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ENGAGING CHILDREN AND YOUNG PEOPLE IN PHYSICAL ACTIVITY

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**Thesis submitted to the University of Huddersfield in partial
fulfilment of the degree of Doctor of Philosophy**

University of Huddersfield

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Abstract

Children and young people's physical activity levels are of continuing concern as the health implications for both childhood, and later on in adulthood, may be determined by their experiences of physical activity whilst growing up. Although many attempts have been made to increase physical activity levels relatively little attention has been paid to listening to the voices of children and how they experience physical activity.

The publications presented in this thesis provide evidence to support the tenets of the Self Determination Theory. The results of three studies, one mixed methods, one literature review and one qualitative, have been synthesised to provide a commentary on why children engage with physical activity. The original contribution to knowledge arises from collecting evidence directly from active children and young people, many of whom have been previously disengaged from activity, to inform future interventions.

For some children and young people being forced to be active is counterproductive as they associate activity as something that has to be 'got out of the way' or avoided where possible. If they are to take part in physical activity of their own volition it has to be enjoyable. The results of this thesis suggest that for it to be enjoyable participation should be in activities of their choice, where they feel competent and in control of their bodies whilst exercising. They want to be supported by parents and peers and respected, but not controlled, by teachers/instructors. Many children, in particular obese children, lack confidence in both their physical and social skills to interact with their peers in a physical activity setting. In providing separate activity sessions, which promote a caring and supportive climate, and a variety of non-traditional activities, children can develop competencies which enable them to enjoy being physically active. These findings need to be understood and further developed if we are to engage all young people in physical activity.

Acknowledgements

I would like to take this opportunity to thank a number of people who have supported me through this journey.

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Importantly I would also like to thank my family who have supported and encouraged me in all my endeavours. In particular my mum and dad who have always been there to pick me up when needed and given me the confidence to carry on.

Finally I would like to thank my two children, Georgina and Ben, who have provided me with both the incentive to work, and to stop. I hope I have inspired them to a lifetime of being physically active and an attitude of never giving up on questioning the 'truth'.

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Published work – Author contributions

Below I describe my and my co-authors contributions to the papers included in this portfolio. Two papers have been co-written with Claire Fraser (CF) and Martin Manby (MM). Any additional contributions from colleagues have been acknowledged in the papers.

Publication 1

Fraser, C., Lewis, K. & Manby, M. (2012). Steps in the right direction, against the odds: An evaluation of a community-based programme aiming to reduce inactivity and improve health and morale in overweight and obese school aged children. *Children and Society*, 26(2), 124-137.

The study was initially conceived and designed by Kiara Lewis (KL) who set up a steering group consisting of the programme Manager and staff, plus MM and CF. The data collection methods were designed by the steering group. KL reviewed the literature on measuring PA and as a result of the lack of appropriate tools the steering group devised a questionnaire to measure physical activity (PA). The other questionnaires used were chosen from existing measurement surveys and adapted as necessary by KL, CF and MM. The physical measurements were taken by the staff delivering the sessions as part of their one-to-one consultations with the children; they also distributed and collected in the questionnaires. CF managed the database and statistically analysed the quantitative data. MM and CF conducted all the interviews and focus groups. The analysis of findings was undertaken by MM, CF and KL. All the results were discussed by KL, MM, and CF who made decisions on which results to report and which format to present the findings. The report was written by KL, CF and MM with drafts being read and amended by the full steering group. The paper submitted for publication was led by CF and written and revised by KL, CF and MM.

Publication 2

Lewis, K. (2010). Evaluating physical activity. *SportEx Health*, 26, 7-10.

Paper was devised, researched and written by KL

Publication 3

Lewis, K. (2012). *Physical activity behaviour of overweight and obese children*. In *Advances in Medicine and Biology*: New York: Nova Science Publishers.

The paper was devised by KL. KL conducted the reviews of the literature, analysed and wrote the results and discussion of the findings.

Publication 4

Lewis, K., Fraser, C. & Manby, M. (2014). 'Is it worth it?' A qualitative study of overweight and obese physically active children. *Journal of Physical Activity and Health, 11*, 1219-1224.

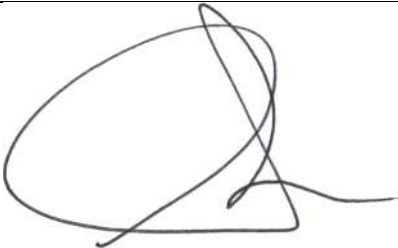
The interview and focus group data collected in study one by CF and MM was re-analysed by KL. The paper was written by KL. MM and CF approved the final manuscript for submission.

Publication 5

Lewis, K. (2014). Pupils' and teachers' experiences of school-based physical education: A qualitative study. *BMJ Open, 4*:e005277. Doi:10.1136/bmjopen-2014-005277

The study was devised and designed by KL. The interviews were conducted by KL with some additional interviews undertaken by Louisa Horner and Max MaClean. KL transcribed and analysed the data and reported the findings. The paper was written and revised by KL.

Author's signatures

Author	Job Title	Signature	Date
Kiara Lewis	Head of Division of Health and Wellbeing		15 th June 2014
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Martin Manby	Retired Director of Nationwide Children's Research Centre, Huddersfield Affiliate of University of Huddersfield	<i>Martin Manby</i>	13 th June 2014

1.1 Children and Physical Activity – the ‘state of play’

The young of all creatures cannot keep their bodies still or their tongues quiet: they are always wanting to move and cry out; some are leaping and skipping and overflowing with playfulness and pleasure, and others uttering all sorts of cries

(Plato, 360 BC)

Children are born with an innate need to move around and derive much pleasure from playing active games from a young age. As they get older they tend to become progressively less active (National Institute for Health and Care Excellence [NICE], 2009) and what was once a source of enjoyment can become a tiresome chore or worse a potential source of distress, as alluded to by this 15 year old girl as she describes how some of her class mates feel before a physical education (P.E.) lesson:

‘kill me now’, that’s what they say, they’re suicidal - it’s only P.E.

(Lewis, Fraser & Manby, 2014, p.4)

Whilst the benefits of a physically active lifestyle have gained greater credibility, and much research has been undertaken to improve children’s activity levels, the evidence base for effective interventions remains limited (Dobbins, DeCorby, Robeson, Husson & LaRoche, 2013). The Olympic Games 2012 promised a ‘lasting legacy’ (Department of Culture, Media and Sport [DCMS], 2012) where children would be inspired to take up sport and ‘turn the tide’ of an inactive nation. Whilst the Games are widely regarded as an overwhelming success we have yet to see the tidal change in participation levels (House of Lords, 2013). The ‘School Games’ were initiated in 2011 (Department of Health [DoH], 2011) to try and capture the increased interest in sport provided by the Games, and whilst they have provided opportunities for competitive sport through school, there is little evidence they have increased participation in previously inactive pupils.

In the UK, population level information on physical activity is sparse but proxy measures of activity suggest there has been a secular decline in activity levels since the 1960’s (Wareham, 2007). Travel by car had increased as walking to school has decreased (Department of Transport, 2011), combined

with an increase in labour-saving devices and a reduction in physically active occupations (Office for National Statistics, 2004) means there is less need to be physically active. Indeed Hills, Anderson and Bryne (2011) go on to suggest that through decreasing opportunities to expend energy Western society is actively discouraging physical activity. It is estimated that children now expend approximately 600 Kcal/day less than children did 50 years ago (Boreham & Riddoch, 2010). Activity levels are thought to peak around age 4-5 years and then gradually decline until adolescence when the reduction is steeper (Hills, King & Armstrong, 2007).

1.2 Should this be of concern?

Statistics suggest that by the age of 15 a child is five times more likely to be unfit than they are to be obese (Sandercock & Ogunleye, 2014). Yet whilst children's obesity levels have caused wide-reaching concern among the public and politicians alike, children's activity and fitness levels have failed to cause as much concern. The impact of a lack of fitness on health is just as important, if not more so, than the impact of obesity (Blair, 2009). In addition overweight and obese children and adolescents have consistently been found to be less active and less fit than their non-obese counterparts (Dumith et al., 2010, Page et al., 2009). Obesity levels of the most deprived children in England (NOO, 2014) have seen a significant increase in recent years suggesting this is a continuing trend in large sections of the population. The result is that children in recent decades have poorer health, increased prevalence of obesity and low levels of fitness (Hills et al., 2011).

The evidence base for the health benefits of physical activity for children continues to grow. A recent well conducted systematic review of the evidence found strong and consistent support across a large and diverse sample of children and young people for the benefits of physical activity to several health outcomes (Jansen & LeBlanc, 2010). The links between cardiorespiratory fitness, fatness and activity are complex and warrant further study but the suggestions are that increasing activity levels may attenuate the negative impact of fatness on CVD risk (Ortega, Ruiz, Castillo & Sjostrom, 2008). Longitudinal studies also support the role of fitness in the later prediction of adiposity in children (Eissenmann, Wickel, Welk & Blair, 2005). Other CV risk factors are found to be lower in children with higher levels of fitness (including cholesterol levels, blood pressure and insulin resistance) (Mesa et al., 2006, Hurtig-Wennlof, Ruiz, Harrod & Sjostrom, 2007). The findings from both large scale epidemiological studies and randomised control trials support the assumption that physical activity predicts physical fitness in children, in particular high intensity activity (Ortega et al., 2008). Despite this evidence, the recommendation for children to take part in 60 minutes a day of moderate to vigorous intensity activity (DoH, 2011), although aspirational, can be reduced to 30 minute a day for the least active and most at risk children. The way in which physical activity is

accrued, and the optimum exercise prescription, is still not fully understood. However there is a proliferation of epidemiological evidence for a dose response for physical activity benefits in youth, the more active the better the health outcomes (Jansen & LeBlanc, 2010).

A recent meta-analysis concluded that physical activity has a significant positive (small to medium) effect on children's cognitive and achievement outcomes (Fedewa & Ahns, 2011). Children with learning difficulties and/or physical disabilities experienced greater improvements from taking part in physical activity, suggesting they would benefit most from targeted physical activity opportunities.

More recently the psychosocial benefits in children have been studied and suggest that, as in adults, depression and anxiety can be reduced and self-esteem increased in physically active children (Hills et al., 2007). Although overweight and obese children are at increased risk of impaired mental health (Farhat, Lannotti & Simons-Morton, 2010), studies fail to differentiate between the weight statuses of children when assessing psychological outcomes from physical activity. It may be that changes in fitness are not necessary for psychological benefits, the context and environment may be more important, or that physically active children are already less body conscious and depressed and it is a reverse association.

1.3 Why are children not more active?

Historically, physical activity research has tried to understand participation through using questionnaires, with predetermined suggestions for what may motivate or act as a barrier to participation. Most studies show that boys are more active than girls and that activity declines with age (NICE, 2009). It is probably because of these differences that adolescent girls have been identified as an 'at risk' group and more research has involved this sub-population than any others. However, as stated, children are also less likely to be active if they are overweight and obese and yet the research on their barriers and motivators is sparse.

The National Institute for Health and Care Excellence (NICE) in a review of the quantitative research from 2000 to 2007 found children are more likely to be active if they have parental support, play sport, spend time outdoors and live in walking distance from school and girls less likely if they have poor body image and low motivation (NICE, 2009).

A review of qualitative studies (searching from 1990 to 2007) found 15 studies on adolescent girls but only 4 on boys (NICE, 2007). Of these it is not always clear whether or not the children are active and generally the review rates the studies as low quality (only 2 of the 15 on girls are given the highest rating and none of the studies on boys) with a lack of information, including recruitment

processes and socio-demographic profiles, as well as a lack of theoretical framework for the studies highlighted as limitations. The studies suggest factors which may prevent or encourage participation in sport and physical activities. For girls there is a suggestion that being sporty does not conform to their perceptions of what it means to be feminine, and this is reinforced by peers' and in some cases teachers' responses to girls within P.E. Many of the girls expressed negative concerns regarding school physical education (P.E.) such as: the uniforms, facilities (including changing rooms) and the atmosphere created (including a fear of being humiliated through forced competition). For boys this fear of forced competition also existed, but also resentment amongst active boys of others not taking competition seriously. This again suggests identity is important and although a sporting identity may be culturally more desirable for boys, those who do not fit with that identity may also feel ostracised by P.E. opportunities that rely on a sporting rather than physical activity agenda. A threat of bullying existed in out of school opportunities. For many of the boys and girls fun and enjoyment were seen as important, however little further exploration was made into what constitutes a fun and enjoyable physical activity experience. Peers and opportunities to socialise with others appear to be one of these elements, but whether this just exists for those who have sufficient skills to contribute to the activity, or not, is unclear.

A large scale qualitative study of girls conducted since the NICE review (Gorley et al., 2011) found very similar results, it was felt by the girls involved in the focus groups that their voices were not being heard (or if they were they are being ignored). One of the key conclusions from the study, supported and disseminated by the 'Institute of Youth Sport' and the 'Women's Sport and Fitness Foundation', was that increasing competitive sport in schools would not be helpful – yet this is exactly what the Government has done in an attempt to increase participation.

A comprehensive systematic review conducted by the EPPI centre (Evidence for Policy and Practice Information Centre) in 2003, focussing on children 4-10 years, found only 5 studies asking children their views on participation in activity (outside of school) (Brunton, et al., 2003). Again there were methodological flaws with none of the studies meeting more than 9 of the 14 quality criteria applied to the review. The key themes that emerged were a preference to undertake different activities, a lack of support and encouragement from parents and lack of access to opportunities to be active. The focus of these studies, on out-of school activity, adds another dimension to the complexity of understanding physical activity behaviour. Brockman, Jago and Fox (2011) used focus groups to derive motivators and barriers to active play (as opposed to structured activity) in 10-11 year old children. The barriers that emerged were a fear of groups of older children encroaching on their access to free play and parental constraints – however having a mobile phone relieved some of their

parent's fears and access to green open spaces or cul-de-sacs provided space to engage in free play. Children enjoyed the freedom of playing outside without the influence of parents and socialising with their friends (Brockman et al., 2011). This may depend on the child's social skills.

1.4 How can we increase children's physical activity levels?

There have been many attempts to increase children's activity levels with limited success (Lewis, 2012). Physical activity interventions tend to adopt a 'top-down' approach rather than a 'ground-up' approach and focus on outcomes (winning games, increasing moderate-vigorous activity) which attract those who are already active, rather than concentrating on what all young people want. A Cochrane review of school based physical activity interventions (only including RCT's) found some improvements in physical activity levels but not in adolescents (Dobbins et al., 2013).

Physical activity interventions based on theory typically attempt to change either intrapersonal factors (normally psychological attributes such as attitude), or interpersonal (often through social support) within a specific setting. These interventions have on the whole been ineffective in increasing total youth physical activity, even when they have increased activity in one setting (Fairclough, Ridgers & Welk, 2012; Mallum, Metcalf, Kirkby, Ross & Wilkin, 2003). This may be in part because they are only working at one level, so changing a person's attitude towards physical activity is ineffective if there are no opportunities for social support to continue participating.

Currently there is no one theoretical model that integrates all potential factors in order to help in our understanding of physical activity behaviour (Li & Rukavina, 2012). The Self Determination Theory (SDT) is one emerging theory in the physical activity domain that is providing promising results (Teixeira, Carraca, Markland, Silva & Ryan, 2012). This theory is attractive as it encompasses the intrapersonal and interpersonal level within the social context that they are presented to the individual.

SDT proposes that all individuals are driven by three innate psychological needs (Deci & Ryan, 1985). Firstly the need for autonomy reflects a need to feel in control over which behaviours to engage in, secondly the need for competency is the need to feel you possess the capability to perform the given behaviour and finally the need for relatedness is the feeling that you are connected to others whilst performing the behaviour (Deci & Ryan, 1985). It is posited that meeting these needs leads to optimal motivation and improved psychological health, general wellbeing and performance (Standage, Gillison, Ntoumanis & Treasure, 2012).

SDT argues that there are three motivational categories towards behaviour;

- 1) amotivation (no desire to take part)
- 2) external (you are driven by external forces)
- 3) intrinsic (you have an internal drive to take part)

(Ntoumanis, 2001 p.226).

External motivation can be further divided up into four types of regulation; external, introjected, identified and integrated. The first two types, external regulation (behaviour is for a reward or to avoid punishment) and introjected regulation (to avoid feeling guilty or to make you feel better about yourself) are both regarded as controlling forms of motivation. The second two, identified regulation (behaviour is regarded as important) and integrated regulation (behaviour is important and valued by the person) are regarded as autonomous forms of motivation (Katartzi & Vlachopoulos, 2011).

According to SDT, autonomously motivated people act with a sense of volition because they are interested in and value the experience whereas people whose motivation is controlled are acting because they are being coerced or persuaded to act in a certain way (Standage & Ryan, 2012, p.244). If we want physical activity to continue for a lifetime then we need to find what leads to autonomous motivation.

The social context provided will determine whether the three basic needs are met. The more the needs are met the more behaviour is regarded as self-determined (autonomous) and motivation moves further towards the intrinsic end of the scale (Quested et al., 2013). Greater self-determination leads to more positive cognitive consequences (e.g. concentration on the task), affective consequences (e.g. enjoyment) and behavioural consequences (more effort put into the behaviour) (Vallerand, 2001).

Deforche, Haerens & De Bourdeaudhuij (2011) reviewed research interventions within the SDT framework for overweight children and found all aspects of SDT to be important in children's decision to be active. The review suggests we can promote autonomy through providing choices and avoiding external motivators (Deforche, De Bourdeaudhuij & Tanghe, 2006; Epstein, Wing, Koeske, Ossip & Beck, 1982). It also suggest we can increase feelings of competence through providing appropriate tasks, goal setting and appropriate feedback (Deforche et al., 2003; Robinson, 1999) and support relatedness by instructors using an empathetic approach, showing enjoyment and enthusiasm and encouraging parental support (Kalanakis, Goldfield, Paluch & Epstein, 2001; Salvy et al., 2009).

These ideas are currently being implemented in a European-wide project aimed at preventing dropout and increasing enjoyment in grass roots soccer through developing the motivational climate created by coaches (Tessier et al., 2013). The intervention is based on SDT and cognitive evaluation theory (CET) (Ames, 1992) and looks at enhancing the coaches' ability to provide a supportive environment for young players. This is an interesting development of a theory-led intervention in youth coaching which has been lacking in previous coach development studies. The development of a positive climate for children is seen as essential in both promoting adherence and performance.

Many of the studies examining children and SDT have focussed on schools and P.E. teachers, in particular teachers' interpersonal style, rather than leisure time activity. The research suggested teachers can support students' psychological needs by the use of language (less controlling), providing choices, giving children a voice and understanding from their perspective their concerns regarding P.E. (Cheon & Reeve, 2013; Hassandra, Goudas & Chroni, 2003; Haerens et al., 2013). They can also set optimum challenges to promote mastery, explain why the activity is taking place, provide supportive feedback to help them improve and provide self-referenced goals (Ntoumanis, 2001, Katartzi & Vlachopoulos, 2011).

Standage et al. (2012) in their study of motivation, physical activity and wellbeing found more support for the role of autonomy and competence in predicting autonomous motivation for P.E. than relatedness, however relatedness was an important link with the students' reported health-related quality of life.

1.5 What more needs to be done?

The research using the SDT framework has been predominantly from a positivist approach (Hagger & Chatzisarantis, 2007), using psychometric instruments to test the various concepts within the theory. Hagger and Chatzisarantis (2007) edited a comprehensive review of intrinsic motivation and self-determination in sport and exercise and propose that given the range and volume of support for SDT there is a need for more experimental and intervention studies to test the theory in practice. Throughout the comprehensive review of the area there is no mention of qualitative research or a need to question children about other potential contributing factors, although a merging of different theories is proposed. Whilst the psychometric instruments testing the contributing factors have been vigorously evaluated the presumption is still from a positivist perspective that what is being measured is objective and measurable. However, the complex interaction of factors that may influence physical activity in the school setting, it is argued (Hassandra et al., 2003), cannot be tested through quantitative methods whilst all the contributing

factors towards participation are unknown. Since the mid 1990's a number of authors have adopted qualitative methodologies within a SDT framework. Lee, Carter and Xiang (1995) and Veal and Compagnone (1995) found that perceived competence differed according to age and was linked to enjoyment. However Dyson (1985) and Portman (1995) have found that perceived competence is less important if students feel they have improved personally (self-referenced goals rather than peer comparisons). Hassandra et al. (2003) found a variety of individual factors including perceived competence, perceived autonomy, outcome expectations, goal orientation and physical appearance (an athletic body was deemed important to be good at P.E.) were important to intrinsic motivation. They also identified that social factors such as the role of teachers, peers, family, the media and cultural factors could influence motivation. Links were made between the P.E. teacher and lesson content with lower intrinsically motivated students feeling a lack of choice in content, that they were being forced to take part and a perceived lack of concern from the teacher. In contrast highly motivated students enjoyed the activities and felt supported by the teacher. This study was able to identify factors outside of school (media coverage, family involvement) that may not have been picked up in more narrowly defined questionnaire based studies.

Yungblut, Schninke and McGannon (2012) suggest researchers need to listen to the 'voice' of young people and this means moving away from conventional methods of approaching physical activity interventions and research. Many of the studies reviewed investigating why children are active or not, and interventions to promote activity; fail to recognise the potential difference for obese children. The culture of shame and blame around childhood obesity means that obese children are either studied separately or weight status is not recorded. A systematic review of qualitative studies undertaken to understand barriers to physical activity by adolescents who are overweight or obese (Stankov, Olds & Cargo, 2012) concluded that there are 'few qualitative studies with sufficiently thick description or interpretative validity that provide insights into this vulnerable group of adolescents' (p. 53).

Whilst inactive girls have been targeted, inactive boys have not. It is proposed by Hareens et al. (2011) and Standage et al. (2012) that a 'mixed methods' approach would be a useful adjunct to this field of research in order to provide further insights into what exercise means to children and adolescents and reasons for their engagement. This thesis acknowledges these gaps in the literature and aims to explore some of the outstanding issues. One of the key concerns is to understand why children are inactive and what can be done to increase their activity levels. The publications included in this portfolio provide evidence to address these issues; the impact they may have on current and future participation is also discussed.

CHAPTER 2

METHODOLOGY

Interventions to increase physical activity in all populations, and in particular overweight children, have been ineffective (Lewis, 2012). A better understanding of why these children are active or not is required and the aim of this thesis is to contribute to this understanding. The studies that are included in support of this thesis are briefly summarised below, this is followed by a discussion of my underlying philosophical approach to research and finally, in this chapter, a review of the methods used to collect and analyse the data.

2.1 Studies included in the thesis

The work I present is based on 5 publications from 3 studies undertaken whilst employed at Huddersfield University between 2006 and 2013 (see table 1, page 22). The first study included in this thesis was initiated by the Programme Manager of a scheme for overweight and obese children who wanted an independent evaluation of the scheme. I set up a steering group to determine the best approach to undertaking the evaluation including all the researchers, the Programme Manager and the staff involved in delivering the scheme. This steering group decided what information was needed from the evaluation and the outcomes to be evaluated; this formed the evaluation framework (see appendix 1). I used a mixed methods design and a case study approach to collect quantitative and qualitative data concurrently over the two year evaluation period. From this there were four publications (one report to the funders, two peer review journal articles and one professional guide for physical activity practitioners), and two presentations (one to commissioner and participants and one to a research conference). See table 1 in results section for a list of titles and publications (p.22).

Following the publication of Study 1, I was approached by Nova Publications to contribute a review article for an edited collection on 'Medicine and Biology'. The series of hardback publications is aimed at publishing academic research in topical areas from a broad spectrum of areas. My interest from the first study was in particular the children's participation in physical activity and the finding that although they had found P.E. at school a negative experience they now enjoyed being physically active. I wanted to study previous research on obese children and physical activity participation and focussed on presenting the results of reviewing the literature in this area for Study 2 (Lewis, 2012). The search of the literature found very few studies which had asked children about their views; this finding was replicated by Stankov et al. (2012) who in their systematic review of qualitative studies of obese children and physical activity from 1950 to 2009 found only six studies. This lack of research led me to go back to the interview data we had collected on overweight and obese children to re-

analyse the data focussing on responses regarding their physical activity experiences (Lewis et al., 2014).

The final study included as part of this submission (Study 3) is a qualitative study on physical activity from the perspective of school children and their teachers. Schools are increasingly regarded as an important setting for physical activity promotions due both to the time children spend in school and the compulsory nature of P.E. (Prusak et al., 2011). This study was initiated by me in response to the findings from the previous two studies that school was not always providing a positive physical activity experience. I wanted to find out how children, whether overweight or not, experienced P.E. I was also keen to find out from the P.E. teachers their perspective on P.E. and how they attempted to engage children with physical activity. The findings of this study were presented as a poster at an international conference and published in a peer reviewed journal (Lewis, 2014).

The three studies (one mixed methods, one literature review and one qualitative) are presented as complimentary studies that contribute to our understanding of why children, in particular those who are 'non-sporty', engage in physical activity. To further our understanding of what engages children with physical activity, the SDT was used as the underlying theoretical framework in Study 1 and 3 to interpret the qualitative data. See figure 1 for overview of the studies (p.21) and table 1 (p.22) for the publications resulting from them.

The diagram below illustrates how the studies are addressing the aims of the thesis:

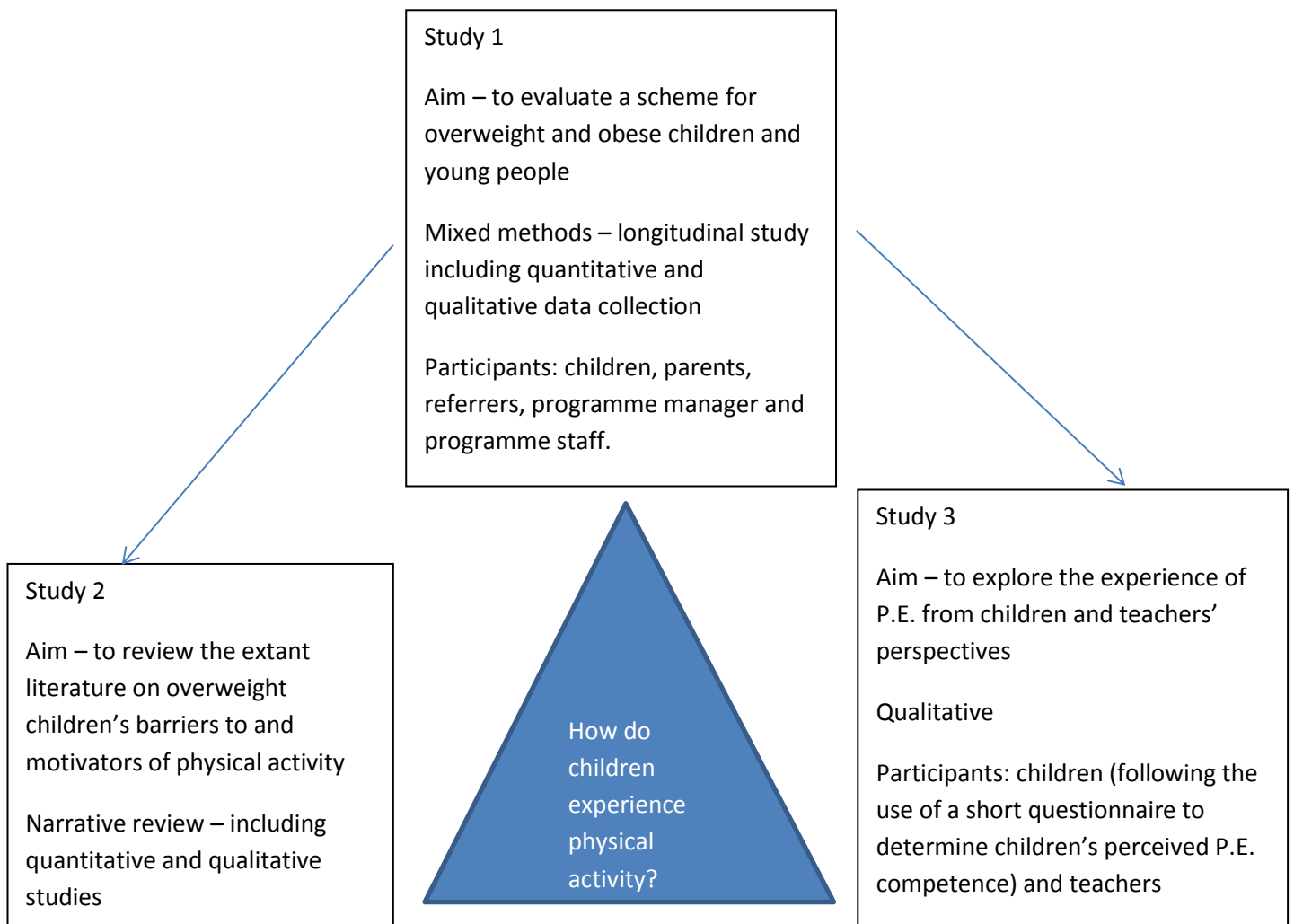


Figure 1 The aims, methods and participant groups in each of the three studies.

From the three studies above five manuscripts were accepted for publication, see table 1 below:

Table 1 Studies matched to Publications

Study 1	<p>Fraser, C., Lewis, K., & Manby, M. (2012). Steps in the right direction, against the odds: An evaluation of a community-based programme aiming to reduce inactivity and improve health and morale in overweight and obese school aged children. <i>Children and Society</i>, 26 (2), 124-137. doi:10.1111/j.1099-0860.2010.00329</p> <p>Impact factor 0.64</p>
	<p>Lewis, K. (2010). Evaluating physical activity. <i>SportEx Health</i>, 26, 7-10.</p>
	<p>Lewis, K., Fraser, C., & Manby, M. (2014.) 'Is it worth it?' A qualitative study of overweight and obese physically active children. <i>Journal of Physical Activity and Health</i>, 11, 1219-1224. doi:org/10.1123/jpah.2012-0295).</p> <p>Impact factor 1.951</p>
Study 2	<p>Lewis, K. (2012). <i>Physical activity behaviour of overweight and obese children</i>. In <i>Advances in Medicine and Biology</i>: Nova Science Publishers: New York</p>
Study 3	<p>Lewis, K. (2014). Perceptions of P.E. and the impact on participation in physical activity: A qualitative study in pupils and teachers. <i>BMJ Open</i> 4:e005277. doi:10.1136/bmjopen-2014-005277</p> <p>Impact factor 2.063</p>

2.2 Philosophical approach to research

It is important when undertaking research for the researcher to make clear their philosophical position regarding their understanding of what it means to be in the world (ontology) and how they know what they know (epistemology). One philosophical position is 'positivism' which implies that the goal of research is to produce objective knowledge through direct observation (Madill, Jordan & Shirley, 2000). In practice most researchers would describe themselves as post-positivist as some element of interpretation is recognised as being required in producing knowledge (Madill et al., 2000). However the underlying view is the acceptance of 'realism'. Realism is based on the idea that reality exists independent of us. 'Independent means that this reality exists whether or not we are aware of it or take any interest in it' (Smith, 1983, p.8).

In contrast to this is the acceptance of the idea of 'idealism'. This is the view that the external world consists merely of representations and is a creation of the mind (Williams & May, 1996). Rather than searching for 'reality', idealists believe there are multiple realities. This is the position taken by those who undertake research from a constructivist position. Constructivists do not believe social phenomena exist outside the individual's understanding of them. The focus of research is not the phenomena themselves, their cause or effects, but the process by which they are identified and created (Hammersley, 2007). In this approach the assumption is that researchers cannot identify social and or psychological process as all knowledge is dependent on the context (Madill et al., 2000). Instead the researcher is concerned with how people use language to describe their experiences. The approach is sometimes described as relativist as it rejects the idea that experiences inform our descriptions of them because it is language that constructs reality, rather than reality that determines how we talk about it. Murphy, Dingwall, Greatbach, Parker and Watson (1998) argue that if researchers adopt a radical relativist position then it is difficult to see how policy-makers or practitioners can make use of their findings (p.67). This is explained further by Hammersley who questions '..why should some 'realities' be published and discussed at the expense of others?' (1992, p.49).

Within qualitative research there are a range of epistemological approaches within which the qualitative researcher can work (Madill et al., 2000 p.2) as qualitative research is not a homogeneous field. There is often an assumption that those using qualitative methods will adopt idealism as the underlying philosophy and those using quantitative methods relativism, however this is not always the case (Murphy et al., 1998). Hammersley (1992) has argued for a third philosophical position known as 'subtle realism'. Subtle realism maintains that phenomena exist independently of the researcher's claims about them, which may or not be accurate. Any claim does not change

reality but is a representation of it (Murphy et al., 1998). Hammersley (1992) suggests that in adopting a 'subtle realist' position the researcher concedes that it is impossible to have certainty about any knowledge claims and that they cannot escape the social world to study it. Akin to researchers from a 'social constructionist' approach, 'subtle realist' researchers do not accept at face value the words spoken by the participants. They acknowledge there may be factors or forces beyond the individuals' knowledge which drive behaviour (Murphy et al., 1998). However the researcher can try and uncover these to describe and explain a causal relationship between a person's experiences and perceptions and how they act. 'Subtle realists' describe the aim of research as being to represent reality, rather than reproduce it (Hammersley, 1992). This approach Hammersley (1992) argues, allows us to accommodate some elements of a social constructionist approach, without abandoning a commitment to independent truth (Murphy et al., 1998, p.69). The objective, from a subtle realist perspective, is to search for knowledge about which we can be reasonably confident, based on the credibility and plausibility of knowledge claims (Murphy et al., 1998). A subtle realist position acknowledges that the researcher's perspective is inevitably influenced by the outside social world, but retains the belief that phenomena exist independently and can be discovered through the research process (Brooks, McCluskey, Turley & King, 2014).

As concluded in their review Murphy et al. (1998) suggest neither naïve realism nor naïve idealism do justice to the complexities which confront those engaged in social science research (p.86). The goal of research, according to Murphy et al. (1998) (to which I also ascribe) is to produce knowledge which we can be reasonably confident about, which provides information that is relevant to policy-makers and practitioners. With this in mind the 'subtle realist' position is the one I have taken throughout this thesis in my approach to answering the research questions.

2.3 Methods

2.3.1 Mixed methods

The 'mixing' of methods has begun to be recognised as an alternative approach to research which challenges the 'dualism' of traditional approaches. Mixed methodology has been defined by Tashakkori and Creswell (2007, p.4) as, 'research in which the investigator collects and analyses data, integrates findings and draws inferences using both qualitative and quantitative approaches or methods in a single study or programme of inquiry'.

There is some debate over which is the 'best' approach/method for mixed method studies. A postpositivist approach would be appropriate where quantitative and qualitative data are collected sequentially and priority is given to the quantitative data. Equally a constructivist approach would be appropriate where data is collected sequentially but priority is given to qualitative data. When the aim is to transform practice then an advocacy-based or transformative-emancipatory paradigm would be required regardless of whether the quantitative or qualitative data was prioritised (Hanson, Creswell, Plano Clark, Petska & Creswell, 2005). Another perspective is that 'pragmatism' offers an alternative approach which is best suited to mixed methods. Within this paradigm a range of approaches can be used to develop both objective and subjective knowledge and the research question, not the method or philosophical approach, is of paramount importance (Hanson et al., 2005). In designing a mixed methods study the first step is to decide whether you are going to view the study from a traditional philosophical approach or a pragmatic base. The studies included in this thesis were viewed from a subtle realist philosophical position as described in the previous section. The type of mixed method design chosen for Study 1 was concurrent data collection. Quantitative and qualitative data were collected at the same time, with the quantitative data providing answers to a different set of questions than the qualitative. The analysis of data was separate with the qualitative research being analysed with a subtle realism lens (Hanson et al., 2005). So whilst we get the broad picture of the impact of a physical activity scheme for overweight and obese children through the quantitative data the qualitative provides us with more detailed information on a subset of the group who have successfully changed their physical activity behaviour and what this suggest about how we can engage other overweight and obese children with physical activity. This type of design and philosophical approach is seen as useful for giving a voice to underserved populations (Hanson et al., 2005).

2.3.2 Qualitative interview methods

There are several different approaches to qualitative research available. Braun and Clarke (2006) suggest when choosing a method of qualitative analysis there are two choices:

- 1) Those tied to or stemming from a particular theoretical or epistemological position (for example 'interpretative phenomenological analysis', 'discourse analysis')
- 2) Those independent of theory or epistemological stance that can be applied across a range of approaches. (p.78)

Thematic analysis is one approach to analysis which although often framed as a 'realist' method falls into the second camp. Due to it being free from a theoretical position, thematic analysis provides a flexible research tool which can provide a 'rich and detailed, yet complex account of data' (Braun & Clarke, (2006), p.78). Thematic analysis allows the researcher to identify, analyse and report patterns (themes) within data (Braun & Clarke, (2006), p.79). There are many different types of thematic analysis, 'template analysis' (T.A.) being one variation (King & Horrocks, 2012). In taking a 'subtle realist' position to research I felt that 'template analysis' best suited the analysis of qualitative data collected in Study 1 and 3. Template analysis differs from other thematic approaches in that it does not differentiate between descriptive and interpretative coding (King & Horrocks, 2012) as it assumes they cannot be separated. All themes must be grounded in the data, but all description is influenced by human interpretation (p. 168), which resonates with a subtle realist approach to research. The template creates a hierarchy whereby lower order themes are sub sets of higher order themes, in essence providing greater explanation of the higher order themes. Template analysis also allows the use of a priori themes which may be determined through reviewing the literature (King & Horrocks, 2012); these are tentative themes which may be rejected at a later date. This also means the analysis can be linked to an existing theory. The qualitative data collected as part of Study 1 were initially analysed using a basic thematic approach. Following my detailed review of the literature (Study 2) I re-analysed the data from the children's interviews using T.A. and a priori themes derived from the review. Template analysis is particularly suited to large scale evaluations (as in Study 1) and to where there are two data sets (Study 3) and to when a theory (in this case SDT) has been identified as potentially useful (whilst still allowing themes to emerge from the data) (King & Horrocks, 2012).

Template analysis has been used extensively in organisational and management research (Gollop, Whitby, Buchanan & Ketley, 2004; McDowell & Saunders, 2010, for example), Psychology (Kent, 2000; Turley, King and Butt, 2011, for example), Healthcare (Birkes, Daniel Lee, Weiner, Chin &

Schaeber, 2013; McKillop, Crisp & Walsh, 2012, for example) and in childhood obesity intervention research (Twiddy, Wilson & Rudolf, 2012). However it was parents and providers rather than children who were the focus of this final study.

There are many advantages to using a thematic analysis method to analyse qualitative data, including; the flexibility, ease of use and ability to summarise key findings of a large body of data (Braun & Clark, 2006). The apparent ease of use means that it can be undertaken poorly and claims made which cannot be justified, therefore care must be taken to ensure that the approach is used correctly to produce valid results. The appeal for me is that it produces results which can be understood by the general population and policy makers and provide practical solutions to research questions. Rather than generating further discussion of the nature of knowledge, suggestions are made as to how we can use knowledge to improve practice.

2.4 Reflexivity

The term reflexivity identifies that researchers are inescapably part of the social world they are researching and this world is already interpreted by the people within it (Edwards & Skinner, 2009). Within qualitative research there is an assumption that the results are not 'objective' and the researcher will have an impact on the results. By being reflexive we acknowledge our theoretical and personal position and the impact this may have on how the research is conducted (epistemological reflexivity) and our personal experiences, attitudes and beliefs and how these may have impacted on the research (personal reflexivity) (King & Horrocks, 2012).

Study 1 was guided partly by the research funding and the need to provide evidence of the effectiveness of the scheme to commissioners. The practitioners and managers knew the scheme was having a positive impact but they needed 'evidence' to support their intuition. A systematic and rigorous collection and analysis of data was needed to provide this information, which in turn did secure further funding for the scheme. At the same time my own children were experiencing physical activity through school and clubs and the more time I spent watching and observing them I began to understand which ones they wanted to keep going with and which they gave up. Being good at an activity was clearly one reason, but it was more complex than that. I also saw how other children gave up all together and no longer had an interest. I wanted to know more about the thought processes and decision making involved. I am a passionate advocator of physical activity having personally found it an essential way of living. I wanted to understand more about other people's experiences and how this influenced their participation and so began my quest to develop a deeper understanding of physical activity behaviour.

This passion for the subject could potentially impact on my research processes as I am trying to understand those who do not share my passion. This required me to put myself into the mind set of somebody who does not find sport and physical activity easy and to imagine what it would be like to engage in activities that do not feel natural and comfortable. As a sports woman you tend to socialise and mix with other people who play sport, however becoming a mother I have met a new group of friends who are 'non-sporty' and here my beliefs and passions leave me as somewhat an outsider. Whilst I may want to discuss my wins/losses over the weekend they show little interest, and some concern, that I would want to spend my weekend running around a hockey pitch! The long term impact of their P.E. experiences was somewhat shocking to me and their 'dread' of watching their children at sports days seemed to be related to memories they wished they could forget about. These experiences have helped both drive my ambition to understand participation from all perspectives and to encourage me to keep an open and inquisitive mind when talking to those with less positive physical activity experiences than my own.

2.5 Summary

The studies presented in this thesis have been generated by a need for practitioners to better understand children's physical activity and my role as a researcher seeking to provide answers to practitioners. Within this I assume there is not one objective truth to be found but that both I and my approach to the research will have some impact on the results (subtle realist approach). However the results do provide some practical suggestions, both for practitioners working in the field and researcher studying the area, as to how we can help increase children's activity levels (as discussed in the next section).

CHAPTER THREE RESULTS AND DISCUSSION

My original contribution to the field of physical activity research relates to furthering the understanding of the influences on children's engagement with physical activity. The research expands on previous research methodologies to provide a greater understanding of physical activity through the use of in-depth qualitative research and mixed methods research, which results in a comprehensive understanding of the physical activity experience. Many previous qualitative studies on children have focussed on inactive children and their barriers to activity, rather than active children and their facilitators (Yungblut, Schinke & McGrannon, 2012). The children, who have been the focus of the publications included in this thesis, provide an insight into what it means to them to be physically active and therefore what can be done to promote activity. All the children included in the studies were physically active but many had previously had poor physical activity experiences. This, therefore, provides information on what contributes to *changing* physical activity behaviour and contributes to evidence to support future interventions with inactive children. The results are based around four key findings that impact on children's participation in physical activity 1) children's experience of physical activity, 2) the social environment and social networks, 3) individual children's needs and wants and 4) children's control over the type of activity and exertion levels. The four key findings are discussed in relation to previous research and theory; this is followed by a discussion of the strengths and limitations of the research and implications for practice.

3.1 Key findings

3.1.1 Children's experience of physical activity

Physical activity is a complex term including many different types of activities. Whilst the recommendation is 60 minutes a day of any moderate-to-vigorous activity, what makes up that activity is important to young people. The studies in this thesis suggest that children like to be active in a range of activities but most of these children do not enjoy competitive team games. The results suggest that younger children like play and imaginative games but as they reach adolescence young people either like individual fitness-related activities, such as gym and swimming, or social activities where they are with their friends, but not competing (majorettes, skateboarding). This has been found in surveys of children previously where, apart from football, most traditional P.E. activities are not as popular as other activities (Bullough, 2011). The findings from these surveys are not influencing policy where both money and advice from government is to provide traditional team sports and opportunities for competition (DCMS, 2012). In addition the studies in this thesis tell us more about why these activities are popular or not (which surveys do not) and supplement the

qualitative research that has previously been conducted with adolescent girls by asking children of both genders, with differing ages and weight statuses, about their experiences.

Existing evidence suggests school-based physical activity schemes have generally been ineffective in increasing total physical activity levels (Lewis, 2012). In school the type of activities and competitive atmosphere created may prevent some children who enjoy activity elsewhere being active in school. Efforts to increase activity in schools have often looked at the intensity of activity and raising heart rates for longer, but have ignored the impact the type of activity (ball games, individual activity, rule based etc.) has on motivation. Running remains unpopular with many school children (as shown in my studies), in particular those who are less fit and overweight, yet getting children to run remains a key component of many P.E. agendas. Whilst the health benefits of running are recognised we are not going to encourage a life time of physical activity by making children run faster or further than they want to, as illustrated in this quote from a 14 year old female P.E. pupil

Basically P.E. teachers, not to me, to others they try and push them too far. They make them do things that they are not comfortable with But, if they don't like running they don't like running basically

(Lewis, 2014 p.5)

Overweight and obese children are generally less active than their normal weight counterparts (Lewis, 2012). Evidence is provided through this thesis that participation in a physical activity scheme, designed specifically for children who are overweight and obese, can have a positive impact on both the range and frequency of children's physical activity participation (Fraser et al., 2012). Previous research with overweight adults has also found that exercising with others who are overweight may be beneficial because they 'foster perceptions of equality in skill level, allow for learning and developing competence without intimidation..' (Sabiston, McDonough, Sedgwick & Crocker, 2009, p.467).

The SDT provides a guiding theoretical framework which helps explain physical activity. In line with the theory, feelings of competence are important in developing intrinsic motivation. Through exercising with others who are overweight, the children in the studies presented here were able to develop competence in a safe environment where they felt at a level with their participants. This is in contrast to research which suggests we should use a whole school approach to avoid obesity stigmatisation (Cale & Harris, 2011) and that by identifying children as overweight and providing them with separate physical activity sessions we are degrading and humiliating them (Cale & Harris, 2011). Schwartz and Puhl (2003) discuss the potential of "victim blaming" and making obesity the problem of the child and their parents and how this leads society to think of obese people as lazy and

undesirable. Whilst it is agreed that overweight children should not be stigmatized for their weight, efforts are needed at all levels (society, community, interpersonal and personal) to both increase physical activity and reduce obesity. The individual child and their family may need individual support and guidance. Making provisions for this does not place the blame for obesity on the child or their family but can help them, alongside provision of wider community and societal interventions, to reduce obesity.

3.1.2 The social environment and social networks

Children who are overweight and obese are less likely to have parents who are physically active to act as role models (Jefferson, 2006). However, the evidence presented here suggests they can benefit from having instrumental support and encouragement from inactive parents (Fraser et al., 2012). In addition children who increase activity levels may encourage their inactive parents to become more active (Fraser et al., 2012). Younger children are more likely to increase their activity through participation in a structured scheme than older children; this may be in part due to their supportive parents having more of an influence than on the older children.

Parents of the overweight children (Study 1) were keen for their children to 'play out more' however they felt they were restricted by a lack of places or people to play out with. One of the outcomes of the intervention was that children, through making new friends, increased their skills in socialising with other children and as a consequence played out more. This is somewhat in contrast to previous research which has found that parents are the ones who restrict free play (Cox, Schofield & Kolt, 2010). However the skills in being able to socialise with other children and play freely may be lost by adolescence if they are not developed when younger and they become more conscious and aware of not being accepted by peers. Previous research has found that friendship networks are important to physical activity levels of children (Sawka, McCormack, Nettel-Aguirre, Hawe & Doyle-Baker, 2013).

Study 2 suggested that obese children have fewer friends than non-overweight children (Jefferson, 2006). The studies presented suggest social skills, or lack of them, may be an enabling factor that prevents some children from being active – this is not something that is commonly taken into account in physical activity intervention studies (Macdonald-Wallis, Jago & Sterne, 2012). This does however provide further support for the SDT where 'relatedness' is regarded as important in promoting intrinsic motivation. Payne, Townsend and Foster (2013), in their analysis of 'active children' within the 2008 Health Survey of England (HSE) found that informal activity makes up a majority of children's activity and social interaction and variety, not competition, is important to

children. The importance of social elements and variety of activities is supported and expanded upon through the in-depth interviews with children presented in this thesis.

Some interventions based on SDT have looked at changing P.E. instructional style but have failed to find what element of the SDT is most important. My suggestion is that the individual elements of the theory (and isolating which ones are effective), is less important than creating a general motivational climate (based on supporting autonomous motivation, relatedness and competency). The motivational climate found in Study 1 was well tolerated and supported by children who had previously not enjoyed activity. The out-of-school activities provided in the school in Study 3 also supported a more motivational climate than in school P.E. lessons and were more popular with students who perceived themselves as less confident in P.E. In Study 3 the students (boys and girls) wanted to feel as though they were at a competitive level with their peers; if they felt they were at a lower level than others in their P.E. class there was a fear of letting others down. This is also supported by 'Changing the Game for Girls' report (British Heart Foundation, 2011) which found some girls feel threatened by being forced to compete. Lessons learnt from these studies can be incorporated into practice and are summarised in table 2 (page nos. 39/40).

In addition boys and girls are concerned with how they are treated by adult leaders (teachers, coaches, instructors) whilst they are being active and this should be taken into consideration for future interventions. In particular children want to feel 'cared for' by adult leaders. If they feel they are going to look stupid and make a fool of themselves, then they will back away from the situation. If they feel a sense of camaraderie with their peers, then they want to engage. Children in these studies increased their sense of self-worth through exercising with others who valued and respected them. Study 1 found that the instructor's friendly and supportive approach was important in increasing the confidence of the overweight and obese children who were less complimentary about their P.E. teachers. This made the activity more enjoyable. Parents also recognised the approach of the instructors as being important, 'I was relieved that there was (somewhere) they could come and they'd be treated equally, regardless of their size or issues' (Fraser et al., 2012, p.20). In general a lack of respect and support was found in Study 3 for less able pupils by some of the teachers, which was in contrast to the supportive and nurturing approach of other teachers.

Children want to make friends and be respected and liked by their peers, particularly as they get older. The social environment created can depend on the activity, but also the person leading the session and those taking part. The leader decides whether the session revolves around self or peer comparisons, competition or cooperation, aggression or compassion, by what they demand from the

children. Whilst some children enjoy fiercely competitive, aggressive physical activity, for others this is a scary and intimidating situation to face. Many P.E. teachers enjoy the former, so may be inclined to provide this for their pupils with little understanding of the impact it may be having on some of the less willing pupils. This has potential impact on how P.E. teachers should be trained and may require a change in emphasis to that currently provided in some P.E. departments.

3.1.3 The individual child's needs and wants

Building on existing evidence this thesis supports the contention that how physical activity makes you feel, emotionally as well as physically, is key to participation. Studies on genetics suggest there may be a biological explanation for some of these differences (Bauman et al. 2012). Individuals with above average abilities may crave activity and feel rewarded by accomplishing an activity, whereas those with below average abilities feel adverse effects such as pain, fatigue or exertion (Bauman et al. 2012). The 'Early Bird' Study (Metcalf et al., 2010) was ineffective in changing physical activity levels and as a result suggested that dietary change (leading to weight loss) may be needed ahead of physical activity interventions (Rahelu, 2010). In this research, Study 1 shows that obese children (even those at the highest levels) can be physically active given the right choice of activities and appropriate support. Weight loss is not needed to be active but the activity and how it is experienced needs to change.

Obese children may have several physical limitations, orthopaedic problems, low exercise tolerance and poor movement efficiency, for example (Cale & Harris, 2009), that make physical activity more difficult. In turn this may make learning to be physically active within a school setting more difficult as participants perceive themselves as less capable and are judged by their peers and teachers as incompetent. Study 1 shows self-esteem increased by attending an obesity scheme, suggesting that far from stigmatizing the children it helped them to become resilient to stigmatisation.

I've started doing sport at school now, and getting involved in P.E. When I used to run my legs hurt and stuff, so I didn't join in. But now they don't hurt as much, so I can run and join in.

(Fraser et al., 2009 p.36)

The role of fundamental movement skills (FMS) is increasingly being recognised as important to a child's perceived competence (Barnett et al., 2011) and the mastery of motor skills in childhood is proposed as a key determinant of future physical activity participation (Barnett et al., 2009). Children who lack these skills need support in developing them rather than being forced to expose their deficiencies in front of peers.

A fundamental finding from these studies is the importance of autonomous motivation, in particular for children aged eleven and older. The concept that children are responsible for and therefore in control of their own physical activity behaviour resonates with the SDT as outlined earlier. If children are autonomously motivated, rather than being regulated, then they are more likely to continue with their activity. Willis, Appleton, Magnusson and Brooks (2006) identify that we should recognise children and young people's behaviour as a conscious decision to act in a certain way, rather than as deviant behaviour and we should help them find ways to satisfy their individual needs rather than coerce them into behaviours we deem appropriate for them. This means attending to and respecting their affective responses to activity rather than measuring and judging them on their physiological responses to physical activity. This supports emerging research in the area that has found that exercise-associated affect may be more important than physiological effect (Schneider & Schmaulbach, 2014).

3.1.4 The child's control over type of activity and exertion levels

This thesis finds that children will enjoy participating in physical activity when they are in control of: the activities in which they take part in, the exertion levels they work at and the clothes they wear whilst taking part (Fraser et al., 2012, Lewis, 2012, Lewis et al., 2014, Lewis, 2014). An emerging finding is that some children may fear not being able to control exertion levels whilst being active and the pain this may cause (Fraser et al., 2012, Lewis, 2014). They were much happier when they could decide when to stop and have a break and when they could push themselves, if they wanted to. Exertion levels and a fear of physical pain may be an important factor for obese children's activity levels (Ekkekakis & Lind, 2006). An important finding in these studies is that all children, regardless of obesity levels, fear not being able to control exertion levels (and therefore fear pain of activity). As they got fitter they were able to accomplish more but the intensity had to be built up, not forced upon them. In Study 3, the children found the relaxed and less controlling atmosphere in after-school activities more encouraging than formal P.E. lessons and being able to control their own exertion levels was a key contributing factor. All of which supports the assertion that exercise needs to 'feel good' if children and young people are to increase future volitional activity (Schneider & Schmaulbach, 2014).

The children were also concerned about what they wore whilst exercising and how exposed it made them feel. Previous research has highlighted this concern from adolescent girls many times before (Standiford, 2013) but continues to be ignored (Lewis, 2014). Appearance is a key concern for adolescents and maintaining a 'feminine' physical appearance is regarded as integral to popularity amongst girls (O'Donovan & Kirk, 2008). The studies presented showed boys were also concerned

about what they looked like and did not want to feel humiliated in what they regarded as inappropriate clothing. Brooks and Magnum (2006), in their study of changing activity levels in a school, found providing more acceptable showering and changing facilities and allowing children to design their own P.E. uniforms encouraged participation. Future interventions need to consider the participation of children of all weight statuses; both boys and girls can find physical activity in general and P.E. in particular an unenjoyable experience. Previous research has focussed on girls and given little attention to boys as they are generally more active. This thesis supports previous evidence that P.E. can have a negative impact on children's participation in school sport but in addition shows that this may not have a negative impact on participation in out-of-school activities in which they choose to participate (Lewis, 2014).

Children want some control over their bodies and how and when they exercise them. This contrasts with school experiences and the need for teachers to feel in control. These studies support previous research in line with the SDT that children need to be autonomously motivated, in particular as they reach adolescence, and this requires them to feel they are being active because they want to.

3.2 Strengths of the research

There has been limited previous research that has asked children and young people about what is important to them in physical activity promotion (Thul & LaVoi, 2011); however it is being recognised that children's voices are important for providing and developing sustainable physical activity programmes (Felton et al., 2005). The limited research that does exist regarding physical activity barriers has focussed on adolescent girls and often takes a deficit (what prevents) rather than asset (what encourages) based view (Thul & LaVoi, 2011). It has been suggested that studying 'active' children, in particular those who have been underserved, will help inform interventions that will impact on physical activity at a population level (Payne et al., 2013). This research fills a gap in the literature through listening to children and what they think has made a difference in their physical activity participation. Using a mixed methods approach including qualitative data collection provides an underutilised approach to study these populations.

Study 1 was a longitudinal study over 2 years allowing us to follow children for a reasonable length of time. The evaluation framework was in place before the start of data collection so there was systematic collection of data throughout the study. The mixed methods approach allowed for collection of data on outcomes and process evaluation to find out not only what worked but why. The adherence figures for the scheme were very high (60%) and of those who had attended, but then dropped out, nearly half were still active – suggesting that they were confident to exercise

elsewhere. Study 2 highlighted the lack of research investigating barriers and motivators for physical activity for overweight and obese children but also the general gaps in the knowledge base. This helped guide Study 3 and allowed for further exploration of the physical activity experiences of children.

The results of these studies have informed practice locally and been disseminated through conference and peer reviewed publications but the lack of a policy change from existing research suggestions more needs to be done to impact on policy. This is something I hope to influence through further research and dissemination.

3.3 Limitations of the research

The studies are limited in their transferability as specific purposive sampling means that the findings may be specific to the groups studied. By selecting active children (even though they have previously been inactive or lack confidence in their ability) there may be different findings from those who are not active – however as stated above this is seen as a strength of the research as we may find out more about how to make positive changes to behaviour. Each study has specific limitations as outlined below.

Study 1: the complexity of the intervention and continual changes made it difficult to control for factors that may have influenced the children. There were data missing for some of the measurements which meant that although there were over 300 children on the scheme there were incomplete data sets which reduced the statistical power of some of the findings. This is a common finding in physical activity interventions and evaluations (Pringle, McKenna, Cooke & Gilson, 2007). The children in Study 1 relied on parents, in particular of younger children, to enable them to get to the sessions (instrumental support). These families may be different to other families with overweight children who did not attend the scheme and are not willing or able to provide transport to out of school activities. The participants who failed to turn up at all despite being referred may have less supportive parents and generally have other barriers to exercise not addressed by the scheme.

Study 2: the review was limited by the strength of the research available. Limitations of the studies included i) measuring physical activity through self-report of 'moderate level activity' rather than asking children to report on the types of activity they are engaged in, ii) not asking who they are active with, iii) not asking where their activity takes place, iv) not recording the impact of school physical activity on out-of-school activity, v) low numbers in quantitative studies, vi) lack of control or contamination in school-based interventions and vii) lack of qualitative research in particular with

boys and overweight and obese children. The review was restricted to three databases and studies in English. Many of the studies were conducted in America and large scale intervention studies have not been replicated in the UK. As such this is a consideration for future research. I am aware that since this review there have been UK based trials including CHANGE which have had some success (Fairclough et al., 2013).

Study 3: the measure of students' perceptions of competencies was devised by the author as a pragmatic measure of students' perception of their ability in P.E. and is not a validated tool. However the questionnaire was piloted and re-tested to increase validity. The children who perceived themselves as low in confidence did not want to be interviewed and so responses from them were not included. Only a selection of teachers were available to be interviewed and may not accurately reflect the teachers at this, or other schools. This is a small scale study that needs to be replicated in other school settings.

My own positive experiences in physical activity, as discussed earlier, made it more difficult for me to envisage what the children and young people in these studies were experiencing. However this allowed me to be open to all possibilities and to listen, rather than impose any preconceived ideas regarding their lack of enjoyment. It was also encouraging to hear the positive social and psychological responses they were able to describe once they were enjoying activity and how this was removed from the physical experiences. This may also be useful for other more sporting children who gain early success from natural physical abilities but then are unable to fulfil their ambitions when only those with the highest levels of ability are provided with opportunities to continue in sports which focus on performance above participation.

3.4 Implications for practice

The four key findings, with specific examples from the studies, can provide us with practical suggestions as to how we can programme physical activity to be more appealing to children of all ages, abilities and aptitudes. The implications for practice suggest how we can change practice to better engage young people with physical activity and specific strategies that can be used. These are also aligned to the National Research Council and Institute of Medicine's (NRCIM) Youth Development Guidelines (2004) formulated in America to support general positive youth development.

Table 2 (p.39) shows how the implications for practice from my studies are aligned to the NRCIM's advice and also provide practical strategies to support the implications. The suggested strategies are for all children and young people, regardless of gender, ethnicity or weight status but are particularly important for children who may not have either the skills or social aptitudes to take part in traditional physical activities offered to children.

Table 2. Implications of the studies presented in this thesis, aligned to existing guidelines and strategies to increase physical activity

Implications	Aspect of NRCIM	Strategies to increase physical activity	Sources of evidence
Provide support for the individual child	Physical and psychological safety	Know the child's individual needs and capabilities; provide changing facilities and a uniform that children and young people are comfortable with.	Study 1 – views of the children and instructors Study 2 – previous literature Study 3 – views of the pupils and teachers
Provide guidance on expected behaviour towards each other	Appropriate structure	Clear guidelines on expected behaviour in sessions and role model appropriate responses.	Study 1 – views of the parents and children Study 3 – views of the teachers
Provide opportunities where children can participate with those of a similar level	Skill development	Promote a climate of mastery, positive feedback.	Study 1 – positive impact on participation and self-esteem through providing separate sessions Study 2 – some previous literature provides support and some suggests it is detrimental Study 3 – views of some of the teachers

Provide instructors/activity leaders who are empathetic to their students' needs	Caring relationships	Adult leaders should show an interest in individual children and their needs. Do not overemphasize winning.	Study 1 – views of the children and parents Study 3 – views of the children and some but not all the teachers
Provide a supportive environment	Opportunities to belong	Provide opportunities where children feel they can contribute to the session, opportunities for skill development, social engagement and buddy systems.	Study 1 – increases in self-esteem and interviews with staff, children and parents Study 2 – previous literature Study 3 – views of the children
Develop physical activities that enhance rather than rely on social skill	Positive social norms	Clear expectations and role modelling of non-stigmatizing behaviour	Study 1 – views of the parents and observations of researchers Study 2 – previous research
Provide a choice of activity and intensities	Autonomy supportive	Support autonomy, provide choices, and focus on improvement not relative performance. Allow children to work at their preferred intensity.	Study 1 – increased participation in out of school activities Study 2 – previous research Study 3 – views of the children

3.5 Conclusions

The findings suggest we need to enable children and young people to enjoy participating in physical activity so that the behaviour remains intrinsically motivated and continues into adulthood. In line with the SDT the evidence suggests that to make the experience enjoyable children and young people need to have a choice of activities that they would like to take part in, with those of a similar standard. The social environment created, through support of parents, peers and activity leaders can help make the experience enjoyable. Alongside this we need to recognise the child's individual needs and wants and allow them to keep control of their exertion levels, the way they dress and the activities they take part in.

These studies show that separating children who are less able and providing a supportive and reinforcing environment can increase both their physical and social skills. This can increase their self-esteem and perceived competence, they can then integrate more with their peers and enjoy being active.

The majority of previous physical activity research, which is quantitatively driven, makes it difficult to understand how physical activity interventions promote behaviour change (Sabiston, et al. 2009). In order to fully understand and explain children's experience of behaviour change further qualitative research is required.

It is hoped that with further research in this area and wider dissemination of the findings, we will increase our understanding and change practices directed at increasing children and young people's physical activity participation.

CHAPTER FOUR

RESEARCH IMPACT

4.1 Local impact

The research presented in this thesis has provided evidence which has influenced policy at a local and National level. The evaluation of the scheme for overweight and obese children was able to show not only that the scheme was effective in increasing the children's physical activity levels and helping to reduce body weight but also was very effective in increasing the children's self-esteem (finding 1). This was important research locally as the results helped secure long term funding for the scheme. Importantly those running the scheme were able to identify from the research which elements of the scheme were important to the children and their parents. Since the evaluation the scheme has evolved and grown with two new full time instructors and an increase in numbers attending so that over 300 children a year now benefit from the scheme. The evaluation demonstrated how important the relationship with the instructors was and how they treated them when being physically active. The programme managers were able to use this information to ensure that future employees would also maintain this ethos of providing a supportive and caring social environment (finding 2). The instructors also developed their initial interview to ensure they spent time with each individual child prior to participation, to get to know the individual child and their aspirations (finding 3), as again this was identified from the research as being important to the success of the programme.

The study into P.E. at a secondary high school also impacted on practice at a local level. The school were keen to find out why some children were disengaged with P.E. and welcomed the report that I sent back to the school (findings 1, 2, 3 and 4). They were able to make changes to the P.E. provision at the school in light of the report and to reflect on current practices and provision and how it could be improved in order to increase inclusivity of P.E. for all pupils. The school were also able to show how they were working with a local University to improve pupils' experience at school to OFSTED inspectors which is regarded as positive collaboration. This is a good example of research being used in practice to change provision. The Head teacher from the participating school has also reflected on the process and changes made (I have added where the changes are linked to the findings);

Since the report we have looked at how we can use P.E. as a positive motivator and engagement with some of our more challenging students (finding 3). We have also amended our enrichment opportunities to spread the opportunities we offer students (finding 4) to try and engage in lifelong enjoyment of sport (finding 1)

(Head teacher, personal communication, Jan 2015)

Within the Kirklees region area I am a member of the 'Kirklees Sport, Physical Activity and Recreation Partnership' and the work I have been involved in has been included in both the Sport and Physical Activity Strategy 2003-6 and the more recent 2008-2016 Strategic plans. The reorganisation of Public Health now means this group is important in delivering physical activity for health and wellbeing.

4.2 National impact

At a national level the second publication from the scheme (Lewis, 2014) was picked up by Public Health England as relevant to the National Childhood Measurement Programme (NCMP). I was invited as a guest speaker to the North of England NCMP workshop aimed at those commissioning and running the NCMP to present my findings on how to engage overweight and obese children into physical activity (findings 1-4). The presentation reached a range of professionals who were interested to learn about both the impact and determinants of physical activity for overweight and obese children.

<https://www.phevents.org.uk/hpa/frontend/reg/tOtherPage.csp?pageID=107913&eventID=256&eventID=256>

I spoke to a number of school nurses at the event who felt they had been given insight into a new aspect of children's behaviour and acknowledged that, in particular, giving children a choice and control over their physical activity (finding 4) was something they had not considered previously. It is hoped the participants from the workshop will be able to take back from the event new concepts and ideas on engaging overweight and obese children in physical activity.

The findings were also picked up by the local press and disseminated through media channels

<http://www.examiner.co.uk/news/west-yorkshire-news/huddersfield-university-expert-kiara-lewis-6411486-a-medical-health-network> (file:///C:/Users/Kiara/Downloads/269286963-WebPdf-20131219%20(1).pdf) a newspaper column

[file:///C:/Users/Kiara/Downloads/A19786_269257043%20\(1\).pdf](file:///C:/Users/Kiara/Downloads/A19786_269257043%20(1).pdf) and website

<file:///C:/Users/Kiara/Downloads/269201207-WebPdf-20131219.pdf>

Nationally I contributed to the Government's Physical Activity commission and sent the findings of my studies for consideration by the working party (<http://activitycommission.com/written-evidence-received/>).

4.3 International impact

The third study was presented at the 4th conference of Health Enhancing Physical Activity (HEPA) Europe (http://eprints.hud.ac.uk/19889/1/HEPA_poster.pdf) where a range of health and fitness professionals showed interest in the findings, in particular the links to the SDT (findings 1-4). I am now a member of the HEPA working group for working with children and young people and contribute to the group through discussions and dissemination of my research findings. The group are hoping to work together to apply for funding to bring together the research findings from across Europe.

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Appendix 1

Young Pals Evaluation

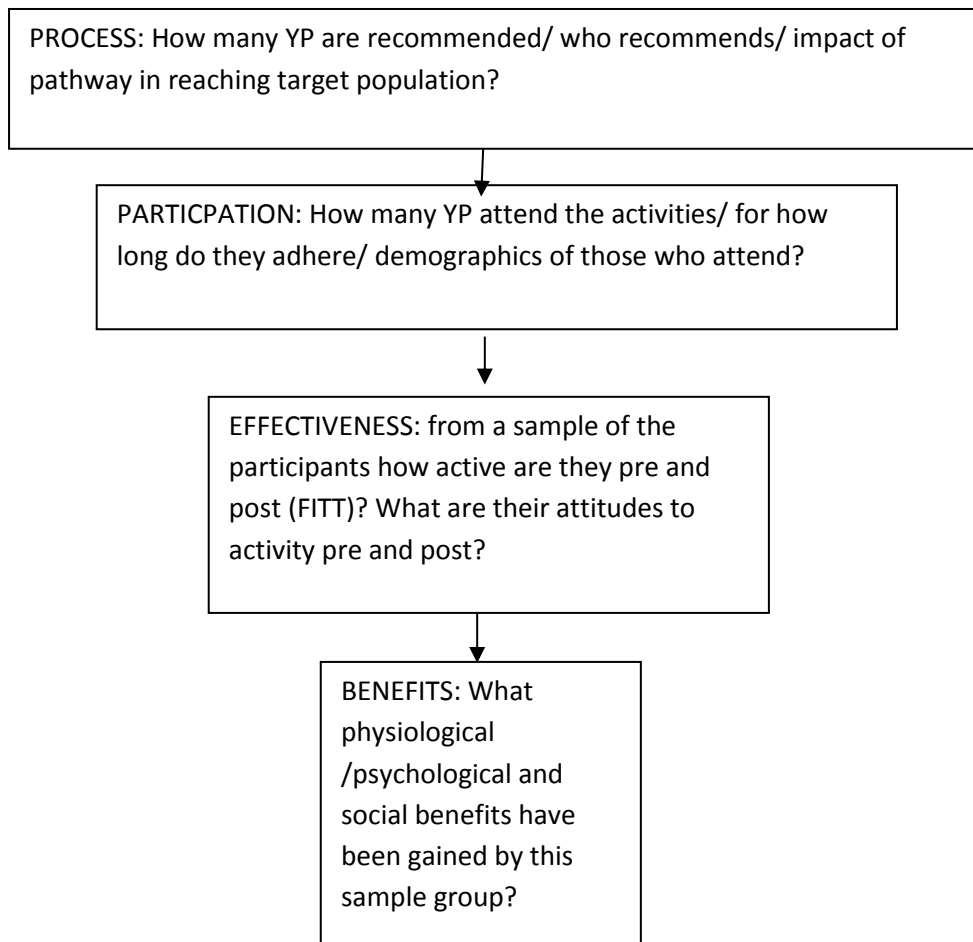
Aims of the evaluation: To evaluate the effectiveness of a care pathway for overweight and obese young people.

The evaluation aims to find out what works locally for children and young people who are overweight and obese. This will inform local practitioners but also contribute to the wider debates regarding effective approaches to tackling childhood obesity.

A case study approach to evaluation has been taken as the aims are to be inclusive and find out what works within the local community. It was deemed important that the processes as well as the outcomes are measured and as such a case study approach was undertaken. A case study approach is considered as effective as a randomised control trial as a means of evaluating health promoting activity (Gormley and Hussey 2005)

A triangulation of data collection techniques has been used to enhance the validity of the data combining quantitative (questionnaires, psychological tests,) and qualitative (semi-structured) interviews.

Evaluation Framework:



Gormley, J. & Hussey, J. (2005) *Exercise therapy – prevention and treatment of disease*. Oxford: Blackwell Publishing.