don't enjoy PA:

> "Yes I can't always do things…….yes because basically I usually go swimming with either one or my parents but my mum she can't go swimming as often so it's quite difficult" (female, 11 y, moderately active, LDS)
>
> "If there were afterschool clubs it would depend on the times because I can't come to school late because my mum won't let me" (female, 11 y, inactive, WIP)
>
> "I think it depends on what my mum is doing because sometimes I'll be asked to stay home because I have a 5 and an 8 year old brother and then I have an 11 year old sister, it sort of depends on what's happening" (male, 14 y, moderately active, TIV)

Friends/Peers was found to be a theme of great importance among the research. Again this influence could either have a positive or a negative effect on the participation of students. Pupils who actively commuted to school tended to do so with friends and the social benefit was a strong motivator. Likewise,

walking was often a consequence of being with friends and was reported to be more enjoyable with friends. Socialising was the main reason given for students walking to school with their friends. **Friends** was a recurring theme throughout the focus groups and were important throughout the school day, before school and after school as illustrated below to socialise with **friends** and make new **friends** was given as to being active generally:

> "I think it give you time to socialise with friends" (female, 10 y, mildly active, LS)
>
> "…..I believe that I have made many friends in PE "(female, 9 y, moderately active, WIP)

For some students walking to school was a **social** experience, in other words it was an opportunity for students to meet up with their **friends** and talk with one and other, discuss and plan the day ahead prior to the school opening. As illustrated below by one student who could have got a lift to school, the choice was made to walk to school so that he could catch up with his **friends**. The other students in the group agreed that this was the reason that they walked to school:

> "As well you get to chat with your mates and have a catch up" (male, 14 y, highly active, TCS)

Social support i.e., **friends** at school had an influential impact on the PA levels of the students during break times. As the quotations below demonstrate if friends are sat talking then other friends will do the same, likewise if a friend was physically active during lunch times then the friend would follow. Therefore the dominance of one friend will impact on the PA levels of other friends either positively or negatively. Furthermore, the students felt that if their friends did more sporting activities at lunchtimes then they would be more likely to:

> "Break, these days, it's a bit more like you talk and…. I don't do anything because we sit down in the refectory and just….." (female, 13 y, inactives, TIV)
>
> "I suppose, because if they, like, go and do something, if they want to go and do something you can, like, follow them" (female, 13 y, inactives, TIV)

> "I suppose, because if they, like go and do something, if they want to go and do something you can, like, follow them" (female, 13 y, inactive, TIV)

Friends was also a theme to emerge in the students taking part in afterschool clubs in the secondary schools and friends played a greater impact on students taking part in afterschool clubs than primary school children as illustrated by the quotations below:

> "I was doing running club after school with the school but one of the reasons why I didn't carry on with it was because my friends weren't doing it. There were some people that I didn't know and "I tried to encourage one of my friends……they didn't want to" (male,15 y, highly active, TIV)
>
> "I did go to the gym but then stopped going because I felt really self-conscious because at the time I was supposed to go with my friends but then something happened and I ended up going by myself and I just felt really self-conscious because I was the youngest there and everyone was in their own groups and I was just like by myself so I stopped going" (female, 13 y, inactive, TCS)

Friends also had an impact on whether or not students would take part in activities outside of the school environment and the quotations below are an example of this. A number of students felt that their friends had an impact on their activity and for some said that if their friends were more active that this would influence them to be more active and join in with them. A number of students spent time playing with friends in the **park** and the park was very much a subtheme to emerge from the data as PA involving socialising with friends:

> "Yeah, like if one of us was going to go or two of us, we'd end of all going and would have, like, a good time" (female, 13 y, inactive, TIV)
>
> "We always run away and then play at the **park**" (female, 10 y.highly active)

> “I went out with my friends on Sunday and I was hanging out with them, then I went swimming, we played football, I went scooting and then I went walking” (male, 11 y.highly active LS)
> “Sometimes, they ring me and say “do you want to come out down to the skate **parks**?” (male, 11 y.inactive LS)
> “If they were doing sport then I would probably go and do sport with them aswell” (male, 11 y, mildy inactive, LS.)

However, **friends** could also negatively impact on a student’s PA participation; as if a student’s **friends** were doing something other than PA then the student may choose to go with the friend instead of being active. Likewise some students did not have the **self-efficacy** to try new activities on their own. Those with greater self-efficacy were more likely to attend activities alone and would not be prevented from attending due to their friends wanting to do other things as the comments below suggest. The students with the greatest self-efficacy who said they would be most likely to attend new activities alone were those students in the ‘’highly active’ and ‘moderately active’ groups. Those with greater self-efficacy were prepared to attend alone:

> “I went to athletics but my friends didn’t go” (female,11 y, highly active, LDS.)
> “I probably would go, but I’d probably, like, try and get someone else to go with me if it was the first time. But, like, if I’d gone before, then I’d go by myself” (female, 14 y, mildly active, TIV)
> “Yeah, I would be pretty confident because I like to do something different and I am always up for learning something new” (male,15 y, highly active, TIV)
> “Yeah, because in a way it improves your social perspective, it makes you better at socialising. Whereas if you stay in a group of friends, the same group of friends all the time, you are not going to be very good when it comes to, like, new people. So that can help” (male, aged15 y, highly active, STJ)

The students were also asked how confident they would be to try something new and again for some they would only contemplate attending a new activity if their friends were also attending:

> "Erm, sometimes I go over to the gym with my friends but if they don't go I probably won't go because it's not as fun and I won't enjoy it as much" (male, 15 y highly active, TIV)
> "Well it depends what it is because there are people there that I am not too comfortable around I do like doing sports where my friends are I find it a lot more fun" (female, 11 y.moderately active WIP)
> "If it's a club that the school have made after school, then I would do it with a friend" (female, 8 y.moderately active LS)

Peers were found to be importance as a facilitator to PA in one of the primary schools (LDS), this school have a scheme whereby they train the older children (aged 10 and 11 y.) **(peers)** to become playground leaders to help encourage the younger children to be physically active and in particular to encourage children stood around on their own to join in with group activities. An example of this is quoted below:

> "there are also sports leaders which help organise sports and games, yes and its fun too, we have been them" (female, 11 y, fairly active, LS)
> "we have like young leaders to help sort out games for the year threes" (male,11 y,highly active, LS).
> "Let's say their friend wasn't there today and they didn't have anyone to play with they could come and join us (female,11 y, mildly active, LS)

Overall, it was suggested that the biggest influence to students in doing physical activities out of **family friends** and **teachers/coaches** was their **friends** as the comments infer. The quantitative research also found **friends** to be the biggest influence over students being active and therefore the qualitative statements corroborate this:

> "Erm, yeah probably friends. Like, if I didn't have my friends playing in the same team as me, then probably, then obviously…yeah the friends I'd say" (female,13 y, highly active, TIV)

> "Yeah, I'd say my friends as well, because I play with a lot of my friends in football. So yeah, they just, like, encourage you to play with them, which is a bonus" (male, 14 y, highly active, TIV.)
> "Yeah most of my friends are from football team and I have made friends with a football team as well, so….." (male,15 y, highly active, TIV)

Teachers and coaches were not found to be the most encouraging in engaging students in PA in the quantitative research. However teachers were found to be encouraging with some students. Furthermore students suggested that they were more likely to join extra-curricular activities if they were encouraged by **coaches** and **teachers** as per the student below:

> "I joined the netball club because of the teachers saying, "Oh yeah, you are good at it, come and join us" (female, 13 y, inactive, TIV)
> "Because the coach gives you a text about training or about the match on the weekend and stuff like that, if he didn't send that text, you probably wouldn't be up for it as you would" (male, 15 y, highly active, TIV)
> "At my karate club that I am going to now the teacher you have to twist your knees to get certain kicks and the teacher shows you little tricks to do it and she really encourages me" (female, 11 y.moderately active WIP)

The boys in one of the highly active groups were asked if having role models in school either **coaches** and **PE teachers** made a difference to them but they felt that this was unimportant. It was observed that boys in the highly active group tend to have high levels of **self-efficacy** and therefore role models are not a necessary in them choosing to engage in PA as opposed to the least active groups who have lower levels of **self-efficacy** and therefore require greater encouragement to participate.

In primary school not having good role models in **teachers and coaches** was a theme of importance to come out of the research, in that they rarely have the staff

with the expertise of effectively delivering PA. This was validated by the ethnography and also by the students themselves:

> "We don't really have a PE teacher, we do PE with our normal class teacher and sometimes the class is mixed together so there are two classes doing PE together" (all the group of females, 11 y, moderately active, LDS)
>
> "Yes we have our class teacher, is our PE teacher really" (male,11 y, inactive, LDS)
>
> "We don't have one, our class teachers are our PE teachers" (female, 10 y, moderately active, LDS)

Regardless of the **PE teacher** being a specialist teacher or not, it was found that the PE teachers could have a positive effect on the PE experience of the students albeit in either a positive or negative way which was reflected in the student comments and when the opposite is true the students would be less bothered about engaging in PA. It was agreed by the students that having a good supportive **teacher**, somebody very encouraging helped students to be active as the comments suggest:

> "They help you to learn new skills and persuade you to be more active" (female, 10 y, highly active, WIP)
>
> "On Friday we have a different one and she really fun [teacher]……she's got like her own kids as well and she is really fun and sporty…….she never makes you do stuff…….she has lots of patience" (female, 8 y, inactives, LS)
>
> "Persuasive and fun that she's like……you want to do it, you want to have a go at it" (female,11 y, highly active, WIP)
>
> "My reasons are I think PE is definitely the way your teacher or coach teaches you. A few years ago when I was in year 3 I couldn't kick a ball to save my life and now I'm in year 6 and I play for Exeter City" (male, 11 y, moderately active, WIP)

Receiving praise of recognition from the teacher appeared to contribute to the student's enjoyment in PE and also encouraged the students to try new activities that they would otherwise be reluctant to participate in. The students felt that when the teacher was persuasive in a positive way the students found it so much

more fun. Likewise the students also felt that when the teacher wasn't active in the class i.e., joining in with lessons or even demonstrating that this wasn't conducive to being a positive role model to the students and this did not help the students receive a positive experience of their PE lesson:

> "And also out substitute teacher, which is his wife, but she goes on and on and on and on and you don't get to try it yourself" (female, 10 y, moderately active, LS)
>
> "Yeah [teacher] he usually just gets u to do it. He doesn't normally demonstrate it, he gets someone else to do it for him" (female,10 y, mildly active,LS)
>
> "…..with [teacher], he teaches boys' stuff instead of girls' stuff" (female, 10 y, unactives, LS)
>
> "The teachers just stand there and tell everyone what to do, but they barely even demonstrate it and when they do they would tell us to sprint and then they would jog it really slowly" (male, 14 y, highly active, TCS.)

As the quotations suggest **teachers** who spent the lesson constantly stopping the students and talking to them the whole lesson also gave a negative experience to the students and this also meant that they were not being active during the PE lesson which then does not help meet the government guidelines for the amount of PA a student should be doing every day.

As with primary school children the **teacher** in secondary schools can also impact on a student's enjoyment of a PE lesson. It is perhaps one of the few lessons in school where the teacher can have an impact on the future PA participation of a student. For some students a negative experience in PE can prevent a student from participating in PA in the future. However, a positive experience in PE can promote adherence to PA by leaving a positive image of PA on the student. Secondary students in particular felt that it was important to be able to have a laugh with the PE teacher which in turn made the lessons more fun. In school observations the rapport PE teachers have with students is often very different to that of other teachers, an example of this is that PE teachers are very often heads of year due to their ability to be able to connect with the most

difficult of students. Comments made by the students illustrate the feelings students have towards PE teachers in secondary schools:

> "[Teacher] is like the best PE teacher ever……the PE teachers in our school are pretty decent……It's better because they know how to have a laugh……they are not like really strict" (male, 14 y, moderately active, TCS)
>
> "In classes, if someone is talking, they'll tell them to come over and join in" (female, 15 y, moderately active, TIV)

Alternatively some students felt that teachers favour certain students and therefore cannot be discouraging to some students as the comments illustrate.

> "Teachers should be more encouraging with students, sometimes they kind of put you off" (female, 15 y, moderately active, STJ)
>
> "And also it's unfair because they pick a few students in the class and they only focus on those students and they don't really care about the other people" (female,15 y, moderately active, STJ)
>
> "In my public services lesson we were all playing tennis and the teacher went and played with the boys and the girls that are good at tennis and then just left us to like not even try or anything" (female,15 y, moderately active, STJ)

There were also other reasons given why students felt that **teachers** negatively affected PE lessons. Some students if they wanted to engage in PE but were in a class of students who continually messed around struggled to get an active, productive lesson as the comments from the student below suggest, which if they had been in a class where they had chosen the activity they would be less likely to mess around as the example below demonstrates:

> "I hate them because I like sport and then there are people in the PE lessons that don't care about it and just mess about and you just spend the whole lesson watching those that mess about get told off" (male, 14 y, highly active, TCS)
>
> "My teacher doesn't really…..if the boys mess around in class she just ignores them and lets them carry on which doesn't exactly……and then she doesn't control the class when we get

> into an activity, she just stands there" (female, 15 y, moderately active, TIV)
>
> "Yeah I can do it, when I do PE I just want to get out there and have a good…..try and get as many……as long as I can into the game, not mess about before and run when she's talking, whatever, for ages" (male, aged 15 y, highly active, TIV.)

Students in both primary secondary schools also felt that when they were engaging in team sports there was too much emphasis on the **teacher** spending the majority of the lesson teaching skills and the rules of the game (some rules are very complex). This involves being talked to by the teacher, practising the skill and then being talked to again by the teacher, which meant that in some cases the students were fairly inactive for long periods of time and then were given insufficient time to play the game. This is also in part due to **individual school policies.** However, the overall teaching of the lesson to some degree has to be the responsibility of the teacher and students see the **teacher** as the barrier to their PA participation not the **individual school policies** and it is for this reason the results of this have been placed in the **social support (interpersonal)** section and not the **policy** section. Whilst it is accepted that there has to be some skill learning lessons, it was also felt by the students that the majority of the lesson should focus on game playing, which in turn brought a greater enjoyment of the game. Throughout the ethnography this was something that was brought to the researcher time and time again:

> "It's like the same because sometimes they concentrate on the rules instead of enjoying it" (female, 14 y, mildly active, TCS)
>
> "And then after that, talk about it, stop the game and then just talk about it again. You get confused and you just want to get on with the game" (Male, 15 y, highly active, TIV.)
>
> "I would rather just have, like, less teacher talking, more of us playing" (male, 11 y moderately active, LS.)
>
> "PE is a waste of time, I can't see the point in doing it. We spend 20 in total getting changed. The teachers spend far too long talking telling you what to do. I wish we could choose what we do, I like badminton and swimming and I would choose these all

> the time. The games have too many rules, they need to be made simple (female, 14 y, inactive, TIV)

It was felt by the teachers in all the schools that **teachers** should present themselves as good role models for the students. Observations also revealed that the teacher is of paramount importance to the enjoyment of the activities by the students. PE is unique in that it is one subject that can potentially put a student off from partaking in future PA during adulthood thereby affecting the health and wellbeing of the student. Moreover, the ethnographic observations found that the teacher plays a role in setting a good example to the students by showing that they live a healthy lifestyle as suggested in the comments below:

> "Yes I think positive role models are really essential because to have someone in a position where they are trying to encourage or coheres students into doing something, it seems slightly hypocritical and also a bit backwards to have someone that's overweight or slightly less active that what they are doing. I think that anything that is expected of the students the teachers should be able to do to a degree. Obviously certain students excel in certain things but I think that any teacher should have the responsibility to be able to every activity to a suitable standard (female, secondary supply PE teacher, Devon)
>
> "I definitely feel that that's a really positive thing and five times a year there are sporting activities that are put out with school teams made up of staff and there was a staff football and sixth form match where the sixth form played the staff and there was a lot of lower school students that came out to watch this and I think the respect and admiration gained by doing those activities regularly with different members of staff and different gendered staff worked really well in terms of the overall ethos of the school and getting a more positive attitude towards activities and also the school staff as a community sort of" (female, secondary supply PE teacher, Devon)
>
> "Yes, are there role models yes some are good role models and some aren't. Strangely enough I've been thinking about this not just in terms of, yes mainly in terms of PE actually, if children see

> staff that are clearly overweight and unfit what message does that give. I think it does, it counts you have to walk the talk, you can't say one thing and do another and interesting now we have got a gym lots of our staff are taking advantage of that as its open to them free in a morning and up until 5.30 and we have a couple of classes each week both in the mornings and in the afternoons where staff and students are there" (male, secondary head teacher, TCS)

Furthermore in regard to role models in primary schools the question was posed to the teachers on importance of having a specialist PE teacher taking the PE lessons as opposed to the class teacher, the mixed responses are detailed below:

> "We are lucky that we have [a PE specialist] but my last school was a small school and if I hadn't been a PE specialist then there would have been no good quality teaching. For a small school it's a bit easier because you can write a PE scheme of work and people are up for it. You can't always work like that. The school's sports partnership [now folded] was ideal, it was a fully funded, good quality approach in PE" (male, primary head teacher, LS)
>
> "Yeah [to having a PE specialist]. When I first started here I did a bit of that and I still occasionally do a little bit of that, I was covering an NQT class and taking their PE and the NQT said to me they hadn't had enough training. They really didn't get enough training in how to take a PE class and it was a really good opportunity for me to do more PE, someone who loves teaching PE and for them to experience a bit of PE in their first years. I think specialist PE teaching would be really good in a primary, particularly the junior primary school. Ideally, you might think outside of the box and have that teacher who then takes the school's sports after school and if you're an academy say let's have them employed from lunch time to five o' clock to do PE in the afternoons and the clubs after school and they co-ordinate the bits and pieces to do with that. That would be a

> really good way forward for PE in primary schools" (male, primary, deputy head teacher, WIP)
>
> "We have a specialist that comes in two days a week and he was a School Sports co-ordinator, he's working with us and he's very good and there's some specialist PE teaching done by teachers as well so from my observations it's sufficient" (male, primary head teacher, LS)

In order to instil a physically active environment within schools it is important for **teachers** to keep getting the message across not just in PE lessons but throughout the school day and for teachers to activity engage children in a healthy dialect. It was thought that it was important to encourage a healthy lifestyle rather than just sports. Some schools did in fact talk about health and PA across the curriculum and the teachers felt it was important to promote healthy lifestyles as they suggest in the quotations:

> "In science we talk about an active and healthy life, part of the curriculum would be part of that then in PSHE and with that you're not talking about just exercise, diet comes into that and also you try get in the importance of sleep……that's very much within a phase of a curriculum, I think that would be great if it's part of the everyday reminders" (male, primary, deputy head teacher)
>
> "Yes and that includes diet and healthy lifestyles as well. I'm quite interested personally in activity, diet and things like that and kids are probably not getting advise about how to live healthily outside of school, so I think it's our responsibility" (male, secondary, head of PE).
>
> "You can't just teach the academic side, it's about lifestyle and if you feel healthier you'll come to school feeling better anyway. They all interlink. The lifestyle of teaching kids is important" (male, primary, class teacher)
>
> "Yeah, I think that's every body's job, if you work within education and public health. That's the unwritten rule. It's not just about being in PE lesson it's about your future life (female, secondary PE teacher)

It was also seen as important for the teachers to be role models to the students, not just in PE lessons as has already been mentioned under PE but throughout the school. It is important for teachers to promote their achievements in their own sports and demonstrate living a healthy lifestyle as demonstrated in the quotations below:

> "Yeah and you do need to model that as well. I think you can't do enough talking about being active yourself necessarily for children to see and then even those inactive children take an interest in that and with the triathlons and that a boy very inactive loved talking to me about it and if that in any way inspired him to do something then that's great" (male, primary deputy head teacher, WIP)
>
> "Yeah I think if we are all preaching about healthy lifestyles and it's not do as I say not as I do. Maybe if the other staff are active they could help with the after school activities and promote what they do. There are a few here actually. There is a guy who's not in PE but does a lot of running and cross county, and a ski-trip taken by someone outside of the department and there are a few staff that are involved but yeah it has got to be the whole school from the top" (female, secondary PE teacher, TIV)
>
> "Teacher, she plays hockey for Devon and England, and that is really important to celebrate that success and head's lunches for the rugby team or football team so they feel special. Making sure it's in the bulletin and the governors reports, so we report back significant PE events, anything of that nature" (female, secondary, deputy head teacher, TIV)
>
> "Yes we have members of staff who do the marathon and what's happened with some members of staff is they first came here for a DT job but now teach aspects of kickboxing and fitness in PE One of our English teachers also teaches dance because she has that passion and is a dancer herself so I think it's also important for the youngsters themselves to make connections. That comes through the Exmoor challenge when you get lots of staff volunteering to support with the walks and going on the

> walks with the young people. There is a lot of different staff across the school that would be involved in that sort of thing (female, secondary, deputy head teacher, TIV)

Of minor importance to PA **other influences/modelling** was a theme in the data analysis. However, this was not seen by the students to be of major significance to engaging them in PA. Ethnographic research revealed that some schools displayed Olympic athletes on their notice boards but students seemed to be passive in the effect they had on the students. Despite the data collection taking place during the Olympic year (2012) the majority of students did not feel that the Olympics had been an inspiration to them to be more active. Nor did they feel that the media encouraged them to be more active as per the comment below:

> "I have heard about the Olympics but I don't really watch it or take any notice of it" (male, 14 y, mildly active, STJ)

Although, in the minority there were a few that did feel that the Olympics and the media was an encouragement:

> "I think the Olympics are quite, like, you know, strong. It does encourage some people, I mean, stuff like football, it encourages, obviously boys and all that, boys stuff. I know the girls hockey that I saw on TV. That encouraged me and I did it. But seeing the Olympics…..quite good at it" (female, 14 y, mildly active, TIV)
>
> "Yeah that's a big encouragement for people" (female, 13 y, mildly active, TIV.)
>
> "When people are in primary school they might see, like pictures of Usain Bolt or a fast runner and say "I want to be like him" and they would, like, strive to be like him rather than a school career" (male,14 y, highly active, STJ)

In summary, the students with positive attitudes to PA, high levels of PA coupled with high levels of self-efficacy in this study displayed high levels of **parental** and **sibling** involvement. They referred to their parents providing encouragement and guiding them to take part in physical activities, together with taking and paying for them to attend physical activities. However, even in families where the

parents were not active themselves, **siblings** played a role in the encouragement of the students, especially if they themselves were active. However, even when the social support is there and the students are encouraged this still does not overcome the barriers of cost and transport. In contrast there was evidence of some lack of support and involvement on the part of the children who were either 'inactive' or with low levels of PA. **Friends** and **Peers** were found to be important to the PA of the students. Pupils who actively travelled to school tended to do so with **friends** and those students who played outside the home did so with **friends** With the exception of the students with high levels of **self-efficacy** students were more likely to engage in PA if they had a friend to attend with. This was of particularly importance with regard to **Peers** whereby playground peer mentors were successful in engaging students in PA who would otherwise not be doing so. Teachers **and coaches** are of key importance to the PA behaviour of students. Whilst for a few students sports stars are good role models, for the majority of students the people known to students play a greater role as role models and in encouraging students to participate in PA. Demonstrating to the students emerged from the research as being important and alongside that was ensuring that the teachers ensured that they did not talk too much during the lessons and allowed the students to engage in physical activity rather than just being talked at. There a few different ways in which teachers can be good role models in schools for example: sharing sporting achievements with the school; taking part in Duke of Edinburgh or school active residential and n schools where other subject specialists are taking afterschool clubs this clearly is giving the impression to the students that the school's staff are physically active and not just the PE teachers thus showing that you don't have to be 'sporty' to lead and benefit from a physically active lifestyle.

6.5 Physical Environment

Within the **physical environment** of the SEM, the themes of **natural environment** and **built environment** were found to be both facilitators and barriers to PA. For the **natural environment** the sub theme of **weather** was found. Many more themes emerged that are subthemes of the **built environment** and these were **cycling/walking facilities;** further subthemes of **walking bus, traffic, crossings; time; distance and cost; schools** with subthemes of **sports facilities; playground; active commuting facilities;**

health promoting; and the theme of **recreational facilities** with subthemes of **sports clubs; gyms; swimming pools.**

The **natural environment** in particularly the **weather** was a barrier to some children active cycling to school such as cycling and some children said that they would not cycle due to the extreme weather conditions that were experienced in the winter months. This also applied to being active generally as per the quotation below:

> "less because its currently winter now and I don't do a lot because I normally do wind surfing but it's too cold outside to windsurf (male, 14 y, moderately active, TCS)

Weather was a subtheme of natural environment that affected PA including walking to school; some students commented that the **weather** would put them off walking. Some students said they would be happy to walk for up to half an hour, whilst others said it would be the **weather** that would put them off from walking for half an hour. For children who lived further afield who walk to school **weather** (rain) was a barrier that stopped them from walking to school as illustrated in the quotation below:

> "If its pouring down with rain I might go in the bus because its rather far away for me" (female, 11 y, highly active, LDS)

Weather was one barrier that came up in discussion on a number of occasions during the focus group interviews and also during the ethnography. Some students, in particular females would not want to engage in PA if it was cold or raining and in fact may have a leave a negative image of PA if being forced to participate i.e., a PE lesson as the quotations suggest.

> "It's too cold now [Sept/Oct]" (male, 15 y, inactive, TCS)
>
> "It was fine in the gym that's because it's warm but outside it's too cold" (male, 15 y, inactive, TCS)
>
> "If they make us do netball and we have to go out in the freezing cold and we are not allowed jumpers then I don't like it" (female, 15 y, inactive, TCS)

> "Yeah I like it when it's sunny but then when it's wet I can do it inside" (female, 10 y, highly active, LS)
> "I just don't feel comfortable with it " (male, 15 y, inactive, TCS)
> "Sometimes the weather can change, if you want to go out when it's sunny and it's just started raining, that stops you" (female, 10 y, highly active, WIP)

For some 'highly active' and 'moderately active' students despite the diverse weather conditions, these groups of students who had higher levels of **self-efficacy** were able to overcome the weather barriers by exercising inside or just carrying on in the rain regardless as the quotations demonstrate:

> "I still go on bikes rides and I just put a raincoat" (female, 11 y, highly active, LDS)
> "I like the rain" (male, 11 y, highly active, LDS)
> When I'm out doing something I don't stop and go inside I just carry on" (female, 11 y, highly active, LDS)
> "If I am out with my friends then I don't really mind it because there's shelter everywhere" (male, 10 y, highly active, LS)
> "Yes, I have been down on the Astroturf when it has been hale stoning and snowing" (male, 11 y, moderately active, WIP)

Active travel is an important part of the PA of children and yet it was found that both the **built environment** in particular **cycling/walking facilities** impacted on children walking to school. Active travel can be incorporated into the daily lives of children and can range from 10 to 60 minutes of PA per day. Active travel for the purposes of this study is walking, cycling or scooting. The results of the questionnaire revealed that approximately 50% of children actively travelled to school and therefore it was important to explore active travel in more detail in the qualitative research.

Distance was one of the sub-themes that emerged from the theme of built environment and had an impact on children walking to school. Children who were very active and lived close to the school i.e., 5 minutes away all walked to school and said that they would also walk to secondary school. There were some students who genuinely did not live within active travelling distance of the

school and it is expected that these children would be driven or access public transport. There was also a perception from some children that they lived too far away from school to walk yet as the quotation illustrates this isn't always the case:

> "By car as I live quite far away" (female,11 y, moderately active, WIP)
> "I live further away than you and yet I walk to school" (male, 11 y, moderately active, WIP)
> "I live further away than you" (female, 9 y, fairly active, WIP)

One student was able to overcome not been able to walk to school due to the **distance** from school by getting dropped off at a friend's house and then walking from there to school. Groups were also asked about the how long they would be prepared to walk for. It was also felt that 2 miles was too far to walk to school by a few students and so they were driven to school. Even 1.5 miles was considered too far to walk by one student, nor would the student consider cycling to school. For some students they were prepared to walk to school a reasonable distance everyday as the quotations illustrate:

> "I walk to and from school every day, [How far away from school do you live] Erm quite far, [how long does it take you], because we speed walk it takes about 15 minutes" (male, 15 y, inactive, TCS)
> "I walk every day, I live like a mile and a quarter away or something, it does take quite a while as I walk by myself (female, 13 y, inactive, TCS)
> "Like I walk for half an hour because I live up the other end (male, 14 y, fairly active, TCS)
> "About 20 minutes and I walk" (male, 14 y, highly active, TCS)

Yet in another school one male was happy to walk 2 miles to school which took half an hour. In the same school students also said that they would be happy to walk 2 to 3 miles to school. Another student who currently got the free bus to school was considering cycling to school which would take approximately 45 minutes. Therefore the number of miles a student is prepared to walk to school clearly changes from individual to individual, what may seem a short distance to

one child is a long way to another. However, the fact that some children are prepared to walk at all is a positive step because at least they are walking.

Traffic was another subtheme of the built environment to emerge from the analysis. Some children were also not allowed to walk to school by their parents amidst fear that it was too dangerous to walk to school, i.e., that the roads are too busy and there wasn't a crossing lady to help crossing the roads. Other parental concerns for children walking home alone, was that of **'stranger danger'**. Although, parental concerns did not seem to be as great once the students went to secondary school, the students did say that they would be allowed to walk to school when they moved onto secondary school as illustrated below:

> "Because my mum says I am going to St Luke's but I don't want to St Luke's. If I do go to St Luke's I have to walk with my brothers to school" (male,10 y, mildly active, WIP)

Some children only walked to school certain days of the week as they were able to get a lift to school on the other days, even though they could walk every day. If they were offered a lift to school then they would take this option as illustrated in the comments below:

> "My mum has to go to work, so she goes to work straight after she drops us off. So she goes in the car" (female,11 y, moderately active, LS)
>
> "I take the car as my parents say it's a lot faster to get to school" (female, 15 y, inactive, STJ)
>
> "I drive to school, my mum brings me because she works here but I walk home"[lives 10 minutes away] (male, 14 y, moderately active, TCS)

Despite the quotations on not walking to school being from students in the moderately active groups, there were clearly a number of reasons given why the students didn't walk to school. For some they couldn't be bothered to walk to school, whilst some others were not knowledgeable on the benefits of walking to school. Though, there were some students whose family circumstances of parents working meant that it was easier for students to be driven to school.

Active travelling to school was very much dependent on the **distance** children lived from the school, the **time** it took to walk and the **age** of the students. Clearly for those children living in rural areas travelling by bus or car is the only practical way to travel to school. The children that lived close to the school i.e., 5 or 10 minutes' walk away generally walked to school. However, there were those children who could have walked to school but were unwilling to do so, reasons for this were that they really didn't want to and parents were happy to drive them to school. In other cases due to family circumstances i.e., parents driving to work it was convenient for parents to drop their children at school by car. Had the children from the younger age groups been interviewed this would most likely have been more prevalent that children were driven to school as some of the students mentioned that parents did not have **time** to walk children to school before going to work. The perception of many parents is that children should not walk to school either by themselves or with friends under the age of 10 with the feeling that **'stranger danger'** is a real threat. There were other older children who could have walked/cycled to school but that they perceived the **distance** too far.

The teachers were asked their opinion on walking/cycling to school and the main theme to emerge from the teachers' perspective was **built environment**; sub themes to emerge from the data were those of **age, distance** and **cycling/walking facilities.** The teachers felt that older age children from year 5/6 upwards should be allowed to walk to school without parents. The teachers did mention parental fears of **stranger danger** and **traffic** being perceived fears that many parents have towards students walking to schools although, local authorities did site crossing patrols and pelican crossings and 20mph zones near to schools together with zig zag lines in order to make roads safer near schools. All the teachers felt that where possible children should actively travel to school and that provision should be put in place to help children achieve some level of PA prior to commencing the school day. The teachers also suggested that some children live in close proximity to the school and yet are driven to school. These ideas were characterised in a number of different ways and the reflections of the teachers are detailed in the comments below:

> "I don't think you can put an age on it. I think it depends on where you live, what the roads are like, if they are sensible

enough to cope with that. Our rule at school is that they have to have passed on one of our bike riding tests and you can only do that when you are 10, then we will allow them to ride to school on their own with their parent's permission. Walking to school we try to give them baby steps to get there such as the walking bus led by two adults" (male, primary class teacher, LS)

"Last year we did a come to school survey and there was a minority of children who lived less than 500 metres away and were still coming to school by car and it's those children who aren't physically active who engage less with the PE programme" (male, primary head teacher, LS)

"It depends on age and the roads you need to cross…..I think encouraging walking to school and something like three miles you could cycle anyway. As a parent you try and demonstrate that yourself and cycle to begin with if it's a nice day. It's working on the parents, trying to encourage parents to walk but I think you need a parental role model" (male, primary class teacher, LS)

"Yes, obviously you read the press and there are lots of dangers involved in walking and cycling to school but actually I think there are lots of benefits……I think they should walk at age 10 or 11…..we are thinking of introducing a walking bus in the partnership primary school (male, secondary head teacher, TCS)

The **school** was a highly important subtheme of the **built environment** that the analysis uncovered. One further subtheme to arise from the analysis was **active commuting facilities.** As well as walking to school active travel also includes cycling and scooting which schools can focus on as an alternative to walking or being driven to school. The ethnography revealed that a lot of schools did have lockable and lit cycle sheds and this was of importance to students cycling to school. Where bike sheds were not monitored this limited the number of students cycling as some students spoke of their bikes being damaged in unlocked sheds. Furthermore, offering cycling proficiency or 'bikeability' to improve road safety was seen as important to encourage cycling, however in the majority of schools observed this was not implemented. The comments below highlight how some

schools have encouraged cycling and some of the problems associated with cycling to school:

> "Yeah, this has been a big thing. We are looking at a bikeability thing and re-build was going to have cycle paths and things built in. The problem here is the bike sheds are not secure enough. Also they need big enough lockers so that as soon as there is wind or rain and they have to wrap up a bit more they have somewhere to store that wet weather gear….cycling is difficult enough in winter but there's a lot more we could do" (male, secondary head of PE TIV)
>
> ."…….I think we could do more to encourage cycling, maybe improve our bike lock-ups and that sort of thing. We have bikeability coming in and one of our caretakers is very keen to do a bikeability club" (female, secondary deputy head teacher, TIV)
>
> "Walking buses are good, we don't use those and we do promote cycling to school quite a lot. There are quite often a "bike to school" with bike sheds….yes, so children can bring their bikes in and it gets locked at about 9 O'clock and it's not open before 3 so the bikes are safe. We do have bikers breakfast at least once a term where we get local bike shops to come in and we do an event out on the playground before school, breakfast is laid on, we also give away reflectors…..it is shocking the number of children that come from such a short distance in a car and that's parents laziness as well" (male, primary deputy head teacher, WIP)

Teachers felt that schools could and should do more to encourage active travel to school and that on the whole they didn't do enough. Some schools had already been proactive in attempting to encourage students to actively travel to school as the quotations suggest, although they had found limited results and greater education of the parents was needed in primary schools:

> "I could talk to you for hours about what we've done to encourage cycling. We've had no car days, we've had class competitions to see who could get the most points for kids who walk so I have families who walk from the other side of town to

> here every single day and we've got some kids who live 500 yards away and get the car so we have a whole range and have done a whole on that…..we have encouraged them to park around the corner and walk that last but they just won't do it….I think if they live not too far away and they have an older brother or sister there is no reason why they can't walk to school when they are 5" (male, primary head teacher, LS)
>
> "We do as part of the transition we encourage all primary schools in the town to bring their trial walk and cycle before they start so their class teachers bring them down and some of them walk and some of them cycle so they do know which the best ways to access the school are. (female, secondary deputy head teacher, TIV)

Moreover, actively travelling to school should involve the staff as well as the children, a whole school approach to social marketing would incorporate staff into any campaign and therefore the narratives given below on staff travelling to school are important:

> "Not anywhere near as many and the staff as well [actively travel to school]. I've got three members of my department who literally live within half a mile/a mile of the school and they all drive……..yeah it's ridiculous, it's a joke. We often moan about parking here and I'd love to do a survey of how many people who drive live within two miles of the school and that's walkable. I know a member of SLT (senior leadership team) who lives less than 10 minutes' walk……I know people who will argue they do loads of stuff outside of school so I don't have to but I think that's part of the modelling. If they see you driving in even though you are really active and just live over there it's not a good role model" (male, secondary head of PE, TIV)

Within the theme **school** there were also the sub themes of **playground,** further subtheme **play equipment**, **sports facilities/clubs** further subtheme **physical activities and health promotion** that affected barriers and facilitators within school PA. The theme of **playground** was found to be of great importance

during break times. Break times or play times as they are frequently called in primary school is the only time some children get to be active in a day. Break times incorporate the morning break time and also lunch times. Although in key stage 1 of primary school (which this research did not cover) children frequently have an afternoon break also. Break times are usually for 15 or 20 minutes in both primary and secondary schools and lunch times are usually for 1 hour in primary schools but in secondary schools lunch times can be as short as 30 minutes and as long as 1 hour.

The ethnographic observations found that break times varied across the schools with some schools providing activities for the students and play equipment in the **playground.** As confirmed by the deputy head of a primary school:

> "We have buckets of equipment that they'll bring out into the play area and some play leaders will get something out for that day and people can just join in. Unfortunately, we have spent a lot of money on different equipment over the years and the property is not always respected and when it's not their own and that's expensive to keep replacing……no and fair play to places like Sainsbury's and Tesco that have those vouchers as that's really helped in being able to keep the sustainability of some of that equipment is often done through some of those vouchers and there's no way it could be done through the schools finances" (male, primary, deputy head teacher, WIP)

The ethnographic enquiry found that in primary schools the majority of **playgrounds** now have outdoor **play equipment** such as a climbing frame, and trim trail. Also a number of schools loan out **play equipment** to students, this mainly occurred in primary schools but also occurred in secondary schools as well. In primary schools where equipment was loaned out, students seemed to be more active in the **playground** than those where no equipment was loaned out to the students. In secondary schools giving out **play equipment** led to students being active that would otherwise be inactive in the **playground.** In secondary schools usually the school badge was exchanged for equipment and then given back when the students handed the equipment back. In one secondary school, giving out the equipment was successfully led by year 11s and

sixth formers. Whilst in other schools children had to entertain themselves by bringing their own **play equipment** (such as a football or just running around the playground). An example of this is mentioned detailed below:

> "You have basketball during lunchtimes and you have tennis, you can bring a tennis racket in and ask for tennis rackets and tennis balls and you can play on the tennis court. There's quite a range of sports you can do if you want to do it. You have to put yourself out there to do it: if you don't then they are not going to bother with you and if you don't want to do sport" (male, 14 yr, moderately active, STJ)
>
> "You have to bring your own ball if you want to play football" (male, 13 y, inactive, TIV)

Schools also varied in the amount of space the children had to play in, with some schools providing designated spaces for different age groups of children. In some schools the problem of space related to the fact that when the fields are dry in the summer the children have plenty of space but when they are 'out of bounds' due to being excessively wet there is little to do as illustrated below in response to the question regarding plenty of space.

> "no I wouldn't say we have. The other field is pretty good in summer when dry but then we don't get much of a summer. So we'll have a kick around at lunchtimes and break times when it's in the summer but if it's not then you have got nothing to do" (male, 15 y, highly active, TIV).
>
> "There is not enough space to play football anyway because you are only allowed on the field in the summer and everywhere else is just glass (surrounded by) and you get told off for kicking the ball (male, 14 y, highly active, TCS).
>
> "I play football down the bottom on the west lawn and because they have put new containers there we are not even supposed to play football in case we damage anything" (male, 14 y, highly active, TCS).

Students were also not allowed to use the **sports facilities** such as sports hall at lunchtimes as these were locked but said that they needed the space and would

definitely use them if they were available. The students in this particular secondary school and in other secondary schools also felt that it was a good idea to be able to loan out equipment in exchange for something i.e., keys or mobile phone but felt that their school would not agree to it as illustrated below:

> "Yes they could like up on the top field get a football or two out so that people could have a kick about and stuff, [even if you had to hand in your keys to borrow a football] yes, that would be good" (male, 14 y, mildly active, TCS)

The students therefore either played a match if someone brought in a football or played dodgeball on the field when the weather permitted as suggested by the students. One school were lucky that they had a cage they were allowed to use during lunch times:

> "Well, I go to the cage just next door to us here and if my friends have a football, we'll just play a match or something like that" (male, 13 y, inactive, TIV)
>
> "Quite a few of the males do that, they'll go on the field and do like, dodgeball or something even, won't they" (female aged 13 y.)

Sports facilities/clubs was deemed to be of great importance as both a barrier and facilitator to PA in schools. Afterschool clubs should be a facilitator to encouraging PA, however on analysis of the data it was found that after school clubs were not facilitating PA in a number of schools. In one of the primary schools they offered cricket club, running club, hockey club, basketball club (winter term only) and athletics (summer term) as **clubs** A number of children engaged in the **physical activities** in this particular primary school. Where one afterschool club finished for the season the students in this school moved into another club, so it clearly didn't matter as much what the activity was they still found an activity to do. Although one student didn't engage in afterschool activities this was due to the student being too busy for afterschool activities due to taking part in activities outside school as per the quotation below:

> "It's just I'm a bit busy after school [so you are busy after school, what other things do you do afterschool then] swimming lessons and scouts (female, 11 y, highly active, LDS)

A number of students also felt that there were enough clubs at the school and that afterschool **clubs,** along with encouragement in lessons were also a way of encouraging PA participation in a sport that they hadn't tried before, an example of this is stated below:

> "……..like if we have a go at it at school then we decide oh I might like to do this then like a club turns up about it, yes like hockey club, and sometimes like you think oh there is a club on this and I haven't done it before but I might like to try that because you have already done it and he has given you that encouragement" (female, 11 y, mildly active, LDS)
>
> "Because it's fun and I do it with my friends and I get more fit than just hanging with my friends" (female, 10 y, mildly active, LS)

Whilst afterschool **clubs** offered encouragement to engage in different sports, some of the students at the primary schools felt that the school did not offer many sports; any clubs that the students found interesting; that the clubs were only available for specific age groups or the clubs had stopped as suggested by the comments detailed in the statements below:

> "I didn't used to do clubs but stopped because I am not very fond of the clubs they put on. I like to spend my free time doing stuff that isn't competitive" (female 11 y, moderately active, LDS)
>
> "Because all the afterschool clubs I want to go to are for, like, an older age group or they are full" (female 8 y, inactive, LS)
>
> "loads have been on but it's at school time and they are all like stuff that I don't want to do. They are mostly males stuff, like football and stuff" (female, 10 y, moderately active, LS)
>
> "Because there's not that many clubs anymore, they've been doing like different things and there's hardly any clubs to go to" (female 11 y, inactive, WIP)

There was a perception among the students that afterschool clubs were for younger children and now the students were older the clubs did not cater for their age group. This was the case with the inactive primary school groups of children

who used to do afterschool activities such as gymnastics, basketball, netball, but no longer take part in any afterschool activities. In discussing the activities students were interested in it was found that dance, Zumba and social cycling met with the student's approval in the inactive groups. Likewise with the 'highly active' groups the female students said that they would like to have dance and Zumba and health related fitness type clubs that cover dance and Zumba, skipping, running, circuits and rollerblading as suggested in their comments. In regard to a rollerblading club this idea seemed to appeal to the students with students commenting:

> "I wouldn't mind rollerblading" (female 10 y, highly active, WIP)
> "That would be well cool" [rollerblading] (female 10 y, mildly active, LS)
> "Like skipping and running" (male 11 y, highly active, WIP)
> "Like an obstacle course" (female 11 y, highly active, WIP)
> "Yeah so you could have like, skipping, tennis, rounders, bench ball. You could have all different ones and you could just go "I want to go here to here" and then they can go there and then they can go there, it would be really fun" (female 10 y, highly active, WIP)

A subtheme of **sports facilities/clubs** were **physical activities.** Having a variety of different physical activities on offer seems to appeal to all the groups of students. Not having a variety of **physical activities** on offer at afterschool clubs could therefore be barriers to PA and affect the two least active groups of students who therefore do not have the self-efficacy to go out and try a new sport outside of school and moreover particularly for mildly active and inactive students it becomes important for schools to offer a variety of different sports to suit the needs of all students.

Having a range **physical activities** on offer can therefore be facilitators to engaging in PA. The students in all groups said that they would like a cricket club, cycling club, badminton club, gymnastics club, and an afterschool swimming club and furthermore, suggested having a climbing club, roller blading and outdoor adventure type clubs. An afterschool dodgeball club appealed to the students as with dodgeball generally in schools, but particularly with the older

children. The students even suggested going to the dry ski slope as an alternative sport that they would enjoy, although they felt that this would be unaffordable for both the school and parents. A further point that was mentioned by the students was that it was important to ensure that the afterschool activities were not like a PE lesson i.e., taught like a PE lesson or as one student said “and you don’t get told off much when you are having fun”. Clearly for the least active student’s afterschool activities need to have an emphasis on being fun as well as being active.

Overall, students in both active groups engaged in after school activity groups. Whereas most students in the least active groups generally did not attend afterschool clubs, this was due to other commitments such as other out of school physical activities, predominantly it was due to lack of choice of **physical activities** which in turn meant that the students did not have the interest to take part in them. Although, one teacher said that they also do non-competitive sporting clubs as that’s what the curriculum lacked such as ‘Fun in a Field’, which is a summer fun activity. It was felt both by students and teachers that clubs should be far more relaxed without the time constraints of having to teach particular skills in readiness for the next lesson, both of which led to enjoyment by the students.

In secondary schools **sports facilities/clubs** was a theme derived from the data analysis that was a facilitator to some students being physically active. Although for some students they were a barrier to PA as physical activities across secondary schools generally catered for the competitive students by offering sports that led to training for school teams. Typical sports played afterschool in secondary schools are football, rugby, netball and hockey. However, some schools did offer non-competitive and fun activities also such as the fitness suite and dodgeball club. In a number of schools the students played football as well as other sports as an afterschool activity as the quotations below illustrate:

> “I play football” (male,15 y, highly active, TIV)
>
> “I do hockey, I used to do badminton, but there’s cricket and rugby. There was a tennis club as well once wasn’t there?” (male, 15 y, highly active, STJ)

In secondary schools there were a number of students that did not take part in any **clubs** and they came from activity groups across the spectrum from the 'very active' to the 'inactive'. Lack of interest, boredom and not having any activities of interest or activities stopping were common reasons given as barriers to afterschool clubs as outlined by the selected responses below:

> "I did go to contact rugby for a bit but it got a bit boring because there was hardly any people there" (female, 15 y, moderately active, TIV)
>
> "There's nothing that really interests me, because I don't really like netball, I used to play netball for like two years but then bouncing a ball got a little bit boring, so" (female, 14 y, moderately active, TIV)
>
> "I don't like sports" (female, 14 y, mainly active, TIV)
>
> "No it's for the people who, like, stand out as really, really good sports people. They do specialised clubs for them" (male, 15 y, highly active, STJ)

It was suggested to the students that if there was a greater choice of **physical activities** on offer such as a dodgeball club, swimming club, cycling, Zumba or just generally different activities the students would be more likely to attend. For one school which is situated close to the beach a suggestion was made of having a school beach volleyball club in the summer. The majority agreed that they would and the students stipulated that clubs would need to be more fun as per the quotations below:

> "They need to be more fun than learning stuff" (female, 13 y, moderately active, TIV)
>
> "A bit more relaxed" (female 14 y, moderately active, TIV)
>
> "Yeah we sometimes do it in our PE lessons; I quite enjoy it [dodgeball] (female, 13 y, inactive, TIV)
>
> "I think there should be more things so we could choose what we want to do, like sport wise. There's some clubs that we don't want to go to, but we'd like to do other ones" (female,15 y, moderately active, STJ)

The students also felt that they were more active when it was fun because students were more likely to mess around if it wasn't fun and yet when they were having fun, they would just get on with the activity in hand.

The priorities for after school activities in secondary schools tended to focus on team competitive team sports. In particular, activities for the school team took priority over other non-school team activities. However secondary schools did try to offer what they could subject to staffing levels, however they did also feel that there should be a wider range of physical activities after school as is suggested below:

> "We offer as much as we can considering there is just two female members of staff so we do football, badminton, basketball, netball, there are all afterschool and a gym club in the fitness suite. At lunchtime we do dance, that's it at the moment….I actually think there is less for the boys on offer because what they will do is offer a football practice but they will send out three male teachers and it's just easier for them because they can separate it out" (female, secondary PE teacher, TCS)
>
> "Yes I definitely think we are very games based at this school and I'm trying to push a bit more dance. The only slot I have been given is lunch time. I think maybe a few more aesthetic things, even if it's like cheerleading or you know gymnastics with the apparatus. I think they would really enjoy that….but yes it's very games based because of the leagues that are set up in this county I think" (female, secondary, PE teacher, TCS)
>
> "There should be a wider range and more. There's not a lot, there's rugby, hockey and they run football teams but no activity after school. There's a gym club run by an outside agency. Nick does a dance club at lunch time and collector skills at rugby and that's it. My year 9s want to do gym but they don't want to go to the external club. Netball needs getting off the ground and it's hard because I only work Monday and Friday and nobody wants to do it on a Friday so I'm doing a netball tournament with the year 7s to get that off the ground because there are enough girls that want to play netball, it's just finding people and time slots.

> The kids would like a gym and be able to into Petroc [the college gym adjoining the school] and have a girls only session in there, they'd like that. I'm sure that would have a reasonable take up and then it's finding out what they want to do. Year 10 boys want basketball and they loved it, they were awful and rubbish but they absolutely loved it, they just want to run around with a ball for an hour. They are desperate for a basketball club but it's trying to run the clubs on the days they have kit so they have their kit otherwise, it's oh no I forgot my kit and then you have no one turning up and it doesn't happen (female, secondary PE teacher, TIV)

In schools that were rural where **transport** would be a problem for some students who would have problems getting home from school, as the school buses would have left, schools had a slightly longer school day to be able to accommodate after school clubs into the lunch time. This seemed to work quite well and in one particular school during the ethnography it was found that the activities were well attended, probably more so than if the activities had been put on after school. This could be because the students were still going home at the same time as everyone else and also it gave them something to do during the long lunch break, so it could be suggested that it was a recommended way of encouraging students into afterschool activities by having them on at lunchtimes. Another school whilst it put the majority of its activities on at lunchtime, did put a few on afterschool put provided a late bus to ensure the students were able to get home. Comments from one school are directed below.

> "Well there is quite a wide range of activities offered at lunch time in term of there is normally two clubs, one female and one male, every lunch time except a Friday. They get 45 minutes for lunch but we do modified activities, so we do badminton with shoes off, ties off, blazers off to minimise the time wasted for getting changed and the same with netball as long as they come in appropriate footwear. (female, secondary supply PE teacher, Devon)

The data has revealed that the after school activities are not as well attended as they could be. The students suggested that the lack of attendance was due to the poor variety of activities. Football seemed to be the most prevalent sports club in all schools primary and secondary alike. Secondary schools, especially the smaller ones struggle to offer the wide ranging after school clubs that appeal to all students from the competitive ones who want to compete for the school, to the ones who want to play team sports for pleasure and those that just want lifestyle exercise. The focus seemed to centre on competitive team sports due to the leagues that schools were involved in. Therefore this did not leave sufficient time or space on the after school curriculum for non-competitive sports and activities that encourage lifestyle PA amongst the least active or competitive students. Of considered importance by the students in making the decision to attend an afterschool club is that the students want a different experience from an afterschool club to that of lessons within school. The clubs have to have a relaxed more informal atmosphere so it doesn't feel like another lesson.

Health promoting was an important subtheme to arise from the data analysis. The teachers interviewed all agreed that schools should encourage students to be physically active and in fact could do more to ensure that students are active:

> "Generally speaking as an ex-PE teacher but still a PE teacher obviously I think it's very important, more than that maybe of paramount importance" (male, secondary, head teacher, TIV)
>
> "At our school we have tried to create an environment that's easy for the children to be active but I think we could certainly do more" (male, primary, head teacher, LS)

Whilst it was felt that schools tried to engage children in PA, there was to some extent a consensus of opinion that more could be done to encourage children to participate in more PA.

> "Not too good. I don't think they get a very good deal. I think there's probably not enough, I don't think there's enough emphasis on it because the problems we have with literacy and numeracy and things, PA tends to be shattered. There is also the element of getting the balance right between competition which is good for some kids and participation which is good for

other. I know there are kids that get taken to clubs every night and they do the football clubs after school and they are the minority (male, primary class teacher, LS)

"I think it's very important that young people are encouraged to participate in and have a healthy approach to exercise and sport and fitness….it's important in the current way that teenagers and young people operate that schools need to look at different ways to engage them in fitness and PA as oppose to some more the traditional aspect. It's about reaching those youngsters that don't exercise at all, making sure that they have at least some exercise during the week if this is their only form of exercise (female, secondary deputy head teacher, TIV)

"Generally I think it's pretty poor, if we look at just fitness levels, it's appalling. You get select groups who are very good, your team players and the odd person who's your gymnast or cross-country runner but for the majority…..I'd say pretty poor….we obviously can't fulfil [PA guidelines] inside the curriculum, we provide what we can extra curriculum wise but it's never going to be enough to provide that" (male, secondary head of PE, TIV)

"I think it's absolutely vital in school age grouping because that's when you create their lifestyles can create their attitudes which will exist throughout their adult life, so if they are not active in infant and junior schools by the time they get to secondary schools it's very hard to turn them around to become an active participant in sport. I think that there is a risk as well that children become too pigeon holed into one type of activity and they need a broad range of opportunities. (male, primary deputy head teacher, WIP)

Some schools were better than others at **health promoting** within the school, with notices put up on notice boards of the clubs that were available and also notices displayed of activities put on by other outside agencies and they felt it was a vital role of the school to promote events. However, some notice boards in school were very outdated and did not have a section of community based

physical activities. It was also suggested that teachers not just put events on a notice board but tell the students about it as the teacher below suggested:

> "We can hear all the clubs in the local area and post them which will miss kids so parents won't see it. If we badger the kids to do it they're more likely to badger their parents it might not be a nice thing but as an adult it's the right thing. You want them to be active and enjoy themselves. So schools are a massive place there we can get them engaged with these things" (male, primary class teacher)

Fundamentally the aim of the research is to ascertain the feasibility of schools adopting social marketing as a mode of encouraging PA among its students. It was therefore deemed appropriate to gage the opinion of both students and teachers on having a social marketing campaign running long term in schools.

The students were asked about their views on an active campaign. Both students and staff were told that a social marketing campaign would be a whole school campaign, promoting health and PA in order to encourage sustained patterns of PA. One idea put to the students as part of that campaign, was the students received a booklet with advice on PA and diet and then the students got points for the amount of PA they engaged in with some sort of reward at the end. They were also told that this would also involve notices regarding what was on outside of school and also the extra school activities. The reaction from the students was a definitive yes as the students described:

> "Yes definitely, because they are like working towards sometimes……when we were in year 1 we had this booklet that had like skipping, all different kinds of sports and every time you did it the teacher would stamp it, right. So the teacher would take you out and check it and that would encourage you. Yes it would be a good idea" (female, 11 y, moderately active, LDS.)
>
> "Yes, I do, I think a lot of people would take part because they have got something to do" (female, 14 y, mildly active, TIV)
>
> "Yes, we had this walk-to-school week with school and each class had to do it" (female, 11 y, mildly inactive, WIP.)

> "If it's posters saying be active, do 2 hours and every break time, take 10 and eat healthy then I would just do it really" (female,10 y, mildly inactive, LDS)
>
> "Yeah, the more active people are around the school would say "yeah, I'll do that and they'd like join in" (male, 14 y, most active, STJ)

Furthermore some children who didn't walk to school said that they would walk to school if they were rewarded to do so thereby extrinsically motivating the students into walking to school. In one school, the 'highly active' group described how they were given a prize for the class walking to school. One student also suggested that a campaign involving competition on number of hours of activity would probably encourage her friend to get out of her bedroom and be more active.

The teachers and head teachers were also asked the question on their thoughts on a county wide social marketing campaign to encourage the whole school including parents to engage in a more physically active lifestyle within both the school and home environment. There was a consensus of opinion throughout the schools that it was a definite yes. Most schools just said 'yes' or a 'definite yes', 'definitely yes' or another said Yeah 100%. Furthermore one teacher added the following:

> "This is key. There has been lots of programmes, some successful more than others, but something like that needs to be on going and be there all the time" (head of PE, TCS)
>
> "Yes definitely, I think not only as a person but as a school we would definitely adopt that campaign and would definitely try and promote it in whichever way possible and try and adapt what we have available to us to try and meet the needs of the scheme" (female PE teacher, TIV)

In regard to a social marketing programme it was felt that it was important to educate the parents on the importance of their child being active as one head of PE explained:

> "Yeah I think they probably would have had those messages but they've chosen to ignore them but I think any opportunity to reinstate the message is useful. I think it's ridiculous that parents sign so many lessons to say that children can't take part in sport when they could take part perfectly well" (head of PE, TIV)
> "I think to some degree yes the school should do but I think ultimately that responsibility lies with the parents we are teachers at the end of the day and we will do our best and yes we should be promoting it and giving the parents the information but I think they are the ones who should act on it" (female, secondary PE teacher, TCS)

The schools were also asked if they had heard of Games for Life, which is part of the government's social marketing campaign to encourage PA. Not one of the schools had received the leaflet on this campaign despite the literature saying that campaign packs (2.6 million packs sent to 7500 schools with lesson plans and take home messages for children to use throughout the school holidays) had been sent out to all schools. The Devon PEDPASS was another campaign that was introduced some time ago, this was an initiative that slowly dwindled. They were just packs that were sent home to parents but there was no explanation or invitations to invite parents into school. One school said "we gave out packs and a lot of children chose not to take them when actually they may have benefitted a lot from it".

All the schools were clearly interested in a social marketing campaign and said that they would fully engage with a campaign. It is clear from the teachers comments and also from the ethnographic research that the government's Games4Life initiative is not reaching the schools of Devon, despite that Change4Life is meant to work in partnership with schools.

Following the quantitative research where some students had indicated that they had some barriers to exercise (section 5.4.1.3), it is important for a future social marketing plan to ascertain greater information on what these barriers are in order to try to find solutions to overcoming them. There can be a variety of barriers to exercise that emerged in the theme of **recreational PA facilities**

subtheme **swimming pools, sports club and gyms** which can be anything perceived or real preventing an individual from partaking in physical activities and further subthemes emerged which were **costs** and **transport**, some students could not afford to partake in **recreational physical activity** as their parents could not afford the cost of either the activity or the equipment needed to participate. In secondary schools most afterschool activities are free; however, this is not always the case in primary schools and can therefore prevent some children from being able to participate, along with **transport** as suggested by the quotations:

> "My mum and dad they encourage me and then when I ask to do they only let me go so many places because of the cost" (female, 9 y, moderately active, WIP)
>
> "Yeah, sometimes, because, sometimes your parents can't afford it. I mean, I know I've had to stop a few clubs because, like the money is just too high" (female, 13 y, mildly active, TIV)
>
> "Sometimes, with transport, and obviously, your house and how far away it is……..I know I did a thing at Cullompton and that's ages away from here. I had to stop that" (female, 14 y, mildly active, TIV)
>
> "No money. My family has got hardly any money…….and we haven't got a car either" (female, 10 y, mildly active, WIP)
>
> "Because like at the Lido for me it's so expensive now" (male, 14 y, highly active, TCS)

Physical activities outside of school were those activities that were undertaken by the students independent of the school day and were activities that were not organised by the school. They mainly consist of activities that happen once the student is away from school in the evenings and on a weekend. Afterschool activities will vary greatly among the age group of students. Clearly younger students are reliant on parents to allow them to attend and to transport them to after school activities. Without parental involvement in the activities of younger children, playing outside in the garden are the only physical activities that younger children can have autonomy over. For older children they have greater autonomy in the physical activities they take part in, although they still need parental help and guidance in the form of permission, transport and funding. The

social support they gain from parents to take part in physical activities outside of school will be discussed in under the social support section of this chapter. The students in the comments below discuss the freedom that age can bring on being allowed to go out and exercise alone, although for some students they still exercise with their parents:

> "Like Holly, I feel that my parents trust me a lot more because I never used to do much cycling because mum and dad had to come out with you or my brother had to and they never wanted to but now I am older I can just go cycling on my own and they know that I am alright" (female, 11 y, mildly active, LDS)
>
> "Well I like playing outside because in my village there's like lots of children and there's, like, new people for me to make friends with. Some of my other friends, that I am not near to, try and actually tempt me to come out" (female, 11 y, inactive, LS)
>
> "I ride my bike a lot" (male, 11 y, highly active, WIP)
>
> "When I'm bored at home I just go out and play on my scooter, go to the skate park or……." (male, 11 y, highly active, WIP)
>
> "I do a lot of sports, I do like windsurfing, paddle boarding, surfing, cycling and running" (male,14 y, highly active TCS)

Furthermore, greater freedoms as students get older also mean that students spend more time out with their friends either to the **park** doing other activities as the comments illustrates:

> "…..like we have a half day on Friday, a group of people in my class had planned to go into town, another group of people are planning to go to the park" (female, 11 y, mildly active, LDS)
>
> "Me and my friend go running on a Tuesday" (female, 10 y, highly active, WIP)
>
> "Yeah, I go out to the park with my friends sometimes" (female, 10 y, mildly active, LS.)
>
> "This weekend I'm going walking along the costal path and I'm going to do that this weekend with my friends and we do that quite a lot" (male, 14 y, moderately active, TCS.)

> "We kind of pick something different to do, so one week it might be like, going to the BMX track or going swimming to do fun splash or something" (female, 14 y, moderately active, TIV)

The students take part in a selection of activities that outside of school. The activities they take part in are mainly recreational which corroborate with the activities the students took part in or wanted to take part during the quantitative research. A popular activity amongst the students, many enjoyed swimming and were either taking part in swimming or would like to go swimming. Other activities were: scouts, football, volleyball, skipping club, majorettes, gymnastics; volleyball, cycling, hockey and rugby. The students also felt that there was a greater choice of activities as the students got older as the students indicated in their comments. Some students went to clubs where they did multiple sports which was of interest to the students so that they could have a taste of a number of physical activities as illustrated:

> "On Wednesdays and Fridays I go to a club and there you do different sports" (female,10 y group 1 highly active WIP.)
>
> "Yeah, Wednesday club, and you do different sports and it's in, like the Whipton Chapel and in there we do rounders and tennis and we do dodgeball. Also, my favourite one that we do there has got to be cricket because we use our hand instead of a bat….." (female,10 y group 1 highly active WIP.)

Restrictions on the opening times of facilities is also seen as a barrier to PA with some students suggesting that the local municipal pool closes too early and the gym opening times for children is also too early for those students who stay at school later as per the quotations below:

> "Yeah, because there's only certain times that you can go" (female,15 y, moderately active, STJ)
>
> "Because sometimes I don't get out of school until 5 and then the gym has already been on, so you can't go" (female,15 y, moderately active, STJ)
>
> "Pyramids also closes early" (female 11 y. moderately active LDS)

Clearly then, for certain students, not only is **cost** an issue, but **transport** getting to activities would also be problematic. As a result a number of students felt that there should be more help available to help with the cost of activities. The student's also felt that the government's **policy** initiative of free swimming should be reinstated and a good number of the students said that they would regularly attend swimming if it was free as suggested by the students:

> "That would be great, I would go every day. Lots of like teenagers would do it and stuff like that" (female, 11 y, moderately active, LDS)
>
> "If I had the chance I would go swimming more often because I don't normally get to go" (female, 11 y, moderately active, LDS)
>
> "Oh definitely yes, I can swim but not that good" (female, 11 y, inactive, LDS)
>
> "It's also about being able to get there. I think they should do a special club. I don't think it should be free but should be £1 for maybe two hours and there should also be other sports and you should be able to choose what you do" (female, 11 y, inactive. LDS)

Although, it was suggested by some students in the 'highly active' group that if their parents could no longer afford for them to take part in their usual activities that they would overcome this barrier and still be active as the quotations illustrate. Thereby, suggesting that 'highly active' students have sufficient motivations and **self-efficacy** to overcome barriers:

> "Just go out" (female, 10 y, highly active, LS)
>
> "Make your own club on weekends that has no adults supervising you" (male, 11 y, highly active, LS)
>
> "Yeah, or take the dog for a walk" (male, 11 y, highly active, LS)
>
> "Go out for a run or something" (female, 10 y, highly active, LS)

In summary, section has explored the **physical environment** affecting PA in children. Of greatest important appeared to be the **built environment** which was the biggest facilitator but yet barrier to PA. Barriers and facilitators to active travel were both **distance** and **time**. **Distance** was how far the students had to travel to school or in some cases perceived distance. Those who were nearer to the

school were more likely to walk. **Time** involved how long it would take for the students to get to school and if it was too long most were not prepared to walk. Parents who did not have time to walk younger students to school would drive them to school. In regard **schools and active commuting facilities** most schools already had facilities in place to ensure that they had bike sheds that were locked during the day, where lockable bike sheds were in play more children cycled to school than in schools where this facility was not evident. Although teachers felt that 'Bikeability' would be an encouraging scheme to encourage more children to cycle to school not all schools were offering this scheme. One school offering a cycling breakfast for children who cycled to school seemed to encourage children to cycle to school. Some schools had walking buses but they were not across all primary schools. The idea of having a rewards scheme and other promotion initiatives to encourage children to walk or cycle to school was met positively by the schools. Finally, it was also felt that the teaching staff should act as role models to the students by walking/cycling to school, particularly the staff that live locally to the school. **Schools** also acted as barriers and facilitators to PA. In particular, **playground** subtheme **play equipment and sports facilities** affected children being physically active during break times, students were more likely to be active where schools had active playgrounds. Furthermore, **afterschool clubs** subtheme **physical activities** was also a mainly a barrier to PA in that insufficient activities and a lack of choice of activities was offered to students. **Recreational facilities** subthemes **swimming pools, sports clubs and gyms** further affected PA in students as what should be facilitators to PA. However, **cost** and **transport** for some students are barriers to attending recreational facilities.

6.6 Policy (Political Environment)

Themes emerging from the analysis involved policy. Two main themes emerged from the data **National (education policies)** subthemes; **school choice policy; national curriculum; funding policies (budget cuts)** subtheme staffing and **Regional/local policies** subthemes **individual school policies** further subthemes **PE kit, no kit sanctions, subject priorities, P.E budgets, cost of local council owned facilities.** These policies have affected individual students as well as groups of students and schools as a collective. Of great importance in schools, from speaking to schools, and from my ethnographic observations

funding cuts has hit schools hard, a number of schools in the Devon area have made staff redundant, and particularly hard hit has been PE departments where PE is not seen by school senior leadership as important, despite it being a national curriculum core subjects. This has seen PE teaching staff being made redundant, or when staff leave they are not replaced. Support staff within schools have also suffered from redundancies, moreover School Sports Partnership roles have disappeared as schools can no longer afford the luxury of staff that are coordinating PA events between primary and secondary schools.

In primary schools ethnographic observation found due that due to **government policies (funding cuts)** there were only ever a few clubs running through the week, which tended to be sports like football clubs and then in the summer they may run a running/athletics club. This was the case due to issues with finding staff to run them, particularly in primary schools that usually have less staff overall and due to funding cuts have less support staff. Staffing after school clubs was problematic in primary schools as all teaching staff have their own marking to do which is tiring for staff without the additional extra work of running an afterschool club. Afterschool clubs are therefore reliant on staff being willing to give up their time to run them as per the quotation below. Clearly having outside agencies come in to run the clubs was one solution but then attendance was reliant on parents being willing to pay for their children to attend and for some **cost** will therefore be a barrier to PA. Football was seen as a popular after school sport with commitment given by the students as suggested:

> "It would be nice to have a hockey club or netball club but it's just finding people to run it" (male, primary class teacher, LS)
>
> "This is how the curriculum and PE teachers have changed within the last 10-15 years. Because we do so many other things, it used to be oh well you don't mark books you can run the football team and that's fair enough whereas now there's so many more things that teachers have to do. ……it's all in your own time, you still have to mark books, assessment checks and write reports. I don't think there's anywhere enough extra-curricular activity going on here or anywhere. We get virtually no help from outside of the department. But there're lots of other subjects doing things in drama and music. It almost seems to be

> with the student teachers through as well…..they seem to teach practically nothing these days. I was doing lunch time clubs, extra curriculum clubs. When I was first head of department I was the only male PE teacher, I was doing every lunch time practically, every after school, district sides on a Saturday morning, that philosophy has gone and now it's I might be able to do the boys on Friday (male, secondary, head of P.E, TIV)

During the ethnographic research it was found that TIV was no longer offering any extra-curricular activities, this was due to cuts in staffing. However, secondary schools where funding prevailed or where parents could afford it, could in fact have outside agencies to come in and run clubs to alleviate the time of teachers, which happened in one school where they use the local community and also one of the 6th formers to help with the football clubs. Parental involvement was also another avenue that one of the schools had explored and two parents came in to assist with the athletics club. The parents were involved with the local athletics club, which helps to foster, nurture and encourage those that they see potential in to the clubs beyond the school gates.

The solution for lack of staffing in one school was that the children ran their own clubs in the hall as per the comments below:

> "Children do a really great job at lunch times in that they set up their own dances, it's very popular and every lunchtime a different club is run in the hall and run by students, adults are on view but they do a really good job of running their own clubs and then students do take responsibility for their own games out on the playground" (male, primary deputy head teacher, WIP)

Furthermore in one secondary school students were allowed to go into the school gym and school staff also used the gym so teachers were there to supervise:

> "It's mostly PE staff yes running the teams but as I say the fitness activities PE staff are there to supervise buy there are lots of other staff there and children see that and they are as surprised as me but I am sure that it gives them a message" (male, secondary, head teacher, TIV)

As has been detailed in chapter 2 schools are led by the **national curriculum** which in part details the content taught in both primary and secondary schools. The **national curriculum** was a major theme in the physical activities being taught in schools and in many cases was problematic as it wasn't perceived by the schools as being broad enough to engage students in activities that they enjoyed.

PE lessons which are underwritten by the **national curriculum** and are then further underwritten by **regional/local or individual school policies** and there is definitely cross over between the two. Some policies will originate with the **national curriculum** but are then subject to interpretation by **individual school policies**. P.E lessons vary across both primary and secondary schools from the time spent in PE lessons (some are as short as 40 minutes and some lessons are as along as 1 hr and 40 minutes). For younger primary school children PE tends to focus around being active and learning basic skills such as throwing and catching the ball and then using the skills in basic fun games. As children progress up the primary schools PE lessons focus more on game based activities such as handball, football and rounders as well as fitness type activities such as gymnastics.

PE lessons are one aspect of PA that can either be a barrier or a facilitator to PA particularly in terms of how PE lessons affect students' motivation to participate in PA in the future. The opinions on PE lessons by the students varied across the schools. Many children across the spectrum of activity groups found the lessons to be fun and varied as suggested in the quotations:

> "They are quite fun. They are really varied, they are really fun. We do lots of different things like one week we might do cricket and then another we might learn rugby skills like next week. Dodgeball, if it's raining we stay in do dodgeball. Sometimes in the gym we go around and do lots of different things like on the climbing wall and the climbing frame and ropes" (female, 11 y, mildly active, LDS)
>
> "Yeah she does a mixture between boys and girls. She does netball and then if she does netball, she normally does

> basketball or cricket…….she does a mix because the girls get bored of the boys' thing and the boys get bored of the girls' things" (female, 11 y, inactive, LS)
> "Yes it's active and fun" (female, 11 y, highly active, WIP)

The students felt that it was important for the teacher to mix the lessons so that they were not doing the same thing all the time and that as the classes were mixed in terms of gender that the teacher mixed the lessons so that one week the chosen activity would appeal to the girls and the following week the activity would appeal to the boys. Likewise, the variety of activities given by the students varied from school to school and included: gymnastics, striking and fielding games, dance, tennis, netball, basketball, dodgeball, cricket, tag rugby, rounders, running, climbing wall. Benchball/dodgeball was mentioned by the students who all enjoyed this and would like to play it more. There were clearly a variety of activities mentioned by obviously not all from one school.

It was also felt by the students that doing a variety of physical activities encouraged them to be active in school as the students suggest and that the students would prefer to engage in a variety of different physical activities, a consensus of opinion in schools was there that there wasn't enough choice and variety:

> "Yes it's better if you are doing different things" (male, 11 y, highly active, LDS)
> "If they give us more freedom to do what we want" [would enjoy PE more] (male, 10 y, moderately active, LS)
> "They could give us loads of options……like six options and then we get to choose it and you can swap over in, like groups or something" (female, 10 y, moderately active, LS)
> "At the end of the season there should be like a voting box and you get to choose what activity you would prefer to do" (male, 11 y, highly active, LS)

However, there were also a number of students who felt that PE lessons were boring or there was insufficient choice of activities been offered by the students as mentioned below which led to the student's losing interest in PE Moreover,

there were other issues raised by the PE lessons that the students felt prevented them from fully enjoying/engaging in their PE lessons:

> "I just don't like it, it's boring……because I don't like any of the sports that we do" (male, 11 y, moderately active, LS)
>
> "Erm, like we are learning to jump off benches and we'd already learnt that in year 2" (female, 10 y, moderately active, LS)
>
> "It wasn't really a PE lesson because you're just sat around most of the time and it's a bit boring" (female, 10 y, moderately active, LS)
>
> "I think maybe separate the girls from the boys because boys do different sports normally from girls. Of you could choose between those two activities" (female, 10 y, mildly active, LS)

In some schools there were clearly activities that the students would like to. engage in that the school were not currently offering as directed by the students. The student's called for more choice of sports during PE lesson and these included: long distance running, rounders, volleyball, badminton, tennis, benchball, dodgeball, football, running races, handball, hockey, rounders, basketball, badminton, table tennis. Overall students wanted to engage in a variety of sports with the exception of dodgeball/benchball where the majority of students would choose it all the time. Choice and variety is key.

There are some schools that are clearly delivering effective PE lessons with students; fully engaging the students in PE lessons, enjoying the activities and having fun at the same time. From the evidence given by the students the teacher taking the students for PE (whether PE trained or not) clearly had an impact on the enjoyment of the PE lessons. Regardless of the activity group or school, the students gained greater enjoyment in PE if the teacher made the lessons fun, made sure that talking was limited, the children spent the majority of the lesson active and that the teacher was able to demonstrate to the students in order to act as a role model for the students. In addition, the activities the students took part in were important to the students. As per the quotations the activities the students would like to take part in were consistent with the quantitative findings. It was important to have a variety of sports and activities on offer and to give the students choice (within reason) as to what they would prefer

to participate in. By giving choice, students are more likely to enjoy the PE lessons which would impact positively on achieving an active lifestyle.

PE lessons in secondary schools vary somewhat in relation to primary schools. Secondary school PE is usually taught by a specialised PE teacher as opposed to primary schools where it is taught by the class teacher who is very often non-specialised. As a result PE teaching should be of a higher quality than that of primary school. However, whilst this may be the case secondary school PE has a number of issues in actively engaging students to take part in PE lessons. Moreover, there is also the need not just too actively engage student in PE lessons but to ensure that the students derive sufficient enjoyment in PE lessons that they continue to be active once they leave the school environment and move into adulthood.

Across schools in Devon there was a very mixed response to secondary school PE with some students enjoying PE lessons, although this sometimes depended on the activity the students were partaking in as the responses below indicate. Observational research has found that when students are taking part in activities that they enjoy they are more likely to be active during the lesson and gaining enjoyment from the lesson is likely to lead to a positive opinion of PA:

> "PE is good…….I like it, it's good. Our sports here is really well done" (male, 15 y, highly active, STJ)
>
> "Sometimes, it depends what it is. At netball, I don't really like it but last year when we finished, I was doing softball and I loved that" (male, 13 y, inactive, TIV)
>
> "Sometimes, it depends on what they want us to do in the lessons" (female, 15 y, inactive, STJ)
>
> "Tennis, sponge ball, (dodgeball), basketball, some other sports that you get motivated and active when you are running" (female, 15 y, inactive, STJ)

Students in secondary schools very often struggled with the lack of choice of physical activities. The majority of students across years 7, 8 and 9 (ages 11-13) were not given a choice in the activities that they took part in. This was the case in most secondary schools. For students beginning their G.C.S.E. choices in

year 9, then they were sometimes given a choice of activities, as with the year 10s' and 11s'. Some schools gave students a theme from which they could pick from i.e., sports or fitness activities. Sports would involve team sports such as netball, basketball, rounders', football, rugby and cricket. Fitness activities could be activities such as going in the fitness suite, trampolining, dance, circuits and badminton. In other schools the students were not given a choice and they were told what they would be taking part in by the teaching staff. An alternative to the above was schools where when the students were in years 10 and 11 and only taking core PE (no examination) they were given options on the day and got to choose from 3 or 4 options what they would do that day. The students in all the schools would prefer to have a choice on what activities they took part in and felt that they would be more encouraged to be active if they were given a choice. The students had strong opinions on this as the quotations indicate:

> "I find it really boring after 3 weeks" [of doing the same activity] (male, 14 y, highly active, TCS.)
>
> "We used to get to pick but now we don't……before the six weeks holidays we got to pick what we wanted to do and we had 3 options and now since we came back they have picked for us….. it's much better [to pick for yourself]……it's better when it's something you want to do" (male, 14 y, moderately active, TCS)
>
> "I think we should get to kind of see what like…….because if we want to do it then we probably enjoy it more and then we'd probably get a better grade. So if we got to somehow vote on what we do each time, then I would be better" (female, 15 y, moderately active, STJ)
>
> "I think there should be a choice for some people, if they want to do it, because some things I prefer to do individually" (female, 15 y, moderately active, STJ)

Some students were very specific on the activities that they wanted the schools to put on as illustrated below:

> "We did choose, or my year we did, we got a choice whether we did dance of like the gym, we could be in separate groups but not enough people choose dance so we all did the fitness gym that's

because we were a double group of girls. There's 60 of us in the group" (female, 14 y, inactive, TCS)

"I love dodgeball, it's so fun" female, 15 y, mildly active, TIV)

"Yes it would be nice if they did the Rugby in our PE In our PE they said that we would do rugby but we never got chance they never offered it to us and it would also be nice if we swapped around" (male, 14 y, highly active, TCS)

"More gymnastics and basketball" (female, 13 y, mildly active, STJ)

"Basketball, cricket, football and more hockey (male, 14 y, mildly active, STJ)

Referring to the quotation above, having 60 girls in a fitness suite at one time would make for a very sedentary PE lesson as there is insufficient equipment in the fitness suite for the students to be active all at the same time. That said had fewer girls being in the fitness suite this is one activity that the students felt was beneficial and would encourage them to take up once they left school. It was felt by the females in the study that it was an advantage to engage in fitness type activities during PE lessons as these were activities that they could partake in once they left school. Moreover, the students felt that it was important to frequently change the activities and add in something different and that it was especially important for girls so that they do not lose interest. It was also felt that having professional coaches to come into school and teach activities such as Zumba and Yoga would be beneficial to the students. One school gave students a choice of skating, skipping, badminton, volleyball, rebounding trampets, jogging and stepping and they could switch around during the lesson. It was observed that all students were active and having fun. It was observed in one of the schools that had instructors in to take lessons that the students seemed to be more engaged than in their normal PE lessons and they were also getting to experience the fitness type activities that they could potentially attend in their local gym or leisure centre. One school brought in a Taiwando instructor which was something different and which was enjoyed by the students. Also one of the schools where ethnography observations were conducted used to send the students to the local leisure centre for 6 weeks to acclimatise the students to the leisure centre for when they leave school (until the funding was cut). The

students in the school felt that it was a real advantage to go there as they got used to going to the leisure centre and also enjoyed the different activities on offer to what were offered at the school. Students in another school also felt that this too would be advantageous to them as per the comments below:

> "Yeah because it would also give us more confidence to actually go ourselves and do it. Because say, I wanted to go and do something like that, then I would just be a bit cautious because I have never been before" (female,15 y, moderately active, STJ)
>
> "Yeah and if its somewhere like the leisure centre you will be determined to do better and it will be more fun because it's something different" (female, 15 y, moderately active, STJ)
>
> "Yeah, because a lot of people in, like, this school, they don't realise what the gym can offer them and what the gym has got until you go over there and find out (male, 15 y, highly active, TIV)

Some groups, particularly girls felt that it would be advantageous and that they would enjoy PE more if the girls and boys were separated as in some schools there are mixed PE lessons as the quotes illustrate. Moreover ensuring that students are in groups with students they feel comfortable with would also ensure enjoyment for some students:

> "Yeah, and I think it would be better if it was, like, groups of girls and boys, because I don't like doing PE with the boys" (female, 13 y, moderately active, TIV)
>
> "Yeah because the other day we did it split and we had the girls doing one thing, boys doing the other, and everyone looked a lot more comfortable doing that" (female, 14 y, moderately active, TIV)
>
> "I think maybe if we have, like, a couple friends in your group because most groups you are, kind of, split up from your friends a bit…….it makes you more comfortable to do it" (female, 13 y, moderately active, TIV)

Dodgeball and bench ball are sports that comes up a lot in schools as being enjoyable, with few rules and skills to learn. However, whilst there are few rules

and less skills than some other sports, nevertheless both games teach skills and tactics which are transferrable to other sports. Dodgeball though is often not regularly played as it is seen as not sporty and skill based enough. Nevertheless, when students are playing dodgeball and bench ball they are active for most of the lesson and moreover, they have fun. The students (particularly females, although males also enjoy dodgeball) found dodgeball to be fun and the students in all schools that the researcher encountered found that students preferred participating in dodgeball and bench ball to traditional sports, such as netball and hockey. The comments from the students illustrate the student's thoughts on dodgeball:

> "Yeah, it's quite cool, yeah" (female, 14 y, mildly active, TIV)
>
> "I love dodgeball, it's so fun" (female, 13 y, mildly active, TIV)
>
> "Erm, I'd probably say less [being active in other sports than dodgeball], like, because some people don't know what it is and then you've got to explain to them over again, whereas dodgeball or something like that they already know how to play it" (female, 14 y, mildly active, TIV)
>
> "Yeah, it's better than the skill lessons where you have just got to do that, that and that, it just like….." (female, 14 y, mildy active, TIV)

The content of PE lessons came out strongly both in the student interviews and also in the ethnographic observations as being a contentious issue with some students (usually the sporty students) being happy with the PE lessons. Whilst other students (usually the least active) wanted different activities than were currently being offered. By giving students choice of activities either on the day (where in some schools they are given a choice of 4 activities to choose from) or giving them a themed choice at the start of each term (themed i.e., they would pick either competitive games, recreational or fitness type activities) students were more likely to engage with the activity and therefore more likely to bring PE kit and furthermore gain enjoyment from taking part in the PA. Through the observations it was found that in some schools sports were too traditional and there was not enough variety of alternative activities such as individual fitness activities or casual team sports such as dodgeball/bench ball nor were students in some schools given any choice. For some students starting them on a

physically active lifestyle is about finding an activity that they can enjoy that they can continue into adulthood, unless students are given a taste of different activities then they will not be able to achieve this unless they have the self-efficacy to attend leisure centres/clubs themselves. The following are the teachers opinions on the activities offered within PE lessons, although giving choice and yet following the National Curriculum can be a problem:

> "I'm hoping that the curriculum might change and they might say, here's the finish line, it doesn't matter how you get there" (male, secondary, head of PE TIV)
>
> "Yeah I think there's always a time and a place for the traditional out on the field and play rugby but it's not about oh we are going to do an hour rugby. This is about invasion techniques and it packaged in that way. I think it is important for young people to think about their mental and physical wellbeing. I think being in yoga and Pilates or something like that, which for some of our young people they may never experience would be really useful" (female, secondary, deputy head teacher, TIV)
>
> "I'm probably happy the way they are run in this school because they fit the national curriculum and guidelines and things like that but I think there are a lot of things that are missing tricks going on and still within the perspective of the national curriculum. A lot of tricks that have been missed in terms of gender sports and encouraging sports that are particularly for girls who are your most in active in your adult life and providing opportunities for them to be more active in a safer environment perhaps away from the competitiveness of some of the boys…..activities that would encourage them to do things that they're going to be doing long term in their life, so if I go to the gym I see ladies taking part in swimming and Zumba, those sorts of activities (male, primary, deputy head teacher, WIP)
>
> "I feel that when you do that [students choosing activities] there is definitely an improvement in terms of effort and there is an also a great improvement in terms of behaviour and there is not the time wasted involved in trying to coheres people that don't want to do things into what they don't want to do and I think long term

> is also enables them to establish what they like to do and they then go on and have a positive outlook towards PA and PE and sport rather than feeling they are forced to do something that they don't want and quite often also it means that there is a social mix because often people from different social groups within a year group will combine in PE in different areas because of what they enjoy doing……..and we have also started doing a pathways system where you can either pick a team pathway or an individual pathway and I think that has really helped because that has allowed those who have got issues with confidence or that are particular competitive to follow what they are really interested" (female, secondary supply PE teacher, Devon)

One PE teacher who had now given up teaching PE to be a cover supervisor was dissolutioned as a PE teacher. She said "that government rules and regulations on how PE should be taught make it difficult to teach, particularly with an emphasis being on competition especially since many students are put off from competitive sport and preferred to play for the reasons of health and enjoyment. She added that PE should be taught in a way that is appropriate for the group of children in question which if that is walking with children, 5-aside football or another activity that is physical but doesn't particularly fit government guidelines of being skill/rule based then so be it, at least you will encourage PA in children so that they will be active in the future".

From the information given there clearly is a need to provide activities that suit all students, however, it is accepted that this can be problematic due to costs and funding and finding pleasing all students at the same time. To alleviate the problem of cost one school took the year 11 girls on a walk but the teacher had the head of PE complain that the lesson wasn't proper PE which again coincides with teaching yoga in schools, some teachers would view this as not being active enough despite it being a strength exercise which is recommended for young people in the government guidelines.

In order to familiarise themselves with local fitness facilities a few of the schools arranged for year 11 students to go to the local leisure centre for 6 weeks to

access the fitness classes and gym facilities in a bid that once they left school they would feel more confident to be able to access them. A couple of the schools were attached to the local leisure centre and so this made it easier to facilitate but for another school students had to arrange to walk to the facility and this also had to be paid for by the school. Unfortunately, it was scrapped in the end due to a lack of funding. The school staff though did find it a very good way of encouraging students to attend a local leisure centre but to also get a taste for the fitness classes that were on offer. The schools interviewed were also asked their opinions on students in year 10/11 being allowed to go to the local leisure centre and this was met with enthusiasm by the schools:

> "If you had the ability and time to do that. That kind of thing normally has a cost. It is nice sometimes, the leisure centre here, they don't have a lot of time here but if they buy into it and can see the long term benefits to them……if they can see the number of their members going up because we are providing an opportunity with them earlier on then that would make it easier. But definitely yes (male, secondary, head of PE TIV)
>
> "It is something that we do at my school and it has worked extremely well in captivating some of the students that don't find the traditional school sports and team games so engaging so they have a spinning group and a yoga group and they also have just started doing a Zumba class so there's more individual based activities which I think girls tend to prefer especially those that are in low self-esteem or confidence……I think we have captured a high percentage of the ones that were very disengaged, very fed up because we've had netball for the last 3 or 4 years of being able to do something else and that they also like the fact that there is different activities on at the same time so there has been swimming, squash are always offered but there has been 2 or 3 other classes so that they can get to choose and so they feel more empowered because it is their choice rather than being a standard lesson where they are forced to do maybe what they don't want to do" (female, secondary supply PE teacher, Devon)

> "Yeah because I think that unless you are somebody who is very sporty as a girl or somebody who is happy to go along, there are a cool group of girls who will vote with their feet every single week and it's for a whole host of different reasons. What schools offer is not for them and getting them hooked into the local college, like the fitness suite with [college] or the leisure centre opposite. There are some girls that are going swimming in our older year groups because it is important making those links and knowing how things operate in a leisure centre and what they can do and the different sorts of exercises because it is about what they do outside of school and after school in terms of when they have left….I think psychologically if you think you are going to a different place to do some learning they don't associate it as learning or even fitness probably. They associate it as leisure time so if they said shall we go swimming? Because they might do that in the holidays so they don't link that with a PE lesson the same as they would if they are being told to put their kit on and playing tennis" (female, secondary, deputy head teacher, TIV)

From the information given by the teachers it was accepted that they thought it was a good idea that students went out to leisure facilities. However, this was also costly and sometimes, on the location of the school could also increase costs of taking the students to the leisure facility. However, where transport and cost is a problem an alternative was suggested that an exercise coach be brought into school to teach the classes that they would have received in a leisure facility.

Often schools are unable to offer different activities due to the activity not being compliant with the national curriculum guidelines. However, despite the national curriculum guidelines some schools do put on a variety of activities and invite outside coaches in to teach students fitness activities such as kettlebells and Zumba. Staffing or funding for external coaches can also be another issue in smaller secondary schools to be able to offer a greater range of physical activities. It was also found through ethnographic observations that available space to offer different activities in school are often at a premium. For example

during examination times (which in some schools take place for weeks at a time) the school sports hall is out of bounds to PE lessons and so it is difficult to put on a variety of activities, particularly fitness type activities that usually require an indoor space.

Students from the 'highly active' group wanted to engage in PE lessons more often. It was suggested by the students that they have PE every day and that twice a week was insufficient for their needs:

> "Because we only do sport two days a week and I think it would be better to do more" (male, 11 y, highly active, WIP.)
>
> "I'd say, like, four a week because you would be knackered by the end of the week where you had been running around and everything" (male, 11 y, highly active, LS)
>
> "Yes I really like it but I think we should a little more because we only do I think it's two lessons a week in year four and I don't think that's enough" (female, 9 y, moderately active, WIP.)

Through the **national curriculum** teaching staff were also asked their opinion on having PE lessons increased to 4 hours per week in order to go somewhere to meeting the government's PA guidelines for children. In an ideal world schools were definitely in favour of this as they feel that the majority of students do not engage in sufficient PE as suggested by one school head of PE Although it should be noted that in some schools students in years 10 and 11 are only engaging in 1 60 minute PE lesson per week:

> "If money was no object so to speak then I think they should be doing it every day, definitely, it has to be quality, it would allow us to widen our philosophy and get more of that general running around and heart rates up rather than assessing a level, the more time we have the less time we have to worry about the curriculum…..we could focus on fitness levels…..yeah I'd love for it to be everyday" (male, secondary, head of P.E, TIV)

However, the current government guidelines squeeze so much into the curriculum already even in primary education. **English and maths priority** was a subtheme of **individual school policies** that affect PA within schools. The

push on numeracy and literacy at key stage 1 means even in primary schools that were previously engaging their students into a 'leap into life' a programme of 25 minutes per day has now been pulled from the timetable. Ethnography research found that in some cases and in one primary school in order to make way for numeracy and literacy at key stage 2 PE was cut to 2 40 minute lessons per week and one class had their PE cut to 1 40 minute lesson per week. Higher up the scale in secondary schools a number of students on have 1 60 minute lesson per week or sometimes 1 1hr 40 minute lesson per week. So rather than schools being able to offer more, they are actually doing less than the recommended 2 hrs of PE per week. Moreover, in some schools observations found that time spent being active during PE lessons was less than 50%. One teacher reported that in the allocated time of 1 hour and 40 minutes of PE lesson the students were only active for 16 minutes of that time. This is contrary to guidelines produced in 1997 by the Centres for Disease Control for School and Community Programmes. It was produced to promote lifelong PA in children and young people and stated that PE can provide children with a substantial proportion of recommended healthful PA. However, in order for this to happen, children should be engaged in Moderate to Vigorous PA for at least 50% of the lesson time. Without increasing the school day, and having additional PE staff then it doesn't look likely that the number of hours for PE will ever be increased. Although, it was suggested by one teacher, that rather than just increasing the number of PE lessons, that the whole PE for young people be packaged in a different way and that rather than calling it PE, a whole healthy living approach is taken which is much more about taking responsibility for health and wellbeing including food and nutrition.

Therefore, **individual school policies** as well as **national curriculum** were a further theme found within the analysis which affected what activities could be taught in PE lessons and the content of those lessons. The content is also of grave importance particularly in regard to the activities the students are taking part in and also the time during the lesson that the students are active. Based on observations through the ethnographic data, the researcher found that students often spend less than half the lesson being active, some of the lesson is changing and registration time, but the teachers often spend too long rounding the students up into a group and talking to them rather than them letting them get

on with activity. Therefore it was important to gauge the opinion of the school on this matter and their comments are noted below. This reported and observed lack of active time within PE lessons that students were active with students being talked at rather than being active for was discussed with teachers as the students felt that it was **teachers** that negatively affected their enjoyment of PE lessons. Whilst in part this is true, it could also be **individual school policies** that affect the structure of lessons. Teachers were asked how active the students were in lessons and if they deemed the lessons were fun:

> "I think if that's the case in secondary school with specialists teaching if you can then recognise how that might transfer into an infant school and I've also seen teachers in primary school where a lot of the PE lesson is spent listening to when actually a better PE lesson is a lot of work within the lesson and stopping for a short break and actually using the time for children to move around and develop on a much more individual level because differentiation isn't there if your stopping the whole class, it's better to go around and speak to groups so in tennis lesson I do now they're playing pretty much all the time we are out there (male, primary, deputy head teacher, WIP)
>
> " "I would say about 45 minutes of the lesson is an actual lesson and from the 45 minutes I would say probably half an hour" (female, secondary, supply PE teacher, Devon)
>
> "Well PE is my line management department so I see a lot of PE lessons and certainly appointed what I thought are to be good old fashioned PE teachers that gets a lot of activity in their lessons and in terms of Ofsted judgements I know each one of the PE team have had outstanding and what that means for me and I have been alongside some of these observers when they have given me this judgement it means lots of PA" (male, secondary, head teacher, TCS)

The comments from the teachers suggest that in primary schools the students are far more active than in secondary schools where more time is spent focusing and getting skills learned to perfection as opposed to in primary school where skills are taught more in a game playing situation and not as much emphasis is

placed upon perfecting the skills to the same degree as in secondary schools. This would also corroborate with the ethnographic data that also found that primary school children were on the whole more active than children in secondary schools, where a big part of the lesson was often spent sitting around listening to the teacher.

Individual school policies have also affected PA in schools with schools with regard to the importance of PE in schools. It appears that some of the least active students had an unfavourable **attitude** towards PE in years 10 and 11 as their perception of the costs and benefits to engaging in PE was such that as it did not count towards their GCSEs grades. However, other, more active students who enjoyed PA had a favourable attitude towards PE as they found it to be an enjoyable break from GCSE work and fully engaged with the sports/exercise offered. Having taught physical education in both primary and secondary schools the author believes that the information on the health benefits of exercise is disseminated into schools, is understood by the PE teachers but very often is not disseminated to students in a way that they understand the benefits of a physically active lifestyle and therefore students do not have positive **beliefs** towards PA. Likewise, the importance of PE to the health of children whilst being understood by some, teachers of other subjects and head teachers deem that English, Maths and Science and other academic subjects should take priority over PE. For students in years 10 and 11 students are often exempt from PE to catch up on other subjects or frequently removed from PE lessons to do other work, hence the importance of PE is not fully understood by either students or their teachers. Often the students who are removed from PE are the ones who need PA the most as they have either no or limited access to sport and exercise outside of the school arena and are therefore more likely to suffer from the ill effects of lack of exercise in adulthood.

Individual school polices subtheme **PE kit** was of paramount importance to the least active students within schools. A great number of students, in particular girls were often put off from doing PE as they had to go outside, this was particularly the case in the winter time when it was cold. Often schools as part of the uniform advised students to buy embroidered school logo sweatshirts (which they were allowed to wear when it was cold). However, very often students for

whatever reason (maybe in some cases financial) did not have the sweatshirts. In those circumstances they were not allowed to wear any other form of jumper or sweatshirt and so were made to go outside and suffer the cold, furthermore the boys in one school were only allowed to wear shorts and t-shirts, even in winter and this put them off from participating:

> "If they make us do netball and we have to go out in the freezing cold and we are not allowed our jumpers then I don't like it" (female,15 y, inactive, TCS)
>
> "It was fine in the gym that's because it's warm but outside it's too cold" (male, 15 y, inactive, TIV)
>
> "We have to wear shorts and a t-shirt [whatever the weather] (male, 15 y, inactive, TCS)
>
> "They still make us do it when it's raining outside" (female, 13 y, inactive, TIV)

From speaking to students as both a researcher and PE teacher in the schools mentioned being made to go outside and engage in PE when the student is cold, especially when it is raining heavily, is not conducive to a successful PE lesson, as the student's do not enjoy the lesson, nor can they comfortably engage in the activity. Students also feel negative towards the teacher as they feel they are being mean by not allowing the students to be warm (especially since the teacher is usually dress in a warm coat, long bottoms and gloves relevant to the weather conditions). Therefore it leaves the students with a negative PE experience which could potentially lead to a negative view of PA. Furthermore, other issues with PE kit are that the students have to have every piece of the exact school kit or they are given a detention as the student below suggests:

> "Erm depends what we are doing, some of them are alright, but a lot of the PE teachers are really strict about PE kit and you are missing one piece then you get detention" (male, 15 y, inactive, TCS)

No kit sanctions was another sub theme to emerge from the data, students often stop bringing their PE kit in a bid to not have to participate in the lesson. For some schools if students don't bring kit then they are not allowed to participate but would receive a detention. For some students a detention is

preferable to taking part in PE This was the case with TIV. In one school (TIV) at the start of a lesson, out of approximately 30 girls only a couple of students had brought PE kit, this was because if they had no kit then they didn't have to take part in PE The reasons they didn't like PE is that they saw no value in the subject, this was due to it being a subject that no qualification was gained from. Furthermore, students in the school felt that the lessons were boring. In the fitness suite had no virtually no equipment in it, 2 rowing machines and 2 pieces of weights equipment for a whole class. They were also not allowed to use the gym in the college next door to the school. Therefore, the reasons for not bringing kit were the lack of value placed on PE lessons and lack of choices of activities and school equipment. In other schools, some schools loan out kit in the event that the student forgets kit in a bid to prevent the blatant nature of not bringing kit to escape taking part in PE Students were also more likely to bring in PE kit if they were given a choice of the physical activities that they would take part in during a PE lesson:

> "I've stopped bringing mine" (female, 14 y, inactive, TCS)
>
> "Yes, because they would enjoy it more and they would actually want to do it instead of being forced to do it" (female, 14 y, mildly active, TCS)

No kit sanctions is a problem in schools with students voting with their feet and if there are no sanctions for not bringing in kit then students will choose the latter. Nevertheless, ethnographic observations both as a PE teacher and from having discussions with numerous PE teachers who felt that there were many students in secondary schools that frequently brought in notes excusing them from PE for very minor ailments, often as an excuse not to have to participate in PE lessons. Many students would bring in notes on a weekly basis. It was even suggested by one parent written on a note to the PE teacher that the student should not take part in PE as they were going on holiday the following week and the parent "did not want the child becoming ill as a result of taking part in PE" In response to frequency of notes for minor ailments some schools have adopted a no note policy whereby students still have to get changed for PE and if they are physically unfit are given a coaching type role. It was observed that often once changed the student would take part in the lesson and therefore this policy reduced the number of students bringing notes into school.

Local funding policies have also affected PA participation across schools. The ethnographic observations revealed that no longer could schools use local facilities free of charge, for example one school had a track opposite the school yet, couldn't use the track unless it paid to use it and yet the track was empty during the day. As it did not have the money to be able to pay to use it the school had to use the limited facilities it had on site. The situation was the same in another school that had a swimming pool opposite. On an individual level one of students said that due to funding being cut he was no longer able to access the sport he was talking part in as he suggests below:

> "well before I used to do Taekwondo, I was meant to be getting funding for that but I didn't end up getting it so I just left because it was too expensive" (female, 15 y, moderately active, STJ)

6.7 Chapter Summary

To summarise, this qualitative chapter reveals the results from interviews with student, teacher and the role of ethnographic research. The analysis derived themes from the data which were categorised under SEM and the categories of Individual (Intrapersonal), Social (Interpersonal), Physical Environment and Policy (Political environment). SEM has been used throughout, although, whilst the quantitative survey was carried out in order to define the students into cluster groups, there was however some relevant information on PA of the students extracted from the questionnaire. However, the qualitative interview and ethnographic data gave this thesis (and a future social marketing campaign) so much more than questionnaire data is capable of. The research shows that students' PA is multi-faceted, with different types of activities having different barriers. Social support from friends, family and teachers/coaches has been shown to have both a positive effect on encouraging PA, whilst at the same time can also have a negative effect on discouraging students. Friends came across as being dominant in students' PA participation and those students with low levels of self-efficacy would only suggest trying new activities if they had a friend present. For others, with higher self-efficacy this was unimportant and often the activity and encouragement of parents played a role in PA levels of students. Cost was a major specific barrier to choice of PA participation particularly when it came to students engaging in physical activities outside of school and it was

suggested that the previous government initiative of free swimming should be brought back which would help to engage students. A further barrier was that of perceived time with older students spending time engaged in gaming and so therefore did not either have the time or inclination to spend on PA. Cost was also a barrier from the school's point of view and when putting on a social marketing plan in schools this is something that needs taking into account and needs to be addressed by government bodies.

Discussing PE lessons proved an emotive topic for the females in this study as vast numbers of them felt that the activities provided during PE lessons were not enjoyable and did not meet their needs in terms of engaging them to be either active during the lesson or outside of PE lessons. Overwhelmingly the qualitative data revealed that students want greater choice in the physical activities that they participate in both in PE lessons and after school clubs PE lessons play a major role in the PA of the students and yet some students found the lessons unappealing and discouraging. Furthermore it was revealed that the major reasons the students engaged in PA was either for health reasons or for fun and therefore it is important that student's feel that when they engage in PA including PE lessons that those two components are part of PA participants. The students and teachers were all enthusiastic about the possibility of a social marketing campaign being in the schools. The results will now be discussed in relation to existing literature and their implications explored in the discussion and implications chapters.

CHAPTER 7

OVERALL DISCUSSION

7.1 Scope of the Chapter

In this penultimate chapter the results of the qualitative and quantitative studies will be contextualised within the broader academic literature and key intellectual debates discussed in chapter 2 and 3. Data from the quantitative (survey) and qualitative (student interviews, teacher interviews and ethnography) studies making up the thesis have been analysed individually and the results presented in the previous chapters (Chapters 5 and 6). This chapter therefore seeks to discuss the results from Chapters 5 and 6 in the context of previous research that has been undertaken in the area of PA in school aged children and moreover in the context of the TPB, SCT and SEM. It is the intention of this chapter to detail an overall discussion of the main findings which will be summarised and main themes drawn out that have been repeated across the different studies. Efforts to change behaviour are more likely to be successful when the multiple levels of influenced are address together. Therefore this chapter will use the SEM as a framework to discuss the research findings. In particular, the chapter will demonstrate the academic contributions the thesis makes to the fields of PA and social marketing research. This study provides greater understanding for researchers, teachers and social marketers of the multiple levels of facilitators and barriers that influence both primary and secondary school students' perceptions of PA within the school environment which can help to inform school based PA interventions and planning. Therefore, this chapter also incorporates recommendations for future research and recommendations for practice.

7.2. Introduction

This research aimed to enhance current knowledge in the area of PA in school children with a future view to utilising a social marketing campaign in schools. The objective of this research was to examine PA participation among school children; to look at the attitudes and beliefs of the children towards PA and the impact this has on the PA choices of school children. Furthermore, the research explored the motivations and barriers to PA participation both social and environmental. The research sought to examine PA in the school in relation to the school day with particular emphasis on PE lessons. The SEM was used in this study to identify a range of independent and interacting factors that influence PA both within and outside of school. The results of this study in chapter 6 offer qualitative evidence of the interplay of intrapersonal, interpersonal, environmental

and policy factors affecting PA of school children. Moreover, whilst there has been mixed methods research conducted on PA research to the researchers knowledge it was thought to be the first to examine PA whilst utilising TPB, SCT and SEM using the combined research methods of survey, focus group interviews, individual interviews and more importantly an ethnography with a view to implementing an all-inclusive social marketing program in both primary and secondary schools across Devon. Qualitative and quantitative research methods were used in an attempt to develop a complete contextual insight into children's PA throughout the school day and beyond, thereby giving the researcher a holistic view of PA in school children across different schools in Devon.

This discussion will consider PA of the students in relation to the school day using the themes and sub-themes from the SEM that were identified in the qualitative chapter 6. Furthermore, factors drawn from the TPB and SCT (e.g. self-efficacy) will be examined from the quantitative chapter 5 and merged into one comprehensive discussion. Results from this mixed methods study uncovered several specific barriers, motivators and social influences that affected participants' PA decisions and behaviours both during the school day and after school. The interview findings revealed that national and local policies affecting PE lessons were able to greatly impact on the PA participation of students and were likely to play an influential role on PA of the students once they leave school and during adulthood. Although schools are well positioned to provide students with opportunities to be physically active, it is clear that many students and teachers from this research feel that schools are not fully achieving this potential. This study adds to the literature on PA in school aged children by addressing the physical environment and policy affecting PA participation in school students. Furthermore, there appears to be little research focusing on utilising a social marketing framework that has been combined with SEM conducted in both primary and secondary schools. The subsequent sections 7.3, 7.4, 7.5 and 7.6 utilises components of the SEM namely, individual, social, physical environment and policy in order to discuss the factors pertaining to physical activity participation in school children which will then facilitate outlining recommendations for social marketers.

7.3 Individual (Intrapersonal)

The first key attribute of the SEM indicates that **individual (interpersonal)** factors were of significance in the research. The percentage of adequately active students (i.e., those meeting government guidelines of at least 1 hrs PA per day) was 48%. This was significantly higher than the figures for the Health Survey for England (2012) that showed self-reported levels of PA to be 21% in boys and 19% of girls. It is worth nothing that whilst the activity levels of students in the study was higher than the Health Survey for England this could be accountable to the recall nature of the questionnaire, students reporting time spent in individual activities and also that the students were surveyed during the summer months when there are greater opportunities to engage in PA (King, 2008) Self-reported methods of collection generally report higher levels of PA participation than objective methods used in small scale studies (McArdle et al., 2010; Rowlands et al., 2000). However the results did indeed show that **sex** was an important **biological** factors of physical activity i.e., males engaged in 30% more PA than females which is consistent with research on PA in children whereby there is a consensus of opinion that males are more active than females (Health Survey for England 2008 & 2012, BHF, 2010, Riddoch et al., 2007, Rowlands et al., 2008, Rowlands et al., 2009; The National Health Service Information Centre, 2011). It is indicated in the results that the reason boys are more active than girls is that based on the evidence given in the qualitative research there are more opportunities for boys to be active as the physical activities offered are in line with what boys enjoy taking part in i.e., **competitive** sports, whereas with girls the opportunities are far more limited i.e., the physical activities that girls said they enjoyed are offered far less in schools, particularly at secondary school. The Youth Sport Trust (2006) found that when schools allowed girls choice over their physical activities the girls were more active and enjoyed PE.

Consistent with the literature and to further add to the quantitative data on PA levels, the qualitative research revealed that it was teachers' opinions that the students on the whole, particularly females were insufficiently active and did not meet the government guidelines. However, this was with the exception of a few students whom the teachers described as being highly active, 'sporty' students that took part in a number of activities. This was especially the case with a number of older **competitive** students for whom being competitive is an

important facilitator to physical activity, again this was related to **sex** as it was particularly males in secondary schools who were **competitive.** From the ethnographic research it could be argued that the 'sporty' students who engage in higher than average PA generally enjoy a variety of sports, are **competitive** and have high levels of self-efficacy.

In chapter 5, it was noted that 62% of the students indicated that they were active for more than 3 hours a day which is 11% greater than research conducted by the PE and Sport Survey (2008/2009). Again this may not be a true reflection of active hours as 2 hours were likely to have included 2 hours PE which as both the literature and results in chapter 6 suggest students are not active for the full 2 hours of a PE lesson (Fairclough & Stratton 2005a, Fairclough & Stratton, 2005b; Hobbs, et al., 2014; Waring et al., 2007).

Age was another biological factor addressed in both TPB and SEM findings and despite there being no significant difference between the number of hours of PA engaged in per week and **age** of the participants the research did show a decline by 3 hours per week from **age** 7 to aged 15 which is consistent with research in adolescent PA (Aresus et al., 2010; PE and Sport Survey, 2008/2009; Riddoch et al., 2004). Decreasing PA levels of students is complex and whilst there is no one overriding reason for a decline in PA consistent with increasing **age** of the students, competing **sedentary** activities that students take part in mainly gaming, television and home work prevent some students from being more active as they become older adolescents (from around age 12 onwards) (Obrusnikova and Cavalier, 2011; Smith et al., 2008; Taveras et al., 2008).

Lack of **time**, due to competing activities such as homework or gaming can be construed as barriers to PA as the students involved in regular gaming were found to be in the inactive groups and were too busy gaming to engage in PA. It could be argued that lack of **time** due to gaming is a failure on the part of the student to structure available time and moreover failure to make time, which comes from the low importance that is placed on PA participation. Although, the qualitative research would suggest that gaming has become a **social norm/practice** much more so than physical activity whereupon it could be argued, particularly with students of older secondary school that it has become a

social norm not to participate in PA. However, research has found that finding available time is possible if the person deems the PA to be important enough. In a study of adolescent behaviours students involved in studying such as homework were better able to make time for PA than those that were just television viewing (Fieldman et al., 2003). What is evident then that lack of **time** is merely an excuse rather than a tangible barrier. Although, there is conflicting evidence on the impact **sedentary** behaviour has on PA (Marshall et al., 2002; Mansoubi et a., 2014; Smith et al., 2008; Traveras et al., 2008). Furthermore for some children the **sedentary** activity of socialising with **friends** can often involve walking around the streets or playing in the **park** of the local area. Moreover the amount of time spent outdoors is positively correlated with PA levels even if the students themselves would not associate walking around the streets with their friends as PA (Sallis, Narder et al. 1993).

The students aged 10 and 11 from the interview data seemed to engage in the highest level of activities. This is in part due to students being allowed to **walk** independently to and from school without parents as they were in the last year of primary school. This new found freedom by parents gave the students autonomy and the students chose to go out and **play** with friends. This meant students not having to rely on parents to either transport or supervise PA.

The students also reported taking part in chores. The means of the number of hours across the age groups ranged from 2.1 to 3.5 hours with students aged 15 years with the highest mean number of hours at 3.5 hours. However, these activities were not included when calculating activity levels as it was felt that more information on the specific activities of chores was required as it was unclear whether they contributed to achieving a 'sufficient' level of PA for health benefits. This would be particularly the case with the younger children who were likely to be given 'light' tasks to do. However, whilst not used in the PA calculations researchers have looked at the contribution of household activities to energy expenditure in adults and found that the finding that "energy expenditure during self-paced moderate intensity walking and self-paced sweeping, window cleaning, vacuuming, and lawn moving can be measured with reliability and precision" (Gunn et al., 2002, pp.901) Therefore whilst not used in the calculation undertaking chores is still considered to be beneficial in creating a physically

active lifestyle and it is likely that as the students age the chores will become more physical. Therefore, whilst the hours of PA had decreased in the older students, the number of chores had increased which for some students may go some way to increasing daily activity levels.

An aspect of TPB (behavioural beliefs) and SEM (psychological) are **beliefs** and **attitudes** towards PA. **Beliefs** in the benefits of PA have been shown to be positively related to PA among children and adolescents (Blue et al., 2001; Casey et al., 2009; Craig et al., 1996; Foley et al., 2008; Hagger et al., 2001; Hausenblas et al., 1997). The survey results in regard to **attitudes** and **beliefs** towards PA, showed that overall the responses were positively related to PA and therefore clearly support the literature. Among **intrapersonal** factors personal **enjoyment** and **fun** were central to the initiation and maintenance of PA. The positive **attitude** and **beliefs** survey results which incorporated amongst others, **fun, enjoyment** and **health** towards PA were supported by themes from the interview findings, of which approximately half of those interviewed gave **health** reasons as the reason for being physically active with the other half **motivated** to engage in PA for **personal enjoyment** and **fun** (Hyndman et al., 2012). Having **fun** clearly enhances the experience of anyone participating in PA and therefore plays a major role in engaging and maintaining PA behaviours. Ensuring PA activities are **fun** and **enjoyable** by the students is clearly of paramount importance to anyone facilitating PA. Read et al. (2002) suggest that maximising the **fun** associated with PA increases the likelihood that the activity will be repeated, this occurs as a result of the memory of the experience because it has been **enjoyable**. For the students that do not **enjoy** PA or take part for **health** reasons this led to negative connotations towards PA participation (Carroll & Loumidis, 2001)

Supported by the ethnographic observations, when students **enjoyed** the activity they were engaging in such as a PE lesson students were more likely to want to engage in other activities within the **school environment** and future PA and moreover would ensure that they brought their kit to school at the next PE lesson. (Hagger et al., 2001; Martin et al., 2007). Ensuring PE lessons are **fun** and **enjoyable** can also cause conflict, dilemma and challenge for those teaching PE as the teacher must work to the guidelines of the **National Curriculum** and **local**

school policies (which will be discussed in 7.6). Students' **enjoyment** and perceived competence of PE is rather seen as a by-product rather than a direct objective, with the learning of motor skills the priority in PE lessons. It was observed that this was especially so in secondary PE whereas in primary PE teachers were slightly more relaxed towards ensuring students **enjoy** PE lessons. This is particularly noticeable with younger children who seem to **enjoy** PE and this then begins to change when students move to secondary school. In order to establish PA participation in secondary schools, early intervention to target primary-secondary transition is required as the decline of PA is even more noticeable in key stage 4 when students have received 3 years of physical education in secondary school. Teachers found that the last 2 years of secondary school were problematic with students not wanting to engage in PE lessons primarily because they were not **enjoyable**. The research suggests, particularly from the ethnography that as PE lessons moves from fun games to competitive team sports in secondary schools, students' **enjoyment** wains, particularly when students reach the final 2 years of secondary school and they dislike the activities that they have been engaging in for 3 years (Hagger et al., 2001; Martin et al., 2007). This will be discussed further in 7.6.

Therefore, in the interview findings, **enjoyment** was rated highly and positively associated with greater participation in PA. However, not all positive health **beliefs** translated into greater PA participation. However, a phenomenon called cognitive dissonance which is defined as the uncomfortable tension between two conflicting points of view may answer the disparity between **attitudes** and action (Straker, 2008) Therefore **belief** in the importance of PA i.e., clearly having strong positive **attitudes** towards PA may not translate into PA participation. Research by Martin et al., (2000) found that whilst participants rated physical inactivity as an important risk factor they did not meet minimal ACSM guidelines for PA. Having strong **beliefs** which can be gained through positive education can still be identified as a positive way forward in encouraging PA participation in those groups of students that are reluctant exercisers. However, students will also need to be **motivated** to have the inclination to engage in PA.

Health emerged as a reason for being physically active, for some it was just to keep **healthy** and this was seen as an important reason to be active which the

more importance that is placed on PA, the more PA then becomes a lasting source of **enjoyment** (Hallal et al., 2006; Cable, 2005; Tammelin et al., 2003; Tudor-Locke, 2002). Consistent with the literature, **weight** (either for **weight loss** or to **maintain weight**) was mentioned on a number of occasions as being a **motivation** to be physically active. **Weight loss** was found to be a prominent reason for exercising in several large epidemiological studies of North American, European and Australian female college students (Leslie et al., 1999; Lowry et al., 2000; Payne et al., 2004). Whilst PA can certainly help prevent overweight/obese children and also aid **weight loss** (Livingstone, 2003; Prentice & Jebb, 1995; Reilly, 2005), if **weight loss** is the only **motivation** to exercise then it is not necessarily a positive reason to exercise as once a person has reached their **weight loss** goal, the person may stop exercising unless they have another motivation to exercise. Therefore, it is important that the overall **health** benefits of PA are discussed with students as opposed to a specific **health** benefit.

In regard to the **socio-economic status** of the student's parents, students whose parents were in managerial/professional occupations and therefore of higher **socio-economic status** were on average more active than the students of parents in the lower socio-economic classification (Dzewaltowski et al., 2008; Hanson & Chen, 2007; Hume et al., 2005). This is consistent with the PE and Sport Survey (2008/2009) and the likelihood is that students of parents of a higher earning capacity have less cost and travel barriers to PA engage in more sports clubs and organised activities than children from lower **socio-economic status** families (Brockman et al., Dishman et al., 2004; Kristjansdottir & Vilhjalmsson, 2001). **Financial** barriers are also likely to impact on the PA of parents themselves so they themselves may be inactive and not see PA as important (Tuinstra et al., 1998; Vihajalmmson & Kristjansdottir 2003 cited in Westerstahl et al., 2005) and therefore may also not be positive role models to engaging their children in PA.

In summary many factors emerged from the individual (intrapersonal) findings. The most important to emerge from the findings were **age, sex, personal enjoyment/fun, social norms of gaming and self-efficacy.** Consistent with existing research, students' activity levels decrease with **age**, although the

research found that students transitioning from primary to secondary school were more active as they were given autonomy by parents to walk to school and engage in physical activities without parents. Competing **sedentary activities** affect activity levels as students' age particularly in regard to gaming whereupon it has become a **social norm/practice** that older students spend time gaming rather than engaging in PA. It was particularly the case with males, in that their overall PA levels are higher than girls. It should also be noted that it was the males during the focus groups that discussed gaming and the researcher only spoke to male students who were interested in sedentary gaming. Moreover with some older students it is a **social norm** not to participate in PA. On the other hand there are students with high levels of **self-efficacy** who will overcome barriers to engage in PA and in fact will make time to take part in PA whilst spending time another part of the day gaming or engaging in other **sedentary** activities. However **enjoyment** and **fun** were the motivators for over half the students interviewed in the focus group and moreover ethnographic research found that the most important motivator for students engaging in PA was that they **enjoyed** the activity and had **fun** and affected all aspects of PA including that of engaging in PE lessons. Whilst there were students found to hold strong health beliefs towards engaging in PA and engaged in PA for **health** reasons it would seem that **enjoyment** and **fun** are the most important motivators for long term sustained patterns of PA. Section 7.4 will now address the complex social factors that impact on PA

7.4 Social (Interpersonal)

Social (interpersonal) factors from the SEM (McLeroy et al., 1988) included the students interpersonal interactions with **family**, **friends**, **teachers/coaches** and **social norms/practice**. In the TPB (Ajzen, 1985) which was the theory used in the questionnaire, social support was incorporated into the questionnaire as normative beliefs (subjective norm) are one of the components of TPB. In the literature social support was found to be a predictor of PA participation in children (Barnet & Spinks, 2007; Eyler et al., 1999; Feltz, 2008; Godin & Shepherd, 1986; Hurley, 1991; Piazza et al., 2001; Martin et al., 2007; Samson & Solmon, 2011,). Consistent with the literature, social support for PA emerged as an important moderator to participation thereby supporting the results of previous research on social support affecting PA participation (Leslie et al., 1999; Eyler et al., 1999).

The findings of this research show how social influences can exert positive and negative effects on participation. (Casey et al., 2009; Duncan et al., 2012; Godin & Shepherd 1986; Obrusnikova and Cavalier, 2011).

The findings concerning **family** and **friends** are in accordance with the literature indicating a supportive family environment is an important factor in achieving PA participation (Prochaska & DiClemete; 1982; Soderlund, 2017; Trost et al., 2002). Although, compared to **friends** and **peer influences**, **parental support** was less likely to be associated with being active among adolescents when a shift from **parental** influence to **friends** occurs. Nevertheless the research did show that **parental** support was of great importance to the students in engaging in PA, this was especially evident in the primary aged school children that were interviewed (McElroy, 2002). Those with greater **family** support, especially where the **parents** or **siblings** were active were more active than those students who did not receive support from either **parents** or **siblings** which is consistent with the literature (Casey et al., 2009; King, et al., 2008; The Health and Social Care Information Centre, 2010; McElroy 2002; Raudsepp, 2006; Steinbeck, 2001). Therefore, given the positive associations found between **family** and students PA **parental/sibling** support should be incorporated into a social marketing strategy encouraging PA participation (Mehtala et al., 2014). Friendship plays an important role in the PA behaviour of students, particularly those aged 11 to 15 when students are more conscious of engaging in physical activities alone. It was found that the majority of students participate in PA with **friends** either for social reasons or because they do not want to participate alone (Casey et al., 2009; Obrusnikova and Cavalier, 2011). The students in the study felt that since they had got older they now had been given autonomy by their **parents** to play out which had led to an increase in their PA. This is substantiated by the literature as suggested by Kirby, Levin and Inchley (2011) who suggested that young people gained extra autonomy as they become older and moreover in a study found that a large proportion of girls felt their walking levels had increased with age, partly due to increased autonomy (Kirby, Inchley, 2003). `

Friends and **peers** played an all important role in the PA participation of students which was further highlighted in the qualitative findings. Being with friends was a beneficial effect of active travel to school, playing out and general PA. Students

were more inclined to take part in PA if **friends** were also taking part. Friendship was an important factor for some children walking to school. A common finding was that those children who walked to school, particularly in secondary school, walked to school with friends and that walking to school become a social experience which was a strong motivator to walk to school (Kirby & Inchley., 2009; Panter et al., 2010) As mentioned in 7.3 walking to school with **friends** was particularly relevant during the transition from primary to secondary school and can be an opportunity to engage students in walking to school whilst making new **friends.** Whilst **friends** were a positive influence in most cases, **friends** could also be negative if friends wanted to do an activity that wasn't physical those students with lower levels of **self-efficacy** would go with friends to do the non-PA (Dishman et al., 2009). However for students with high **self-efficacy** and social support they would engage in the PA (Casey et al., 2009; Gao, 2012; Hurley, 2001; Nies & Kershaw, 2002; Samson & Solmon, 2011). Students with high **self-efficacy** and social support predicted less decline in PA than **self-efficacy** alone (Beets et al., 2007; Dishman et al., 2009; Lewellyn et al., 2011; Samon & Solmon, 2011). Furthermore, the presence of a friend to engage in PA with has been shown to increase motivation to be active as well as increase the amount of PA completed (Salvy et al., 2009; Wu & Pender, 2002). **Self-efficacy** plays an important role in the confidence students have to try new activities on their own (Bandura, 1986; Samson & Solman, 2011). Students with strong **self-efficacy** said that they felt confident to engage in new activities without having to take a friend with them (Annesi, 2006; Glanz et al., 2008; Lewellyn et al., 2008). Whilst those with low **self-efficacy** said that they would only try new activities if they had a **friend** to accompany them. **Peer** influence during break times, which only occurred in one of the schools, whereby the school had a **peer-led** games system where children in years 5 and 6 would encourage children to join in playing games, this was an effective way of engaging students in PA and ensuring those children that did not have **friends** to play with and were therefore sitting alone gained peer support to enable them to have the confidence to be physically active. This agrees with a study by Jago et al., 2009 of 10-11 year olds that found that **friends** were key in initiating PA in children and could occur in one or more of three ways: co participation, peer modelling and verbal encouragement. This **peer-led** games system could certainly be easily adopted by other schools and incorporated in a social marketing plan.

Teachers and **Coaches** who lead activities and the relationship they build up with students play a major role in establishing and maintaining PA behaviours. (Hagger et al., 2001). This was certainly the case in the study whereby **teachers** could either positively impact upon students thereby encouraging further PA participation or they very often negatively impacted on the students (Casey et al., 2009). Being a positive role model was seen as an essential non-negotiable factor in the participation of PA of school aged students (Bailey 2000, Fox, 1992; Hyndman et al., 2012). Added to this and where feasible students found PE lessons more enjoyable when the teacher demonstrated or joined in with the activities taking place (Mehtala et al., 2014). Therefore, **teachers**' experience such as teachers that are PE specialists and personal characteristics appear to play an important role in increasing PA among students. **Teachers** agreed that with the student findings that it was important that they act as role models to the students, demonstrating activities and joining in with the students where possible. Moreover, a successful social marketing campaign will also encourage non-specialist PE **teachers** to be physically active so that the whole school can be physically active which in turn will encourage the students to be active (Andreason, 2002; Mehtala et al., 2014).

In summary, **family/siblings** support, particularly activity levels of parents themselves were important factors in the students being active. It was particularly the case that the most active students had **parent/sibling** support than the least active students. However, **friends/peers** played an all important role in physical activity of all students and in particular **friends/peers** were found to be facilitators to PA in the least active students. **Peer-led** activities in primary schools were found to be effective at engaging the least active students in the school and could be easily implemented across both primary and secondary schools. In regard to **teachers/coaches** the qualitative research found **teachers** to be of greater importance than the quantitative research would suggest with students indicating that it is the **PE teacher** that is key to the **enjoyment** and engagement of PE lessons and suggested that **teachers** should act as role models by demonstrating activities and where possible joining games with the students. Section 7.5 will now examine the physical environment and its relationship with PA participation of students.

7.5 Physical Environment

A component of the SEM is that of the **physical environment** and incorporates both the **natural** and **built** environment. The **physical environment** has the capacity to facilitate or hinder engagement in the participation of PA (Sallis, 1998). The **natural** environment played a minimal but important role in PA of school children namely that out of school physical activities can take many forms and can include taking part in specific sports during the week/weekend or just **play** outside of the family home whether alone or with **friends**. Whilst only a few children took part in organised physical activities a good number of students **'played outside'** usually with **friends** for which active play has been found to make a significant contribution to heath-enhancing PA, this after school period was a critical period of play especially during the summer months and it has been found is positively correlated to the amount of overall PA (Brockman et al., 2010; Sallis et al., 1992). To reiterate seasonality could also have affected the overall PA levels of the children as the research was conducted in the summer months when, due to an increase in daylight hours (Nov-Dec: 8-10 hrs vs June-July: 16-16.5 hrs) and an increase in drier and warmer weather children are likely to be more active, especially after school. A number of studies have recorded that in summer, when the **weather** is more temperate and there are longer hours of daylight, that children's overall PA is significantly higher than in the winter (Duncan et al., 2008; Rowlands et al., 2009). This could especially be so in younger children who **play** out after school once they are home with children being unlikely to take part in outdoor **play** during the winter months when it is cold and dark. Duncan et al. (2008) found that on comparing winter and summer PA, a 10ºC increase in mean ambient temperature demonstrated a 1700 and 3400 step increase in sales during the week and weekend days respectively. However, further research is required as to the impact of seasonality on PA.

During the focus group interviews **weather** came up as a barrier to PA participation, this was particularly the case with school PE lessons where it was ascertained both from the focus groups and moreover from the ethnographic observations that students, mostly female students did not enjoy taking part in PE in adverse weather conditions i.e., cold or wet **weather** and was a factor in students not enjoying PA and not wanting to engage in PE lessons. The majority

of schools observed, found that students, were made to go outside for PE lessons in adverse **weather** conditions and was seen by teachers as a **social norm/practice.** To combat this, schools with sufficient indoor space will allow students to do PE inside, although schools prepared to allow students indoors are in the minority are the exception to the rule. However, this is not always possible due to physical restriction of space or **local policy** determining the activities that students should take part in. Consistent with the literature the students with high levels of **self-efficacy** were able to overcome **weather** barriers; this was particularly in regard to **active travelling** to school and described strategies to overcome barriers to PA in chapter 6 (Dishman et a., 2009; Lewellyn et al., 2008; Samson & Solman, 2011). Later in the chapter implications and strategies will be discussed to overcome barriers to PA to empower and facilitate those students with low levels of **self-efficacy**, especially in females who generally have lower self-efficacy than males (Dishman et al., 2009).

There were numerous themes that emerged from the data regarding the built environment namely **active commuting**; **school** and **recreational facilities**. **Active travelling** to school has been identified as an important opportunity for children and adolescents to accumulate recommended amounts of MVPA (Tudor-Locke et al., 2001; Faulkner et al., 2009; NICE, 2009). It can also help children and adolescents adopt important health behaviours that can be maintained into adulthood (Cooper et al., 2006). Students reflected on walking to school and suggested that convenience of **parents** driving students to school coupled with time constraints of parents not having time to walk students to school before going to work was a factor in them not walking which is consistent with the research that suggests increased car use and greater demands on parent's time i.e., both parents working have led to fewer children active travelling to school (DfES, 2003). Despite this, the survey revealed that 51% of students actively travelled to school every day, 75% on at least one day per week with 24% not actively travelling at all. These figures were consistent with those of the Health Survey for England (2008). The focus groups revealed that students who walked/cycled/scooted to school seemed to be more active throughout the day than those who choose not to walk (Cooper, 2003) with the exception of those for whom it was generally too far, even then those with high levels of **self-efficacy**

were prepared to make the effect to walk or cycle. This finding agrees with the consensus opinion from other researchers thereby walking to school should be encouraged in a social marketing campaign as it is an effective way to engage students in PA and instil habitual PA in the students (Faulkner et al., 2009; Michaud-Thomson & Davidson, 2003).

It is also worth noting that as my research was carried out during the summer months, seasonality could have affected the numbers of school children who declared that they walked or cycled to school. Another reason for this is that it was observed by the researcher that in the summer of the final year of primary school (year 6) many parents allow their children to walk to school in preparation for high school. Therefore, it is likely that numbers of active travellers may be lower at the start of year 6 and during the winter months as **weather** is an influencing factor in PA. There is literature to support this, although limited. A recent review by King et al. (2008) examined the correlates of accelerometer measured PA and sedentary behaviour in 480 seven year old English children. The researchers found that children were significantly more active in the summer compared to the winter, spring and autumn and were generally more active if they travelled to school by active means and if they were male. Sleap & Warburton (1993) reported that 50% of British school children aged 4 to 11 years were driven less than a mile to school on a regular basis, a **distance** that could easily be walked which is in agreement with the ethnographic and interviews where it was suggested that a number of students and staff were driven to school less than a mile away. However, walking to school clearly depends on the proximity of the school. Those students who attend rural schools generally catch the school bus and so the opportunity to walk to school doesn't present itself. There are however, those that could walk to school but deem it to be too far. The focus of a social marketing strategy should be to encourage those reluctant walkers to walk to school by promoting the benefits such as social benefits to them walking to school and assisting them with overcoming perceived barriers. This is far easier to achieve once students reach age 11 and are in their last year at primary school because they are generally given autonomy to get themselves to school. In this regard parents would also benefit from being educated on the benefits of their children walking to school as there are some parents who are concerned for the safety of their children in terms of safety of cross roads,

stranger danger and bullying by other students on their way to school. Improving the infrastructure for students walking to school and ensuring there are safe places to cross the road, i.e., with a crossing warden would help to alleviate some of the parental fears (Carver et al., 2010).

The **school physical environment** and the facilities that this provides were an important factor in students being active during the school day. Secondary students cycling to school were affected by the **school physical environment** such as provision of facilities such as **bike storage** which was an important factor in a student's decision to cycle to school (Fox & Harris, 2003 in McKenna & Riddoch, 2003). Students reported that where schools did not have lit, locked and monitored **cycle sheds** they were unlikely to cycle to school in fear of their bikes being damaged or stolen, the opposite was the case where facilities were in place, although it was acknowledged by teachers that more could be done to encourage active travelling to school. Consistent with the literature one school felt that having teacher role models was seen as important (i.e., teachers should if possible walk to school) (Kirby & Inchley, 2009). Whilst support from school for active travel came mostly in the provision of **bike storage** and **parking restrictions**, schools and students were in favour of **active travel** incentives as they felt that these would have a positive effect on participation.

Break times are an opportunity for students to engage in PA particularly in primary schools where they generally have longer break times than in secondary schools. During observations it was found that boys were more active than girls and is consistent with the literature (Ridgers et al., 2005; Stratton, 2000). Most primary schools (but not all) those interviewed provided students with **playground equipment** during playtimes in a bid to increase the PA levels of students. There are a small number of studies that have examined the impact of providing **games equipment** during break times. One such study was conducted by Verstraete and colleagues (2006) in Belgian elementary schools. They provided **games equipment** in four schools for three months during morning and lunchtime breaks, comparing this to 3 control schools which found PA increased in the intervention group but decreasing in the control group. Similar results were found by Loucaides et al., (2009) who provided **playground equipment** together with playground markings and designated activity areas and

again in the after 4 weeks, during the 20 minute break time, PA significantly increased in the two intervention schools (8.7% and 13.2%). Observations by the researcher concluded that where **playground equipment** was provided the students did appear to be more active. However, there were still students who were still standing or sitting alone which was combated by the use of the peer-lead games system discussed in 7.4. However, it was evident from students' perceptions of their break spaces that there are a different set of environmental priorities between primary and secondary schools. Primary schools have playground equipment and sporting facilities in contrast to those offered in secondary schools. In secondary schools break and lunch times are often underutilised as a time where PA could be promoted and encouraged. It was observed that secondary students were also less active during break times than in primary schools, this was particularly the case in schools where students had limited access to **sports equipment** and the school gym/sports hall during break times and organised activities. Therefore it is the difference in play spaces that may be contributing to the decline of PA during the transition between primary and secondary school. Therefore improving the choice of activity opportunities was found to be a motivating factor influencing participation and one that is so often neglected in secondary schools.

Extra-curricular after school activities should be an area where students get involved in doing activities that they wouldn't otherwise get the opportunity to do either due to barriers at home or because the activity is not done during PE lessons. Furthermore, it is also an opportunity to do PA towards achieving recommended minutes of PA (at least 60 per day, most days of the week). This can be especially so in winter and in bad **weather** where students are prevented from doing outdoor activities. Therefore indoor spaces in schools can provide students with an opportunity to engage in an activity that the **weather** would otherwise be a barrier for. Unfortunately though, the after school activities that the majority of schools offered usually only appeal to the more active/sporty students, with a focus on competitive 'gendered' traditional games based activities appealing more to boys than girls (Harris, 1997). Suggestions of activities that the students would be interested in were made during the interviews and if after school activities are going to appeal to the least active students or the students not interested in competitive games then schools need

to adhere to the needs of those children providing activities that the students enjoy which were found to be not necessarily competitive sports. Change to the after school provision could help to engage the non-competitive students within the school.

Through the interviews with teachers but mainly via the ethnographic research the schools were viewed with regard to **health promoting** to students in regard to PA. It was found some schools promoted local activities on notice boards although these were not always updated and there were more schools not promoting local activities. However, most schools did highlight after school clubs to students but more could be done to positively promote after school clubs so that students are encouraged to attend them. There was limited education given to students on the benefits of PA outside of PE lessons which it could be argued is an opportunity missed as the school is in an enviable position in which to positively promote PA throughout the school day and not just during PE lessons, which even then is limited. Educating students as to the benefits and value of regular PA can increase the perceived value of PA. The **teachers** interviewed felt that it was everyone's responsibility within a school to highlight the health benefits of physical activity and encourage PA among its students but yet they felt not enough was being done to achieve sufficient levels of PA among students. Research in an educational setting on the value of a course found that increasing perceived value leads to greater engagement by students (Floyd, Harrington & Santiago, 2009). Furthermore, there have been countless short term interventions carried out across schools over the decades, although these have not led to long term sustained patterns of PA (Mei et al., 2016) Social marketing campaigns carried in a variety of settings that focus on PA such as the VERB campaign, Woodside Gets Active, Activmob and The People's Movement have shown success and similar campaigns could therefore be implemented in schools (Huhman et al., 2005; Huhman et al., 2007; Lemon, 2009, Gordon et al., 2006b). In accordance with the value that has been placed on school based interventions and health promotions within schools both the schools and students were asked their opinion on a long term social marketing plan (the students and teachers were informed that this would be a 'whole school' holistic approach to encourage PA) being implemented in the schools. Both students and teachers gave unanimous support with the students suggesting ways in which this could

be achieved as highlighted in 6.5 for a campaign to encourage PA especially if it was ongoing and teachers were greatly in favour of any campaigns that would engage students in greater levels of PA.

Recreational facilities should also be facilitators for engaging in PA. However there are many barriers to being able to access **recreational facilities** and within TPB are known as perceived behavioural control. Children in many situations lack control over their behaviours, especially younger children (Ramirez et al., 2012), for example children cannot control for **cost** of an activity or transportation to an activity, which is usually the parent's decision on affordability. The biggest barriers to not taking part in PA that emerged from the interviews were cost and transport and represented a true barrier to increased participation. 25% of students in the quantitative data agreed/strongly agreed this to be a barrier (Ferreira, 2006). **Cost** as a barrier was also confirmed during the interviews with some students saying that they were unable to take part in activities due to the **cost** and/or **transport** issues. (Raudsepp, 2006). **Cost** of travelling to sports facilities, paying for using sports facilities (for example going swimming) and buying equipment were all mentioned as barriers. For some students lack of **transport** to get to the venue was also a barrier (Sallis et al., 1992). Free swimming is one PA initiative that should be made available to students, when questioned there was a high number of students who would want to go swimming and would use the facility if it was available. Prior to 2010 free swimming was a successful initiative and gave students who were otherwise unable to go swimming the ability to do so and this would also help them to achieve the recommended levels of PA on the weekends and in school holidays when they are not at school (Department for Culture, Media and Sport 2009)

In summary, the **physical environment** was found to be both a barrier and facilitator to PA. **Weather** was of particular importance to students engaging in physical activity which was particularly the case with PE lessons, whereby students did not enjoy PE when they were made to take part in PE lessons in adverse weather conditions. As a result of this students felt negative towards PA participation and as they did not find **enjoyment** in these lessons this impacted on students taking part in other PA activities and was likely to have a longer term effect on students PA participation. The **school physical environment** also

impacted on students break time activity with students in primary schools being more active than students in secondary schools where there were more **playground facilities** available. In regard to activities outside of school both **cost** and **transport** were barriers to physical activity participation for some students and is a factor that would need addressing when suggesting **recreational facilities** for students to attend as part of a social marketing campaign.

7.6 Policy (Political Environment)

Policy was found to incorporate **policy** and both **national** and **local** levels. This research challenges the PE **curriculum** that schools currently offer. It is suggested that following the interview comments from the students and teachers together with the ethnographic observations that the 20th century PE **curriculum** is outdated and not fit for purpose in the 21st century, failing to encourage and engage students in PA.

Many of the barriers and potential strategies identified were related to secondary school students' perception of **choice**. Part of the **national curriculum** as detailed in the literature review was that as a result of PE lessons students should become physically confident and interested to take part in physical activities outside of school and in later life. The **national curriculum** is also meant to ensure that students get involved in a range of activities that develop personal fitness and promotes fitness through promoting an active healthy lifestyle (curriculum.gcda.gov.uk & afpe.org.uk). The research was inconsistent with the literature as it was found that far from gaining a positive PE experience vast numbers of students across schools in Devon reported not enjoying PE, not taking part in activities outside of school and the intention to take part in activities as an adult were not there. Furthermore consistent with this is on speaking to 6th form students who no longer take part in PE lessons many of them say that they do not take part in any physical activities. A common finding across students is that they frequently say "I don't like any physical activities". However, part of the **national curriculum** also states that the PE curriculum has to inspire all students to succeed and excel in competitive sports (Department of Education, 2013) and it is this aspect of the curriculum that schools appear to be focusing on and it is competitive team sports that are being offered to students. These are, the same

sports (such as hockey and netball) that a lot of students, particular girls do not enjoy and therefore does the opposite of what the **curriculum** is designed to do in terms of encouraging PA participation outside of school. Moreover PE lessons themselves are not active enough as per 6.4 and my observations which are consistent with research by Ofsted (2013) and Waring et al. (2007) that raised the concern that PE lessons were insufficiently active. Therefore, it is suggested that the **curriculum** needs to change to meet the ever changing needs of students, with a change in attitudes of some PE teachers also requires revision. This is so that they are willing to offer students the health-related physical activities that many students desire and change the focus of PE lessons to increasing the amount of time the students are active. This will ensure that the students gain **fun** and **enjoyment** from the lessons which in turn will give the student's confidence to be active outside of PE lessons and in later life.

Despite falling into different PA categories the participants all had similar thoughts on what constituted a good PE lesson in terms of activities and the way the lesson is taught. Across all schools throughout the interviews and ethnographic observations the overwhelming desire of students were that PE lessons should be active, with less teacher talk, more game playing (if it is a games lesson), less focus on rules (as long as everyone plays by the same rules) and more **choice** on the physical activities that they participate in. Students expressed interest in being involved in decision-making processes during PE classes to determine the activities to be undertaken which would give the students independence. The ethnographic research found that where students were given a **choice** of activities the students enjoyed the lessons more, were more active, more focused and their behaviour in lesson improved. Students ultimately wanted their PE lessons to be **fun**, this was especially the case with the students in years 10 and 11 for which PE was a break from the academic subjects and a time during which they could relax and have fun. Some schools were definitely working hard to try and achieve this whereas for other draconian PE teachers had little understanding of the needs of its students, particularly those that were less sporty. It should therefore be recommended that more **choice** of activities and student-driven activities should be incorporated into PE lessons, albeit with the appropriate supervision and encouragement from teachers.

The research has also shown that activity levels decrease during secondary school which based on ethnographic observations and the results of the interviews suggests that it is the current format of PE lessons that are discouraging students from wanting to engage in PE or PA. Primary school activities are based much more on having **fun** in lessons, whilst still learning skills. The research found, particularly through the ethnographic observations that students were more active during primary PE lessons and in secondary lessons teachers spent too much time talking and learning skills than on active game playing. It can be construed that this is another reason for the decline in activity levels once students attend secondary school. Clearly the focus on PE in secondary should be on the 11-12 year olds during the key transition from moving from primary to secondary school, ensuring that any changes in the structure of PE lessons is gradual so that students are not put off from participating. Furthermore, it emerged from the data that of importance is the removal of students from PE lessons when in years 10 and 11 so that the students can focus on academic subjects. Staff in schools would benefit from being educated on the benefits of an active lifestyle so that they can appreciate the importance of students receiving the government recommended two hours of PE per week as it would appear that PE is not seen as important as academic subjects (Annesi, 2006).

Students are often taken out of PE lessons to work on other academic subjects and this has become the **social norm** in schools to remove students from PE lessons. The very students that need PE are the ones who often ask to be removed from the lesson to carry on with academic work as students see it as a **social norm** not to go to PE lessons and often lessons for some year 10 and 11 students has been reduced to one hour a week. Furthermore **local policy** measures in relation to not bringing in kit so that students do not have to do PE should be amended. In schools where students still had to engage in PE even if they had no kit, there were far less students not partaking of PE lessons than in schools were it was the **social norm** to not bring in PE kit and thereby not have to participate in PE.

It was observed in the ethnography and from discussions with heads of PE that due to recent austerity measures and the devolving of budgets to individual

schools (where schools are now academies) there is little cohesion between local facilities, i.e., local leisure centres, with each facility having their own budgets, meaning that schools have to pay to use local authority leisure facilities. There needs to be more partnership working between schools and local facilities to ensure that no one misses out on being able to access the local leisure centre/swimming pool. When schools become academies they can choose how they spend their budgets. It is in the interest of public health that schools should be given a specific budget which has to be spent on PA provision so that schools can afford to take students out to other facilities. Modification of current legislative **school policies** regarding PE lessons and other PA within the school should be carried out to ensure optimal engagement in PA.

In summary, both the **national curriculum** and **individual school policies** play an important role in engaging students in physical activity. Overwhelming it was discovered during the qualitative research that the way in which the **national curriculum** is interpreted by schools, mainly the structure of the PE lessons and the physical activities offered to the students impacted upon **enjoyment** of PE lessons. Moreover, students expressed strongly that they wanted a **choice** in the physical activities they took part in during PE lessons. It was also found that **local policies** in regard to PE kit had an effect on students using this as a **social norm** to not participating in PE along with the removal of students from PE lessons in the latter two years of school to concentrate on academic subjects. Furthermore **local policies** in regard to **funding** of physical activities within schools meant that **PE teachers** had restrictions placed upon them in regard to the facilities **teachers** can access.

7.7 Theoretical Implications and thesis contributions to the academic literature

The studies conducted in this thesis were to the researcher's knowledge the first to combine PA together with the theories of TPB, SCT and SEM with a view to considering the implications for social marketing campaigns in schools in the UK, and in this way provide a novel contribution to the academic literature and provide a platform for linking research on PA using the models of TPB, SCT and SEM to social marketing. There have been many studies conducted that have looked at PA within schools. However, the literature search revealed that there

are limited studies that have used a mixed methods approach whereby a survey utilising a questionnaire was conducted alongside qualitative methods. In this particular case, this included interviews of both students and teachers and ethnographic observations carried out over a period of 3 years schools across Devon. Furthermore, to the researcher's knowledge no other study has combined the theories of SCT, TPB and SEM in a mixed methods research project which allows for a deep insight into the PA behaviour of school children. Applying SEM to the qualitative research enabled the researcher to identify the important aspects that influence PA in school children, in particular looking at the physical environment and the political environment and the impact these have on the individual. The researcher, working as a supply PE teacher, was given the opportunity to go out into the field in numerous primary and secondary schools in Devon, which gave the researcher a far greater understanding of the PA culture of schools. This greatly enhanced the ability of the researcher to appreciate the role of ethnographic methods, which provide a deeper level of understanding that that afforded by interviews and focus groups alone. This research has found that in order to begin to change behaviours in young people it is imperative to ascertain the beliefs, attitudes, motivations, barriers, physical and political environment and social support of students, not least the role of the school cultural context. (French, 2010). Unless the researcher 'steps into the shoes' of the students and fully understands their lives, interventions put into place to encourage PA may to deliver the intended outcome. Interventions carried out without fully investigating the needs of the students are liable to be unsustained as they have failed to fully appreciate the context in which students are based (Meredith 2009) Interventions in any case are usually only short term and rarely if at all engage students' long term into sustained patterns of PA.

In this way, focus groups interviews provide an invaluable tool in finding out the needs of the students but are still liable to situational bias as some students may feel pressured to agree with what others students are saying or may even say what they feel the researcher wants to hear (Barbour, 2008, Fink, 2003d, Flick, 2006, Hastie & Hay, 2012). In this research such situational bias was reduced as the groups were segmented into four distinct PA groups. Accordingly, for social marketers looking to change PA behaviour of students it would seem prudent to conduct group research as it would seem that understanding groups from

analysing qualitative data is a much more effective way of truly accounting for the needs of the target audience rather than handing out questionnaires or conducting telephone surveys (Gratton & Jones, 2007; Morgan, 1998; Seidman, 1998).

Whilst social marketing uses quantitative and qualitative research using an ethnographic approach to understanding PA behaviour of school children could be an invaluable tool for social marketers (Blair & Wood, 2006; Gratton & Jones, 2004). Without doubt using ethnographic observations and by becoming immersed into the school setting, allows the researcher to more fully understand the school culture from the point of view of the students, PE staff, other teaching staff and other staff in the school (Cohen et al., 2004; Flick, 2007; Trochim, 2001). Not only is more information freely given by the different segments of the school but the researcher can look at the school as a whole and also see how the different segments fit together (Denscombe, 2001). Therefore, for PA researchers, conducting long term ethnographic observations allows the whole school to be illuminated rather than just specific groups of individuals (Biddle, 1989). This research should also be disseminated to order to encourage government department(s) to conduct further research in combination with a university to pilot the design across different areas of the country.

As such, the findings present empirical evidence to support the basis for designing a social marketing campaign for use in schools. As there is no one factor responsible for PA participation, the evidence supports a 'whole school approach' to PA, which should include students, teachers and non-teaching staff and where possible parental involvement in the schools so everyone involved in the school can become part of the PA ethos that the schools would adopt. The barriers and facilitators identified in this study provide information for teachers and school decision makers to consider when targeting children's PA in schools. Recommendations follow in 7.9 where there are a number of suggestions made that social marketers could develop when designing a 'whole school' social marketing plan for both primary and secondary schools.

7.8 Recommendations for Future Research

In considering the implications for future research, the study would also benefit from being conducted in an area with a wider mix of ethnicities to help understand how ethnic and cultural factors affect exercise participation. Researchers should examine the role of parents/guardians in children's PA participation this is because parents/guardians and significant others as well as communities also play an important role in changing PA behaviour. In order for children to adopt and maintain PA behaviours it is important that they are enabled and reinforced by people outside of the school environment as well as within. Interviewing the parents of the children interviewed would also help the researcher to fully understand both the social and physical environment outside of the school day. Furthermore, the research should be conducted in other areas that contain an ethic mix of children to examine PA in different ethnic groups. The survey and interview research was conducted during the summer and autumn terms of school, further research should be conducted to examine whether season has an effect on children's PA and whether there is any difference during different times of the day.

Work in the present thesis seeks to expand on work on the usual school based short term interventions that have had limited success (Cale & Harris, 2006). The challenge now is to operationalise and test SEM more specifically and to evaluate the effectiveness of multi-level interventions among school children. Larger controlled studies utilising a social marketing plan should be conducted that encompasses SEM and uses a whole school holistic approach to assess increases in PA would make an excellent research project. If successful a project such as this would help to 'sell' the idea of using social marketing within the school context. In order to develop an effective social marketing campaign to increase participation in PA, it is necessary to gauge understanding of the population prevalence of habitual PA and to look at the factors responsible for different types and levels of activity and also to assess the barriers causing physical inactivity (Donovan & Owen, 1994). In order to increase PA, efforts need to focus not only on the behaviour choices of individuals but also on the factors that influence those choices. Multilevel analysis assists in efforts to investigate children's PA from the perspective of socio-ecological model through enabling analysis of the contribution of different levels of determinants and their

interactions (McLeroy et al., 1988). The qualitative study in this thesis utilised the socio-ecological model to identify the factors which were both barriers and facilitators. Therefore, socio-ecological model could use the same approach to identify which factors should be targeted in ensuring schools are more health promoting. School approaches to PA must involve the community for example, organisational i.e the school and also policy alongside intrapersonal and interpersonal factors of the individual students. By ensuring that all the factors within SEM are addressed and SEM is used in within a social marketing framework children's PA should improve and therefore children will be protected from certain physical and psychological disorders in adulthood.

The aim of a social marketing campaign is to move individuals from intention to action (Fox & Kotler, 1980). Therefore, barriers to exercise are one of the most important factors in inactivity. This is due to exercise competing directly with other demands on time; in the case of children, these are likely to be other hobbies and interests, school demands, but more importantly most children's involvement in PA impacts upon the parents of the child either to participate in the activity, chaperone at the activity or just merely act as a taxi service. For some, requirement of a parent to engage in any way with the activity may make exercising out of school hours almost impossible for some children except maybe, for active commuting to school. Therefore any exercise campaign must enable the child to participate in a regular pattern of PA engagement that conflicts minimally on the demands of the family such as active commuting to school. If the PA impacts on other leisure activities then the PA has to enable the child to gain the same if not more enjoyment from the activity than their current other leisure activity. Children will not want to engage in PA solely to gain health benefits. Furthermore the activity has to be cost effective especially when promoting campaigns to children of families with lower socio-economic status (Donovan & Owen, 1994).

7.9 Implications for Policy and Practice for social marketers

NICE in 2004 and 2009 outlined their recommendations for the promotion of PA in youth, whereby schools are encouraged to deliver multi-component PA programmes and suggested schools employ a 'whole school approach' involving whole school, family and community based activities in its guidance for the

prevention and treatment of obesity and the promotion of PA. These should include education on the benefits of a physically active lifestyle, motivating children to engage in PA and providing opportunities to develop self-efficacy. The concept of a settings based approach was initiated by the World Health Organisation Health for All Strategy (World Health Organisation, 1980). Therefore promoting health and PA engagement will be most successful within the school if all those connected with it are actively involved. As suggested by World Health Organisation, 1986 'Health is created and lived by people within the settings of their everyday life; where they learn, work, play and love'. Schools have been identified as the most logical environments for the promotion of public health strategies not least because the school environment is where the full socioeconomic range of the population can be targeted equally (Fox et al., 2004; McKenna & Riddoch, 2002). Children spend the vast majority of their time in school; five days a week for approximately 40 weeks of the year at school (Fox et al., 2004).

The development and maintenance of PA behaviours from childhood is a priority for public health in the UK and is important for physiological and psychological health and wellbeing (Department of Health, 2004). NICE in a report in 2009 highlighted the school as one of the key settings for the implementation of their guidelines for promoting PA, sport and active play in school-aged children and young people. The school environment is important as lifestyle and risk behaviours relating to chronic disease and the beneficial effects of PA are learned early in school (Rogers et al., 1998). The school can provide different opportunities to encourage and foster PA behaviours both within and outside of the school curriculum as generally schools have the resources (in the form of staff, space and equipment). Furthermore, Ofsted regulations require that schools provide evidence of students adopting healthy lifestyles (Ofsted, 2009).

The school as a vehicle to promote health and PA is important; children, in particular young children are most receptive to learning about lifestyle and risk behaviours (McKenna & Riddoch, 2002; Rogers et al., 1998). Numerous attempts have been made to promote health and PA of children and adolescents through the school curriculum (Fox et al., 2004; Salmon et al., 2002; Salmon et al., 2007). Despite education through the formal curriculum and government

incentives for schools there remains a need to consider policy and environmental changes in order to improve the environment in both primary and secondary schools conducive to enhancing sustained PA patterns.

Furthermore, there remains a lack of consistent evidence that previous interventions have been successful in UK schools (Metcalf, Henley & Wilkin, 2012). NICE (2009) also state that for interventions to be successful and maintained they need to be based on psychological theories and models. Hence, the research covered within this thesis utilised the theoretical models of the theory of planned behaviour, social-cognitive theory and socio-ecological model. The SEM was used in this study to identify a range of factors and importantly physical and policy environmental factors that influence students' participation in physical activities. (McLeroy, 1988). The multi-level socio-ecological model provides a way for teachers and social marketers to obtain crucial information to enable children's perceptions to be taken into consideration when planning school interventions. The findings provide new knowledge for teachers and social marketers to ensure schools provide an environment that is inclusive for all PA levels and interests of students. Guidance also states that interventions need to be based on a whole school approach. Therefore, social marketing can utilise the 'whole' school in order to increase PA. The 'whole school' refers to teachers, students, staff and parents and also the resources (albeit sometimes limited) in the form of space i.e., physical buildings, classrooms, playground, gymnasium, sports hall and equipment i.e., playground games, trim trails, balls, rackets, to enable children to learn and develop healthy behaviours at a time when they are receptive to behaviour change. Finding ways to encourage participation in PA is a difficult task. There isn't one programme fits all and so programmes have to be tailored towards specific schools and specific segments of students.

A social marketing programme can be tailored to target different segments of the population at the same time (French et al., 2010; McKinnon, 2007; Truss et al., 2010) Policies for PA participation in children and young people have to look at the long term implications i.e., ensuring that policies don't just focus on immediate results but have an understanding that social marketing is a long term solution, one that can help to encourage adults as well as children to lead an active lifestyle. It is also hoped that this research will act as an impetus to

exploring further the problems that young people face when taking part in physical education in school. Moreover, that many school PE activity choices can be not only be limiting to PA participation in children but in the long term can permanently discourage PA in adulthood.

7.10 Recommendations for social marketers

This section presents the recommendations for social marketers that have arisen from analysis of the mixed methods research with particular regard to the findings from chapter 6 that utilised the SEM. Recommendations are set out giving ideas and suggestions for a social marketing campaign. As has been discussed previously understanding the lives of the students, their attitudes, beliefs, motivations and barriers of the individual together with the social, physical and political environmental factors is crucial in underpinning a social marketing campaign. Therefore, the suggestions that follow are purely based on the research conducted as part of this thesis in Devon and should therefore not be generalised to other areas of the UK. Based on the SEM, recommendations for interventions into a social marketing campaign will be detailed under the SEM headings of individual (intrapersonal), social (interpersonal), physical environment, policy (political environment).

As part of a social marketing plan put into schools children need providing with the information regarding the health benefits of PA which will allow them to value PA with a view to increasing and maintaining PA. The more children take part in PA they develop the skills to be able to take part in and enjoy the activity which in turn improves the self-efficacy of the child. A whole school approach which includes: the curriculum across the school; policy and environmental changes are recommended as an effective approach to increasing PA behaviour in children and young people (De Meiji et al., 2011).

7.10.1 Individual (Intrapersonal)

It is recommended that as part of a school social marketing programme the schools could purchase modestly priced pedometers thereby being an inexpensive way in which to facilitate the increase in children's PA during the school day. Pedometer use can also increase PA due to its competitive nature among the children. This method of PA promotion may be an effective way of

targeting the least active children within a population without any one child being singled out. A prize could also be issued for the most active child each week with suggestions to the children on how to be more active. Children can also be given activity planners to record activity outside of school, particularly during school summer holidays. In primary schools activity levels could also be recorded on a wall chart to encourage competitiveness among students.

Social marketing could also use point of decision prompts (PODPs) aimed at reducing sedentary behaviour. PODPs have proved to be a useful tool in prompting less sedentary behaviour. PODPs are used to inform individuals about the health benefits associated with behavioural change, and have been used with success to prompt individuals to use stairs to increase PA levels (Nocon et al., 2010; Soler et al., 2010), and to prompt groups to stand rather than sit (Lang et al., 2015). Furthermore, PODPs are simple, cost effective interventions that provide an equitable population-based impact; in a school setting this would promote PA amongst children of all ages together with the adult population of the school (Wu et al., 2011). PODPs could be spread around the school, specifically around the sports areas of the schools. Stairwells are a good place to place prompts particularly as they can brighten up stairwells. Prompts encouraging walking to school could be placed around the school gates for both parents and children to see and read. Schools should also signpost local PA events taking place in both the school and the community (Gorely et al., 2009).

7.10.2 Social (Interpersonal)

PE teachers should be given specialist PE training and all primary schools should have a specialist PE teacher taking the majority of PE lessons within the school and running after school activities. Lack of knowledge or confidence in the area of PE and physical activities can be a barrier to implementing after school activities and can negatively impact on the experiences students receive during PE as was found in student interviews. Where teachers are not specialists' then in-service teacher training on the various PE activities and sports should be put in place to ensure that non PE specialists have sufficient knowledge to equip students to learn new skills but also they have sufficient knowledge to make them feel confident when teaching PE. This could contribute to developing greater enthusiasm and skill with regards to the implementation of physical activities.

Within school PE lessons teachers have a duty to foster positive relationships with the students and ensure the students gain self-efficacy in physical activities, also ensuring PE lessons are not only active but also fun. A greater focus should also be on children being active during the majority of the PE lesson rather than sitting around listening to the teacher talk. Focus should also be on game play with a minimum amount of rules during team sports as students find greater enjoyment in those PE lessons when the majority of the lesson is spent playing the game. Students find that PE lessons where all or the majority of the lesson is spent either been taught rules or learning skills is boring, doesn't engage the students as they find it repetitive and instils negative opinions towards PE lessons and PA.

The scope of any social marketing plan must go beyond the school gates. In order for a physically active lifestyle to be adopted and maintained it is important that they be enabled and reinforced outside of the school day (Welk, 2000). Many people prefer to engage in PA with other people. Examples of group based activities include: Walking groups; Dog walking groups; Cycling groups; Sport events or competitions; Creating community gardens. Primary schools usually have PTAs (Parent Teacher Associations. Involving parents in such group based activities and encouraging them to set up groups with the help of the school (which can then be marketed within school) could help both students and parents to be active outside of the school day.

7.10.3 Physical Environment

Following the results concerning travelling to school in the survey and interviews, it is recommended that schools encourage active commuting to school via a travel plan which should be implemented with a travel plan coordinator. The travel plan should also be updated each year with all new parents and children being made aware of the school travel plan during induction into the school. Consultation with local government also needs to be made to ensure that the local environment and infrastructure is safe for children to walk or cycle to school, taking in the catchment area of the school, so that all children can be safe to walk to school and parents feel confident to allow their children as they get older to walk alone. This can be incorporated into a continuous social marketing campaign in which parents and students can be educated on the benefits of

children walking to school with information given as to safe walking routes. Where children live too far to walk all the way to school, parents should be encouraged to park and walk their children some of the way to school, this would also ensure that the area around the school is safe for children to cross roads as there will be fewer cars and it also ensures that no child will be excluded from receiving rewards for walking to school due to the distance they live.

Schools should set up walking buses for primary school students, give rewards for children who walk to school and enforce greater parking restrictions around the school. All schools should also take part in 'walk to school weeks' or 'walk to school days. A greater focus should be made by secondary schools on encouraging students to walk or cycle to school as the researcher found more evidence of primary schools following walking to school initiatives than in secondary schools. Parents should also be encouraged to walk their children to school and if parents are encouraged to show their children a safe walking route then this may ease concerns on the dangers of walking to school. Older children, even though that live a distance from the school could be encouraged to cycle to school and could be given incentives stamps (which when collected so many could receive a free water bottle, puncture repair kit), cycling proficiency tests could also be offered in schools to ensure safe cycling to school. Secondary schools could offer bike maintenance courses after school (which could potentially be undertaken by staff from the technology department) Schools need to ensure that they have locked cycle sheds so parents and students can feel confident that their bikes will be safe and secure during the school day.

Schools could also take part in a health week/s throughout the year which is to give students an understanding as to why they need PA and build on their self-efficacy for taking part in sports and exercise which could give students: lessons on the beneficial effects of PA in a bid to increase children's understanding of the relationship between exercise and health; a taste at trying different physical activities that they don't usually take part in (such as orienteering, golf, mountain biking, Zumba, martial arts, attending classes at the local gym); tournaments among form groups (in sports such as netball, basketball, rounders, badminton). In studies this has been found to increase health related exercise knowledge by 23% (Fairclough, Stratton & Butcher (2008).

Another potential approach is to provide structured PA breaks during regular school hours such as Take 10 that already exists in some of the primary schools. (Kibbe et al., 2010; Salmon, 2010). The students interviewed in this study were found to enjoy Take 10. However this could be rolled out across all schools including secondary schools. Research suggests that these PA breaks can provide significant increases in PA, can also lead to increased physical fitness, together with improving academic performance (Barr-Anderson et al., 2011; Katz et al.,2010; Kibbe et al., 2011). Although PA breaks provide a short duration of PA, the evidence suggests that sporadic bursts of PA can be beneficial to health (Glazer et al., 2013; Holman et al., 2011).

During break times, equipment (such as bats and balls, hoops, bean bags, skipping ropes, basketball & hoop) needs to be provided in both primary and secondary schools, where it is put in place in primary schools it has proved successful in children being active during lunchtime. Permanent fixtures such as trim trails should also be provided in primary schools to encourage those children that enjoy individual play rather than group sports. Lunchtime assistance and teachers on duty can also be provided with training to encourage students to be active during lunch times rather than supervision only being a passive experience. Student peers have also been successful in increasing PA in schools and therefore 'playground buddies' could be trained and put in place in all primary schools aimed at getting older primary school aged children to initiate and play games with younger children and ensuring no child is left alone in the playground.

Providing opportunities for PA outside school hours is another useful method of addressing the time constraints within the school day. As an alternative to extra-curricular activities taking place after school the school day could also be extended with students arriving earlier in the morning so that there would be sufficient free time for structured PA. Also for students living in rural areas that use school buses, and therefore staying after school could be a problem, schools can offer extra-curricular activities during lunch times (where lunch breaks are too short these can be extended slightly by extending the school day). Some key points to for extracurricular physical activities include:

- Encourage and provide schools with safe and accessible spaces and facilities to allow students to spend their time in after school actively.
- Designing comprehensive after-school programmes - both competitive and non-competitive including lunch and after-lunch classes, dancing, fitness activities, school sports competitions.
- Both individual and team activities should be offered so that the maximum number of students' needs, interests and abilities are addressed.
- Extracurricular activities should not be a substitute for PE lessons but rather supplement or enhance existing PE programming.
- Supporting schools with resources and guidance in establishing partnerships with communities and community spaces so that after-school clubs, student groups, and parent groups can learn about the value of PA and become engaged.
- Government funding should be given for free afterschool activities where staff are employed from outside of school.

7.10.4 Policy (School Political Environment)

Within the school environment an integrated curriculum approach is needed in order to increase PA. The school setting and physical educators in particular should embrace public health by adopting a comprehensive school based social marketing programme. As academic subjects are being prioritised over PE lessons, primary and secondary schools can incorporate the benefits of PA and leading a healthy lifestyle into the course curriculum of other subjects where possible in order that all teaching staff can encourage participation of PA. As stated by Oliver et al., (2006, p78) “the promotion of PA participation holistically through the school environment may enhance the likelihood of behaviour sustainability”. The critical component to integrating PA into school hours is engaging with key stakeholders including parents, teachers, students and school authorities. There may be resistance to the idea of allocating time during the school day towards PA as there are concerns about the time taken away from academic subjects.

In schools where the curriculum is very full, time can be found for PA by incorporating it into the curriculum. In secondary schools, PA and health behaviours can be taught through lessons other than PE such as Science, I.C.T, Business Studies, Food Technology, P.S.H.E, Life Skills, Tutor time and assemblies. An example of this can be in science classes where PA can be used to illustrate body mechanics or a ball thrown between two students can illustrate trajectories in physics. For primary school aged children PA and health behaviours can be taught through science, literacy, numeracy, I.C.T, P.S.H.E, geography and project work. Curriculum resources are available to assist teachers with delivery such as CD-ROM and internet based activities.

One suggestion is that as all schools have some form of tutor time with their students, which is not always utilised very well and so students can just be sat reading or sat chatting. Teachers could promote healthy lifestyles and PA during this time and could also be trained to engage with students' on a one to one basis to put together an individual PA plan with the students. Schools should also provide healthy environments for children in the form of extra-curricular PA promotion, computer and media based resources such as an interactive website linked to the school site for parents and children to access giving additional information on diet, exercise and healthy lifestyles in addition to sign posting of local PA events and to give suggestions for adding extra minutes onto their day by making lifestyle changes. Motivational messages could also be utilised on the site. There are many possibilities for an interactive social media site with forums where students can talk to and arrange to be active with their friends.

In addition to classroom based education schools should ensure PE is health related with PE teachers aiming to increase PA within PE lessons. Examples of how PE lessons can be improved to engage students are listed below:

- Diversify and increase the number of PE lessons to include aerobic/endurance, strength, flexibility, and coordination activities.
- Offer a variety and choice of PE lessons so that students' age, gender, disability, emotional needs, self-efficacy and interests are taken into consideration.
- Allowing student input into lessons to determine the content which may help to ensure a more positive PA experience, especially for females.

- Promote and support the use of local environments (e.g. beaches, hills) and facilities (e.g. public parks, local leisure centres) for PE lessons.
- Provide adequate funding for PE and appropriate PA facilities, including change facilities and training for PE teachers (e.g. training in fitness related activities such as Zumba, Aerobics, Pilates).
- From a policy perspective, devise or provide a national curriculum framework for PE that is flexible so as to be appropriate to all pupil needs and address the development of a regulatory approach to make PE lessons compulsory in schools, ensuring this is adhered to by schools.

Implications for policy can include compulsory PE timetabling with schools being fined that do not adhere to regulations. The PE curriculum needs to be amended so that schools are free to teach physical activities to suit segmented groups of students so that the majority of students can get a positive experience from PE lessons. Social marketers can also find out what motivates students to participate in PA; the social support available to students and uncover perceived barriers to PA. In assisting students to increase perceived health benefits and overcome barriers students will be more likely to be physically active.

7.11 Chapter Summary

This chapter discussed the findings from both the qualitative and quantitative studies which were merged together in the form of a research summary giving the reader an overview of the research findings. Consistent with Stokol's (1996) perspective, this study attempted to identify and draw out specific factors at each level of SEM that might be viewed as barriers and facilitators to PA participation. The results suggest that specifically in children PA patterns and attitudes and beliefs towards PA are ever evolving. Furthermore, the physical and political environments were found to be important factors that should not be overlooked in a social marketing campaign to encourage and increase PA levels in school children. This chapter has attempted to identify potential strategies for increasing PA at each level of influence of the socio-ecological model that could be incorporated into a social marketing campaign conducted in primary and secondary schools. Any social marketing campaign would need to integrate the current values and feelings of the students into a campaign whilst addressing physical and political environment factors, recognising the need to be flexible and

explore changes in beliefs and attitudes as student's age. Following on from this chapter, Chapter 8 will now provide a thesis conclusion.

CHAPTER 8

THESIS CONCLUSIONS

8.1 Conclusion of the Thesis

The work in this thesis has sought to answer questions about the PA behaviours of school aged children using a mixed methods approach. This study gives support to the use of an interdisciplinary approach to understand PA behaviour in school children. This approach has enabled the exploration of PA in school aged children with a view to tailoring a social marketing plan to the needs of school aged children in Devon. The research questions sought to identify the influences, motivations and barriers to students' PA. Quantitative and qualitative research has sought to understand how PA is perceived and experienced by school children. Listening to students' perspectives of the individual, socio-cultural and environmental/political factors that encourage them to be physically active may assist in reducing students' sedentary time and promote a healthy physically active school that uses a 'whole school' approach (Hyndman et al., 2012). In this final conclusion the strands of the thesis in relation to theory, methods, data and interpretations will be pulled together. Several empirical, methodological and theoretical reflections that have emerged throughout the research journey are offered within this chapter.

To the researcher's knowledge no previous study has looked at PA in both primary and secondary schools using a combination of the TPB, SCT and SEM with a view to implementing a multi-faceted social marketing campaign in schools, to increase sustained patterns of PA. Moreover, the majority of theory and practice in social marketing has been driven by the use of individual level behaviour change models such as (Collins et al., 2010). Therefore using SEM, a multilevel model that accounts for the complexity of social-cultural and environmental effects i.e., the physical and political environment has enhanced knowledge within school based physical activity participation. Furthermore this research has demonstrated the potential for incorporating SEM into a school based social marketing campaign.

As children spent more time in schools than any other environment outside of the home, the school has been identified as an important environment for the promotion of PA as it provides unparalleled access to children through continuous and intensive contact (Fox, 2004, Cale & Harris, 2006). Therefore a 'whole school' approach would seem to be the most effective way of achieving

the aims of the research which fundamentally was to increase PA in children. As a result utilising a social marketing approach within schools may encourage a physically active school environment (Dann, 2010; Evans, 2008). The overall aim of the thesis was to examine the PA of school based children with the aim of increasing sustained patterns of PA using social marketing.

This thesis shows the differences in **childhood experiences of PA** as told by the children themselves. Children are active agents and solution based researchers who are knowledgeable and reliable in their own experiences and therefore make a significant contribution to **local policy** making. The thesis has given a better understanding of the most active and least active children in order that all children can be encouraged to take part in daily PA.

This study recognises that most **public health challenges are too complex** to be adequately understood and addressed from a single perspective (Stokols, 1996). Therefore, in order to understand children's PA, theories and models have been adopted from health psychology and applied to the context of PA. This study used the TPB and SCT when writing the questionnaire and the SEM in the interviews as tools in the process of social marketing. Whilst the TPB looked at individual factors that affect PA in school children, SEM advocates that behaviour affects and is affected by multiple levels of influence, and that individual behaviour shapes and is shaped by the **social environment**. Moreover, the **physical** and **political environments** are also of importance when addressing health issues such as PA which were found to be of importance to PA of school children (Stokols, 1996).

Using **SEM** revealed a number of prominent themes and key findings. Individual (intrapersonal) factors revealed that a greater percentage of students were adequately active than reported in the literature. However, a reason for this discrepancy could have been that the children filled the questionnaire in independently and overestimated their PA participation, a common problem of self-reported PA (Rowlands et al., 2000). A further reason for this could is that the questionnaire was completed during the summer months when children's PA levels are likely to be highest (Duncan et al., 2008; Rowlands, 2009). Lack of time was a factor to students engaging in PA as a result of sedentary activities of

which gaming has become a **social norm** with the older students, particularly males. Although for younger students in their last year of primary school, increased freedoms gave them the ability to spend more time being active with friends. This period when moving from primary to secondary school was a particularly important one whereby students are vulnerable to declining PA levels. Therefore this period of time should be an increasingly important one for the promotion of PA for policy makers, PE teachers and social marketers to encourage long term participation among older adolescents. Participation in PA was positively influenced when activities were fun and when they were supported by positive role models and supportive family and friends (Casey et al., 2009).

Social (interpersonal) factors was a predictor of PA in all activity groups with students saying that they were more likely to walk to school if they had a **friend** to walk with or more likely to engage in afterschool and out of school activities if they had **friends** to participate with. Even the least active students were prepared to go to the park and play or take part in sports if they had someone to go with. Participation was negatively influenced by a perceived lack of **self-efficacy** as only students with high levels of **self-efficacy** would engage in activities without friends (Casey et al., 2009; Dishman et al., 2009). This was particularly the case with females who seemed to have lower levels of **self-efficacy** than males and therefore less likely to attend activities alone (Dzewaltowski et al., 2008).

Peer-led activities provided an opportunity for students to be active during break times, particularly the least active students and as such it is recommended that all schools take on **peer-led** activities during break times. Secondary school students would benefit from being able to loan equipment and also having indoor space available in which to play sports during break times. Moreover, students whose **parents** were either active or encouraging were also more likely to be active. **Teachers** were seen as important role models within the school with students enjoying PE lessons more when PE **teachers** participated in the PA, thereby encouraging PA participation in the students (Casey et al., 2009; Mehtala et al., 2014).

The physical environment found issues within both the school facilities for break times and **local recreational** facilities for outside of school. The **weather** impacted on the **enjoyment** of physical activity with students being negatively affected by and not enjoying PE lessons that took place outside in adverse **weather** conditions. An effect that schools could reverse, by ensuring students (particularly females) are given indoor facilities when the **weather** is extreme. Of major important to students being active during break times was the addition of **playground equipment**, both static and also sports equipment (Giles Corti et al., 2002; Louicades et al., 2009; Metlzer et al., 2012). In regard to **recreational facilities** outside of school **cost** and **transport** were major barriers that need to be overcome in order that those students can access PA in order to increase their participation.

Within the **policy (political environment)** the PE **curriculum** was a major stumbling block for students and teachers alike. Having to follow such a specific **curriculum** meant that lessons were very skill and rule based and at times quite inactive with children standing or sitting around listening to the teacher. As a result students, particularly in secondary schools were spending more of the lesson being inactive than active. This teaching style is likely to be a factor in students' activity levels decreasing in secondary school. Consistent with the literature one school felt that having **teacher role models** was seen as important (i.e., teachers should if possible walk to school) (Kirby & Inchley, 2009). Many of the barriers and potential strategies identified were related to students' perception of choice both with PE lessons and afterschool club activities. The activities on offer tended to be traditional sports, such as football, rugby, netball and hockey which only appealed to some students with vast numbers of female students wanting to engage in health related PA or games such as bench ball and dodgeball. Modification of current legislative school policies regarding PE lessons and other school activity choices is justified to ensure optimal engagement of all students but particularly those that are no so sport orientated (Hohepa et al., 2006). Flexibility in this area could make a vast difference to the perceived enjoyment and quality of PE lessons particularly with the least active students in schools. Moreover **school policies** (i.e., no kit, no PE and removal from PE lessons for academic subjects) need to be adapted that ensure that all students take part in the minimum of 2 hours per week so that those students that

most need PA can access enjoyable and fun activities within school. This would also help students to view PE positively as opposed to seeing PE as a lesson to be dropped with students going to extreme lengths not to participate. Encouragement should be made throughout the school with staff and students to view PE as lessons that are greatly beneficial. Students should be empowered through education, encouragement, social support and being given a choice of activities so that students want to engage in PE, in the last 2 years of secondary school. Moreover, if school staff see PE as beneficial and an important lesson that carries equal if not more merits that academic subjects within schools that students should engage in then this may encourage students to not only want to engage in PE but to also engage in other physical activities. Motivational support may foster a school community commitment and support to engage the least active students in PA.

Continued research into PA programming, health behaviour change, together with the effective administration of such programmes, firm commitments from parents, teachers, coaches, policymakers and health professionals is required in order to reverse the trend of an inactive population, more specifically reversing the trend of sedentary youngsters into active children (Annesi, 2006). Whilst the school is not the only arena where inactivity could be addressed in young people it certainly has the opportunity to address the vast majority of young people in this nation.

The literature reviewed shows promising directions for research and practice using **theory based interventions** for behaviour change in particular **SEM** in order to increase PA in school children. This study demonstrated that a mixed methods theoretically driven, multi-component whole school social marketing campaign targeted to the needs of the individual schools according to the community location (rural vs urban setting), the target population (intrapersonal needs of males and females students) together with the community needs (what opportunities currently exist and what is lacking) would be beneficial to increasing children's sustained patterns of PA. Partnership working between local authority departments (such as local swimming) would also assist in students becoming more active as students would have more access to facilities and the infrastructure in the local area could ensure it encourages the community to be

physically active. For a whole school approach to be successful PA researchers and social marketers would benefit from using SEM to carry out qualitative research which includes ethnographic research in order to fully understand the lives of the students and the school environment. An increased understanding of how these interlinked components of SEM influence behaviour will ultimately support the delivery of more effective social marketing campaigns. There have been many studies conducted that have looked at PA within schools. However, it would appear from the literature search that whilst many have used quantitative research (Harsha, 1995; Thomas et al., 2003; Reilly, 2005) less have used qualitative studies and a mixed methods approach (Casey et al., 2009; Hyndman, 2012) whereby a survey utilising a questionnaire was conducted alongside qualitative methods. In this particular case, this included interviews of both students and teachers/headtachers and ethnographic observations carried out over a period of 3 years. This gave the researcher a far greater understanding of the PA culture of schools.

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APPENDIX A

CONFERENCE COMMUNICATIONS

UK Social Marketing Conference, Brighton

Oral presentation on physical activity and social marketing in school children November 2011

University of Exeter Centre for Sport, Leisure and Tourism Research

Research Showcase Westminster

Oral presentation on Are you sitting comfortably? Social marketing and physical activity among schoolchildren 23 April 2012

University of Exeter Postgraduate Research Showcase

Poster physical activity and social marketing for health in children 13th June 2012

Prize won for Best Poster

ICSEMIS Conference Glasgow "Olympic Conference"

Poster presentation on social marketing for physical activity and health: Encouraging sustainable patterns of physical activity 19-24th July 2012

ISM-Open Institute for Social Marketing 'Taking Responsibility"

Oral Presentation on social marketing for physical activity and health: Encouraging sustainable patterns of physical activity and health in children 9th May 2012

World Social Marketing Conference - Canada "WSM Conference"

Poster Presentation on Social Marketing and physical activity and health in children April 2013

BASES Conference Preston "New Directions in Sport and Exercise"

Oral Presentation on Physical activity in school children: Social Marketing to sustain patterns of physical activity 3-5th September 2013

Brunel Centre for Sport, Health and Wellbeing "Sport for Health"

Oral Presentation on Social marketing for physical activity and health: encouraging sustainable patterns of physical activity and health in children 7th November 2013

The Sport and Exercise Scientist. Co-wrote an article “Physical Inactivity” How can we encourage Physical Activity in the population? Spring 2011

APPENDIX B

BENCHMARK CRITERIA FOR SOCIAL MARKETING

1. Customer Orientation

This involves development of a broad understanding of the consumer, which has to focus on people's everyday lives. It uses marketing research to identify audience characteristics and needs, together with incorporating key stakeholder intelligence and understanding. This aspect of the benchmark criteria also uses a range of research analyses combining data from both public and commercial sector sources (French et al., 2010).

2. Behaviour

The aim of the behaviour aspect of the social marketing framework is to identify the needs of customers that will assist with wanting individuals to change their behaviour in the desired way, complete with behavioural goals. The intervention addresses the behavioural issues of understanding what triggers and maintains the established behaviour. Furthermore the intervention then seeks to understand what will move and motivate people to change and addressing the barriers and voluntary behaviour controls that may or may not work (French et al., 2010).

3. Theory

Theory is used to inform and guide development and an open integrated theory framework is utilised to examine which theory is best used in a given context. It also takes behavioural theories into account across the domains of biological and physical factors, psychological factors, social factors and environmental/ecological factors (French et al., 2010). Psychological behaviour change theories of which they are numerous such as attribution theory, goal-setting theory, health belief model, social cognitive theory, social learning theory, theory of reasoned action, theory of planned behaviour and trans-theoretical stages of change model help to play an understanding of social-marketing strategies for exercise (Donovan & Owen, 1994).

4. Insight

The approach of Insight is about identifying and understanding why people do what they do and why it benefits them and what is likely to move and motivate them. It seeks to identify the key factors and issues narrowed down from a wider

understanding of the customer that will positively influence a particular behaviour (French et al., 2010; Morris et al., 2009).

5. Exchange

The principle of 'exchange' is derived directly from marketing and is the transfer of goods between two parties; in the case of social marketing it offers intangible benefits and the transfer of values, beliefs or affects and often involves third parties (Bagozzi, 1975). It clearly analyses the cost to the individual of achieving the proposed benefits and analyses the perceived and actual costs versus perceived and actual benefits (French et al., 2010). Some costs and benefits to the individual are easier to adopt than others. An example of this comes from the prevention of sudden infant death syndrome which had been linked to the baby sleeping on his/her back. When advised of other positions that would help to prevent sudden infant death syndrome, parents rapidly carried out this advice. In this case the behaviour was easy to adopt and failure to do so could have been catastrophic. However, other cost/benefits such as not smoking are not so easy to adopt. Incentives and rewards have to be considered and tailored according to specific audiences.

6. Competition

Knowing 'the competition' is a key aspect of the social marketing framework. Competition in a social marketing framework refers to all the factors that compete for the person's attention, willingness or ability to change (Morris et al., 2009). It examines both internal (psychological factors, pleasure, desire and risk taking) and external (wider influences and influencers competing for the audiences' attention, time and behaviour) (Evans, 2008). In the case of physical activity in children this is likely to be TV viewing; a study by Singh, (2008) found that regardless of age and gender TV viewing is significantly negatively associated with physical activity participation.

7. Market Segmentation

One of the key decisions in social marketing that guides the planning of a social marketing campaign is whether to deliver the message to a general audience or to segment into target audiences (Evans, 2006). Market segmentation involves the division of the total market into groups so that all individuals within the same group share similarities. As described by Kotler, (1989) there are three phrases in identifying groups: dividing the total market into segments and giving each a profile; evaluating each segment and selecting one or more segments as the

target audience and developing a detailed marketing mix individualised for each segment. Target groups in social marketing campaigns are often defined according to risk factors (e.g., overweight/obese, inactive, smokers) or according to demographic group (e.g., ethic minorities, low-income families, blue-collar workers) (Evans, 2006). The segment based approach helps the social marketer understand which segment engages in which behaviour, and what causes that behaviour. A more knowledgeable understanding of the differences in behaviour will enable specific consumer orientated market segment strategies (Singh, 2008).

8. Marketing Mix

Marketing mix uses both intervention and marketing mix in the social marketing framework. The marketing mix uses the 4ps' of product, price, place and promotion. Product focuses on the benefits package to the customer. Price refers to the costs i.e., money costs, opportunity costs, incidental costs and costs to wellbeing (Andreasen, 2002). Place refers to where the social product is available to the customer (Mah et al., 2006); in the case of physical activity, this would be access to activities either at school, the community or ability to walk/cycle to school. With regard to behaviour change in physical activity the sense of place should be given precedence in the marketing mix so that campaigns acknowledge local opportunities and constraints imposed (Herrick, 2007). Promotion is the communicating of powerful messages relevant to the target audience (Andreasen, 2002). Intervention mix is important in social marketing, is additional to the 4p's and has an explicit focus on systems analysis and systems redesign as many barriers to change at the individual level are beyond the control of the individual and therefore innovative changes need to be made (French, 2009).

APPENDIX C

QUESTIONNAIRE

QUESTIONNAIRE

Beliefs and attitudes on physical activity participation in school children

Samantha Parnell

Shsp201@exeter.ac.uk

Tel: 07855878372

SECTION A: BACKGROUND INFORMATION

This section asks for some personal information to help us understand about you; your responses will be kept anonymous.

Q1. What is your **name?**

Q2. What is your **date of birth?**

Q3. What **school** do you go to?

Q4. What **school year** are you in?

Q5. Are you a boy or girl? (please tick one box only)

Boy

Girl

Q6. What do your **mum** and/or **dad** or **guardian** do for work?

SECTION B: PHYSICAL ACTIVITY LEVELS

In this section we need to collect some information about your current and future physical activity patterns on both school days and weekend days.

Q1. How often do you **walk** or **cycle** to school each week? (please tick the box that best describes a normal week).

Everyday ☐ 3 or 4 days ☐ 2 or 3 days ☐ 1 or 2 days ☐ never ☐

Q2. How much time each week do you think you spend doing **chores (jobs)** at home that are **physically active** i.e. cleaning or gardening? **(please write the number in *hour(s)* or part thereof).**

☐

Q3 (a). On a normal week how many **hours** do you think you spend on **physical activity** or **sports** during the school day and outside of school hours. **(Please put the number of hours or part hours next to the activity listed and only mark one box per line)?**

Activity	I never do this (tick)	I sometimes do this (tick)	I usually d this (hou each wee
Cycling (not school travel)			
Running			
Walking (not school travel)			
Exercise: push-ups, sit-ups, jumping jacks,			

weights, indoor gym equipment			
Climbing/playing on playground equipment			
Outdoor play i.e. chase, tag, hopscotch, hide & seek, tree climbing, skipping			
Volleyball			
Basketball			
Baseball, softball, rounders			
Football			
Rugby			
Swimming			
Hockey			
Netball			
Other ball playing i.e. dodge ball			
Racket sports i.e. badminton, tennis, squash			
Dance/Aerobics			
Gymnastics			
Skateboarding, skating, rollerblading, ice skating			
Martial Arts			
Cheerleading			
Trampolining			

Other (please state)			

Q3(b) Could you also put a tick next to an activity that you would like to or are considering participating in, in the future. (**Please tick or mark with an 'x' only one box per activity, if the activity applies to you).**

Activity	I will be doing this activity in the near future	I would like t do this activi in the futur
Cycling (not school travel)		
Running or jogging		
Walking (not school travel)		
Exercise: push-ups, sit-ups, jumping jacks, weights, indoor gym equipment		
Climbing/playing on playground equipment		
Outdoor play i.e. chase, tag, hopscotch, hide & seek, tree climbing, skipping		
Volleyball		
Basketball		
Baseball, softball, rounders		
Football		
Rugby		
Swimming		
Hockey		

Netball		
Other ball playing i.e. dodge ball		
Racket sports i.e. badminton, tennis, squash		
Dance/Aerobics		
Gymnastics		
Skateboarding, skating, rollerblading, ice skating		
Martial Arts		
Cheerleading		
Trampolining		
Other (please state)		

Q4. How many ***hours*** on an average week do you spend:

Doing homework, reading		On the computer, playing games		Watching Television	
Talking on the phone		Listening to music, playing an instrument		Hanging out with friends	

SECTION C: YOUR FEELINGS AND KNOWLEDGE ABOUT PHYSICAL ACTIVITY

This section looks at your own personal feelings, beliefs and knowledge about physical activity and the reasons why you would want to participate in physical activity.

Q1. Why do you do physical activity? **(Please say how much you agree or disagree with the following).**

	Please place an 'x' in one box for each statement				
	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
• I have always done physical activity					
• Exercising helps me to feel happy					
• Exercising helps to give me energy					
• Friends/parents and brother/sister do					
• I enjoy physical activity					
• Exercising helps me feel good about myself					
• Exercising makes me feel really tired					
• I exercise because					

it's fun					
• Exercising helps me to be healthy					

Q2. How important do you think the following statements are? **(State how much you agree or disagree with their importance).**

	Please place an 'x' in one box for each statement				
	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
• It is important to take part in physical activity to maintain good health					
• It is important to take part in physical activity to maintain confidence					
• It is important to take part in physical activity for mental health and well being					
• How important do you think the role of physical activity is for					

weight control? i.e. stopping a person from becoming fat					
• I think I do enough physical activity to be healthy					

SECTION D: SOCIAL SUPPORT

This section is looking at all the people around you who help you to be physically active and includes family, friends, teachers, coaches and media influences such magazines, television or sports stars.

Q1. Who do you do **physical activity** or **play sports** with? **(please tick all that apply).**

1. Alone? ☐
2. With family? ☐
3. With friends? ☐
4. With sports group? ☐

Q2. Do you do **physical activity/outdoor play** in order to spend time with your friends?

☐ Yes ☐ No

Q3. Have you made **new friends** as a result of taking part in physical activities?

☐ Yes ☐ No

Q4. Who or what **encourages** you to take part in physical activity and sports? **Please state how much you agree or disagree.**

	Please place an 'x' in one box for each statement				
	Strongly	Disagree	Neither	Agree	Strongly

	disagree		agree or disagree		agree
• Friends					
• Family					
• TV/Magazines					
• Role models i.e. footballer					
• Medical or other health professional i.e. doctor or nurse					
• Sports Coach					

Q5. Would you take part in more physical activities if you were encouraged by? (please tick or 'x' **only one** box per question).

	Yes	No
1. Parents	☐	☐
2. Teachers	☐	☐
3. Friends	☐	☐

SECTION E – BARRIERS AND CONTROL BELIEFS TO PHYSICAL ACTIVITY

This section looks at the people or things that prevent you from taking part in physical activity. It also looks at how confident you are in taking part in physical activity and the controls that help you to do physical activity.

Q1. Do you recognise any of the following as **stopping you** from taking part in physical activity? **(Please state the degree to which you agree or disagree).**

	Please place an 'x' in one box for each statement				
Barriers (stopping you)	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
• Physical constraints i.e. a physical disability.					
• School i.e. teachers.					
• Family responsibilities i.e. looking after parents or brother/sister(s).					
• Parents not allowing me to do physical activity.					
• Friends.					
• Hostile social environment i.e. unfriendly groups or gangs.					
• Facilities such as cost (money) or transport to get to the activity.					
• Embarrassment/Shyness of showing your body.					
• Lack of interest in sports or physical activities.					
• Lack of skills i.e. you don't think that you could do the sport or activity.					

Q2. These questions relate to your **self-confidence** and **control** in being able to carry out physical activities. **(Please state how much you agree or disagree).**

	Please place an 'x' in one box for each statement				
	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree
• Other than when in PE lessons I have a choice on whether or not to do physically activity.					
• I think I can do physical activities even if they are difficult.					
• I think that I can do physical activities even if I have homework or other activities to do.					
• I think I can do physical activities even if the weather is very hot or cold.					

• I think I can be physically active no matter how busy my day has been.					
• I think I can be physically active no matter how tired I may feel					
• I think I can be active even if my friends don't want me to or want me to do something else.					
• I can be physically active on most days even if I could watch TV or play video games instead.					

Please feel free to use the space below to add your own comments in connection with participation in physical activity.

Would you be willing to be contacted again to further take part in the research by attending a focus group with other students? **(Please tick yes or no).**

Yes ☐ No ☐

Thank you for your valuable time and cooperation.

APPENDIX D

CONSENT FORM

PHYSICAL ACTIVITY SURVEY INFORMATION SHEET

Thank you for showing an interest in this project. Please read this information sheet carefully before deciding whether or not to participate. If you decide to participate we thank you and would ask that you complete the attached consent form. If you decide not to take part there will be no disadvantage to you of any kind and we thank you for considering our request.

What is the Aim of the Project?

This project is being undertaken as part of the requirements for the PhD in Human Geography and Sport and Health Sciences. The aim of the project is to assess school age children's activity levels. The project will also look at how children feel about participating in physical activity and any barriers that may prevent them from being active. It is hoped that by obtaining this information future physical activity campaigns may be tailored to meet the needs of different groups of children.

What Type of Participants are Needed?

The opinions of children in key stage 2, 3 and 4 are being sought, those are children in years 3 to 11 (ages 7 to 16). The project will include both boy and girl participants.

What will Participants be Asked to Do?

Should you agree to take part in this project, you will be asked to complete a short questionnaire on the physical activity that you do. There will also be questions asking how you feel about physical activity and anything that stops you from being physically active. A small number of students will be contacted after completion of the questionnaire and invited to take part in a focus group interview. However, further consent for this will be obtained before participation.

Can Participants Change their Mind and Withdraw from the Project?

You may withdraw from participation in the project at any time and without any disadvantage to yourself of any kind. You may also request that any information collected from you to date be destroyed or deleted and not used either now or in the future

What Data or Information will be collected and What Use will be Made of it?

The data will be collected via a questionnaire and may be followed up by focus group interviews. The data will be used to help shape a school based social marketing campaign. The data will only be used by me in order to put together the campaign, however, data from the campaign may be mentioned in my final report to the schools and local authority.

Results of this project may be published but any data included will in no way be linked to any specific participant. You are most welcome to request a copy of the results of the project and a copy of any interview transcripts should you wish. The data collected will be securely stored in such a way that only those mentioned above will be able to gain access to it and will be destroyed after 5 years.

What if Participants/parents have any Questions?

If you have any questions about this project, either now or in the future, please feel free to contact either

Samantha Parnell	or	Craig Williams
01392 264721		01392 724890

This project has been reviewed and approved by the Ethics Committee of Department of Geography (Human) at the University of Exeter.

PHYSICAL ACTIVITY SURVEY

CONSENT FORM FOR PARTICIPANTS AND PARENTS/GUARDIANS

I have read the Information Sheet concerning this project and understand what it is about. All my questions have been answered to my satisfaction. I understand that I am free to request information at any stage.

I know that:-

my participation in the project is entirely voluntary;

I am free to withdraw from the project at any time without any disadvantage;

the data (questionnaire/audio-tapes) will be destroyed at the conclusion of the project but any raw data on which the results of the project depend will be retained in secure storage for a period of 5 years from collection;

all responses to this survey are completely confidential and all identifying information will be removed from this questionnaire as soon as all the data has been collected.

the results of the project may be published but any anonymity will be preserved.

I (name) agree to take part in this project

....

(Signature of participant) (Date) (Class)

I agree to my child/person in my care to take part in this project

....

(Signature of parent/guardian) (Date)

APPENDIX E

FOCUS GROUP QUESTIONS

Explanation of what the focus group interviews are, why they are necessary and a recap of the questionnaires they completed previously. Full assurance of confidentiality given. Checked that they consent to take part in the interviews.

Opening 1. Firstly, give your name and age?

Introduction 2. (state which group of activity they fall into according the their questionnaire responses). How active are you weekly and has your exercise decreased or increased since completing the questionnaire?

Transition 3. Do you walk or cycle to school?

Key 4. What other activities do you take part in?
4a) Why would you prefer to do these as opposed to being physically active?
4b) Would you be more active if you didn't have gaming machines or television?

Transition 5. What physical activities do you like doing and what would you like to do more of?

Key 6. How could physical activity be improved in schools, what could they do?

Key 7. How do you find PE lessons, what would you change i.e. more choice?

Key 8. At break time, could you be more active, would could schools do i.e. playground space?

Key 9. Could other people such as family and friends give more support, how would this encourage you i.e. media/coaches etc..

9a) Do your parents take part in physical activities and if they did would this encourage you to be more active?

Key 10. How do you feel about physical activity, what does it do for you?
10a) What do you get out of it?
10b) How do you feel about the health consequences of physical activity i.e. healthy lifestyles, diet etc.?

Key 11. Are there many barriers stopping you from taking part in physical activity i.e. facilities and cost.
11a) How do you overcome these?

Key 12. How do you feel about exercising with friends, would you exercise alone, if it was a new exercise, other activities, new activities ?

Ending 13. How would you feel about having a social marketing campaign in schools to encourage you to exercise?

Final 14. Is there anything you would like to add in addition to what we have covered today?

APPENDIX F

INDIVIDUAL QUESTIONS WITH STAKEHOLDERS

1. Icebreaker question about physical activity and health of children within schools and outside of the school environment i.e. what is their personal opinion on this?

2. Do you think the majority of children in your school engage in sufficient physical activity to meet government guidelines of 1 hour per day? (this can be both within and outside of the school setting).

3. Are PE lessons sufficiently active? Should PE Lessons be increased in number per week i.e. 4 per week (if you were provided with sufficient staff and facilities).

4. Do you think that PE lessons could be changed in any way i.e. the type of activities that students take part in; the context of lessons; choice of activities?

5. Do you think that for students in year 10/11 it is appropriate for them to go off side (particularly females) to a leisure centre to familiarise themselves with the activities there and take part in the activities they offer, in a bid to encourage engagement after they leave school?

6. The children interviewed and research has found that children have said that they think role models are important within PE lessons and within the school as a whole. Do you agree with this and as a PE teacher (where safe to do so) would you or do you join in with lessons?

7. What is your opinion on after school physical activities for example do you think there should be a wider range of physical activities after school or lunchtimes? What activities do you currently offer at lunchtimes or after school? Do you agree that they should be different to PE lesson and if so what do you do differently?

8. What population of the school attend after school physical activities on a regular basis?

9. What is your opinion on this statement: In order to meet government guidelines of 1 hours physical activity per day, after school activity of at least one session per week should be made compulsory for all students with the choice of activity given to all students. If so, how would this impact on schools?

10. How important do you think it is for children to engage in physical activity on a regular/daily basis?

11. Do you think that schools should have a role/responsibility to try to engage and motivate students to be physically active not just within PE lessons but throughout the school day, after school, holidays i.e. promoting local clubs, school holiday activities and generally just trying to engage students to live an active lifestyle?

12. Do you think that schools have a responsibility to try to improve the general health and wellbeing of its students?

13. Should PE/Physical activity be a priority in schools and should the same priority be given to PE as English, Maths and Science? There is some research that has found that children who are physically active achieve better in core/academic subjects at school, did you know about this? If not, then having this information, would this make a difference to how you perceive and prioritise PE in school?

14. Do you think that it is important to have physically active staff to serve as role models to the students? This could include promoting physical activity achievements of the staff in school.

15. How do you feel about children walking/cycling to school? At what age would you say children should be allowed to go to school alone or with friends?

16. Do you think more should be done and could be done in your school and schools generally to encourage children to walk/cycle i.e. walking buses, greater parking restrictions at school, rewards for children walking /cycling, locked and lighted cycling sheds.

17. What is your view on restrictions being imposed so that children should go to their nearest school or a school within walking/cycling distance to encourage independent active travel and what would you consider a reasonable cycling/walking distance to be?

18. Does your school have an afterschool facility, if so is it physically active? (Question for primary schools only).

19. Is your school involved in healthy schools or enhanced healthy schools?

19. If a campaign (possibly county wide) was to be run in school to encourage children/parents to engage in more physical activity both within the school and home environment would you support this? Such as change 4 life but a more school/home/community collaboration – a whole school holistic approach to increasing physical activity and healthy lifestyles among school children.

20. Show information on games for life and ask if they have seen the information packs that were supposedly sent out to schools, what they know about Change 4 Life and Devon Pedpass.

21. Ask if they would like to add anything in addition to what we have already covered.

APPENDIX G

SOCIO-ECOLOGICAL THEMES

Themes from the data analysis were placed into categories consistent with a socio-ecological perspective as outlined in section 3.4

Individual (Intrapersonal

Psychological
- Attitudes
- Beliefs
- Motivation
  - Competition
  - Health
  - Personal enjoyment
  - Sedentary activities

Biological
- Age
- Sex
- Socio-economic status of parents

Social (Interpersonal)

Family
- Parents
- Siblings

Friends/Peers
Teachers/Coaches
Other influences/modelling
Social norms/practice

Physical environment

Natural Environment
- Weather

Built Environment
- Cycling/Walking facilities – crossings
  - traffic
- Parks
- Recreational PA facilities
  - Swimming Pools
  - Sports Clubs
  - Gyms
- School
  - Sports facilities/clubs
  - Playground – physical activities
  - Active Commuting facilities- walking bus
    - bike sheds
  - Health promotion
- time
- cost
- distance

Policy

National Education Policies
- School choice policies
- National Curriculum
  - Activities
  - Number of PE lessons

Regional/Local
- Government Funding Policies
  - Staffing in schools
- Individual School Policies
  - PE kit
  - No Kit Sanctions
  - English Maths Priority
  - Local Government Funding Policies

APPENDIX H

GAMES4LIFE INFORMATION THAT SCHOOLS SHOULD HAVE RECEIVED

15 June 2012

All sport and no play?

Games4Life is a new Government campaign which aims to inspire the nation to get active during this year's summer of sport.

The campaign aims to build on the excitement of the sporting activities taking place this summer to encourage millions of people to get involved and get active.

This summer there will be over 1,200 hours of sport on TV, which is an average of 13 hours a day. New research, carried out by PCP, shows that 93% of us will be tuning into some of this coverage during the next three months.

The survey also shows that over half of us will snack on crisps, four in ten adults will drink alcohol and one in five will eat a takeaway whilst watching.

In a bid to get the nation up off the sofa, Games4Life will be encouraging everyone to fill out a simple activity check questionnaire in return for a tailored Games4Life activity pack to keep both adults and kids active during the summer months.

The campaign will provide access to ideas for fun, easy and free ways for everyone to get moving via the Change4Life website. There is also a mobile app, *the Fun Generator*, that will equip parents and families with over 100 indoor and outdoor activity ideas for kids of all ages.

Around 2.6 million activity packs have been distributed to 7,500 schools across the country with lesson plans for teachers and take-home activities for children to use throughout their summer holidays.

ASDA, Aldi and JJB have also pledged their support for the campaign and will promoting the campaign through events, sports related offers and promotional material.

Local Authorities and Change4Life supporters are also getting involved in supporting Change4Life and will be distributing over four million questionnaires to local communities. The campaign will also be supported by TV, digital, press advertising and social media activity.

Appendix I

PEDPASS Leaflet