

**Understanding Family Physical Activity and  
Health Related Behaviours:  
A Multi-Layered Approach**

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## Abstract

In spite of the growing awareness of the importance and health enhancing benefits of physical activity (Anderson et al., 2000; Barengo et al., 2004; Kaleta et al., 2006) the population still remain predominantly inactive (Haskell et al., 2007). Limited UK published data (to date) has simultaneously examined children and families health and physical activity patterns (Wing, 2000). The research aimed to explore and better understand the determinants associated with children and families health related behaviour and physical activity patterns and investigate the *underlining factors* which direct current and guide future health related behaviour choices.

Prior to Study 1 an extensive needs assessment of the area (gathering data on the children and families literacy levels and understanding of research) was undertaken to assist in the development of Study 1's measures. Study 1 then utilised a parental (Goding, 1985; Baker et al., 1994) and children's (Baldings, 1997) health related behaviour questionnaire to explore the habitual physical and nutritional behaviours of children and their families in Knowsley (UK) thus creating a baseline of data to investigate further.

One hundred and fifteen children (n=115; M=55, F=60) mean age of 8.6 years completed the self-report questionnaire from five Knowsley MBC (UK) primary schools. Fifty-seven parents (n=57; F=54, M =3) completed and returned the postal self-report questionnaire. Statistical analysis was carried out using SPSS for windows Version 7 and descriptive statistics (cross tabulation with two dimensional tables), frequency distributions and Chi Square used to assess the children and parents' nominal health related behaviour results.

Study 1 suggested that (generally) the children and families of Knowsley Metropolitan Borough Council were not meeting the national recommended guidelines for physical activity or diet (Choosing Health, 2004; NICE, 2009). Forty Three percent of the parental sample (n=22) reported they did participated in moderate levels of exercise, 7-8 times per week. Of this sample 25% (n=10) were found to accumulate only 11-30 minutes of activity (per week). Foods children consumed most often (3 or more times a week) were generally of low nutritional worth, such as, chocolate / sweets (51%; n=59), fizzy pop (46%; n= 53), crisps (36%; n=42), cakes and biscuits (35%; n=41). On average, families consumed one take away meal per week and regularly ensured their families obtain fresh fruit and vegetables at least two to three times a week or more.

Study 2 encouraged the use of more objective methods (accelerometer and photography) to locate the children's habitual physical activity levels and eating behaviours as they occurred within their home environment. Two of the original primary schools were randomly selected (n = 43; M: 21, F: 22). Actigraph (AM - 7164) accelerometers were utilised (over a minimum of four day monitoring) to assess the children's physical activity patterns. Ten hours of measurement were required from the participant (each day), two of the four being weekend days to enable comparisons between weekday and weekend day activity rates in their home environment to be made.

In parallel with the accelerometer data, daily habitual dietary patterns were measured using a 25 exposure disposable camera and diet diary. Photographs of every main meal the children consumed within their home environment, over a 4-day cycle (Breakfast and Evening Meal, Weekends: Breakfast, Lunch and Dinner) were recorded. The photographic data was analysed using a directed form of content analysis (Fang-Hsieh & Shannon, 2005). Descriptive statistics were calculated (mean, standard deviation (SD), range) for the accelerometer component of Study 2 (n = 43; M: 21, F: 22). Three children's data were incomplete and were eliminated from analyses. Median and inter-quartile range (IRQ) values were displayed for variables that were not normally distributed. All analyses were performed using SPSS version 11.

Overall boys were more physically active than girls during Wednesday – Friday (mean difference 82 accelerometer counts per minute (95% CI 17 to 179,  $p < 0.101$ ) with 32 minutes more MVPA (95% CI 9.2 to 53,  $p < 0.006$ ). Differences were noted between the mean MVPA activity counts during the weekday and weekend (95% CI 16 to 24,  $p < 0.000$ ). The difference between total daily activity counts on a weekday and weekend was 215 accelerometer counts per minute (95% CI 200 – 248,  $p < 0.000$ ). Only the boys mean accelerometer scores for weekday MVPA (78 minutes) achieved recommended physical activity guidelines (NICE, 2009). Neither the boys nor the girls complied with physical activity guidelines during the weekend with boys achieving a mean daily score of 39 minutes of MVPA (21 minutes below the requirement) and girls achieving only 36 minutes (24 minutes under the daily physical activity guidance).

The photography component of Study 2 suggested that the children were not *over* eating within the home environment but indicated that the typical meals they were consuming were of poor nutritional worth. Frozen and packaged convenience foods were the main foodstuff being consumed by the children over the monitoring period.

Study 3 aimed to better capture the context, culture and environmental constraints children placed upon their own current activity choices and future recreational aspirations through a write and draw approach (Pridmore & Bendelow, 1995). One hundred and eight children (n=108; M: 50, F: 58, Mean age 8.6 years) participated in Study 3. Content analysis (Kondracki et al., 2002) was undertaken on the written text displayed within the drawings. Primarily, inductive analysis was applied to the data sets whereby categories and key order themes were formulated by interpretations as near as possible to the data (Tuckett, 2005). The predominant key order themes that children engaged in most often (after school) were: Indoor, safe, sedentary pursuits within the home environment. Children chose to watch TV, play computer games (70 images) or read and listen to music in the home environment (10 images) after school. Although many children chose to illustrate a very barren, exposed landscape of where they 'hung out' after school, Key Order Theme 3 clearly illustrated that 'Play' (n=40) both indoor (n=18) and outdoor (n=22) including parks and open spaces still dominated the social choices of the children and their activity behaviours after school.

The images displayed within exercise 3 also suggested culturally unique characteristics associated with the children's future after school activity choices existed (i.e., under age drinking). Exercise 3 (n=83 images) identified that the majority of the children at all 5 primary school sites would like the creation of a new after school club within their local community. However, the main themes related to this request were for the service: *to be unsupervised (adult free), Open 24 hours a day, free admission, age restricted (no over 13's)* and had significant adult oriented threads associated to them.

In order to explore the variables that may be inhibiting physical activity engagement and healthy eating it seemed appropriate to engage more closely with the children and families in their own home environment. Similar to Irwin et al. (2006) Study 4 selected participant observations to become (progressively) closer to the participants and thus observe a deeper engagement of their lives within a phenomenological approach (Crotty, 1998). The aim of Study 4 was to explore the micro (day-to-day existence) of a family in Knowsley MBC (UK) and observe their naturally occurring physical activity and nutritional behaviours within the context of their own home. One family: 2 females (1: 12.6 years and 1: 43 years) 1 male (10 years) participated. The observations included various half-day or full day sessions (dependent on week or weekend dates) and operated on an ad hoc basis to ensure a variety of behaviours were captured. Observations were conducted regularly (once a week) on a rotational period at the convenience of the family. The researcher spent a total of 9 months (equating to 288 hrs) observing the family. The day-to-day existence of the family is represented through a realist story that draws on the concrete details of real life that attempt to conjure up and draw the reader's attention to the appropriate and relevant images and emotions that permeate family life (Caulley, 2008).

Triangulation was adopted with member checking (Lincoln & Guba, 1985) occurring at every phase of the writing process. The creation of a creative non-fictional diary narrate the social experiences encountered by a child (Age: 12 years called Paige Winters) and her single mother of three (Age 45 years called Jayne Winters) living in the cultural landscape and community of Knowsley MBC (UK).

It appeared that this family's physical activity perceptions and behaviours were directed at a community level, which needed to be uncovered and observed to better understand the wider context in which physical activity choices are made. One of the most predominant overarching themes of Study 4's findings appeared to be the significant power and capacity a *community* can have in facilitating or hindering physical activity engagement. *The day-to -day* existence of a family and the reasoning behind their health related behaviour choices were understood during this final study and highlighted what *restricted* physical activity behaviour. Moreover, all of the physical activity policy directives alluded to earlier in the literature do not take into account the multi-layered and complex process some families face by just making a collective and conscious decision to be 'healthy.'

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# CHAPTER ONE

## 1.1 Introduction

Over the last century society's definition of the 'family' has undergone a rapid transition and has come to include single parents, biracial couples, blended families and unrelated individuals living cooperatively among others (Crawford, 1999; p. 271). However, Stack (1996) ultimately defines 'family' as:

*"The smallest, organized, durable network of kin and non-kin who interact daily, providing domestic needs of children and assuring their survival"*  
(Stack, 1996; p. 31)

Although this definition appears straightforward the notion of what constitutes to the word 'family' remains a contested concept with researchers from different disciplines understanding and defining it in highly distinctive ways. Nonetheless, regardless of this umbrella concept under investigation the definition illustrated above is still acknowledged to be an important agent for the socialization of children in their formative years (Lau, Quadrel & Hartman, 1990). The family exerts social influence (Edwardson & Gorely, 2010) and informs belief systems which in turn, shape an individual's attitudes towards work and life in general and more specifically can influence an individual's approach to and perception of physical activity (McEloy, 2002) and diet (Watt & Sheiham, 1996).

This is of particular importance for current health policy (NICE, 2009) as although the health – enhancing benefits of regular physical activity (Anderson et al., 2000; Barengo et al., 2004; Kaleta et al., 2006) and a healthy diet (Shepherd et al., 2006) have been documented for many years, the majority of the population still remain unhealthy and inactive (DH, 2000; Haskell et al., 2007). As a consequence, many nations are now faced with high numbers of obese young children (Campbell, 2003). The decline that has been noted across children's physical activity and dietary levels (HEA, 1997) and the subsequent increase in participation rates in more sedentary behaviours (e.g., activities such as T.V viewing & reading) (Strong et al., 2005) are of important significance for children's current and long term health status (Shepherd et al., 2006; Reilly et al., 2008).

Considering the likely influence that parent's have over their child's physical activity (Edwardson & Gorely, 2010) and dietary patterns (McClain et al., 2009) it would appear these levels are also *normally* sustained by adequate support by the family (Sallis & Owen, 1999). Indeed, the important role the family maintains in shaping children's physical activity and eating behaviours is a central foci and driver for many health policy directives (DH 2004; 2005; NICE, 2007; 2008). Moreover, literature would suggest that parents are one of the strongest determinants of children's physical activity patterns, serving as both role models and gate-keepers to activities (Moore et al., 1991). However, regardless of this, sedentary patterns of behaviour are becoming more readily observed within home life (Pretty et al., 2003) and it would be naive to assume that physical activity and healthy eating can easily become an habitual part of a child's daily existence (Malina, 2001).

The decline of children's physical activity levels to more sedentary pursuits (Strong et al., 2005) and unhealthful diets calls for a clearer understanding of those determinants responsible to ensure the strongest and consistent modifiable correlates (Baranowski et al., 1997) are targeted for future health intervention success (Gustafson & Rhodes, 2006).

Extensive reviews have been conducted on the correlates of physical activity in parents, children and adolescents (Sallis et al., 2000; Ferreira et al., 2006; Gustafson & Rhodes, 2006; Edwardson & Gorely, 2010) with the most consistent correlates of physical activity for children (aged between 3-12 years) found to be; time spent outdoors, sex (male), parental overweight status, intention to be active, physical activity preferences, perceived barriers (inverse), previous physical activity status, healthy diet and program/facility access (Sallis et al., 2000). Gustafson & Rhodes (2006; p.80) established several broad categories to house these correlates, namely; '*Fixed biological* (e.g., age, sex and ethnicity), *Cognitive* (e.g., goal orientation, intention), *Behavioural* (e.g., participation in sport, sedentary time), *Social* (e.g., parental modeling, sibling support) and *Physical Environment* (e.g., opportunity to be physically active).

Similar reviews have been undertaken for dietary behaviours in children (Shepherd et al., 2006) and youth (Van de Horst et al., 2007) with socio-cultural and economical-environmental correlates (at the house-hold level) being the most dominant (Van de Horst et al., 2007). A desire to invest in one's appearance, will power, broader access to healthy foods and support of the family are all noted as key facilitators for healthy eating in children. In contrast, individual taste preferences to fast food, its ease of access and cheapness coupled by poor school meals have also been reported to be responsible for inhibiting healthier choices for children (Sheperd et al., 2006).

For the purpose of this thesis further examination of the modifiable variables associated with children and parents physical activity and dietary behaviours (namely from the; *cognitive, behavioural, social and physical environmental correlates* categories) will be sought. The rationale for doing so is to target the associated physical activity and dietary correlates that offer more likely modifications for future intervention purposes. Furthermore, the social variable has been consistently purported to be the most important modifiable correlate for children and youth (Gustafson & Rhodes, 2006) and warrants further exploration within the home environment.

The social-cognitive frameworks that exist for children (Welk, 1999) and the child - parent interactions model (within the context of physical activity and dietary environments) (Taylor et al., 1994) are also grounded in Bandura's Social Cognitive Theory (1986) and enable parent-child interactions (including those situated in physical activity and diet) to be observed (Bandura, 1986). Yet there are mixed reviews as to whether parent's actual physical activity levels are a correlate for children's activity rates. Only 6 from 14 studies reviewed by Gustafson & Rhodes (2006) suggest a moderate prediction (Gottlieb & Chen, 1985; Perusse et al., 1988; Sallis et al., 1988; Stucky-Ropp & DiLorenzo, 1993; Welk et al., 2003) with a weak or insignificant correlation being noted across seven studies (Sallis et al., 1992; Dempsey et al., 1993; Aarnio et al., 1997; Kimiecik & Horn, 1998; Cambell et al., 2001; Trost et al., 2003).

Similar trends have been noted across other reviews (Ferreira et al., 2006) with modeling of physical activity across parents, siblings and friends (across 96 independent samples) finding no significant association to children's own physical activity rates. It was only when the behaviour of the father and mother were separated that relevant associations could be found. Specifically, parental modeling was successful for girl's physical activity levels when fathers engaged in more active modeling of behaviours and mothers provide logistic support (i.e., enrolling their child in sport, attending sporting events) (Davison et al., 2003).

When the research and aligned literature explores dietary behaviour there does however appear to be a consistently positive association of parental modeling to healthful food uptake in children (Cullen et al., 2001; Bere & Klepp, 2004). A further six studies (Gibson et al., 1998; Kratt, Reynolds & Shewchuk, 2000; Cullen et al., 2001; Fisher et al., 2002; Bere & Klepp, 2004; Cooke et al., 2004; Vereecken et al., 2004) also note the importance of parental uptake of fruit and vegetables to children's consumption of healthy foods. More recent cross sectional findings located within a current review by Edwardson & Gorely (2010) within the physical activity domain extends the parental modeling debate further and suggests that to assist children aged 6-11 years in being active a multitude of factors must be considered; specifically, the direct involvement by parents in physical activity, facilitation of encouragement within broader support mechanisms (i.e., transporting their child to facilities), role modeling and encouragement.

Friends similarly have also been found to exert some level of influence on eating patterns (Sheperd et al., 2006) and physical activity behaviours for children across both quantitative (Salvy et al., 2008) and qualitative studies (Jago et al., 2009). Amongst British children three distinct friendship groups have emerged from the research; school friends, neighbourhood friends and other friends (e.g. children of parent's friends) (Jago et al., 2009). The literature would appear to suggest that children are part of multiple groups (Jago et al., 2009) and, in turn, their normative beliefs of physical activity and television and computer habits shaped by them (Jago et al., 2009).

Whilst these mediating variables assist in understanding particular influences on physical activity and dietary behaviours they provide only limited assistance in understanding how these influences originated or shift over time. Similarly, although established data capture methods exist for obtaining parental support (Davidson et al., 2003) further research is needed to examine imposed activity related parental regulations and also for behavioural differences which may occur between weekend and weekday pursuits within the family home context (Jago et al., 2009).

The motivational driver, to establish how we can increase and or maintain children's health is clearly borne from the consensus that engaging in healthful eating and physical activity offers some type of preventative mechanisms for overweight, obesity and chronic health issues (Corbin & Pangrazu, 1998; De Bourdeaudhuij, 1998). The Chief Medical Officers Report (DH, 2004) Choosing Activity (DH, 2005) cites physical activity as a key intervention that should be considered in order to reduce the risk of (several) degenerative diseases, mortality, and overall improvement of a person's quality of life (NICE, 2008). Moreover, a variety of policy documents and initiatives (e.g., Game Plan, 2001; Choosing Health, 2004; Every Child Matters, 2004; Time for Play, 2006) have now been developed and subsumed within this action plan (NICE, 2008) in order to address and curb the inactivity levels of the UK population. The public health objectives located within these documents are motivated to encourage individuals to participate in physical activity from an early age.

Such a public health drive is based on significant evidence that suggests that being sufficiently active throughout childhood can have a direct improvement on quality of life, prevention (or reduced risk) of future chronic health diseases and increase the likelihood of maintaining physical activity participation rates throughout adulthood (Boreham & Riddoch, 2001). However, it appears that despite these public health policies and initiatives, rates of active commuting are declining (Stanford University, 2007) and sedentary behaviour patterns are increasing (Saelens, 2003).

The relatively short time period in which obesity and unhealthy patterns of behaviour have risen globally has caused Booth et al., (2005) and others (Peters et al., 2002) to question whether environmental correlates (as opposed to genetics) are responsible. The environmental features which have promoted obesity induced behaviours have been shown across studies (Booth et al., 1999; Strauss & Knight, 1999; Trost et al., 2001) with others (Swinburn et al., 2004) proposing that the environment is accountable for this trend. The need to understand, measure and change obesity-inducing behaviours across children has led to subsequent calls for more studies to examine the home (Ritchie et al., 2005) and neighbourhood environments (Dowda et al., 2001) and their subsequent impact and influence on health behaviours.

Extensive reviews already exist in the personal and environmental influences on children and adolescents physical activity and dietary behaviours (Sallis, Prochaska & Taylor, 2000; Ferreira et al., 2006). The strongest personal and environmental correlates associated with children's physical activity being found to be the *home* and *school* environment (Ferreira et al., 2006) with further positive associations noted for the amount of time children spent outdoors and across school physical activity policies. However, six potential physical activity environmental / neighbourhood correlates were reviewed by Ferreira et al. (2006) (including access and availability to a PA programme, facilities, safety and neighbourhood hazards) and were found not to be related to children's physical activity thus contrasting earlier works by Sallis, Prochaska & Taylor (2000). Nonetheless, various authors (Kohl et al., 1998; Richter et al., 2000) now advocate that these particular environmental correlates warrant further investigation at distinctive levels (i.e., at a school, home and neighbourhood level) and from a longitudinal perspective if policy development is to improve upon the sedentary rates of this population group (Burg et al., 2005).

The individual determinants that relate to the prediction and engagement of physical activity and healthful eating in children (i.e., access to facilities, intentions and preferences, consumption levels of healthy foods, outside play spaces, school policies, previous physical activity history and gender), have been briefly mentioned above and extensively explored in the literature (NICE, 2007).

Similarly, the prevailing normative values and behaviours, environmental policies, resource allocations from government and schools have also been shown to interact and impact (in some way) upon long term adherence to physical activity and health behaviours (Stanford University, 2007). However, what has not warranted the same level of attention is the relationship between the environmental correlates of actual physical activity and diet as it occurs at the neighbourhood level (Duncan et al., 2002; Braza et al., 2004). Similarly, whilst social factors have been consistently found to be associated with children's participation rates in activity (Voorhees et al., 2005; Price et al., 2008; Jago et al., 2009) the concept of neighbourhood friends and how this could facilitate or hinder physical activity and eating behaviours is a new one and warrants further investigation (Jago et al., 2009).

Researching children's lives still remains at an exploratory stage with previous health related behaviour research often failing to recognise the complexity of the myriad of social and cultural factors that influence children's health related behaviour patterns and perceptions. Predictors of inactivity and obesity within communities have important significance for providing and promoting policy and health promotion practice (Trayers et al., 2006) yet current research focusing on children's everyday activity and dietary patterns within their local community and the subsequent impact that this may have upon their well-being are limited (Ben-Arieh & Ofir, 2002).

Prior to instigating behaviour change a greater understanding of the relationship between health and the realistic opportunities that exist within the desired community are required (Miilunpalo, 2001). However, observing and capturing these particular beliefs, motivations and situational constraints that initiate, maintain and compound particular behaviour patterns are especially difficult (Abraham, 1999). The sporadic nature of children's physical activity patterns (Anderson et al., 2006) appears to blur the lens with regards to being able to accurately capture physical activity engagement levels (Reilly et al., 2008).

To extend our understanding of *why* children and families are maintaining sedentary behaviours and poor diets, further attention is sought from research that seeks to understand how the *cognitive, behavioural, social and physical environmental correlates* interact and occur simultaneously within the context of day-to-day existence. In order to understand the multilayered affect of physical activity and food choices we need to move towards a greater understanding of how these correlates are embedded within a social and cultural setting as opposed to isolating them as objective measurable variables. Through observing behaviours simultaneously within the context in which they occur more realistic behaviour change strategies can be sought (Lake & Townsend, 2006).

The literature that follows firstly provides the reader with an overview of the context in which the research was conducted followed by a literature review which clarifies the definition of and the holistic health benefits of engaging in physical activity for both children and adults. The review then details the current National and International physical activity recommendations proposed for children and adults. An exploration of current physical activity trends for both population groups then follows and provides a critical review of some of the potential consequences for inactivity rates in children (i.e., active commuting and sedentary pursuits). The review then moves on to the current physical activity policy directives and initiatives targeted at children. Nutritional trends and profiles of children and families are then discussed as proposals concerning the notion of parental facilitation and the relationship, influence (and context) of the environment with respect to eating behaviours are brought to the reader's attention. Chapter one draws together key contributory correlates that may account for and/or explain the deficiencies in healthy eating habits and poor engagement in physical activity (these constructs include; *location, socio-economic status and the built environment, community design, attitude and intention, social support, psychological theories and physical activity and nutrition frameworks for behaviour change*). A summary of the literature concludes this section and illustrates how the literature has guided the emergence of specific research aims of this study.

A mapping exercise of the complete research journey is then offered to the reader in order to clarify the structure and methodological direction the overall study takes.

## **1.2 Location of the Study**

### **The Landscape of Knowsley, Merseyside (UK)**

Prior to reviewing the literature this chapter is intended to offer the reader an understanding of how the research project emerged. Similarly, the subsequent health trends of the community under investigation and the perceived health inequalities currently observed by the target population will also be discussed to provide the context for why the families within Knowsley Borough Council were targeted for research.

Following a successful application by Knowsley Sport Development Unit to Merseyside Health Action Zone (2001), residents of Knowsley Metropolitan Council (children aged 7 – 8 years, N= 115; M: 55, F: 60 and their families, N 57; F=54, M =3) from the wards of Huyton and Kirkby were selected to participate in a longitudinal study to explore their health related behaviours and physical activity levels.

Prior to the start of the Study Knowsley Borough had a combined population of over 150,000 people across nine townships (Improving Health in Knowsley Report, 2002). Thirteen percent of Knowsley's population were aged 65 years or over at the time of the study in comparison to 15.5% for the North West Region. A higher rate of children aged 15 years or younger were also observed against the North West average (22% vs. 19%) (Knowsley Public Health Report, 2003).

High levels of social deprivation have been proposed to have a direct negative effect on the health of a community (Sands, 2002). This notion was of particular significance to the population under exploration as Knowsley was ranked the 5<sup>th</sup> (out of 354) most deprived local authority in England (Knowsley Public Health Annual Report, 2002) with eighty two percent of Knowsleys wards falling into the top 10% of the most deprived wards in England during the time of the research (The Indices of Deprivation, 2000). The high prevalence of social deprivation reported across the borough appears to have had a marked effect on the general health status and standard mortality ratios associated with coronary heart disease.

Knowsley residents had amongst the highest mortality ratios for coronary heart disease in the North West Region of the UK (St Helens and Knowsley Public Health Annual Report, 2001 – 2002). Moreover, nationally in 2000, 29% of men and 25% of women smoked cigarettes yet Knowsley's smoking statistics were 11.6% higher than the national average for men and 15% above the national average for women thus highlighting the marked increased risk of contemporary health diseases (e.g., cancer, coronary heart disease, hypertension etc.) to the target population. The highest rates of smoking prevalence, by locality within Knowsley was Kirkby, with 40% of women aged 18-39 years and 40.6% of men aged 40 -64 years smoking (Improving the Health in Knowsley: Summary Report, 2002).

Knowsley's education and employment statistics were also found to be below the National average. During 1998-99, 23% of pupils within Knowsley attained five or more A\*-C grades in GCSE examinations. This figure resides well below the national target of 50% of pupils achieving 5 or more A\* -C grades at GCSE in 2002 (Sands, 2002). Similarly, Knowsley Public Health Annual Report (2002) also stipulated that 1 in 10 of Knowsley residents were unemployed and that those who were in employment were typically more likely to be in manual jobs as opposed to professional and managerial occupations. This trend is concurrent with Sands (2002) observation that the standards of education within Knowsley correlated significantly with the poor health status of this community.

The brief overview of Knowsley's landscape (high social deprivation levels and high unemployment rates) coupled by the steady global rise of obesity (Ogden et al., 2006) and increased rates of sedentary pursuits amongst children (Hesketh, 2006) clearly illuminated the importance of exploring and understanding further the correlates associated to the children and families' physical activity and eating behaviours if future health policies are to succeed within this community.

## **Literature Review**

### **1.3 Definition of Physical Activity**

The term Physical Activity, in its broadest sense, encompasses “Any bodily movement produced by the skeletal muscles which results in energy expenditure” (Caspersen, Powell & Christenson, 1985; p.126). This definition captures any active leisure, exercise, sport, manual occupation or chore which affects daily energy expenditure (Bouchard & Shephard, 1996). Furthermore, physical activity has been categorised as a ‘behaviour’ that occurs in a variety of forms and as such, the study of adherence and compliance should be considered in a biocultural context (Seedfeldt et al., 2002). The literature on the beneficial effect of physical activity against health outcomes is extensive but typically drawn from adult populations (Boreham & Riddoch, 2001). Consequently, in order to help understand the relationship between physical activity and health (more generally) the reader is offered a critique of the literature which currently exists across the adult populations.

#### **1.3.1 The Effects of Physical Activity on Health Outcomes in Adults**

The Department of Health and Human Services (DHHS, 2002) stated that it is crucial to make physical activity part of our daily lives as regular physical activity is purported to increase life expectancy (CDC, 1996; Ferro – Luzzini & James, 2000; DCMS, 2002). Moreover, to sustain both positive physical and mental health across an individual’s lifespan it has been widely acknowledged that the two primary determinants are physical activity and diet (Pretty et al., 2003). Maintaining regular physical activity in adulthood has been shown to decrease and/or have a preventative effect on many chronic health issues (e.g., type 2 diabetes, heart disease, reduced risk of certain cancers, osteoporosis, high blood pressure, increased mobility and strength and co-ordination in the elderly) (DHHS, 2002). Both fitness and physical activity have been found to have an inverse relationship with mortality in adults (Paffenbarger et al., 1986; Blair et al., 1989).

The beneficial effect of exercise on lipids/lipoproteins and blood pressure (Whelton et al., 2002) have also been demonstrated in randomised controlled trials (Kraus et al., 2002) with prospective studies continuing to illuminate the protective effect that exercise offers in cardiovascular disease (Tanasescu et al., 2002). A meta-analysis of 40 studies further illustrates that independent of all other risk factors, coronary heart disease is 1.9 times more likely to develop in physically inactive adults than their more active counterparts (Powell et al., 1987). The level of independent risk associated with inactivity was also comparable to the other main risk factors associated to CHD (i.e., cigarette smoking, cholesterol and hypertension) (Powell et al., 1987).

Although Anderson et al., (2000) and Barengo et al., (2004) acknowledged the cardiovascular benefits of engaging in regular physical activity, not all studies (Berlin & Colditz, 1990; Dishman & Buckworth, 1996) have outlined the benefits to subjects' overall health status. Whilst some authors (Kaleta et al., 2006) associate physical activity with a decrease in obesity, cancer (i.e., colon and breast), diabetes mellitus, cardiovascular disease, osteoporosis/osteoarthritis, hypertension and depression, it is worthy to note that other authors (Gyntelberg, Lauridsen & Schubell, 1980; Ilmarinen, 1989; Tuomi et al., 1991) believe that any positive effects of PA is dependent on the specific mode and frequency of the exercise or physical activity performed to obtain these health gains (i.e., moderate to vigorous intensity). Similarly, Warburton et al. (2006) established that by increasing the level of physical activity (energy expenditure) to 100kcal (4200kj) per week there appeared to be observed mortality benefits of around 20%. Moreover, a study by Hu et al. (2004) discovered a 52% increase in all-cause mortality rates and a 29% increase in cancer related mortality risk for middle aged women who participated in less than 1 hour of exercise per week, in contrast to their more regularly physically active counterparts (i.e. who undertake 30 minutes of moderate activity per day, on five days a week).

Low-intensity exercise programmes (utilising 45% of maximum aerobic power) for patients with cardiovascular disease have also been found to offer significant health gain (Blumenthal et al., 1988). Researchers have also postulated that participating in half the volume of exercise (from what is normally recommended) may have some adequate health gains (Wannamethee, Shaper & Walker, 1998).

This statement is particularly relevant for individuals who are frail, elderly or 'de-conditioned' (Warburton, Nicol & Bredin, 2006). A graded dose-response relationship to physical activity engagement has however been reported against mortality rates. Adults who engage in the lowest end of the physical activity spectrum have been found to have the greatest mortality rates (Paffenbarger et al., 1986).

Whilst there remains speculation against specific physical activity dose and accumulation rates against accrued health benefits in some health outcomes, the consensus pertaining to the positive association of physical activity to benefits in psychological health is more consistent (Biddle et al., 2000). North et al. (1990) constantly found (across all ages) a reduction in depression for those that exercised. Similarly, Biddle & Mutrie (2001) reviewed several meta-analysis studies with favourable improved mood and psychological well-being outcomes reported against those adults who engaged in physical activity.

From the literature one can conclude that i) engaging above the low end of the fitness and activity spectrum (i.e., moderate level and above) offers the greatest accumulative health benefits (Boreham & Riddoch, 2001) and ii) regardless of the type, duration and intensity of the activity performed it may be the total energy expenditure that offers the key dimension for health improvements in a predominantly sedentary population. Activities such as gardening (Leon et al., 1987), walking and taking the stairs (Paffenbarger et al., 1986) have all been shown to provide a significant risk reduction for CHD in adults.

At this juncture it is important to ask whether the adult health outcome data discussed above is relevant and/or comparable for children. Malina (1996) has undertaken extensive work within children's physical activity. The debate associated to whether physical activity behaviours performed as an adolescent can be found to transfer to adulthood is mixed with Malina (1996) finding only a *weak to moderate* association for physical activity tracking from adolescents into adulthood.

Boreham & Riddoch (2001) indicate that the likelihood of childhood activity patterns being transferred to adulthood (i.e., whether highly active or not) is difficult to ascertain and/or establish given the extensive disturbances that exist across an individual's lifespan (e.g., school-work transition, moving home, new neighbourhoods, illness, marriage, childrearing, biological and psychological development). The complexity of 'growing-up' will ultimately impact upon an individual's ability and or motivation to engage in physical activity pursuits, therefore suggesting that at an individual level, the nature of physical activity will be a hostage to a complex array of an individual's personality, situational experiences, circumstances, relationships and life experiences.

Regardless of this Cale & Harris (1993) emphasise that from a behavioural perspective, physical activity must still be promoted and seen by children as important, positive and an achievable aspect of their daily lives. Moreover, the health consensus of the beneficial effect physical activity offers to children's health is built from the foundational literature source from adults (Boreham & Riddoch, 2001). Consequently, the hypothesis proposed by Blair et al. (1989) (illustrated in Figure 1.0) regarding the association of childhood activity and health outcomes to adulthood warrants further discussion below.

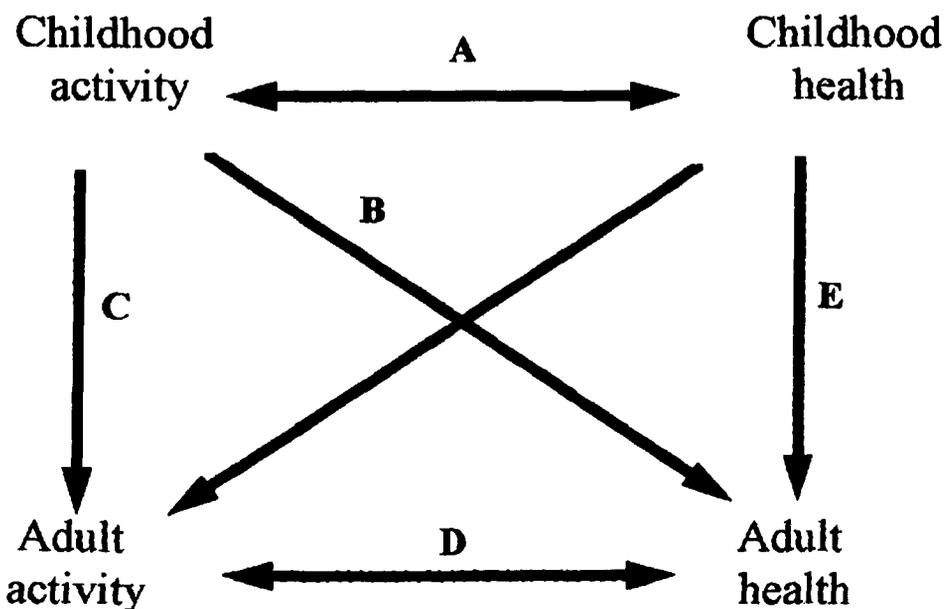


Figure 1. Hypothetical relationships between physical activity and health in children and adults (Blair et al., 1989)

### **1.3.2 The Effects of Physical Activity on Health and Well-Being During Childhood**

Being regularly physically active as a child is essential for sustaining a positive energy balance, healthy weight and supporting physical, cognitive, psychological and emotional development (Burdette & Whitaker, 2005; Ginsburg, 2007). The physiological benefits of physical activity and the subsequent ability to assist in the prevention of chronic health disease have been acknowledged for many years (Kaleta et al., 2006). Physical activity has been associated with a moderate predictor of both short-and-long term health benefits for children (Sallis and Patrick, 1994) with further evidence to suggest that patterns of physical activity established in youth (*can*) persist in to adulthood (Sallis et al., 1992).

However, scant research exists that can establish (from large longitudinal tracking studies with children) that the prevention of chronic health diseases occur during childhood (Stanford University, 2007). Nonetheless, some authors have postulated that being physically active during childhood and adolescence can delay or avert high blood pressure in adulthood (DHSS, 1996). Similarly, Boreham & Riddoch (2001) found healthier cardiovascular profiles in active children in contrast to their inactive counterparts. Boreham & Riddoch (2001) go on to suggest that being sufficiently active throughout childhood; i) has a direct improvement on children's global self worth / quality of life, ii) can prevent or delay future chronic health diseases and iii) can increase the chance of continuous participation in an active lifestyle throughout adulthood.

Further literature exploring the effect of exercise on cardiovascular disease (CVD) risk in children appears less robust. Armstrong & Simons-Morton (1994) reported less impressive results on the effect of exercise on adolescents' blood lipids across longitudinal studies. Similarly, only a weak association was found by Riddoch (1998) for serum lipid and lipoprotein concentrations and blood pressure against children's physical activity levels.

Although the literature pertaining to children's physical activity levels and CVD risk factors are less robust than the adults (Kraus et al., 2002) it is nonetheless important to recognise that it may be too early (owing to lack of rigour from previous study samples) to disregard the concept that exercise may play a role in assisting and influencing CVD risk in children (Biddle et al., 2004). However, further studies are required if the literature is to propose that physical activity offers a modifiable CVD risk factor in children and young adults (Biddle et al., 2004).

Cardiovascular risk factors in later life have however been examined extensively against physical activity and fitness in adolescents (Boreham et al., 2002; Hasselstrom et al., 2002 & Twisk et al., 2002). High physical fitness during adolescence did appear to be related to healthy 'CVD' profiles in later life. No such association was reported for the influence of physical activity across the target population (Twisk et al., 2002). From reviewing the literature it would appear that for future benefits to health status, physical fitness should be targeted for young people rather than physical activity (Biddle et al., 2004). However, as Biddle et al. (2004) and others have clearly argued, for successful long term behaviour change and maintenance it may well be worth targeting the behaviours associated with physical activity rather than solely focus upon physical fitness for energy expenditure purposes in children and adolescents.

Although Type II diabetes has traditionally been associated with adulthood (Biddle et al., 2004) higher incidental rates are now being reported across children and adolescent populations (Sinha et al., 2002). Moreover, white adolescent girls (aged 13-15 years from England) who historically were one of the least at risk group to contract the disease have now been observed (Drake et al., 2002). The incremental shift across all child / adolescent population groups to the disease appears to be associated with the increased rate of childhood obesity (Rocchini, 2002). As of yet, there are limited studies which have investigated intervention trials to ascertain whether exercise can prevent Type II diabetes in children (Biddle et al., 2004) but the studies which have been undertaken in adult populations (Tuomilehto et al., 2001) have found promising results, suggesting that exercise can be effective in preventing Type II Diabetes.

Consequently, although the evidence is sparse there is still some support for the role exercise and physical activity may play in the prevention and treatment of Type II diabetes in children and adolescent population samples.

The importance of skeletal health across childhood has similarly been explored to ascertain whether being physically active at a young age could delay the onset and prevalence of osteoporosis in later years (French et al., 2000). Moreover, researchers have now reported that the environmental influences of diet and physical activity play a role in bone health and have both been associated to peak bone mass (Ralson, 1997). Bass (2000) speculates that 'pre-adolescence' may be the optimal time for exercise-induced bone development, yet Biddle et al. (2004) proposed that there remains speculation as to whether there is sufficient evidence to support or reject such notions. Similarly, as of yet, there are limited longitudinal studies to support the notion that bone mineral density improvements in childhood or adolescence tracks across adulthood or that these benefits may decrease future fracture risk in later years (MacKelvie et al., 2002). What has been well documented is the direct improvement physical activity may offer to children's global self worth.

There is widespread consensus of the benefits of engaging in physical activity against psychosocial outcomes in children (self-esteem, cognitive outcome) (Mutrie & Parfitt, 1998). Yet this relationship remains complex (Biddle et al., 2004). The positive health outcomes which have been noted across children's social and emotional development are typically drawn from cross-sectional small-scale studies which lack measurement consistency and therefore lack any real confidence in drawing firm conclusions from the data (Biddle et al., 2004). Similarly, it may not necessarily be the physical activity behaviour itself that has caused enhanced psychological well-being in children but rather the setting and/or the social interactions which have occurred within those climates (Biddle et al., 2004). Consequently, within the climate of unstructured free play Ginsburg (2007) and Burdette & Whitaker (2005) found marked improvements in children's social and emotional development. This trend was also comparable to children who engaged in structured, organised sports (DHHS, 2002). However, the social interactions and climate itself was not explicitly explored.

The intensity level of the activities in which children perform has also been explored against mental well being. Steptoe & Butler (1996) reported marked improvements in adolescent emotional well-being for those who engaged in more vigorous physical recreation and sport. However, regardless of intensity levels, Pate et al. (1996) highlighted the positive socio-cultural impact that physical activity can have on decreasing negative influences of violence, drugs and gang culture during childhood and adolescence. An increased uptake of fruit and vegetable consumption and even a reduced use of drug and smoking behaviours have also been attributed to general engagement levels of physical activity in adolescence (Escobedo, 1993; Pate et al., 2000).

### **Summary and Implications**

It would appear that being physically active throughout childhood and subsequently as an adult may have some favourable health gains. However, consistent with previous work by Riddoch (1998) Biddle et al. (2004) confer that there still remains to be 'no single study or set of studies that provides definitive evidence for a meaningful health gain through being an active child.' (p.30). Nonetheless, the evidence that physical fitness and physical activity are independent risk factors for CVD and all cause mortality in adults (Erikssen, 2001) would suggest that physical activity will provide some gains for children and adolescents and as such the target population should be encouraged to engage in the physical activity recommendations.

At this juncture it would appear useful to discuss with the reader the current national and international recommendations for physical activity in adults, adolescence and children and review the variance that occurs according to the source. In addition, the evolution of the physical activity recommendations will also be examined.

## 1.4 Physical Activity Guidelines for Children and Adolescents

Historically, previous guidelines for children and adolescence recommended 30 – 60 minutes of physical activity at a moderate intensity on five days a week or more (SHHS, 2000) and/or engage in vigorous physical activity on 3 or more days per week for 20 minutes or more on each occasion (DHHS, 2000). The current recommendation has subsequently increased the ‘duration’ period per day following an extensive review of literature by Strong et al. (2005) on the physical activity and health outcomes of children.

Although there is continued debate with regards to the level and duration of physical activity required to obtain health benefits (Sallis, Prochaska & Taylor, 1999), current recommendations and guidelines encourage young people to engage in an accumulated 60 minutes of moderate – vigorous activity over the course of a day (with at least two sessions a week including weight bearing activities, to improve overall muscle strength, flexibility and bone health) (NICE, 2009). The amount recommended can be achieved in short 10 minute (minimum) bouts (NICE, 2009). Examples provided for moderate to vigorous physical activities for children include: skateboarding, swimming, competitive sport or active play (NICE, 2009).

Similarly, The National Association for Sport and Physical Education (NASPE) recent document (Physical Activity for Children: A statement of Guidelines for Children Ages 5-12 years, 2004) suggest that children should accumulate *at least* 60 minutes (and up to several hours) of physical activity on all, or most days of the week (Corbin & Robert, 2004). These guidelines also suggest bouts of 15 minutes or longer of physical activities (per day) as oppose to the 10 minute (minimum) bouts suggested by NICE (2009). NASPE (2004) also recommend avoidance of extended periods of *inactivity* and cite children should avoid prolonged periods of inactivity of more than two or more hours a day (particularly during the day). In relation to Body Mass Index Reference standards for steps per day, NASPE (2002) recommend for the prevention of overweight /obesity boys (age 6-12 years) need to achieve 15,000 steps per day with girls requiring 12,000 steps a day.

However, there does appear to be discrepancies associated with children's physical activity guidelines. Boreham & Riddoch (2001) suggest the current recommendations provided no dose response relationship for health gains from which the activity guidance can be obtain. Similarly, to prevent cardiovascular clustering risk factors Anderson et al. (2006) state that the current national guidelines of 60 minutes per day of moderate to vigorous physical activity (NICE, 2009) is not enough and needs to be increased to ninety minutes.

However, Andersons et al., (2006) recommendations are borne out of the use of accelerometer cut-points of 2000 cpm for moderate – vigorous intensity (equivalent to walking about 4 km/h) of at least 5 min or at least 10 minutes, which differs considerably from other studies (Ekelund, 2008) which have calculated moderate physical activity at 2000-5500 (counts min<sup>-1</sup>) and vigorous intensity at >5500 (counts min<sup>-1</sup>). Reilly et al. (2008) clearly demonstrates that while cut-points of accelerometer data are essential to convert outputs to physical activity and sedentary behaviours there are implications for such varied practice currently being undertaken in the field.

A systematic review undertaken by Reilly et al. (2008) on the effect of different accelerometry cut-points used to interpret different levels of physical activity and sedentary behaviours was clearly illustrated when the study used different cut-points of accelerometry outputs for the *same data* sets and found significantly different periods of length for MVPA behaviours. The inconsistent collective view of what the appropriate level of moderate – vigorous intensity level should be for children clearly adds to the confusion and differences noted in 'duration times' by authors within children's physical activity guideline literature and as such, should be treated with caution. Nonetheless, the intensity level of moderate - vigorous physical activity continues to be recommended due to their ability to accrue more health benefits than (say) more sedate activities (Corbin & Pangrazu, 1998; De Bourdeaudhuij, 1998). Strong et al. (2005) suggest physical activity guidelines for pre-school children should concentrate on more basic movement patterns to ensure they learn the basic skills necessary to form the foundation of activity patterns such as play, games and sport in later stages of childhood. As such, motor skill development is emphasised for children until the ages of 8-10 years (Malina, 1991; NICE, 2008b).

This alters significantly once a child reaches 8 – 10 years with a clear emphasis being placed on prescription levels, fitness and behavioural outcomes (NICE, 2007). The intermittent, sporadic nature of children’s general activities (characterized by the short duration of <5 minutes bursts of activity) (Pangrazi, 2000) have implications for the types of activity promoted within interventions to sustain health benefits for children (NICE, 2007).

#### **1.4.1 Physical Activity Guidelines for Adults**

In 1995 the American College of Sports Medicine (ACSM) and the Centres for Disease Control and Prevention (CDC) published national guidelines on Physical Activity and Public Health for adults (Haskell, 2007). A review of the 1995 guidelines was subsequently undertaken by a panel of experts in 2005 to try and engage and improve current physical activity rates of the population.

The new updated recommendation for adults ages 18 – 65 years are relatively unchanged from the 1995 guide and encourage adults to engage in a minimum of 30 minutes of moderate – intensity aerobic activity on five days a week (or vigorous – intensity aerobic physical activity for a minimum of 20 minutes on three days each week (Haskell et al., 2007). Nonetheless, the new recommendations do clarify the frequency of moderate – vigorous activity. Haskell et al. (2007) clearly acknowledge that the old 1995 recommendations only document “*most preferably all days of the week*” whilst the new frequency recommendation clearly outline a minimum of five days per week. Vigorous activities were also not emphasised within the old guidance but now feature explicitly in the new physical activity guidelines (Haskell et al., 2007). The ACSM and CDC (2007) new guidelines also support adults in exceeding the recommendations to prevent the onset of obesity, disability, chronic diseases and increase their overall fitness levels (Ainsworth, 2000). Although the favourable benefits of physical activity have been documented for many years and data from 1990 – 2004 (CDCP, 2005) suggest less U.S women and men report no leisure- time physical activity (CDCP, 2005). Data in 2005 does still highlight that less than half (49.1%) of the U.S. adult population are still not meeting the ACSM/CDC physical activity recommendations.

## **1.5 Physical Activity Data and Trends**

### **1.5.1 Adult Physical Activity Trends**

Sedentary patterns of behaviour are now more readily observed within home life (Pretty et al., 2003) and although during the past 20 years gym and fitness club membership have seen a steady increase, there is now a clear indication (Sport England, 2000) that people are becoming less active and engaging in less organised sports (WHO, 2001). Conversely, The Active People Survey 2 (Sport England, 2007/08) has shown a marked increase in 552,000 adults (over a two years period between 2005/06 and 2007/08) participating in sport, three times a week, for 30 minutes at a moderate intensity.

The Active People Survey 2 (Sport England, 2007/08) does however acknowledge that this data does not incorporate any recreational cycling or walking activities, only including more strenuous activities i.e. power walking, gorge walking and cycling, once a week, if undertaken for a minimum of 30 minutes at a moderate intensity. Nonetheless, 16.5% of adults over the age of 16 years in 2007/8 in the UK reported participating in sport, three times a week for over 30 minutes (at a moderate intensity) in contrast to 15.5% in 2005/6 (Sport England, 2007/08). Participation rates have also increased among women over the same two year period from 2.57million to 2.81 million within lower socio economic groups (NS-SEC 5-8) also increasing from 11.8% - 12.7%.

These generic participation rates still remain below the target set within Sport England's Strategy to get one million people participating in more sport by 2012-13 (Sport England, 2008), and whilst figures show that 57% of Australians and 70% of Finns are achieving the recommended daily activity levels to maintain optimum health, worryingly only 32% of British Adults have achieved this threshold level (30 minutes of moderate exercise, five times a week) (Pretty et al., 2003). Alarminglly these figures propose that approximately 63% of men and 75% of women in the UK do not participate in enough physical activity to obtain any health benefits (DH, 1998; DCMS, 2002; Sport England, 2002).

Sport England (2006) illustrate how low activity levels operate through a series of complex behaviour mechanisms (Owens et al., 2000) and determinants (Gordan – Larsen et al., 2000) with lone parents in the UK finding it particularly difficult to locate additional time, financial resources and support to become physically active (Sport England, 2006). Coincidentally, the study also demonstrates how lone parents sacrifice their own fitness levels to support their child's participation in exercise and physical activity (Sport England, 2006). As such, these findings should be acknowledged when discussing the proposed behavioural determinants associated with the decline of physical activity levels in the UK adult population.

### **1.5.2 Children and Adolescent Physical Activity Trends**

The decline is not only associated with adults within the UK, the Avon Longitudinal Study of Parents and Children (ALSPAC), (which tracked the health of more than 14,000 children since birth in the South West of England) found both sexes spent the majority of their day in *light* intensity activities. The study highlighted only one in five (22%) girls averaged at least *one* bout of moderate to vigorous activity a day, lasting at least *five minutes* compared to 40% in boys. Less than 1% of the children averaged at least one 20 minute bout a day. Compared to the national physical activity guidelines, the study only found 5% of boys and 0.4% of girls achieved this, thus equating to only 2.5% for the whole sample (Science Daily, 2007). Van Sluijs et al. (2007) believe the current physical levels children are achieving are insufficient and further health promotion interventions are now required to tackle this issue.

Whilst some countries have begun to see a marked increase (from 9% in 2005/2006 to 13% in 2007/2008) in the proportion of children and youth meeting the guidelines of 90 minutes of physical activity a day (Active Healthy Kids Canada, 2009) the objective measures still suggest that 87% of those children and adolescence are still not adhering to the physical activity recommendations (Active Health Kids Canada, 2009).

Although children are proposed to be the most physically active group of the population (NICE, 2008b) 30-40% of under eights do not adhere to the guidelines with a further 10-25% undertaking less than 30 minutes of moderate activity a day (DH, 2003). Similarly, over one third of children in England are now increasingly inactive with 1 in 4 (five to sixteen year olds) only participating in sport on a regular basis (DH, 2005).

Some authors are now challenging the reliability of Health Survey physical activity data as a true indicator of children's physical activity records. Basterfield et al. (2008) found a gross overestimation of Annual Health Survey data when they compared it to accelerometer readings. The information supplied by parents, using the Health Survey for England annual questionnaire suggested their children on average accumulated 146 minutes of activity a day when in fact Basterfield et al. (2008) study indicated that the children only accumulated 24 minutes (Boys: 26 minutes, girls: 22 minutes). If the Health Survey data had been taken at face value it would have suggested that 83% of boys and 56% of girls met the daily recommendations of daily moderate – vigorous physical activity, when in reality only 3% of boys and 2% of girls did so (Basterfield et al., 2008).

Physical activity was highlighted as one of the 10 leading health indicators for the nation within Healthy People 2010. Yet the documented benefits of engaging in physical activity (i.e., the protection against premature mortality, coronary heart disease, hypertension, diabetes mellitus type 2, osteoporosis, colon cancer, depression and anxiety) (Bouchard et al., 1994; USDHHS, 1996), appear not to have altered peoples reluctance to actually engage or participate in physical activity (Anderson, 2000). Consequently, a great deal of developmental work has been undertaken in terms of new policies, initiatives and resources to try and encourage more physical activity opportunities for children and warrants further discussion below.

## 1.6 Policies and Targeted Physical Activity Initiatives for Children

The Department of Health (DH, 2005) has played a central role in co-ordinating services in accordance to the Chief Medical Officers report (DH, 2004). The cross – government plan (Choosing Activity: a physical activity action plan, DH, 2005) links to the public service agreement (PSA) targets specifically trying to ‘halt the year on year increase in obesity among children under 11 by 2010’ (NICE, 2007). Similarly, the Choosing Activity Action Plan (DH, 2005) focuses on encouraging activity from early years to adulthood through building community capacity by providing after school opportunities, voluntary sports clubs and outdoor play. A ‘whole school approach’ has also been adopted through active travel plans, cycling and national healthy schools programmes (PESSCL) within Choosing Health (DH, 2004) and Health Challenge England (2006) plans. The holistic health of every child (from 0 – 19 years) is also the central driver of Every Child Matters: Change for Children (DfES, 2004) ensuring every child is supported in staying safe, being healthy, enjoying and achieving and making a positive contribution.

Within early years and childhood ‘play’ also has a focus (Time for Play, DCMS, 2006) with local and regional infrastructures being created for children’s services. Similarly, the Gameplan (DCMS, 2002) has attempted to breakdown barriers to sport and physical activity opportunities (from grassroots level participation) in the young, women and the elderly. The voluntary sector organisations (Youth Sport Trust, Play Council, The British Heart Foundation etc) are all playing a pivotal role in attempting to change children and adolescence participation rates. An example being; *The Neighbourhood Play Toolkit*, Provided by the Play Council (2006) to increase access to good play opportunities for children and young people in their neighbourhoods (NICE, 2007).

Cale & Harris (2005) speculate that the majority of policy focus has been on ‘sporting opportunities’ with limited promotion on unstructured, lifetime physical activity initiatives for health. In addition, there are limited systematic reviews on the effectiveness of many of the initiatives and policies aforementioned.

## **Summary and Implications**

Although it has been acknowledged above that the sporadic nature of children's physical activity patterns appears to blur the lens with regards to being able to accurately capture physical activity engagement levels, there does appear to be a consensus to the benefits of engaging in physical activity (as a preventative mechanisms for overweight, obesity and chronic health issues). To extend our understanding of inactivity and the prevailing obesity rates across Europe and around the globe Robinson (2000) advocate further investigation of nutritional behaviours as the common issues that arise from exploring physical activity and nutrition behaviours *simultaneously* have received little attention especially within the context of children and families (Sallis & Glanz, 2006). As such, the effect that diet has on children and families current health behaviours will be discussed in the following section.

### **1.7 Nutrition**

During the last two generations the diet of most industrialised countries has undergone significant transformation (Popkin, 1998; 1999). Generations as far back as 600 years rely upon agricultural systems for food (Pretty, 2002). However, during the last fifty years the typical UK diet has altered greatly (DEFRA, 2002). A typical UK diet now consumes more calories than it can expend with higher consumption rates noted in foods containing excess salt and simple sugars. Such a diet will ultimately compromise an individual's health (Pretty at al., 2003).

As a consequence and as previously outlined, the prevalence of obesity in children and young people is escalating worldwide (WHO, 2000; Lobstein, Baur & Uaug, 2004). Moreover, similar to physical activity, the nutritional choices made by young people also direct their current and future health trajectories (WHO, 1998). Thomas et al. (2006) further suggest that similar to physical inactivity, diets high in fat are a consequence of environmental influences that can be modifiable through appropriate lifestyle adaptations.

However, what has been observed over the last decade is a cultural shift in children and families eating patterns. Recent figures suggest that a quarter of all meals / snacks are now consumed outside the family home (Dietz & Gortmaker, 1985). This trend is particularly worrying when McCroy et al., (1997) and French, Harnack & Jeffery (2000) highlight that typically high energy dense foods consumed outside of the home offer a greater risk factor for obesity. Given the public health interest in childhood obesity it is ever more pertinent to uncover the rationale of certain food choices, physical activity and eating patterns from the child's perspective (Noble et al., 2001) if they are to inform health professionals and health promotion practice (Gosling, Stanistreet & Swami, 2008).

### **1.7.1 The Effects of Nutrition on Health Outcomes**

The World Health Report (2003) stipulates that 4.4% of the overall burden of disease and deaths in Europe could be attributed to low intakes of fruit and vegetables. Although previous nutritional policies aimed at disease prevention and reduction (particularly for cancer and cardiovascular disease) have typically focussed upon fat consumption (Lock et al., 2005) there is now good evidence to show the protective effect fruit and vegetable consumption can offer against cardiovascular disease and some cancers (Ribioli & Norat, 2003; WHO, 2003). Similarly, around 15% of global disease can be attributed to deficiencies in micronutrients and malnutrition (Lock et al., 2005) with similar disease risk factors attributed to high blood cholesterol, hypertension and obesity (Ezzati et al., 2002).

Lock et al. (2005) analysis of the 26 risk factors associated with the aforementioned disease states found that 1.8% of the total burden (worldwide) was attributed to inadequate fruit and vegetable consumption. When compared against the global burden of disease for physical activity (1.3%), overweight & obesity (2.3%), high cholesterol (2.8%) and tobacco (4.1%) this data emphasises the importance and necessity that fruit and vegetables consumption warrants as a key determinant for cardiovascular disease prevention (Lock et al., 2005).

Although the majority of health outcomes associated to fruit and vegetable intake have previously focussed upon adult populations, more attention has now been placed upon children.

Knai et al. (2006) study suggests the consumption of fruit and vegetables may offer protection against a variety of childhood diseases (even respiratory problems). With other researchers documenting that fruit consumption during childhood can also offer a protective affect against cancer in adulthood (Maynard et al., 2003).

Although public guidance on consumption levels of fruit and vegetables may vary across countries (Pearson et al., 2008) the drive for increasing consumption levels remains the same. Similar drives to reduce sugar intake and increase fibre content of children's diets have also arisen due to the detrimental effect upon insulin dynamics and body composition (Pereira et al., 2002; Davis et al., 2006) and consequently the consumption rates of sweet, sugary beverages association to weight gain in children (Malik et al., 2006).

Targeting these health behaviours at an early age are critical as these unhealthy learnt behaviours in childhood have been found to track through to adulthood (Law, 2000) thus emphasising the pivotal role diet can play as an independent influencer on adult health status (Mikkila et al., 2004).

### **1.7.2 Children & Adolescent Nutrition Guidance and Trends**

Current UK guidelines recommend the consumption of at least five portions of fruit and vegetables a day (i.e., 400-500g per day, excluding potatoes), reduced saturated fat and salt intake with increased consumption of complex carbohydrates (DFES, 2005; Dept Health, 2005). Yet despite policy efforts, children and adolescents are consuming much fewer fruit and vegetables than those recommended for healthfulness (Pearson et al., 2008).

The average UK consumption rates of fruit and vegetables are approximately 3 portions a day (DH, 2000) with data from the Health Behaviour in School aged Children Study (2007) suggesting only one third of children eat vegetables each day and approximately two-fifths of young people consume fruit on a daily basis. Research surrounding British children's dietary habits also suggests that >92% are exceeding the recommended level of <10 per cent of saturated fat (Gregory et al., 2000).

This raises concerns as diets high in fat (particularly saturated fat) have consistently been found to have a direct relationship to coronary heart disease (WHO, 2003). The need to identify the correlates associated with fruit and vegetable consumption in children - to improve the current uptake levels have been documented by many (Shepherd et al., 2006; Horst et al., 2007; Pearson et al., 2008). Similarly, there is now an incremental shift to review the environmental factors (family, school community & policy environments) located within ecological models (Green & Kreuter, 1991) to understand more and effectively target healthy dietary behaviours.

Extensive literature on the benefits of a healthful diet have also been documented (Knai et al., 2006), yet when discussing health related behaviour and activity patterns of children and families it is worth exploring and noting the significant factors that directly impact upon their health. Owing to the eclectic complexity of the area in question, it is firstly important to explore some of the significant factors of health related behaviour and physical activity.

The following section offers the reader a brief insight into the predominant determinants and correlates associated with children's physical activity and nutrition behaviours (i.e. the role of the family and social support, socio-economic and demographic variables and personal and social norms). Many authors have referred to the word determinants as the 'reproducible associations that are potentially causal' (Buckworth & Dishman, 2002; p. 191) as oppose to necessarily casual effects (Biddle et al., 2004). Consequently, it will be these determinants and their association to physical activity and eating behaviours in children and families that require further attention within the thesis and which will be reviewed further in the following chapter

## **1.8 Ecological Model**

The ecological model of physical activity behaviour (Spence & Lee, 2003) is a useful model to turn to here as it suggests that physical activity is influenced by three elements: i) Intrapersonal (biological, psychological & behavioural), ii) Social (Family support, modelling), and iii) Environmental (communities, facilities) (Sallis & Owen, 1999). Further still it has been suggested that the interaction and relationship of the three elements must be considered concurrently when addressing children's activity rates (Humbert et al., 2006).

### 1.8.1 Psychological Theories

According to the Social Cognitive Theory (Bandura, 1997) the environment must also have four crucial rudiments; *connection, autonomy, skill-building and healthy norms* (Dzewaltowski et al., 2002, p543). Catalano & Hawkins (1996) further add to the debate and highlight the importance of people having a place where they belong and feel connected. Their study also suggests that individuals who felt disconnected and isolated from their own community neither ‘entered in,’ ‘wished to engage’, nor returned to the activity (Catalano & Hawkins, 1996). Furthermore, various authors (Deci and Ryan, 1985; Bandura and Wood, 1986; Bandura, 1997) have also postulated that individuals must be able to feel they have a sense of control over their behaviours within their community. The environment has also been acknowledged (Dweck, 1986; Wood & Bandura, 1989) to assist the individual in the mastery, development and application of new skills thus improving self-efficacy and self-worth within the community.

Health behaviour outcomes which evaluate change are still predominantly identified through psychosocial processes (Dzewaltowski et al., 2002) and commonly aligned to the Social Cognitive Model (Bandura, 1977; 1997). Although interventions (within a school setting) have attempted to improve children’s health behaviours (Baranowski et al., 1998, 1999; Sallis et al., 2000) through the use of social cognitive theory, the successful long term change of health behaviours remains to be established.

However, the social cognitive theory (Bandura, 1977) does offer a clear framework and hypothesis of the “triadic reciprocation between an individual and his/her environment and behaviour” (Dzewaltowski et al., 2002; p543). As such, Bandura’s Social Cognitive model may provide some guidance as to the more relevant determinants that may influence or inhibit participation in regular physical activity. However, Bandura’s Model (1977) fails to represent or account for the complexity or multitude of environmental situations and/or structures that young people may be exposed to. Eccles et al. (1996) suggests that the ‘environmental variable’ can (or should be) broken down into ‘*social environments*’, such as ‘school-climate’ and ‘person-environment fit’ (Maehr & Midgley, 1996; Dzewaltowski, 1997).

Further still, Dzenwaltowski et al. (2002) stipulate that if the junior school environment does not incorporate 'critical elements' of these social environments (to match the psychosocial requirements of the child) then SCT predicts that the child's genuine interest and motivation to participate and/or perform in physical activity or a chosen behaviour would diminish (Dzenwaltowski et al., 2002).

### **1.8.2 The Environment**

Since the 2000 Diet and Lifestyle recommendation (Giddings et al., 2005), further revisions have occurred during 2006 to acknowledge that individuals require supplementary awareness of the environmental influencers that can affect their health behaviours and cardiovascular disease risk (Lichtenstein et al., 2006). Interestingly, although various authors (Certain & Kahn, 2002; Gordon-Larsen et al., 2004) have postulated that many children are not adhering to the national recommendation guidelines, Gordon et al. (2004), Pratt et al. (1999) and Bradley et al. (2000) have all argued that the distribution patterns of children's inactivity levels are not equal with regards to demographic and social variables (Hesketh, 2006).

Schonkoff & Phillips (2000) suggested that it may be a child's biology, early year's experiences and environments that affect their overall health. Living in poverty, isolation, un-stimulating family environments, low maternal education, negative parenting styles and neighbourhoods with high crime and overcrowding have all been proposed as viable risks factors to children's health and low physical activity engagement (Brooks-Gunn 1995; Feldmean et al., 2000; Kohen et al., 2002; Kotchick & Forehand 2002). Similarly, extensive reviews on the environmental correlates associated to children and young people's diets have been conducted (Blanchette & Brug, 2005; Ramussen et al., 2006; Horst et al., 2007) with socio-cultural and economical-environmental correlates (at the house-hold level) highlighted as the most dominant (Van de Horst et al., 2007).

### **1.8.3 Socio-Economic Status & the Built Environment**

Low socio-economic status (SES) has been highlighted as a risk factor for obesity within industrialised countries (WHO, 1998).

A variety of arguments have been conveyed to support this statement, ranging from low education levels within low SES area to the obeseogenic environments in which the individual lives (Janssen et al., 2006). The activities and food sources parents choose for their children to engage in are predominantly determined by the level of resources that are made available to them (Welk et al., 2003). Coon et al. (2001) found lower socioeconomic status was associated to lower levels or frequency of fruit and vegetable intake in children. Moreover, this was particularly associated to family income (positive correlation from 14 of 14 studies), parental occupation (positive association from 9 of 11 studies), and parental education (positive association from 11 of 11 studies) across the forty six papers reviewed (Rasmussen et al., 2006). However, in juxtaposition, Pearson et al. (2008) found no association to socioeconomic status and fruit intake in children aged 6-11 years thus highlighting the lack of standardised measures of socioeconomic status across studies (Gustafson & Rhodes, 2006).

Moreover, although Janssen et al. (2006) reported that individuals with less than a 'high school education' (or secondary education) increased their probability of unhealthy eating and becoming obese, Sallis et al. (1993) failed to find any significant association to children's physical activity levels and parental education. However, given it may be environmental barriers as opposed to an individual's educational attainment that restricts and / or prohibit activity, access and consumption to healthy foods, many authors (Stunkard, 1996; Wardle & Griffith, 2001; Frank et al., 2004) have observed that obeseogenic environments (which promote the consumption of high energy-dense foods and dissuade or inhibit participation in physical activity) may be to blame. This statement is echoed by Epstein et al. (1996) who found SES only predicated 6.8% of the variance of physical activity in children (Gustafson & Rhodes, 2006).

A well-structured social and physical environment enhances an individual's health behaviour and empowers (or better enables) an individual to engage in positive behavioural change (Barker, 1968; Bandura, 1996; Eccles et al., 1996; Forsyth, 2000). Furthermore, Forsyth (2000) argued that for long term adherence to physical activity an individual needs a location where the normal practice is 'healthy behaviours'.

This can be a very challenging task for policy and practitioners to address (especially with families residing within areas of low social economic status) as previous research has observed, low SES environments do not generally promote positive social and physical opportunities within the local community to encourage healthy participation (Humbert et al., 2006).

There are also perhaps deep-rooted, entrenched societal issues that occur within the day-to-day existence of communities that will challenge practitioners further in tackling behaviour change. Within Cordell et al. (1999) study, inner city low SES residents were least likely to engage in any of the 23 outdoor recreational activities surveyed compared to the more affluent areas. Powell et al. (2004) proposed the reasoning behind this was the lack of safe, accessible settings for low SES communities to participate in physical activity. They go on to suggest that as SES level decrease (i.e. increase in poverty) availability of accessible, safe play spaces decrease (Powell et al., 2004).

#### **1.8.4 Community Design**

Similarly, a lack of recreational facilities and parks within similar low SES areas were also observed by Ross (2000) and Yen & Kaplan (1998). Despite the apparent relationship associated with SES and young people's participation in physical activity, Humbert et al. (2006) acknowledged that scant research exists with regards to outlining the influencing factors that inhibit or encourage young people with either high or low SES to be physically active. Humbert et al. (2006) purported that only low SES young people acknowledged the environment to be an important contributory factor for participation in activity.

Specifically, safe, accessible, low cost, well-maintained equipment and facilities were identified as key factors for participation in physical activity by low SES young people (Humbert et al., 2006). These contributory factors and determinants for participation are supported further by various authors (Zakarian et al., 1994) who have found having access to safe play environments correlates significantly with children's activity rates. Moreover, transportation (Sallis, et al., 2000) and equipment (Stucky-Ropp & DiLorenzo, 1993) have also been acknowledged by other studies as significant contributory factors to children and young people's physical activity engagement levels.

Further investigations with reference to girls' engagement in activity have also outlined that the closer proximity of recreational facilities significantly relates to an increase in adolescent girls' physical activity levels (Gregory & Norman, In Press). The suggestion that local access to safe, well lit environments improves children's physical activity levels is further strengthened by reports that recreational facilities in close proximity to children's homes increases activity rates of children in contrast to those without (Sallis, Prochaska & Taylor, 2000). The low physical activity trends reported above correlate notably with the increased rates of indoor, sedentary behaviours observed among children (i.e., television viewing) and their snacking behaviours. Saelens (2003) acknowledged that sedentary behaviours such as; TV, video games, computers and listening to music are now vital elements of young peoples daily routines and existence. However, these 'typically' sedentary behaviours are associated with increased risk factors for obesity (Sallis & Glanz, 2006).

### **1.8.5 Snacking and Sedentary Choices in Children and Adolescents**

The incremental shift to more sedentary pursuits (watching television, computer games) has been typically observed in children between the ages of 10-12 years (Brodersen et al., 2007). A longitudinal UK study highlighted decreased levels of physical activity and incremental shifts to more sedentary pursuits during the years of 11- 16 years (Brodersen et al., 2007).

Although TV viewing and electronic devices have been suggested to contribute to these trends, many authors (Biddle et al., 2004) believe that the level of TV viewing of children has remained relatively stable during the past five decades. A recent debate offered by Biddle et al. (2009) proposed that sedentary behaviours (i.e., TV viewing) may be independent of physical activity engagement and should not be viewed in isolation. This is further illustrated by Sugiyama et al. (2008) who identified that 22% of Australian adults had high leisure time sedentary behaviour but based on national physical activity guidelines still adequately met physical activity leisure time targets. There does however appear to be an increase in home internet access uptake from 1998- 2007 (ABS, 2006) with only 14% of children accessing the internet in 2003 compared to 64% in 2006 (Australian Film Commission, 2007). Similarly, 64% of children in 2006 reported playing on hand held computer games (boys averaging 9.2 hours, girls 5.7 hours per fortnight) (ABS, 2006). The increase of TV viewing and electronic media could be associated to the influence of the wider family context (Granich et al., 2008) i.e. family dynamics (Bagley et al., 2006), eating meals whilst watching TV programmes (Salmon et al., 2005) and TV viewing rules (Gentile & Walsh, 2002).

The types of food typically consumed whilst watching television are notably of a high fat content and subsequently have significant implications to a child's health. Less intake of fruits, grains, green and yellow vegetables and nuts have been recorded across families who choose to eat two or more of their meals (per day) whilst watching television (Coon et al., 2001). Interventions which have targeted television and video game time in school aged children have found significant reductions in children's adiposity when screen time / meal time consumption in front of the television was decreased (Robinson, 1999). As previously discussed, there seems to be little doubt that environmental factors play an important role in shaping children and family behaviours. However, it is also important at this juncture to acknowledge and address the psychosocial and cognitive factors of physical activity and diet which have been outlined by researchers over the past decade and applied accordingly to children and families' physical activity and health behaviours (Cullen & Baranowski, 1999; Sallis & Owen, 1999; Trost et al., 2002).

### **1.8.6 Intention & Preferences**

Epstein & Roemmich (2001) believe that children's sedentary behaviours and physical activity levels are controlled via a complex system of decision making processes. A child's attitude (and pre-disposition) towards activity also appears to be a predominant factor in their 'intention to participate in physical activity.'

The significant effect of attitude on the 'intention' to engage in and on the level and duration of physical activity within children and adolescence has been found across a variety of studies (Garcia et al., 1995; Craig, Goldberg & Dietz, 1996; Hagger, Chatzisarantis & Biddle, 2001). Similarly, children and adolescents perceived sport and physical activity competence has also been found to be associated with increased physical activity levels (Kimiecik, 1996).

Intention also appear to influence the food choices young people make with the construct being documented as the second most common variable found across children's eating behaviour predictions (McClain et al., 2009). Moreover, it appears children's behaviour towards food operates from a more effective (as oppose to cognitive) drive (Spruijt-Metz, 1999). The instant satisfaction and personal need towards a particular food source have been found across studies in children (Bagley et al., 2006) and may help to understand why food knowledge and self efficacy was not shown to be a strong predictor of eating behaviours in children (McClain et al., 2009). The neurobiological age related changes that occur to a child's pre-frontal systems have been deposited to offer an understanding of why children may be unable to make beneficial nutritional choices (Killgore et al., 2005).

With regards to the psychosocial correlates responsible for less healthy dietary consumption (fast food, sodium, full fat margarine and inadequate consumption of fruit and vegetables) a child's intention to eat these type of foods were positively associated with consuming less healthier food types across three (Mesters & Oostveen, 1994; Berg et al., 2000; Horst et al., 2008) of the four studies reviewed by McClain et al. (2009).

Although children's food choices and participation in physical activity are multifactorial and may not be exclusively controlled by motivational or psychological variables (Sallis et al., 2000) it is nonetheless worthy to explore children's perceptions of achievement and motivation in relation to their uptake of physical activity (Sallis et al., 2000). Self-Determination Theory (Deci & Ryan, 1985; 1991; Ryan & Connell, 1989; Ryan & Deci, 2000a; Ryan & Deci, 2000b) is centred upon the psychological needs and motives of the individual. Moreover, the psychological needs of; competence, autonomy and relatedness (social needs) have been found to be clear motivators to fulfil these needs (Wang & Biddle, 2001). Behavioural regulation is central to the function of the Self-Determination Theory (Deci & Ryan, 1985) and proposes (in addition to intrinsic motivation); *extrinsic, external, introjected, identified and integrated forms of regulation* (Wang & Biddle, 2001, p4). According to Vallerand & Fortier (1998) feelings of 'want' rather than 'should' represent the motivational behaviour of identified regulation, in contrast to 'intrinsically motivated behaviour' which is conducted under the premises of an individual's own enjoyment and sake.

The benefits of more self-determined behavioural regulation within the motivational profile of adults within a physical activity context have been found (Mullan & Markland, 1997; Chatzisarantis & Biddle, 1998) with similar trends occurring in youth participation (Chatzisarantis et al., 1997; Biddle, Soos, & Chatzisarantis, 1999). Different types of involvement in physical activity have been observed amongst children in different cluster groups. Young people who resided within the self-determined cluster of Wang & Biddle's (2001) study were involved in more recreational pursuits as opposed to the highly motivated cluster which appeared to engage in more competitive, structured sports. This position is echoed by Fox et al., (1994) who proposed that highly motivated young people appear to obtain high scores on the ego and task orientation scale thus having positive physical self-worth and sports-competence. Vlachopoulos, Karageorghis & Terry, (2002) reviewed markers of 'high' and 'low' motivation to participation in sport and activity yet Wang & Biddle (2001) argued that owing to the multidimensional dynamics of motivation, young peoples' goal orientation *and* perception of sports ability, perceived competence and behavioural regulation need to be explored together to better understand, target and develop interventions which suit specific groups.

Rennie et al. (2005) have pondered the impact and ramifications of conflicting determinants. For example, if a child has high motivation and self-efficacy for physical activity but resides within a neighbourhood that does not provide adequate and/or safe access to facilities what impact may this have on their overall health and well-being? Moreover, to what extent would this determinant (i.e. the inadequate or unsafe facilities) reinforce long term inactivity and unhealthy behaviours? This example reinforces the need to explore the multiple levels of determinants simultaneously in order to better understand the important social, environmental and personal influences that affect a child's (and more than likely the subsequent adult's) physical activity and dietary behaviours. Intrapersonal factors of nutrition and physical activity behaviours (motivation, self-efficacy, knowledge, perceived barriers, intentions, preferences, attitudes and beliefs) (Baranowski, et al., 1999; Sallis and Owen, 1999) and have been extensively utilised to review children's activity levels. However, Sallis, Prochaska & Taylor (2000) argue this approach only addressed a fragment of the variance found within children's activity levels. Health related behaviour research has mainly focused its attention upon the 'cognitive determinants' of behaviour change over the last decade (Crosby, Kegler & DiClemente. 2002).

Within the health domain numerous psychological theories have been deposited to address health related behaviours. Most notable models include; the Transtheoretical Model (Prochaska & DiClemente, 1983), The Theory of Planned Behaviour (Ajzen, 1988) and Protection Motivation Theory (Maddux & Rogers, 1983). All of these models stem from a cognitive – rational paradigm (Resnicow & Vaughan, 2006) and have perceived change in physical activity and nutritional behaviours to be an interface of efficacy, intention, belief, attitude and knowledge (e.g. Cognitive Factors) (Glanz et al., 2002; Baranowski et al., 2003). Consequently, the influential role the family may offer in shaping the physical activity and healthy eating beliefs, intentions, knowledge and preferences of their children is important (Crockett & Sims, 1995; Patrick & Nicklas, 2005; Sheperd et al., 2006) and as such warrants further discussion below.

## **1.9 Family-Related Factors**

One of the most consistent correlates of physical activity for children and adolescents (aged between 3-12 years) was found to be; time spent outdoors, parental overweight status, intention to be active, physical activity preferences, perceived barriers (inverse), previous physical activity status, healthy diet and program/facility access (Sallis et al., 2000; Ferreira et al., 2006; Gustafson & Rhodes, 2006; Edwardson & Gorely, 2010) all of which can be controlled (in some way) by the parent (Patrick & Nicklas, 2005; Sheperd et al., 2006).

It is the family that remains an important agent for the socialization of children in their formative years (Lau, Quadrel & Hartman, 1990) exerting social influence (Edwardson & Gorley, 2010) and belief systems which in turn, may shape and influence a child's approach to physical activity (McEloy, 2002) and healthy eating (Watt & Sheiham, 1996).

### **1.9.1 Social Support**

Wing (2000) recognised the importance of the family and parents as a stabilising agent in children's health choices during the phases of a child's development. Quantitative (cross-sectional and longitudinal) (Hovell et al., 1989; Sallis et al., 1989; Hovell & Hofstetter, 1992, Sallis and Keating, 1994; Booth, Bauman & Owen, 1997; Eyler et al., 1998) and qualitative studies (Clarke, 1996; Conn, 1998; Eyler et al., Juarbe, 1998) have all highlighted the importance of social support (i.e., family, friends, team mates) in enhancing children's participation in physical activity.

Social support is comprised of a multi-dimensional collection of resources available to an individual through social ties to other individuals and groups (Lin, et al., 1979; Norbeck, Lindsey & Carrirti, 1981). Moreover, social support can be defined as “ *The existence or availability of people on whom we can rely, people who let us know they care, value and love us*” (Sarason, Levine & Basham, 1983; p128).

As such, social support from families and friends has been consistently found to influence participation in physical activity, across a wide spectrum of population groups (Steptoe et al., 1997; Sallis & Owen, 1998 & Sternfeld, Ainsworth & Quesenberry, 1999). Nineteen studies reviewed by Gustafson & Rhodes (2006) all found a positive correlation between parental social support and children's physical activity uptake. Social support for physical activity has also been reviewed from both a direct, tangible and/or instrumental angle (e.g., financial support or the provision of transportation to and from the activity) to an emotional, intangible and/or motivational (e.g., praise, empathy, care) and observational level (e.g., modeling of healthy behaviours) (Springer et al., 2006; p.2).

Whilst recommendations have been proposed to explore which 'type' of social support is more advantageous for children's physical activity uptake (Sallis et al., 2002), scant research has investigated the concurrent influence of certain 'types' of support to children's engagement in physical activity. However, the type of social support in relation to the uptake, mode and frequency of physical activity during childhood and adolescence has been reviewed by Springer et al. (2006). The study uncovered a direct relationship with higher mean scores of daily minutes of vigorous physical activity to adolescents with the highest level of family and friend social support (Springer et al., 2006) suggesting that adolescents who are exposed to higher levels of social support undertake significantly higher levels of daily minutes of vigorous activity. The study also reported that instrumental support (i.e. financial support) assisted adolescents in reducing sedentary pursuits and that families' actual participation (as opposed to just encouragement) appeared to be more significant in curtailing any sedentary behaviours (Springer et al., 2006).

### **1.9.2 Parental Modeling**

During the early stages of childhood (0-5 years) food choices are controlled by the parent (Tilston et al., 1991) yet as the child develops, parental influence diminishes and are often displaced by peer and media pressure (Ajzen & Fishbein, 1980). This is further echoed by Gosling, Stanistreet & Swami (2008) study which found children appeared to be influenced by their peers on two disparate levels, i) as play companions and, ii) as creators of their own physical activity and dietary attitudes and self-identity choices.

Whilst parental control decreases in physical activity as a child develops Gosling, Stanistreet & Swami (2008) did discover that children still relied (more so in relation to their diet than activity participation) on their mothers in curbing their unhealthy food choice behaviours (Tilston et al., 1991). Interestingly, Wind et al. (2005) and Sanvik et al. (2005) observed that a child's daily intake of fruit & vegetables is associated with parental modeling, high self-efficacy, positive preference and knowledge of the national recommendation guidelines (Bourdeaudhuij et al., 2006).

A consistent positive association of parental modeling to healthful food uptake in children has been found across studies (Cullen et al., 2001; Bere & Klepp, 2004) with several (Gibson et al., 1998; Kratt, Reynolds & Shewchuk, 2000; Cullen et al., 2001; Fisher et al., 2002; Bere & Klepp, 2004; Cooke et al., 2004; Vereecken et al., 2004) advocating the importance of parental uptake of fruit and vegetables to children's own consumption of healthy foods.

Parental modeling, intake and home availability seem to be strongly associated to children and adolescents eating behaviours across recent reviews (Pearson et al., 2008). Similar findings across qualitative studies (Campbell, Crawford & Hesketh, 2007) also support these findings with parents believing that eating healthful foods with their children provide positive modeling which directly influences their child's food preferences. Birch (1999) extends this notion further and believes that if exposure to fruit and vegetables was limited in the home environment this would result in lower taste preferences to those particular food types from children. Conversely, repeated exposure to the foods that children observe their parents to eat seems to increase the likelihood of children requesting those food sources (Gillman et al., 2000). This clearly emphasizes the importance of parents to be made aware of how their children's taste preferences are formed at an early age (Birch, 1999) to ensure appropriate health strategies can be established within the home environment.

There are however mixed reviews as to whether parent's actual physical activity levels correlate to their children's activity rates.

Only 6 from 14 studies reviewed by Gustafson & Rhodes (2006) suggest a moderate prediction (Gottlieb & Chen, 1985; Perusse et al., 1988; Sallis et al., 1988; Stucky-Ropp & DiLorenzo, 1993; Welk et al., 2003) with a weak or insignificant correlation being noted across seven studies (Sallis et al., 1992; Dempsey et al., 1993; Aarnio et al., 1997; Kimiecik & Horn, 1998; Cambell et al., 2001; Trost et al., 2003). Similar trends have been noted across other reviews (Ferreira et al., 2006) with modeling of physical activity across parents, siblings and friends (across 96 independent samples) finding no significant association to children's own physical activity rates. It was only when the behaviour of the father and mother were separated that relevant associations could be found.

Specifically, parental modeling was successful for girl's physical activity levels when fathers engaged in more active modeling of the behaviours and mothers provided logistic support (i.e., enrolling their child in sport, attending sporting events) (Davison et al., 2003).

### **1.9.3 Family Structure**

The decline of eating the evening meal as a family unit has also resulted in poorer dietary quality (Nickalas et al., 1993). Consequently, after the adjustment of social status, inactivity and other possible confounding issues the study of Gillman et al. (2000) reported that children aged 9-14 years who regularly ate as a family consumed more fruit and vegetables and less high energy dense food. These findings suggest the family plays a pivotal role in shaping children's patterns of behaviours. Similarly, from the six papers reviewed by Rasmussen et al. (2006) (on the influence of shared family meals), five were found to have a positive association with children's consumption levels of fruit and vegetables. The importance of understanding the social, cognitive, behavioural and physical environmental correlates that assist in children's health related behaviours have been discussed extensively above. However, it is also necessary to understand how these correlates are ultimately brought together, made sense of, and implemented to sustain positive health change across communities.

The following section will discuss current physical activity and nutrition frameworks and review contemporary nutrition and physical activity interventions that are attempting to make significant changes to children and families' diet and physical activity profiles.

### **1.10 Physical Activity and Nutrition Frameworks**

The Oxford University Framework of determinants as cited in Fig. 1.1 clearly demonstrates the social, environmental and interpersonal association that can determine an individual's participation in active recreation or sport.

However, the model does not offer any indication as to how the determinants interact or are associated to a person's participation and merely only serves to strengthen the notion that people's patterns of physical activity behaviour are governed by a complex series of constructs (social, environmental and interpersonal) and subsequently cannot assume any directional relationship for current and future health trajectories. Similarly, Figure 1.2 outlines the Environmental Research Framework for Weight Gain Prevention (Kremers et al., 2006) and offers, in conjunction with the model recently developed by the Committee on Prevention of Obesity in Children and Youth (Koplan, Liverman & Kraak, 2005), a functional insight into outlining potential determinants of individuals health behaviours. The model offers a more constructive illustration of how the moderators (i.e. the person and their behaviours) are directed in their engagement of physical activity and eating behaviours by their current attitudes, intentions and environment. The relevance of this model is that it appears to incorporate the main tenants of the ecological framework (Sallis and Owen, 1999) but cannot predict which (if any) of the variables override or influence peoples current physical activity behaviours.

In relation to targeting unhealthy behaviours and increasing physical activity levels of children and families, we need to understand how individuals, and different groups of individuals, interact within their environments with regards to their physical activity and food intake (Lake & Townshend, 2006) prior to instigating any interventions. Kremers et al. (2006) call for the cognitive, 'behavioural' causes of weight gain to form the foundation of researcher's investigations.

Consequently, the application of conceptual frameworks of the environment have since been developed and applied to both physical activity and diet (as illustrated in Figure 1.2).

### Oxford University's Framework of the determinants of participation in sport and active recreation

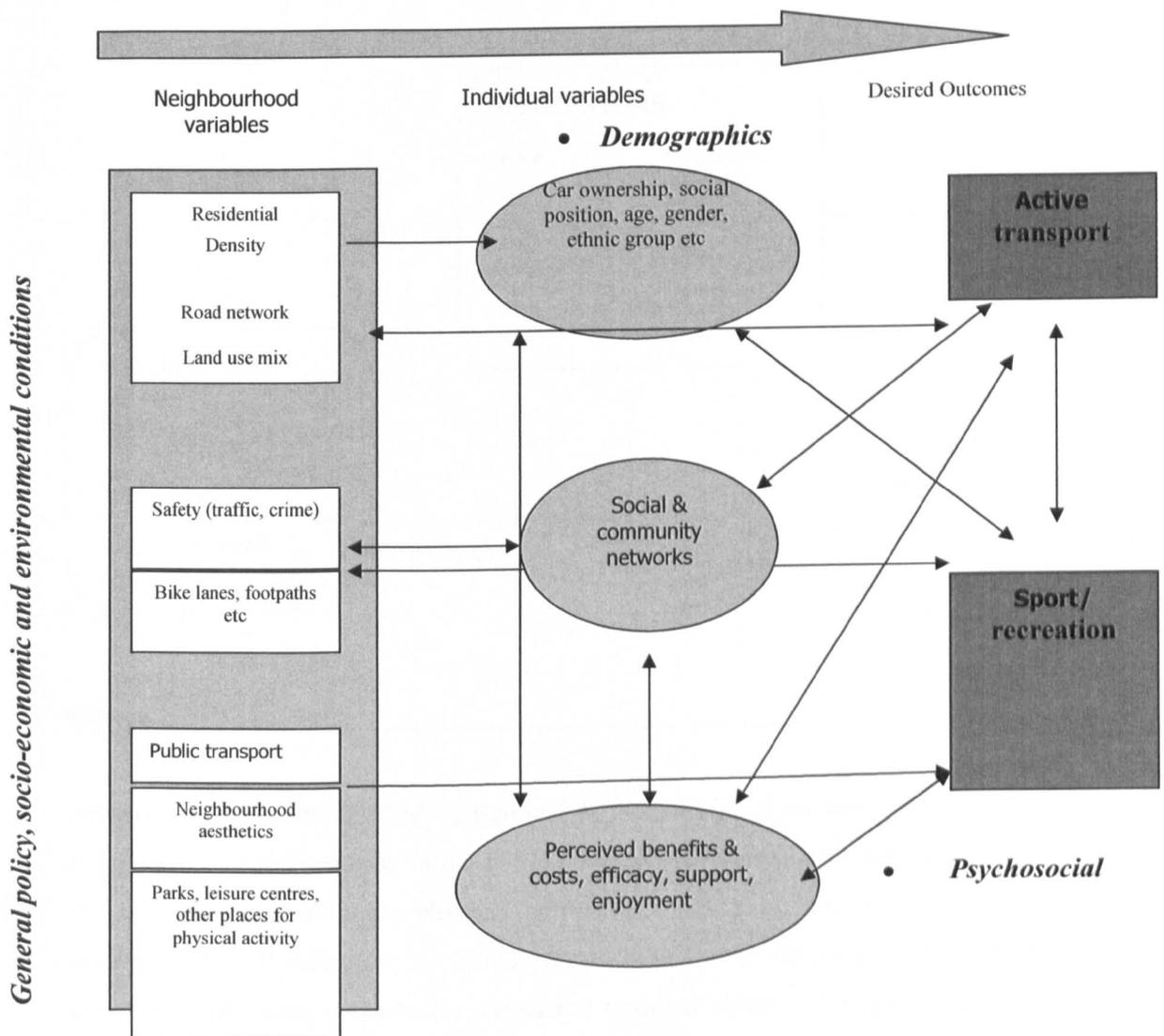
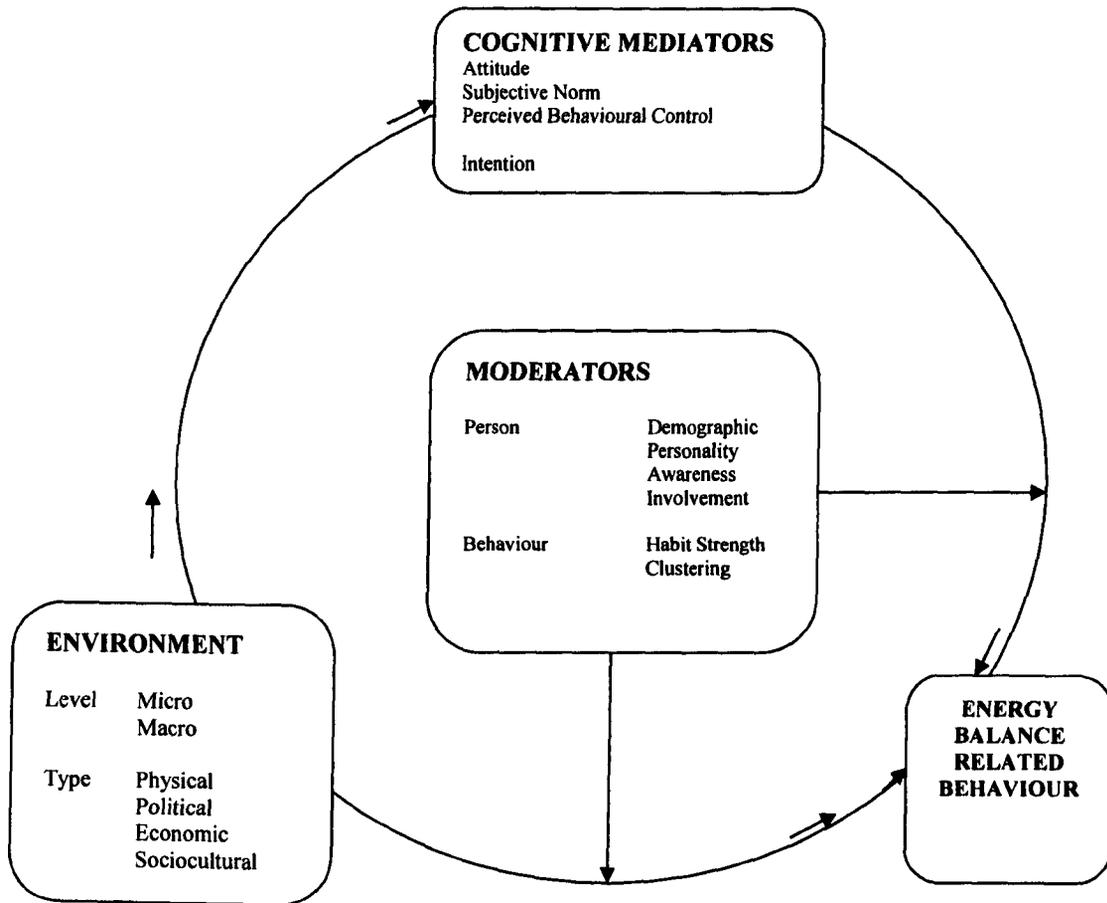


Fig. 1.1

**Environmental Research Framework for Weight Gain Prevention (EnRG)**  
**(Kremers et al., (2006, p3).**



**Figure 1.2**

Although various authors (Sallis, Bauman & Pratt, 1998; Swinburn, Egger & Raza, 1999; Booth, Ritenbaugh & Sallis, 2001) have raised awareness of the importance of the environment within the physical activity domain, a review of sixteen studies conducted by Kremers et al. (2006) found there to be no singular rudimentary environmental cause consistently associated with (or linked to) physical inactivity. With this in mind it is important to consider the design of current interventions that have been implemented to tackle inactivity levels of children and families.

### **1.10.1 Physical Activity and Nutrition Interventions**

Several interventions have been conducted by Epstein and colleagues (2005) to increase physical activity participation rates in obese and non-obese children. One of their earlier studies (Epstein et al., 1995) focussed upon obese children and their families and distributed diet and physical activity information on the positive effect of a balanced diet and increased physical activity level also stressing the negative effects of inactivity to the families. This information was then supported by one group, i) receiving positive reinforcement for increasing physical activity behaviours, ii) a second group receiving the same reinforcement for decreasing the duration of time engaged in targeted sedentary pursuits and thirdly, iii) the final group receiving positive reinforcement for decreasing both their targeted sedentary pursuits *and* increasing their physical activity behaviours. Interestingly, it was the group that received positive reinforcement for reducing their targeted sedentary pursuits that had the greatest effect on body fat and changes in percentage of overweight with the exercising reinforcement group consuming the highest intake of calories. Similar to previous studies mentioned earlier (Epstein, 2005; Salmon et al., 2005) the studies findings suggest that the 'exercise' group may still have actively engaged in the sedentary pursuits (TV watching) which could have triggered and encouraged snacking and eating behaviours.

Targeted school based interventions have also been utilized in an attempt to alter children's dietary and physical activity patterns (NICE, 2007). However, a randomised control trial conducted by Warren et al. (2003) located within a primary school (children aged 5-7 years) provided lunch – time clubs focussing on physical activity and nutrition in an attempt to increase activity rates at school breaks and at home. Post intervention, the self-reported data suggested that compared to the control group the intervention made no effect on the children's out of school physical activity rates or running patterns during school breaks (NICE, 2007).

Although extensive work has been undertaken to facilitate healthy eating with children (Dennison & Shepherd, 1995; Watt & Sheilham, 1996; Moon et al., 1999) the evidence of intervention effectiveness is mixed (Shepherd et al., 2006).

Age appears to be a sub component for success across some studies (Moon et al., 1999) with more successful intervention change being noted across interventions targeted at children aged 15-16 years. Multi variant health interventions (i.e. those that target eating behaviours, sedentary pursuits and physical activity) for children appear to have some significant changes to the prevalence of obesity. A two year longitudinal study (Called Planet Health) targeted primary school children and educated them on the importance of healthy eating, decreasing TV viewing and increasing physical activity rates (Gortmaker et al., 1999). The information was incorporated into curriculum led subjects and the students were tracked for two years. Compared to the control schools the females students prevalence of obesity at the intervention school was significantly reduced (Gortmaker et al., 1999). However, no association was noted with regards to increased physical activity levels for this cohort. Decreased TV viewing frequencies in association with improved eating behaviours appeared to be responsible for the decreased prevalence effect of obesity in the female sample (Gortmaker et al., 1999). Thus reinforcing earlier researchers (Nelson, 2005) that posit that only recently have the multidimensional patterning of children's health behaviours received recognition and the need for further investigation to curb the obesity rates of children.

The literature would also seem to suggest that interventions which are multi-component (either involving a combination of parental input, school meal modification, parental activities or community interventions) have the strongest rate for success (i.e., with increases from +0.2 to +1.68 portions of fruit and vegetables a day) (Foerster et al., 1998; Perry et al., 1999; Baranowski et al., 2000; Story et al., 2000). The type of intervention activities involving parental input have typically included taste-testing activities and family homework. However, those activities directed outside of the home environment appeared to have low input from the parents (Davis et al., 2000; Reynolds et al., 2000). This would suggest further work is needed on the design of the parental components of interventions. To improve current parental home components currently offered within nutrition interventions Blanchette & Brug (2005) proposed that parents should provide positive reinforcement and exposure to fruits and vegetables within the home environment coupled by fruit and vegetable preparation skills.

The social cognitive theory and the self efficacy theory have also been embedded within the Women, Infants and Children Programme intervention by McGarvey et al. (2004) and encouraged parents to model healthy behaviours and set achievable goals. The 12 month programme focused on parental education classes for pre-school children. Six key messages were adapted for the intervention group and filtered through the educational material. The messages included (1) limiting household TV screening, (2) observe mealtime behaviours, (3) increase physical activity, (4) Five fruit and vegetables a day, (5) Exchange sugary beverages for water, (6) Increase fitness activities conducted as a family. Emphasis was also placed on the parents acting as role models for their children with staff (at the intervention / clinic sites) encouraged to exhibit those healthy behaviours that the parents had received through the education material and which may have been witnessed whilst visiting the site. Similarly, local community networks (recreational centres, public libraries, parks and recreational services) also reinforced the 6 key messages (NICE, 2007). Post intervention, the findings suggest the interventional approach did increase the frequency of active play the parents reported to engage in with their child. However, an extensive review of children's physical activity interventions by NICE (2007) argues that similar approaches adopted at nursery or pre-school sites found no alteration on physical activity behaviours outside of the intervention sessions.

### **1.10.2 Summary and Implications**

Cale & Harris (2006) stipulate that there is scarce evident on the effectiveness of interventions for children due to the measurement difficulty of tracking physical activity change within the delivery mechanisms of interventions. The review of physical activity interventions for children conducted by NICE (2007) support this notion and found poor assessment of overall activity levels as a consequence of the measurement challenges of physical activity with children. Target interventions (outside the school environment) were also seen by Cale & Harris (2007) to be particularly difficult to execute and evaluate as a consequence of the involvement of an array of organizations and individuals adopting an assortment of methods.

The recommendations for children and young people continue to advocate 'activity' guidelines but have failed to make an impact on current inactivity rates. A report produced by Stanford University (2007) clearly emphasizes the need now to move away from the general public health strategies (which focus on impacting large population samples) through the influence of normative behaviours, attitudes and values and focus more on macro level change that can impact the whole group of children with a local community. Successful public health initiatives need to be embedded into new strategies to effect behaviour change.

Similarly, the literature has shown that very few studies have explored multiple determinants of physical activity (e.g. environmental, motivation, self-efficacy, knowledge, perceived barriers, intentions, preferences, attitudes and beliefs) (Rennie et al., 2005). The few that have indicate that in relation to (say) walking as a leisurely/recreational pursuit or activity, it is not necessarily one determinant that overrides participation. The physical environment, personal and social determinants have all been found to be associated with physical activity engagement (Ball et al., 2006). Researchers must now simultaneously review both (physical activity and nutritional behaviours) in order to understand how the 'built environment' may affect childhood obesity.

Furthermore, Resnicow & Vaughn (In Press) challenge health related behaviour theorists to conduct physical activity and nutrition research in new ways, defending their belief that ... "*change is random and cannot be predicted*" ( Baranowski, 2006; p.3). Whilst Resnicow & Vaughn (In Press) evoke new non-linear 'Chaos and Dynamic System Models' to tackle health behaviours, it is important to note that these suggestions do not consider the inter-relationship between psychosocial and behavioural predictors (Cullen et al., 2003; Kremers et al., 2006) nor do they incorporate emotional manipulation (Taylor, Bagozzi & Gaither, 2005; Richardson et al., 2006), environmental (Jago & Baranowski, 2006) and biological (Rankinen & Bouchard, 2006) influences or address the neighbourhood characteristics (or community), (i.e. where we live) (Jago, Baranowski & Baranowski, 2006) that may condition and predict individual dietary and activity behaviours.

There is a clear rationale for researchers to now adopt a more holistic/eclectic approach to uncover children and families physical activity and health behaviours (at a macro level) to understand if physical activity behaviours operate within different behavioural systems (Nelson et al., 2005), track, (Gordon – Larsen et al., 2005) and are affected by disparate determinants (Gordon – Larsen et al., 2000) which current health interventions and health policies mentioned previously have failed to identify.

## 1.11 A summary of Literature and Clarification of Aims

The overall aim of this research is;

**To explore and better understand the determinants associated with children and families health related behaviour and physical activity patterns and to investigate the *underlining factors* that may *govern* current and future health related behaviour choices. In doing so it aims to offer a critique on the current physical activity guidelines, comment on existing health and physical activity policy interventions, and present thoughts on the future direction needed for targeting children and families health and physical activity behaviours.**

As a consequence of the literature review further complimentary and ‘specific’ aims have been created to support the central studies purpose. These supplementary aims are illuminated in the section below and were guided by chapters reviewed within the literature.

The introduction to the literature clearly acknowledged the rising tide of obesity globally and the current trends of inactivity across all population levels. Similarly, it clarified that to sustain both positive physical and mental health across lifespan the two primary determinants needing attention were physical activity and diet (Pretty et al., 2003). It also suggested that very few children and young people were meeting the current physical activity (NICE, 2009) and nutritional (DH, 2004) guidelines to obtain positive health gains. This led to the conclusion by many authors (Gordan – Larsen et al., 2000; Owens et al., 2000) that low activity levels operate through a series of complex behaviour mechanisms and determinants which need to be explored in parallel (rather than in isolation) in children and families physical activity and health research.

Subsequently, the first specific aim is;

**(A) “To (better) understand the habitual mental, physical and nutritional behaviours of children and their families in Knowsley (UK) thus creating a baseline of data to investigate further.”**

The literature review then moved on to discuss the limitations associated with data capture methods in children. Authors (Rennie et al., 2005) challenged the reliability of nutrition and physical activity self-report data as a true and accurate measure of children's health behaviours. Basterfield et al. (2008) found a gross overestimation of Annual Health Survey data for children's physical activity rates when they compared it to accelerometer readings. The inconsistent collective view of what the appropriate level of moderate – vigorous intensity level should be for children clearly added to the confusion and differences noted in 'duration times' by authors within children's physical activity guideline literature (Reilly et al., 2008) and as such, should be treated with caution. Basterfield and colleagues (2008) clearly emphasized the need for studies to look beyond subject methods of data capture to obtain a more complete view of children's habitual physical activity daily profiles. In this sense, many physical activity studies have failed to employ a mixed-methodological approach to cross reference subjective and objective measures and reconfirm what children's physical activity MVPA levels really are. This ambiguity further supports the need for an additional aim of the study to;

**(B) “To adopt a multi-layered approach to data capture for children within the field of physical activity and nutrition to compliment the subjective methods employed earlier within the study”**

The literature continued by critically exploring the significant factors contributing to the lack of physical activity and healthy eating. Authors argued that the distribution patterns of children's inactivity levels were not equal with regards to demographic and social variables (Hesketh, 2006) postulating a child's environment, low maternal education, negative parenting styles and neighbourhoods with high crime and overcrowding were all viable risks factors for children's low engagement patterns of physical activity (Brooks-Gunn 1995; Feldman et al., 2000; Kohen et al., 2002; Kotchick & Forehand, 2002). A lack of recreational facilities and parks within low SES areas were also observed by Ross (2000) Yen & Kaplan (1998). Specifically, safe, accessible, low cost, well-maintained equipment and facilities were identified as key factors for participation in physical activity by low SES young people (Humbert et al., 2006).

These contributory factors and determinants for participation are supported further by various authors (Zakarian et al., 1994) who believe that having access to safe play environments correlates significantly with children's activity rates. Although Humbert et al. (2006) purported that only low SES young people acknowledged the environment to be an important contributory factor for participation in activity, scant research exists that has obtained these views directly from children, specifically outlining the environmental influences that inhibit or encourage them to be active and healthy. As such the second specific aim of this research is;

**(C) "To explore the everyday experiences of children's after school physical activity opportunities in their local community to better capture the context, culture and environmental constraints they place upon their own current activity choices and future recreational aspirations."**

Whilst a multi-layered approach offers further understanding in relation to gaining a more accurate assessment of children's physical activity and eating behaviours it still does not offer any rationale as to *why* the children achieve the levels of inactivity they do nor does it identifies the drivers explaining consumption levels of particular food types. The review continued to build on this understanding by exploring the role and involvement of significant others (*social support*), attitudes, intention, motivation, parental modeling and facilitation on influencing unhealthy eating and inactivity trends among children. The social influences (e.g. support and encouragement to be active from family and friends) have been reported in the literature to influence children's' participation in physical activity (Sallis et al., 1992) with some evidence that these environments may play a longer term role in influencing behaviour (Andersen & Wold, 1992). A variety of social support (i.e. family, friends and team mates) was purported throughout this review to show a positive impact on enhancing children's participation in physical activity. Similarly, at this juncture authors also believed it was the families (i.e. mother, father and siblings) *actual* participation (as opposed to just encouragement) in physical activities that appeared to have more of a significant effect in curtailing any sedentary behaviour in children (Springer et al., 2006).

The nature of parental modeling and facilitation (in transporting their children to activities) again was pivotal to improving children's sedentary behaviours. The focus of the review then reflected on the intrapersonal factors of nutrition and physical activity behaviours (which included motivation, self-efficacy, knowledge, perceived barriers, intentions, preferences, attitudes and beliefs (Baranowski, et al., 1999; Sallis & Owen, 1999). It seemed that the majority of behaviour change research focused mainly on the Transtheoretical Model (Prochaska & DiClemente, 1983), The Theory of Planned Behaviour (Ajzen, 1988) and the Protection Motivation Theory (Maddux & Rogers, 1983). All of these models stem from a cognitive – rational paradigm (Resnicow & Vaughan, 2006) and perceived change in physical activity and nutritional behaviours to be an interface of efficacy, intention, belief, attitude and knowledge (e.g. Cognitive Factors) (Glanz et al., 2002; Baranowski et al., 2003). Within the review a collection of authors now stressed the need to be less reliant upon just these 'cognitive' determinants for behaviour change approaches and advocated new non-linear 'Chaos and Dynamic System Models' (to tackle health behaviours (Resnicow & Vaughn, In Press) believing *change to be random* and as such cannot be predicted via cognitive – rationale paradigms.

Nevertheless, the latter stages of the review focused upon children and family physical activity and health interventions and appeared to suggest that (on the whole) the majority of behaviour change initiatives were embedded within a cognitive rationale paradigm (i.e. targeting intentions, beliefs, self-efficacy and knowledge). The literature alluded to the notion that many interventions were multicomponent and implemented self efficacy (Mc Garvey, 2004) and parents with knowledge and behaviour driven targets (i.e. change sugary beverages for water).

Whilst this literature base found a positive effect within some family physical activity behaviour change initiatives (McGarvey, 2004) others were shown to have little or no effect on the frequency of physical activity change outside the sessions (NICE, 2009). Similarly, Multi variant health interventions (i.e. those that target eating behaviours, sedentary pursuits and physical activity) for children were shown to have some significant changes to the prevalence of obesity but the effect was associated with changes in targeted sedentary activities and not as a consequence of increased frequency rates of physical activity (Gortmaker et al., 1999).

However, the literature briefly alluded to the fact that there appeared to be a scarce evidence base of intervention effectiveness for children due to the measurement difficulty of tracking physical activity change within the delivery mechanisms of interventions. NICE (2007) supported this notion and found poor assessment of overall activity levels as a consequence of the measurement challenges of physical activity with children. Target interventions (outside the school environment) were also seen to be particularly problematic to execute and evaluate as a consequence of the involvement of an array of organizations and individuals adopting an assortment of methods (Cale & Harris, 2007).

In the latter stages the review suggested that successful health intervention programmes were seen as essential ingredient to inform new health policy and strategies and subsequently positively impact on behaviour change. However, in order for this to be achieved the review emphasized the need to move away from the general public health strategies (which focus on impacting large population samples) through the influence of normative behaviours, attitudes and values and focus more on *macro and micro* level change that can impact the whole group of children with a local community. Minimal literature overtly aligns itself with this position due to very few researcher studies obtaining the opportunity to engage in research that observes individuals at a community level. This guided the final aim of this research;

**(D) “To explore the micro (day-to-day existence) of a family in Knowsley MBC (UK) and observe their naturally occurring physical activity and nutritional behaviours within the context of their own home.”**

## **Mapping the Research Journey & Clarifying the Structure of the Research**

This section provides the reader with a brief overview of the thesis structure and research journey. In Study 1 a reconnaissance phase was adopted by the researcher over a four month period within five purposefully selected (Patton, 1990) primary schools (n: 115). Undisclosed school based observations and community meetings were undertaken by the primary researcher to obtain the trust and familiarity of the children (Proud, 2002) and to gain an insight into the children's current communication, comprehension and literacy levels in the school environment prior to research tool development. Having been granted ethical consent, a self-report health related behaviour questionnaire for children (Balding, 1997; The WHO: Health Behaviour in School Aged Children Survey, 1997) (n: 115 Children; M: 55 F:60 mean age 8.6 years and their families (Andrews and Withey, 1976: Global Quality of Life; Godin 1985, Leisure Time Exercise Questionnaire; Baker et al., 1994; Life Fulfilment Questionnaire) (n: 57 Adults; M: 3, F: 54) was subsequently created in line with research aim A & B (outlined above and integrated into figure 1.0 below).

To aid and guide Study 2, alternative methods were deployed to extend and confirm the children and families baseline physical activity and nutritional data. This approach directly related to aim A & B of this study. Having previously analyzed all self-report questionnaires, two schools (School 1 & 2) from the original study cohort were randomly selected to participate in the accelerometer and nutritional photography study. Forty children (M: 18, F: 22; mean age 8.6 years) participated in the study for the duration of 1 week (including weekends). The object of the two measures was to validate the self-report baseline measure and capture a one week habitual physical activity and dietary profile of the children. The main outcome variable of data analysis for the CSA actigraph accelerometer study was the total amount of physical activity (counts day<sup>-1</sup>). Aligned with other studies (Ekelund et al., 2006) this was obtain by accumulative MVPA activity counts (per child) per day using cut-point of time spent in sedentary activity; <500 counts min<sup>-1</sup>, in light (500–1999 counts min<sup>-1</sup>), moderate (2000–5500 counts min<sup>-1</sup>) and vigorous (45500 counts min<sup>-1</sup>) physical activity.

In parallel to this the photography study was conducted with the same cohort of children (School 1 & 2). Children were informed to take a photograph of every main meal they consumed within the home over a 1 week cycle (Monday – Friday: Breakfast and Evening Meal, Weekends: Breakfast, Lunch and Dinner). The children were also provided with a weekly diet diary (Appendix A) to document any additional snacks they had consumed within the home. Primarily, inductive content analysis was adopted (Kondracki et al., 2002) to analyze each day's photographs and formulate categories (Ballsteadt et al., 1981). Having analyzed the data sets, conflicting messages emerged from the accelerometer and photography studies findings which suggested a miss- reporting of activity levels and healthy nutritional behaviours within the original (self-report questionnaire) baseline data.

At this juncture Study 3's objective was to move away from the children's actual MVPA activity levels and nutritional profiles and explore their daily experiences in Knowsley to ascertain what environmental, cultural or psycho-social determinants were inhibiting physical activity behaviours within their home and community setting. This position was central to aim B and C of the study. A write and draw methodology was adopted for this study (N: 108; M: 50; F: 58 Mean age 8.6 years). The researcher guided the children throughout the process (in a classroom setting) whilst they individually drew and or wrote their current (regular) after school activities and future aspirations for after school services within their local community. The goal of analysis was to create and display the key order themes as a result of content analysis. In order to overcome subjectivity of the researcher, peer triangulation (Tuckett, 2005; Moriarty, O'Hara and Byron, 2007) was also implemented to ensure the key order themes found were accurate and representative of the sample. The method employed was found to be a powerful one in disclosing culturally specific messages regarding children's current activity engagement (after school) and their representation of their community but equally in exposing the design of their after school aspirational services. The key order theme for the creation of under aged bars and consumption of alcoholic beverages only reinforced aim D of Study 4.

The culturally specific connotations that the drawings and writing illuminated strengthened the need to be less reliant upon national physical activity policies (ECM, 2004) and more driven towards investigating and understanding the reason for engagement of physical activity and dietary behaviours to specific communities (on a macro & micro level).

Having reviewed children and families physical activity and nutritional data, Study 4 focused on a randomly selected family (from a total of 3 families that wished to participate) in the final phase of this research journey. The family (from the original cohort) comprised of a single mother of three (aged 43years), 1 female: aged 12.6 years and 1 Male: aged 10 years. The main aims of Study 4 related specifically to aim (A), aim (C), and aim (D) as illustrated in Figure 1.3.

Up until this time Study 1 - 3 had been unable to explain the lifestyle choices and physical activity levels of the children. To further explore the families dynamic, experiences and health and physical activity choices, ethnographic engagement (Tedlock, 2000) was thought to be the most appropriate vehicle to capture and understand the true realities of a communities physical and nutritional behaviour (from the perspective of them). A major strength in being granted access to the family was thought to be due to the researcher's previous time spent within the field, building trust and fostering positive relationships with the children. Observations are the backbone of ethnographic process (Hymes, 1962) and require the researcher to comprehend and provide a conceptually framed detailed understanding of the phenomenon under investigation (Lofland, 1996; Tedlock, 2000). The observations for study 4 included various half-day and full day sessions (dependent on week or weekend dates) and operated on an ad hoc basis to ensure a variety of behaviours were captured.

To minimise the potential *nuisance* of observing a families habitual daily activities the main researcher contacted the family by telephone or text one day prior to the visit to minimise any disruption to the family unit.

Similarly, the observations were conducted regularly (once a week) on a rotational period at the convenience of the family. Intense engagement involved 9 months observations (Total of 288 hours), observing, following and interacting with the family within their home and community environment.

This observational approach provided rich data which was taken from the daily detailed note taking by the researcher at the end of each day (but away from the site). The researcher also captured significant details relating to the families home, environment, clothes, appearance, tone, facial / bodily features, accents and style in a fieldwork journal during each visit. These additional details were used to draw upon when writing the creative non fiction to offer the reader a sense of authenticity, realism and emotion (Caulley, 2008). Although the technique of creative non fiction is renowned to be particularly difficult, many authors (Coffey & Atkinson, 1996; Sparkes, 2000; and Tierney, 2002) are now beginning to consider it to present their research.

Creative non fiction was used for Study 4 (as opposed to alternative genre) as it was felt to be the strongest vehicle to “construct and convey *analyses* of social settings and social actions that are given a particular point or are impossible by other means....(Coffey and Atkinson, 1996; pp. 128). Similarly, Study 4’s intention was to generate important questions to the reader (Barone, 1997) in relation to the children and families physical activity and health behaviours. The realists’ story that was adopted ensured the concrete details of real life conjured up the appropriate images and emotions to the reader (Caulley, 2008). Through this approach the recordings of conversation encapsulated reality (Gutkind, 1997). Writing in the ‘first person’ (and through the ‘eye’ of the characters) (Cheney, 2001) was adopted for Study 4 with parallel narratives and perspectives relating to the same topic but from different peoples perspectives (i.e. the daughter and mother) displayed within episodes occurring in the diary.

Parallel episodes of an event that were either witnessed by the researcher at the time of the study or shared by the participants to the researcher during the process were interwoven into '*time line*' historical events to allow the reader to capture significant moments in the families lives (from two people's perspectives) that have shaped their current view point of physical activity engagement. The narratives presented in the results section have been subjected to a number of reworking of observations and practices (Caulley, 2008) and narrate the social experiences encountered by a child (Age: 12 years, Called Paige Winters) and her Single Mother of three (Age: 43 years Called Jayne Winters) living in the cultural landscape and community of Knowlsey MBC UK.

Purposefully, the study chose not to engage in reflective stop offs during the diary extracts as it was felt this would remove the evocative and powerful nature of the narratives for the reader. Inductive and deductive discussions (Krane et al., 1997) are subsequently made following the creative non-fiction accounts to enable the reader to digest the drama and generate their own answers as to what they feel the true determinants governing the families' current physical activity and health behaviour really are.

**STUDY 1: RECONNAISSANCE PHASE & CHILDREN AND FAMILY SELF  
REPORT QUESTIONNAIRES**

*Chapter 2 – Study 1 Aims:*

**(A). To (better) understand the habitual mental, physical and nutritional behaviours of children and their families in Knowsley (UK) thus creating a baseline of data to investigate further.**

5 Primary Schools, Mean age: 8.6 years (N: 115; M: 55, F: 60): Parents (N: 57; M: 3, F: 54)

**STUDY 2: ACCELEROMETER & PHOTOGRAPHY (2 randomly selected primary schools from Study 1)**

*Chapter 3 – Study 2 aims to address aim (B) and:*

**(B). To adopt a multi-layered approach to data capture for children within the field of physical activity and nutrition to compliment the subjective methods employed earlier within the study**

40 children; M: 18, F: 22; mean age 8.6 years

**STUDY 3: WRITE & DRAW with all five primary school children**

*Chapter 4 – Study 3 Aims to address Research Aim (D) and also:*

**(C). To explore the everyday experiences of children's after school physical activity opportunities in their local community to better capture the context, culture and environmental constraints they place upon their own current activity choices and future recreational aspirations**

N: 108; M: 50; F: 58, Mean age 8.6 years

**STUDY 4: ETHNOGRAPHIC ENGAGEMENT & CREATIVE NON FICTION**

*Chapter 5 – Study 4 Aims to address research Aim (A),(B), but also :*

**(D). To explore the micro (day to day existence) of a family in Knowsley MBC (UK) and observe their naturally occurring physical activity and nutritional behaviours within the context of their own home.**

1 family (1 female; 43years, 1 female: 12.6 years and 1 Male: 10 years).

# **CHAPTER TWO**

**STUDY 1: RECONNAISSANCE PHASE & CHILDREN AND FAMILY SELF  
REPORT QUESTIONNAIRES**

*Chapter 2 – Study 1 Aims:*

**(A). To (better) understand the habitual mental, physical and nutritional behaviours of children and their families in Knowsley (UK) thus creating a baseline of data to investigate further.**

5 Primary Schools, Mean age: 8.6 years (N: 115; M: 55, F: 60): Parents (N: 57; M: 3, F: 54)



**STUDY 2: ACCELEROMETER & PHOTOGRAPHY (2 randomly selected primary schools from Study 1)**

*Chapter 3 – Study 2 aims to address aim (B) and:*

**(B). To adopt a multi-layered approach to data capture for children within the field of physical activity and nutrition to compliment the subjective methods employed earlier within the study**

40 children; M: 18, F: 22; mean age 8.6 years

**STUDY 3: WRITE & DRAW with all five primary school children**

*Chapter 4 – Study 3 Aims to address Research Aim (D) and also:*

**(C). To explore the everyday experiences of children's after school physical activity opportunities in their local community to better capture the context, culture and environmental constraints they place upon their own current activity choices and future recreational aspirations**

N: 108; M: 50; F: 58 Mean age 8.6 years

**STUDY 4: ETHNOGRAPHIC ENGAGEMENT & CREATIVE NON FICTION**

*Chapter 5 – Study 4 Aims to address research Aim (A),(B), but also :*

**(D). To explore the micro (day to day existence) of a family in Knowsley MBC (UK) and observe their naturally occurring physical activity and nutritional behaviours within the context of their own home.**

1 family (1 female; 43years, 1 female: 12.6 years and 1 Male: 10 years).

## **2.1 Study 1: Aims and Methodology – Reconnaissance & Questionnaires**

Study 1 included the following research aim;

- (A). To (better) understand the habitual mental, physical and nutritional behaviours of children and their families in Knowsley (UK) thus creating a baseline of data to investigate further.**

Given the eclectic mix of Knowsley's landscape, the steady increase of obesity (Ogden et al., 2006), the sedentary pursuits amongst children (Hesketh, 2006) and limited UK published data examining children and families health and physical activity patterns (Wing, 2000), the overall aim of Study 1 was to explore the health related behaviour and activity patterns of children and families in Knowsley, Merseyside (UK). More specifically, prior to this the study aimed to undertake an extensive needs assessment of the area (gathering data on the children and families literacy levels and understanding of research, Appendix A) before implementing any baseline measure.

## **2.2 Sampling Selection for Study 1 – 3**

To ensure school selection within the ward boundaries discussed reflected the landscape of Knowsley a fair sampling assessment framework was created. In addition, owing to cultural diversity within the area an even number of Church of England and Roman Catholic Primary Schools were also obtained.

Children and school selection was based on:

- League table position: Based on aggregate 2001 Key Stage Two National Curriculum Report (Incorporating attendance records, geographical location, attitudes of head teacher and class teacher).
- School PANDA reports: comparisons of subsidisation of meals within schools to reflect specific socio-economic conditions.
- D.E.T.R (1999) Index of deprivation, Knowsley Council, % of lone parents, % households not owning a car, % of owner occupiers, unemployment rates, % teenage pregnancy and % adult illiteracy.

- Compendium of Population and Health Indicators 2002/3: Knowsley Primary Care Trust: Index of well being amongst ward divisions.

Each school within a ward boundary received a total rank score to reflect their overall position. Such extensive information ensured that the five schools selected best matched the economic status of Knowsley (for a clear breakdown of the selection process see Appendix A). The age group of the children selected was based on several factors. All phases of research focused on children aged 7 to 8 years of age (i.e., year 4) as it was considered that children between this age (and below) do not have as much freedom of choice to make more independent decisions away from the influence of parents (i.e., including decisions related to food selection and activity habits) (Borra, 2004).

The 5 primary schools were selected by the research team at Liverpool John Moores University and ratified by colleagues at Knowsley Borough Council. All studies discussed within the following chapters were predominantly delivered within the context of the children's primary schools with the exception of Study 4 which was observed within the context of the children and families own home.

Due to the high demand for engagement in the research programme and school time-scales, 5 primary schools were selected for Study 1, as illustrated below. Study sites remained the same for each research phase (1-4). St Columbas R.C Primary School (Huyton), Park View Primary School (Huyton), St Dominic's R.C Primary School (Huyton), Overdale Primary School (Kirkby), Beechwood Primary School (Kirkby). A map of Knowsley MBC with clarification of the schools location can be located in Appendix A.

### **2.2.1 Familiarisation Phase**

Initial meetings were arranged with each head teacher of the 5 primary schools by the principle researcher to discuss and distribute information on the study and clarify any concerns. These meetings were supplemented with follow up informal meetings with specific class teachers to explain the process and ensure no disruption occurred to pre-determined lesson plans (Appendix A).

Understanding the context in which you intend to deliver your method is a vital ingredient for building rapport and appropriate relationships with your participants (Patton, 1990). Study 1 engaged in an extensive familiarisation phase (Proud, 2002) involving a comprehensive audit of pre-existing data on the ward population, health status and school league table positions within Knowsley (Appendix A). In an attempt to ensure that the subjects selected for the study met the approval of the funding representative for Knowsley MBC and the research team at Liverpool John Moores University, an extensive amount of data relating to the Borough and schools was collated and subjected to regular peer review and triangulation consensus (Gould et al., 1993) between all representatives during each stage of data collation.

During the participant observational phase children's consent was not requested as the researcher adopted a covert role within the school. The teacher of each class informed the children that the researcher would be present in the school for a period of four months to assist (on an ad hoc basis) in class lessons and thus take on the role of a teaching assistant. Similar to the procedure of Gilbourne et al. (1996) & Martin et al. (1998) this design allowed the researcher to develop a closeness, trust and familiarisation with the children and the environment and decreased the likelihood of children adjusting their behaviours due to the researchers presence (Bryman, 2001). Furthermore, building a positive and trusting relationship with the children can reduce the potential for lies and evasion further on in the study (Ennew, 1994).

Owing to the covert role of the researcher within the class setting, field notes were not made during the practical observations (Bryman, 2001) as this would disclose the researchers identity and potentially jeopardise the nature of the study (Ennew, 1994). In this regard, a more flexible method of note taking was adopted for the study. Mental notes (Alkinson, 1981) were made within the setting, key words and quotes from children and teachers were jotted on a note pad following the session (LoFland, 1995) and added, and amplified to during the end of the day when detailed reflective field notes were taken (Sanjeck, 1990; Lofland, 1995).

The early familiarisation through participant observations also enabled the researcher to explore the current level of understanding (literacy, numeracy and communication) of the children, the range of language and colloquial terms used within the environment, attention spans and peer relationships / behaviours, and general themes of the children's lives, interests, free time, eating habits and peer friendships. In this sense the study recognised that child development models are not universal but socially and culturally specific (Woodhead, 1998). The data generated from the observational study informed the structure, protocol and clarity of language required to develop the health related behaviour questionnaire.

Vignettes were used as a complimentary technique (Hazel 1995; Hughes, 1998) alongside the self-report questionnaires method to enhance the existing data. Similar to Barter & Renolds (1999) the vignettes described in this study were constructed from actual experiences which arose during the observational process and pilot stages of the research. The following section firstly comprises of raw data quotes and observations made by the researcher during the reconnaissance phase as this serves as the foundation for the considerations of the methodological developments of Self-Report Questionnaires.

The below themes capture a series of issues and experiences noted by the researcher extracted from the school and community reports and directly from the children and teachers observations within the primary school environment.

### ***Literacy and Numeracy Skills of the Children***

The following section highlights the emergence themes and aims predominantly made by the researcher during the stages of familiarisation. The first exploratory aim focused on establishing the current literacy and comprehension levels of the children. This decision was taken because without clear indicators of the children's current comprehension levels, the implementation of a health related behaviour questionnaire for Study 1 could clearly jeopardise and distort the results. The initial exploration indicated that over 50 % of all the children in each primary school class had poor literacy skills (functioning lower than average 8 – 9 year olds).

This is further supported in the schools' 2001 PANDA reports for Key Stage 2 tests (Appendix A). During one literacy and reading session at St Dominic's R.C primary school only 2 children completed the reading with ease whilst three additional children were unable to read the words; *beach, shore, shocked and explained*.

During the observational analysis (of 5 boys on the blue table) at St Columba's R.C Primary school, one boy constantly required support and assistance in writing simple words such as, *house, chair and often* with three of the remaining five boys on the table expressed their dislike saying;

*"Don't help him all the time Miss, he's thick and your always helping him, he can't spell or nothing!"*

This reoccurring outburst made by the boys had a clear impact on the work and highlighted that not only did the research method required for this study need to match the educational level of all the children, but the environment in which it was delivered needed to be safe and fair to ensure children did not become distracted, anxious or a target for taunts.

### ***Children's Attention Spans***

It became apparent that the attention span of the children required methodological considerations. Field notes taken in all five primary schools found that the majority of children were unable to concentrate on a class task for more than 20 – 25 minutes. On many occasions the researcher noted individual children (particularly within St Dominic's School, of which 70% were male) were unable to focus on a task for more than 10 minutes. Which appeared to result in disruptive behaviour, such as, *swearing, kicking other boys at waist height, shouting out in class and wrestling other boys to the floor* (during a P.E. lesson). Further disruptive behaviours (talking in class, stealing rulers, rubbers and pens from each other) were observed in three schools whilst the teacher was talking. During each occasion the class teacher had to stop the lesson and highlight his/her concerns to the whole class and on occasions (4-5 times) distribute lines reprimanding a variety of children for their anti social actions.

## **Teacher Observations of the Children's Behaviour**

General themes raised by *teachers* are classified into subcategories with the most pertinent issues stipulated below.

### ***Anti-social Behaviours***

Throughout the observations all teachers informally commented on the social circumstances many of the children encountered when they left the school vicinity. Many of the teachers appeared to defend the anti-social and disrupted behaviour of their pupils. Moreover, anti-social behaviour appeared to be attributed to the child's social circumstances:

*"It's not his fault, he can be a lovely boy when he wants, but when his parents do attend parents evening high as a kite it puts things into perspective."*

(Class teacher: School 2)

*"She always rushes her work, if only she slowed down a little she could do better, I visited her home recently and saw 6 children in a very small house with very little if any room for her to do her homework. She's probably competing for attention and that's why she rushes everything in class."*

(Class Teacher: School 1)

### ***Eating Patterns***

All class teachers and one head teacher appeared concerned with the lack of healthy food supplied by parents in the children's packed lunches. One head teacher highlighted that he made it his priority to sit with the children to eat every lunch time. He commented that:

*"All you have to do is sit next to them at meal times to see the vast amount of unhealthy food they eat. It's all crisps, chocolate and fizzy drinks and even if they do have a healthy piece of fruit it very rarely eaten!"*

(Head Teacher: School 2)

## **2.3 Study 1: Participants and Procedure**

The five schools selected for Study 1 participated in the familiarisation and school observation phase (n= 115; M: 55, F: 60). Letters informing the schools of the intention of the study were distributed to the head teachers of all primary schools within Knowsley Borough Council, inviting all Key Stage 2 (Year 4 classes; Children aged 7-8 years) to participate in the longitudinal study (Appendix A).

### **2.3.1 Questionnaire Pilot Work**

The researcher felt well positioned to guide Study 1 owing to the emergent themes that occurred within the initial observational study which assisted the development and refinement of an appropriate self-report health related behaviour questionnaire for the children (Balding, 1997) and families (Andrews & Wiley., 1976; Godin, 1985; Baker, 1994).

### **2.3.2 Study 1: Instrument Selection**

A variety of questionnaires outlined below were reviewed and considered for this study; The National Health and Nutritional Examination Survey I, II and III (1973), Faces Scale (Andrew & Withey, 1976), Godin Leisure-Time Exercise Questionnaire (1985), Stanford Usual Activity Questionnaire (1985), Becke Questionnaire of Habitual Physical Activity (1982), KIHD Seven Day and 12 month Leisure Time Physical Activity History Questionnaire (1994), ), Life Fulfilment Scale (LFS; Baker, 1994), Bouchard Three-Day Physical Activity Record, Baldings (1997) Primary Health Related Behaviour Questionnaire, and WHO: Health Behaviours in School Age Children Survey (1997). Following the data generated from Study 1 observation phase, it was proposed the parental questionnaire would incorporate The Life Fulfilment Scale (Baker et al., 1994) that was originally developed from Krupinski's (1980) measure to enable those parents with low literacy skills to engage in the research. Similarly, the sensitivity of the measure was also modified (and simplified) to reduce the number of items that parents were required to respond to on a four-point Likert Scale.

A Global Quality of Life: Delighted – Terrible Faces Scale (Andrews and Withey, 1976) was also placed within the parental questionnaire to explore their overall quality of life and diet. Andrews & Witney (1976) reported good validity and reliability of the scale. Such an approach enabled parents in the study with low literacy skills to understand the basic framework of the question and respond accordingly (see Appendix A).

Similarly, Godin Leisure-Time Exercise Questionnaire (1985) was also incorporated to explore the parents' activity levels over 7 days (i.e., exercise intensity and duration) in contrast to other measures reviewed, as the study did not wish to focus specifically on parental work-based physical activity behaviours. A definition of 'activity' was included in the section with three English examples (as opposed to Americanized options) to represent possible strenuous, moderate and mild activities. In addition to the times per week column a further classification was included for the approximation of minutes (per week) for each exercise intensity category. This measure and the three day physical activity recall questionnaire (Pate et al., 2003) have reported good reliability in the intensity levels used for physical activity across population studies (Eisenman et al., 2002).

Similar to the construction of the parental questionnaire, the selection of a physical activity and health related behaviour questionnaire for the children was directed by Aim (A) of the research and were informed by observations made by the researcher during the reconnaissance phase. In this regard, section 6 (after school activities); section 7 (frequency of participation in sports after school); section 8 (frequency of food types); section 24 (self-esteem) and section 28; smoking behaviours were adapted from Baldings (1997) primary health related behaviour questionnaire. Further categories exploring children's general health and happiness; frequency and duration of exercise (out of school), frequency of recreational pursuits and self perception of body image were also felt necessary for the study and adapted from The WHO: Health Behaviour in School Aged Children Survey (1997) to explore the psychosocial aspect related to aim (A) of the study. Some of the psychometric properties of the WHO (1997) constructs have been analysed and reported from both a qualitative and quantitative based analysis (Haugland & Wold, 2001) with good face validity and adequate test-retest reliability being recorded.

The psychometric properties of measuring body image have also been reported with Cronbach's  $\alpha = 0.58$  and good test-retest reliability ( $r = 0.65$ ) over a one year period in previous studies (Marcoux et al., 1999). Colourful cartoon imagery was also incorporated into the design to encourage the children's interest and attention in the research technique (Appendix A).

### **2.3.3 Participants: Study 1 Questionnaire Pilot Phase**

Two primary schools ( $n=42$ ; M: 19, F: 23) were randomly selected to test the suitability and administration of the children's questionnaire and information sheet (outlining the studies purpose and procedure). Following this, a number of alterations to the design of the questionnaire and procedure were made (Appendix A). A decision was made to utilise an overhead projector to help the children with lower literacy skills and ensure that all children were able to understand the instructions verbally given to each question. Due to the variety of exploratory factors within the questionnaire, the time allocation of the original procedure was altered to two, twenty minute sessions, to support the children's concentration span. Following consultation with the children no major alterations were made to the questionnaire used in the pilot study.

### **2.3.4 Study 1: Participants**

One hundred and fifteen children ( $n=115$ ; M=55, F=60) mean age of 8.6 years completed the self-report questionnaire in each of the five participating primary schools. Fifty-seven parents ( $n=57$ ; F=54, M =3) completed and returned the postal self-report questionnaire (Appendix A).

### **2.3.5 Study 1: Procedure (Children and Families)**

A fifteen minute introduction and explanation of the procedures involved in Study 1 was provided by the researcher to the children (supported by the children's individual information sheets, Appendix A). All children were provided with a letter of introduction (Appendix A), parental consent forms and a parent questionnaire (Appendix A).

The parental questionnaire also incorporated consent for any additional family members (over the age of 16 years still residing in the family home) to participate in the study. Permission was formally obtained from the head teachers and parents for the longitudinal study. All children who were granted parental consent participated in Study 1.

Parents were requested to rate their psychological well-being on a four point scale regarding different aspects of their lives (i.e., family, health, diet and residential area), regardless of whether it applied to them specifically. They were then required to consider the items again to establish how satisfied they currently were with those particular aspects of their lives. Parents were also given seven diagrammatic faces ranging from wide smiles to turn down mouths, and requested to select the face which closely represented their current overall health and diet.

Low parental returns were evident with the initial procedure, with only a total of 24 completed questionnaires being returned to the class teacher from all 5 participating schools. Following informal discussions with the class teachers and children, a second batch of questionnaires were distributed direct to children's postal addresses by the researcher, increasing the response rate of families to fifty seven.

To address the challenge of low parental consent (Alderson, 1995; Oakley et al., 1995) a further letter was distributed to parents requesting those who wished to decline on behalf of their child, to do so by returning the form within 14 working days. Failure to return the letter indicated consent for their child to participate. The process ensured high participation rates occurred and avoided sample bias, allowing children previously neglected from research (due to low parental returns) to have the opportunity to participate.

All the methods employed for the study were reviewed and approved by the medical ethics committee of Liverpool John Moores University and the head teachers of each primary school.

### **2.3.6 Study 1: Children's Questionnaire Procedure**

Children completed the questionnaire within their classroom setting. The main researcher provided a fifteen minute introduction to the task. The children were asked to select a box or circle a number that related to them. For questions pertaining to the children's home' or 'community environment,' children were provided with a verbal definition of the word 'home' as the "house, or place that you live and sleep in for most of the time/ week" (Hume et al., 2005).

The specificity of the boundaries of what the home environment included was 'any garden or yard up to the front, side and back fences of the children's home'. The word 'environment' was also explained as "the surrounding places and things that are around us" with the main researcher offering some verbal examples to the children prior to the start of the exercise. To assist the children in making sense of the question pertaining to the activities and places that they could access in their local community after school, 'local community' was verbally described to the children as the "places and things you could easily walk or ride your bike to"(Hume et al., 2005).

Children were assured of confidentiality and additional support (if required). Each question within the nine sections was individually read aloud to the children by the researcher. Following the administration of the questionnaire a further fifteen minutes was allocated to allow the children to place their completed forms in the envelopes provided. This process helped to further assure the children that their responses would remain confidential, and that only the researcher and colleagues at Liverpool John Moores University would have access to the data. During each phase of research the children and their families were assured that their responses would be confidential and coded to protect their identity. They understood that there were no right or wrong answers and that they had the opportunity to decline to participate in the study at any point.

### **2.4 Study 1: Data Analysis and Representation**

Statistical analysis was carried out using SPSS for windows Version 7 for Study 1 (Children and Families Self-Report Questionnaires).

Descriptive statistics (cross tabulation with two dimensional tables); frequency distribution and Chi Square were used to assess the children and parents' nominal health related behaviour results. Measures on each variable were obtained for individual children and participating parents. Bivariate and multivariate (Bock, 1975) analyses were conducted using contingency tables, frequency and 2 x 2 table chi-square (Cohen, 1975) to examine the relationships between variables.

Principle component analysis (varimax and oblique rotation) (Cliff, 1987; Stevens, 1992; Tabachnick and Fidell, 1996; Mac Callum et al., 1999) was conducted on Likert scale variables concerning children's self-esteem and anxiety states to detect any possible sub-components within children's anxiety and self-esteem responses. Whilst statistical significance was defined as  $p < 0.05$  several correlations were carried out during the analysis.

## **2.5 Study 1: Results and Discussion**

The following section offers the reader an eclectic view of the children and families; frequency of exercise, happiness, perceived body image, worry states, smoking habits and food choices.

Demographics for the parent sample ( $n=57$ ) were as followed: Eighty percent ( $n=46$ ) of respondents were female of which 43% ( $n=25$ ) were unemployed or housewives in comparison to only 5% ( $n=3$ ) having a professional occupation. Similarly only 7% ( $n=4$ ) of the male sample had a professional occupation, 63% ( $n=23$ ) were in manual trades and a further 22% ( $n=8$ ) were unemployed.

### **2.5.1 Study 1: Children's Habitual Physical Activity Levels**

Table 1.0 illustrates that 47% ( $n=53$ ) of the children exercised every day, with a further 19% ( $n=22$ ) exercising 4-6 times a week. Rather more worryingly, the data indicates a small, yet important sample of children only exercised (after school) either once a week (11.6%;  $n=13$ ), less than once a month (1.8%,  $n=2$ ) or never (1.8%;  $n=2$ ).

Table 1.0

*Profile of How Often Children Exercise After School in their Community*

Frequency of Exercise	Descriptive Characteristics	
	N	Percent
Every Day	53	47.3
4-6 times a week	22	19.6
2-3 times a week	20	17.9
1 x week	13	11.6
Less than a month	2	1.8
Never	2	1.8

Table 1.1 displays the frequency level (in hours) the children exercise after school within their local community. Over a typical week, forty five percent of the children (n=52) engage in one hour or less of exercise, after school, within their home environment.

Table 1.1

*The Amount of Hours (per Week) Children Exercise After School in Their Community.*

Hours	Descriptive Characteristics	
	N	Percent
None	4	3.5
half an hr	20	17.4
1 hr	28	24.3
2-3hrs	16	13.9
4-6hrs	16	13.9
7 hrs	31	27.0
Total	115	100.0

The activities that children were found to engage in after school, the day before the questionnaire was administered, were found to be predominantly sedentary pursuits.

Sixty percent of children (n=68) reported watching television, 53% (n=61) playing computer games and 30% (n=34) and 25% (n=29) respectively listening to music or reading a book / magazine. Although 67% (n=77) of children were found to have played out with friends for a short period of time, only 37% (n=43) were found to attend any form of club (including sports, recreation or music).

### 2.5.2 Parents' Habitual Physical Activity Levels and Intentions to Exercise

Only 30% (n=12) of parents reported that they accumulate 31-60 minutes (per week) of strenuous exercise 1-2 times a week. This figure rose to 43% (n=22) when they stated participating in moderate levels of exercise 7-8 times per week. However, only 25% (n=10) of this sample were found to accumulate 11-30 minutes of activity (per week). Table 1.2 illustrates the mean frequency (in minutes) and intensity level (mild, moderate and strenuous) a parent performs over a typical seven day period.

**Table 1.2**  
*Parental Frequency and Intensity Level of Physical Activity Performed over a Typical Seven Day Period.*

	N	Mean (SD)	Maximum
Strenuous exercise (times per wk)	39	3.85 (5.29)	30.00
Strenuous exercise (mins per wk)	29	130.69(173.16)	840.00
Moderate exercise (times per wk)	50	6.56 (6.88)	50.00
Moderate exercise (mins per wk)	40	170.13(267.82)	1200.00
Mild exercise (times per wk)	45	12.44(29.48)	180.00
Mild exercise (mins per wk)	34	165.32(229.13)	1080.00

*\*\*The mean frequency (in minutes) and intensity level (mild, moderate and strenuous) a parent performs exercise over a typical seven day period. \*\**

Table 1.3 provides the parental responses of *actual* and *intention* to exercise. Twenty six percent (n=15) of respondents identified not being regularly active but may consider starting within the next six months.

Furthermore, although 42% (n=24) of families reported being regularly physically active (and have been for over 6 months) a small percentage (8%; n=5) of parents stated not being regularly active and had no intention to start.

**Table 1.3**  
*Parental Intention and Engagement Level of Physical Activity.*

	<i>Parental Intentions to Exercise</i>				
	<b>**NRA NI</b> N (%)	<b>NRA T6M</b> N (%)	<b>SPA NE</b> N (%)	<b>RPA L6</b> N (%)	<b>RPA O6</b> N (%)
<b>Response</b>					
N	5 (8.8)	15 (26.3)	27 (47.4)	6 (10.5)	24 (42.1)
Total	57 (100)	57 (100)	57 (100)	57 (100)	57 (100)
Missing	2 (3.5)	2 (3.5)	2 (3.5)	2 (3.5)	2 (3.5)

Note. N = Total number of participants

\*\*NRA NI = Not regularly active, no intention to be

NRA T6M = Not regularly active but thinking of starting to be so over the next 6 months

SPA NE = Some Physical Activity but not long enough to work up a sweat

RPA L6 = Regularly Physically Active but only began 6 months ago

RPA O6 = Regularly Physically Active and have been for over 6 months

### 2.5.3 Children and Families Health and Happiness

The majority of children perceive themselves to be very healthy (30%, n=35) or quite healthy (63%, n= 73), and very happy (67%, n=78) with their current life. A cross tabulation and spearman's rho correlation employed to analyse global health, happiness and dietary factors within the family questionnaire also showed a significant relationship between parents overall happiness to their current health and diet status. The data suggests only 17 % (n= 10) of parents are currently very happy with their overall health and only 9 % (n=5) happy with their diet.

Although 94% (n=52) of parents believe that being in good health is very important, only 13% (n=7) felt very satisfied or fairly satisfied (43%; n=23) with their current health status. The spearman's Rho correlation between families overall happiness of their diet and health was significant (0.650 (52); p >0.001). To gain a clearer understanding of these beliefs it is necessary to examine the emotional health and well being factors within the questionnaire that may contribute to these results.

By including these factors it is hoped that a clearer profile of the children and families overall health behaviours and choices may occur.

#### **2.5.4 Children's Worry States**

To further explore and obtain a holistic view of the children's overall emotional health, 'worry' factors were explored. Ten questions (section 21 of the questionnaire, Appendix A) associated with children's worry states were analysed. Table 1.4 indicates the sub scales constructed from the data. The factor loadings are derived from oblique rotation. Items were presented on a five-point scale (0=never, 5=very often) to enable possible patterns among the variations in values to be discovered and for the purpose of factor analysis.

Absolute values less than 0.04 were suppressed from preliminary analysis and a two-tailed significance selected. Eigenvalues values greater than one were retained from the three-factor model. Bartlett's test of Sphericity was highly significant ( $p > 0.0001$ ) and Kaiser-Meyer-Olkin sample measure of adequacy was found to be modest to good (0.8).

The three factors accounted for 53% of the variance of all the items. Table 1.4 indicates the three significant factors that children worry about most often; 1 = *Their appearance*, 2 = *Their family, health and social circumstances* and 3 = *School issues*.

Furthermore, 74% (n=84) of children ( $\chi^2$ , 85.6;  $p < 0.001$ ) worried the most often about their families in contrast to only 25% (n=28) and 21% (n=23) respectively worrying about school. Interestingly, 34% (n=39) of children stated they 'quite often' or 'sometimes' (40%, n=46) worried about their own health even though 93% (n=108) of respondents had earlier stated being 'very or quite' healthy overall.

Table 1.4  
*Scale Constructs and Items Children Worry about in Relation to Their Social Environment.*

Rotated Component Matrix

Factor Analysis	Component		
	Factor 1	Factor 2	Factor 3
How Often I Worry About:			
% Variance explained	15.6%	23.2%	14.2%
Alpha for Sub-Scale	.714	.830	.802
My Height	.763		
My Weight	.708		
The Way I Look	.658		
Growing up	.584		
Falling out with Friends		.775	
My Family		.703	
Moving to Secondary School		.553	
My Health		.485	
School Work			.759
Being Bullied			-.689

Extraction Method: Principal Component Analysis  
 Rotation Method: Varimax with Kaiser Normalization

### 2.5.5 Children’s Perceived Body Image

The objective here was concerned with examining children’s perceived body image and attraction levels. A cross tabulation was employed to examine and analyse the children’s data. The cross tabulation between children’s attractiveness and current body image indicated no significant relationship owing to the low validity count ( $\chi^2$ , (103) =32.3;  $p>0.05$ ). Forty-four percent (n=51) of children in this study reported wanting to change something about their body. In addition, none of the children who reported being ‘not very good looking’ or ‘not at all good looking’ felt they were the correct body shape (8.7%, n= 9).

However, 25% (n=6) of children within the ‘very good looking’ category also perceived themselves as being either too fat or thin (25%, n=6). Although subjects reported a positive association to their general appearance and self-worth, a worrying trend of eight years olds identified and commented upon physical and emotional characteristics they would like to change about themselves:

*“My big belly”, “like to be very, very skinny”, “my ‘mingin’ arms”, “I would like to change myself.”*

**2.5.6 Smoking Habits of Children**

Table 1.5 identifies children’s current smoking habits and their intention to smoke. Sixty nine percent (n=79) of children report they had never tried smoking with a further 20% (n= 23) only trying it once. However, 3.5% (n=4) of respondents aged 8 years stipulated smoking everyday.

Table 1.5  
*Children’s Response to Smoking Behaviours.*

Statement	N
Never Smoked	79
Tried Smoking Once	23
Used to smoke but do not anymore	5
Sometimes smoke but no more than one per week	1
Smoke one cigarette a week but not Every day	1
Smoke every day	4
Total Response	113

Table 1.6 indicates that 1 child at age two, four, five and six years had reportedly tried smoking.

Twenty two percent (n=29) of children were found to have experimented with cigarettes from the age of seven years and above, although 20% (n=23) of this sample clearly stated only smoking once. A small (but percentage of 8-9 year olds: 3.5%; n=4) self reported that they smoked regularly (every day).

Table 1.6  
*The Age a Child First Tried a Cigarette (even one puff).*

Descriptive Statistics	
Age (in years)	N
2	1
4	1
5	1
6	3
7	9
8	5
9	6
10	6
Total Response	82

### 2.5.7 Children's & Families Diet and Food Choices

A cross tabulation was employed to examine the frequency of food types children (regularly) consume. In addition, a summary of the children's breakfast, on the day of completing the questionnaire is also outlined.

Six children (5%) did not drink or eat anything before going to school. Although the most frequently selected food choice was found to be cereal (45%; n=52) and toast (32%; n=37), fifteen percent (n=17) of children had chosen to eat chocolate, crisps (11%; n=13) and a fizzy drink (19%; n=22) for their breakfast.

It emerged that the foods children consumed most often (3 or more times a week) were generally low nutrient-dense sources, such as, chocolate / sweets (51%; n=59), fizzy pop (46%; n= 53), crisps (36%; n=42), cakes and biscuits (35%; n=41), with the exception of milk, of which 68% (n=78) of the sample were found to drink at least

three or more times a week. The data also indicated low consumption rates (hardly ever or never) of foods such as brown bread (52%; n=60), salad (40%; n=46), vegetables (28%; n=32), bran cereals (53%; n= 61), fish (39%; n=45) and cheese (40%; n=47). Figure 2.0 indicates that on average families consume one take away meal per week, and regularly ensure their families obtain fresh fruit and vegetables at least two to three times a week or more. However, these findings conflict with the children’s self-assessment of dietary choices, and the low dietary satisfaction scores stated within the parental returns.

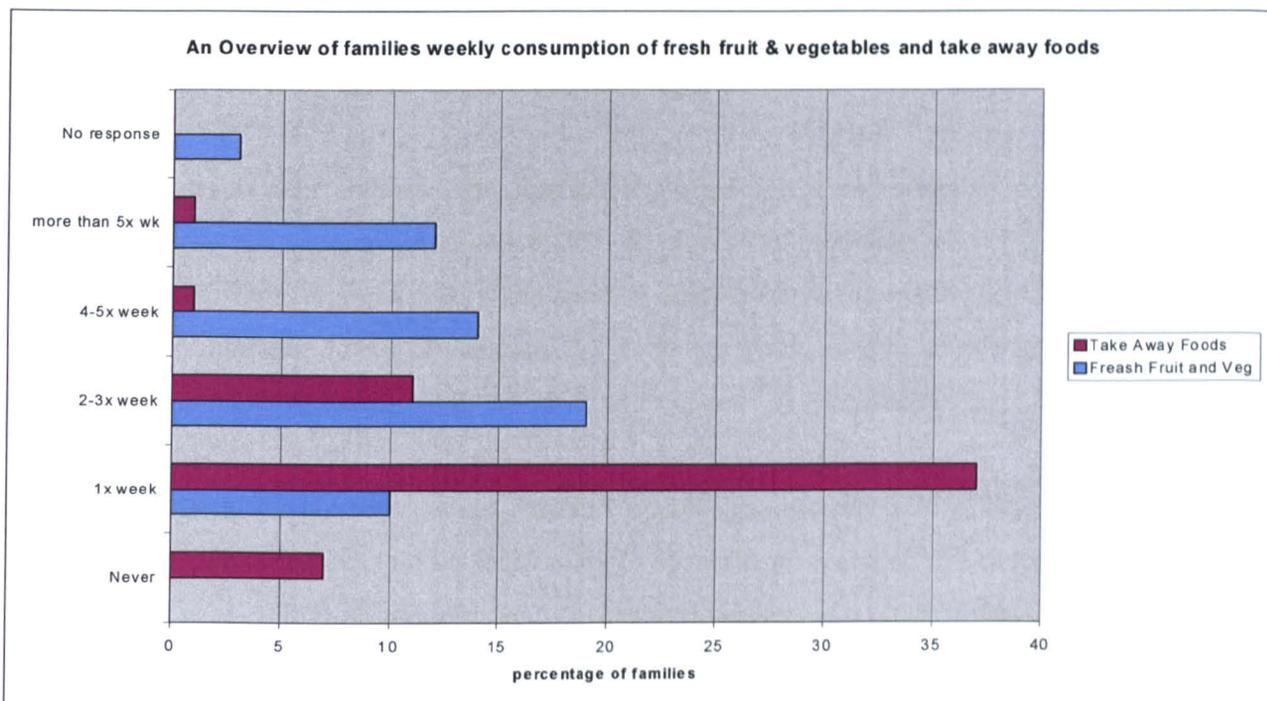


Figure 2.0

## 2.6 Study 1 - General Dimensions of Children and Families Physical Activity and Dietary Behaviours.

A synopsis of the key physical activity and nutritional dimensions of Study 1 (self-report data) are located below and offer the reader an insight into the children and families current physical activity and nutrition patterns. Further details of the psychosocial and health behaviour dimensions can be obtained from the MPhil transfer document.

### ***Low Physical Activity Rates***

The literature suggests young people should be encouraged to engage in an accumulated 60 minutes of moderate – vigorous activity over the course of a day (with at least two sessions a week including weight bearing activities, to improve overall muscle strength, flexibility and bone health) (NICE, 2009) with similar recommendations of a minimum of 30 minutes of moderate – intensity aerobic activity on five days a week (or vigorous – intensity aerobic physical activity for a minimum of 20 minutes on three days each week (Haskell et al., 2007) being made for adults. However, it would appear that (generally) the children and families of Knowsley Borough Council were not meeting the national recommended guidelines for physical activity or diet (DH, 2004).

Study 1 (self report data) indicates that the majority of parents were not found to be regularly meeting the national guidelines of 30 – 60 minutes of moderate activity (per day). Although forty three percent of the parental sample (n=22) reported they did participated in moderate levels of exercise, 7-8 times per week, of this sample 25% (n=10) were found to accumulate only 11-30 minutes of activity (per week).

This trend appears to align with current literature which suggests only 32% of British adults are achieving the threshold level (30 minutes of moderate exercise, five times a week) (Pretty et al., 2003). Similar to the 63% of men and 75% of women in the UK who do not participate in enough physical activity to obtain any health benefits (DH, 1998; DCMS, 2002; Sport England, 2002), eighty two percent of the parents (n=47) also reported either not being regularly active or not participating for long enough to work up a sweat. Based on the low MVPA profiles of the parents this may have future implications for the heightened risk and onset of obesity, disability and chronic diseases (Ainsworth, 2000). The health consequences of this low level of activity have been reported elsewhere and associated with increased risk of a variety of chronic health diseases (obesity, cancer (colon and breast), diabetes mellitus, cardiovascular disease, osteoporosis / osteoarthritis, hypertension and depression) (Lauridsen & Schubell, 1980; Ilmarinen, 1989; Tuomi et al., 1991).

The children's self report physical activity data also suggest that 47% (n=53) of the children exercised every day, with a further 19% (n=22) exercising 4-6 times a week. A small, yet important sample of children reported that they only exercised either once a week (11.6%; n=13), less than once a month (1.8%, n=2) or never (1.8%; n=2). The intensity level of activity was not explored in depth within Study 1 and will be tackled via more objective methods in Study 2 to locate the frequency and intensity variance within the 47% of the cohort which reported they exercised every day.

An additional rationale for the utilisation of objective measures within Study 2 is borne from recent literature (Basterfield et al., 2008) which suggests that there can be a gross overestimation of self report Health Survey data when compared against accelerometer readings. If Health Survey questionnaire data had been taken at face value it would have proposed children on average accumulated 146 minutes of activity a day when in reality the accelerometer data indicated that the children only accumulated 24 minutes (Boys: 26 minutes, girls: 22 minutes) of activity a day (Basterfield et al., 2008).

### ***Dietary Behaviours***

In line with physical activity literature, the review alluded to the notions that the nutritional choices made by young people also direct their current and future health trajectories (WHO, 1998). Research surrounding British children's dietary habits suggested that >92% of them are exceeding the recommended level of <10 per cent of saturated fat (Gregory et al., 2000).

In accordance with this it emerged that the foods children consumed most often (3 or more times a week) in Study 1, were generally low nutrient-dense sources, such as, chocolate / sweets (51%; n=59), fizzy pop (46%; n= 53), crisps (36%; n=42), cakes and biscuits (35%; n=41), with the exception of milk, of which 68% (n=78) of the sample were found to drink at least three or more times a week. The data also indicated low consumption rates (hardly ever or never) of foods such as brown bread (52%; n=60), salad (40%; n=46), vegetables (28%; n=32), bran cereals (53%; n= 61), fish (39%; n=45) and cheese (40%; n=47).

Findings here resonate strongly with the literature which has indicated that diets high in fat (particularly saturated fat) have consistently been found to have a direct relationship to Coronary Heart Disease (WHO, 2003). Children's breakfast patterns were also concerning with six children (5%) not drinking or eating anything prior to school. Although the most frequently selected food choice was found to be cereal (45%; n=52) and toast (32%; n=37), fifteen percent (n=17) of children had chosen to eat chocolate, crisps (11%; n=13) and a fizzy drink (19%; n=22) for their breakfast.

### **2.6.1 Concluding Reflections on Study 1**

This study aimed to (better) understand the habitual physical and nutritional behaviours of children and their families in Knowsley (UK) (i.e., aim A) thus creating a baseline for further investigation. The discrepancies found between parental and children's self-report data began to establish a need for locating alternative methodological dimensions within Study 2. Aim (A) has established a clear baseline which suggests children and families were not meeting the current physical activity and nutritional guidelines.

Yet the significant factors and determinants saturated within Study 1 data sets: (i.e., such as why 9 % of parents reported not being regularly active and had no intention to start), cannot be determined through the quantitative research methods alone (Irwin et al., 2006). Furthermore, much is known about the barriers of physical activity participation and health choices on an individual level (Nelson, 2005) yet more research on the family unit as a whole is needed (Baranowski, Cullen & Baranowski, 1999; Sallis & Owen, 1999; Trost et al., 2002). Through the adoption of a quantitative dominant design strategy (Miller, 2003) (the opening strategy being a self-report, health related behaviour questionnaire) (Balding, 1997), Study 1 offers the reader a foundational understanding of the baseline profile of children and families current physical activity and nutritional patterns in Knowsley (UK). It is envisaged that aim (B) & (C) will provide a more advanced understanding of the inference and determinants which currently direct and drive the children and families baseline data.

### ***Methodological Dilemmas***

Although the children's self-report returns for Study 1 suggest over half of the children do not consume a regular balanced diet of nutrient rich foods, data observed from the parental questionnaire (outlining weekly consumption rates of fresh fruit and vegetables and take away foods) (per week), inferred otherwise and proposed that the children and families were predominantly receiving a healthy balanced diet.

The above observations would again appear to highlight the limitations associated with the sole use of self-report measures within a research design and justifies the relevance of incorporating further qualitative principles within Study 2 (Tesch, 1990; Atkinson & Hammersley, 1994).

# **CHAPTER THREE**

**STUDY 1: RECONNAISSANCE PHASE & CHILDREN AND FAMILY SELF REPORT QUESTIONNAIRES**

*Chapter 2 – Study 1 Aims:*

**(A). To (better) understand the habitual mental, physical and nutritional behaviours of children and their families in Knowsley (UK) thus creating a baseline of data to investigate further.**

5 Primary Schools, Mean age: 8.6 years (N: 115; M: 55, F:60); Parents (N: 57; M: 3, F: 54)



**STUDY 2: ACCELEROMETER & PHOTOGRAPHY (2 randomly selected primary schools from Study 1)**

*Chapter 3 – Study 2 aims to address aim (B) and:*

**(B). To adopt a multi-layered approach to data capture for children within the field of physical activity and nutrition to compliment the subjective methods employed earlier within the study**

40 children; M: 18, F: 22; mean age 8.6 years

**STUDY 3: WRITE & DRAW with all five primary school children**

*Chapter 4 – Study 3 Aims to address Research Aim (D) and also:*

**(C). To explore the everyday experiences of children's after school physical activity opportunities in their local community to better capture the context, culture and environmental constraints they place upon their own current activity choices and future recreational aspirations**

N: 108; M: 50; F: 58 Mean age 8.6 years

**STUDY 4: ETHNOGRAPHIC ENGAGEMENT & CREATIVE NON FICTION**

*Chapter 5 – Study 4 Aims to address research Aim (A),(B), but also :*

**(D). To explore the micro (day to day existence) of a family in Knowsley MBC (UK) and observe their naturally occurring physical activity and nutritional behaviours within the context of their own home.**

1 family (1 female; 43years, 1 female: 12.6 years and 1 Male: 10 years).

### **3.1 Study 2: Aims and Methodology – Accelerometer**

Study 1 captured a baseline of children and families current physical activity and nutritional behaviours in Knowlsey (UK). Study 2 intends to enhance this level of understanding by adopting the following aim;

- (B). To adopt a multi-layered approach to data capture for children within the field of physical activity and nutrition to compliment the subjective methods employed earlier within the study.**

In doing so, it is hoped that Research aim (B) in effect will use more objective methods to locate the children's habitual physical activity levels and eating behaviours as they occur within their home environment.

Biddle and colleagues (2004) advocate that to truly understand the relationship between health and children's physical activity rates more emphasis is needed on the understanding of reliable 'objective' measures of assessments to uncover the 'true' every day patterns of children's activities.

Recent reviews suggest that accelerometry (motion sensors) are a reliable, practical and objective measure of quantifying the amount ('volume') and intensity of habitual physical activity and amount of sedentary behaviour occurring in children and young people (De Vries et al., 2006; Reilly, 2006; Rowlands, 2007; Trost, 2007) especially as children's activity patterns tend to be sporadic in nature (Bailey et al., 1995; Baquet et al., 2007). Accelerometers measure the acceleration on a vertical axis and convert this into activity counts (Trayers et al., 2006). As discussed in the literature, many questionnaire based studies have suggested a decline in children's physical activity rates with children in more socially deprived areas suffering the most (Andersen et al., 1998). Yet the underestimation and subjective nature of self-report surveys makes these findings questionable (Trayers et al., 2006). The use of accelerometers with pre-pubertal children have now become a more acceptable approach to obtain accurate and detailed information on children's activity levels (Trayers et al., 2006; Baquet et al., 2007).

However, as of yet, very few studies (Trayers et al., 2006) have adopted this type of investigation with children from socially deprived backgrounds. Study 2 intends to investigate the physical activity levels of children within an area of high health need, using objective monitoring. The results will serve to extend (and supplement) Study 1.

### **3.2 Sample Selection and Composition - Accelerometer**

Having distributed self-report questionnaires to 5 different primary schools and their families' in Study 1 the researcher and supervisory team at Liverpool John Moores University made the decision to randomly select 2 of the 5 primary schools for the accelerometer and photography phase. Study 2 was designed to clarify and obtain the most accurate description of the children's physical activity patterns throughout the day, specifically gaining a measurement of the intensity level. Whilst Study 1 did provide a self-report profile of the children's daily physical activity frequency levels there was no data to indicate what intensity level the children were adhering to (this construct was not explored in depth within Study 1 and needed further clarity within Study 2). The sampling frame chosen for Study 2 was also directed by time and financial constraints.

### **3.3 Participants: Accelerometer Study**

Children aged 8–9 years (mean age: 8.6 years), from year group 4, were recruited from 2 of the original primary schools participating in Study 1 (n= 40; M: 18 F: 22). Both schools were situated in one of the most deprived wards within Knowsley; ranked 8<sup>th</sup> within the most deprived wards in the UK (Knowsley Public Health Report, 2002). Both School 1 and 2 were larger than average primary schools, located in areas of low socio-economic status where deprivation levels were three times higher than the national average (Ofsted, 2007). The number of children eligible for free school meals at both school 1 & 2 were significantly higher than that of the national average (i.e., 66.9% compared to the national average of 8.6%) (Ofsted, 2007). Low literacy skills among children living in Knowsley were also observed with children achieving a national average level grade 4 in English and Maths, which is below the national average (Appendix B).

### **3.4 Physical Activity Instrument & Design**

Physical activity was measured using an accelerometer (actigraph AM - 7164; Manufacturing Technologies Inc., FL, USA) programmed to record movement data each minute. All children and families were issued with a protocol information sheet (Appendix B) and signed a written consent form. All procedures adopted for Study 2 received ethical approval from Liverpool John Moores University (UK). Similar to previous studies (Trost et al., 2002; Riddoch et al., 2004) the study measured physical activity using 60-s epoch (i.e., an epoch being a selected sum of accelerations over a selected time period, Baquet et al., 2007). Similarly, a minimum of four days monitoring (Janz et al., 1995; Trost et al., 2000) was utilised to reliably assess children's physical activity patterns.

### **3.5 Procedure for Study 2 (Accelerometer Study)**

The children were familiarised with the accelerometer and physical activity log (Appendix B) and instructed to clip the accelerometers around the right hand side of their waist during waking hours for four consecutive days. Ten hours of measurement were required from the participant (each day) with two of the four being weekend days to enable any comparisons between weekday and weekend day activity rates in their home environment to be made. Children were informed to remove the monitor for water-based activities and whilst sleeping. Children were asked to log each time the monitor was attached and removed (for water-based activities and sleeping) in their physical activity diary (Appendix B). Whilst the accelerometer was being worn the children were also directed to shade in (in half hour time increments) the intensity levels of the activity they were performing using a light, moderate or vigorous scale in their physical activity log (Appendix B).

The study adopted an 'opt- out' consent approach (Krott & Beck, 2006) whereby those who did not wish to participate returned the consent form. In order to ensure all families received the information and to remind those who may have mislaid or forgotten to return the form, additional information and consent forms were sent out to the family homes, two weeks post initial contact. Prepaid envelopes were enclosed with all letters to increase return compliance.

Each parent and child were distributed with protocol guidance (Appendix B) and the contact details of the main researcher should they require assistance during the process. A telephone call was made to all the families on the day before the study was completed to remind the child to bring the accelerometer back to class the following day for collection. Following the completion of the monitoring period a fifteen minute de-brief was given to the children by the researcher with verbal questions and answers on the process and study.

### **3.6 Inclusion Criteria for the Analysis of the Accelerometer Study**

Only children that had at least 10 hours of measurement each day, over a period of four days were included in the analysis of activity counts (Troost et al., 2000; Trayers et al., 2006). The study was guided by estimation levels of children's habitual accelerometer physical activity developed from previous studies (Janz et al., 1995; Pearson et al., 2009) utilising previous markers of daily accelerometer counts between 10,000 – 20 million (Telford et al., 2004; Pearson et al., 2009). In parallel with this the physical activity logs were used to identify any significant non-wear time periods (i.e., missing counts of  $\geq 1$  hr in duration). Any missing counts of  $\geq 1$  hr a day were removed from the analyses. Transformation of the accelerometer data into metabolic equivalent time (MET) were performed by a multiplication of the minutes spent on each activity level (light, moderate or vigorous) and averaging these values across valid days (Brender et al., 2005). The incidental physical activities (such as cycling and swimming) which could not be accurately captured through the accelerometer method were recorded by the children in their physical activity diaries and cross references against their profiles. To determine and obtain what percentage of the cohort were meeting current physical activity recommendations of 60 minutes of MVPA on at least 5 days per week (Pate et al., 2002) age specific cut points (Cooper et al., 2003) were used to calculate daily moderate-to-vigorous physical activity ( $>3$  METS; (MVPA). Acceptable limits (CV=3%) of calibration for all ActiGraphs (n = 40) were observed (Chen and Bassett, 2005; Welk, 2005).

### **3.7 Statistical Analysis: Accelerometer Study**

Descriptive statistics were calculated (mean, standard deviation (SD), range) (n = 43; M: 21, F: 22). Three children's data were incomplete and were eliminated from analyses. Median and inter-quartile range (IRQ) values were displayed for variables that were not normally distributed. All analyses were performed using SPSS version 11.

### **3.8 Participants: Study 2 (Dietary Photography)**

In parallel with the accelerometer data, Study 2 proposed to clarify and obtain an overview of the children's dietary patterns throughout the day, specifically reviewing what types of food they consumed within their home environment to extend (and supplement the self-report dietary classifications obtained through Study 1). The photography study was incorporated into the accelerometer phase enabling the same children and schools to participate in the process (n= 40; M: 18 F: 22).

### **3.9 Rationale for the Use of Photography in Study 2**

The use of photography in children's health research has been limited. Nevertheless, Darbyshire et al. (2005) and Punch (2002) have both confirmed the method to be advantageous. Researchers in health and nutrition have adopted photographs to help estimate, measure and quantify portion size (Nelson et al., 1994; Robinson et al., 1997; Frobisher & Maxwell, 2003; Beasley et al 2004; Lillegaard et al., 2005). Such photographic data is typically used in conjunction with other dietary assessment methods such as dietary surveys and weighed food inventories (Frobisher & Maxwell, 2003). The adoption of photographic data in Study 2 was not intended to measure actual dietary intake (i.e., macro, micro nutrients). Rather, the collation of photographic images was an attempt to explore what 'type' (i.e. fresh, fruit and vegetables) of foods the children and families of Knowsley were choosing to prepare and consume within their home environment.

Furthermore, the photographic element was also intended to allow the children to express themselves through another medium, perhaps in a more creative manner through more intriguing and potentially artistic methods (i.e., photography rather than through vocal methods such as interviews). Banister & Booth (2005) also recount that photography can be an insightful data capture method without being intrusive. Similarly, Punch (2002) identified that the visual approach also allows the children in the study to become active participants in the research process. Such active participation, inclusion and engagement assist's in re-negotiating the power relations between the main researcher and child (Davis, 1998). Utilising such a method also provides the children with a sense of control over the research process (Darbyshire et al., 2005) and enables them to feel involved and empowered (Davis, 1998). The choice of photographic/visual evidence was also selected for the Study 2 to provide different solutions to apparent difficulties in recall, which had been previously reported within the self-report questionnaire of Study 1. Furthermore, it was hoped to encourage the children who may have been less reluctant to contribute to discussion in the class setting to become more actively involved (Darbyshire et al., 2005). The photographic data collection method also captures the reality of the portion size and the predominant food types the children chose to consume within their home environment. Such information may be reviewed against the self-report findings located in Study 1.

### **3.9.1 Study 2: Photography Procedure**

Daily habitual dietary patterns were measured using a 25 exposure disposable camera and diet diary (Appendix B). Only photographs of every main meal the children consumed within their home environment, over a 4-day cycle (Monday – Friday: Breakfast and Evening Meal, Weekends: Breakfast, Lunch and Dinner) were included in the analysis. Any incomplete diet diaries and photographs were removed from the analysis. All children and families were issued with a protocol information sheet (Appendix B) and signed a written consent form.

The children were also provided with a weekly diet diary (Appendix B) to document any additional snacks they had consumed within the home. The primary researcher discussed the process in detail with the children and answered any questions the children had. Furthermore, the researcher explained that any remaining exposures could be used by the children to take photographs of their community, family or anything that they felt represented being healthy. Interestingly, all disposable cameras were returned to the researcher the following week and no child had taken any additional photographs with the remaining exposures.

The children were informed that none of their teachers would view their work and that their responses would remain anonymous with the research team at Liverpool John Moores University coding their names to protect their identity. The children also understood that it was not a test and that there were no right or wrong answers and that they had the opportunity to decline to participate at any point in the study.

### **3.9.2 Data Analysis and Representation - Photography**

The photographic data was analysed using a directed form of content analysis, which since 1991 has been increasingly used in health studies (Fang-Hsieh & Shannon, 2005). Researchers such as Cavanagh (1997) regard content analysis as a flexible method for analyzing data (Fang-Hsieh & Shannon, 2005). Other forms of data analysis have been used when using photographic data such as computer programmes (Nelson et al, 1994; Beasley et al., 2004).

The photographic data was predominantly inductively analysed (Whitehead & Biddle, 2008). In order to help evolve, challenge and/or confirm the initial themes derived by the author, a further process of peer triangulation was also undertaken (Denzin & Lincoln, 2005). Furthermore, all of the photographs were then cross referenced to each child's diet diary to clarify any abnormalities that may have existed in the data capture process and to ensure that any snacking behaviours (i.e., those snacking behaviours that had not been captured by the camera) were identified. Similarly, reports in the log were also used to identify any documented 'non-meal' times against forgotten photographic exposures (i.e., when the child forgot to take the picture).

All photographs were then scrutinised by individual members of the research and supervisory team, predominant key order themes were then agreed, crossed checked, and triangulated with members of the team prior to the formulation of the final key order themes. The thematic analysis approach (Joffe & Yardley, 2004) resulted in the following key order themes that are presented within the results section of this chapter. Individual case studies (2 male, 2 female) are also offered to illustrate and illuminate the typical foods types consumed by children in their home environment.

### 3.9.3 Results – Accelerometer Study

Table 3.0 presents the descriptive statistics for participants with valid habitual physical activity data (n = 40; M: 18, F: 22). Table 3.0, Figure 3.0 and 3.1 clearly identifies that whilst both male and females accumulate a reasonable daily average of activity counts (weekday: 150 minutes – 400 minutes, of low - moderate physical activity) both weekday and weekend averages for the majority of male and female participants were well below the recommended 60 minutes of moderate to vigorous physical activity (MVPA) levels (DH, 2004) (M: 39,  $\pm$ 29 MVPA, F: 36,  $\pm$ 19 minutes of MVPA during the weekend).

Table 2.0  
*The Mean Daily Physical Activity Levels of Primary School Children in Knowsley (UK).*

<b>Weekday</b> ( <i>Wednesday - Friday</i> )	<u>Mean (SD)</u>		<i>p-value</i>
	Males	Females	
Accelerometer counts per minute	746 ( $\pm$ 191)	664 ( $\pm$ 112)	.101
Total daily MVPA (min)	78 ( $\pm$ 44)	46 ( $\pm$ 21.7)	.006
<b>Weekend</b> ( <i>Saturday - Sunday</i> )			
Accelerometer counts per minute	432 ( $\pm$ 117)	438 ( $\pm$ 75)	.828
Total daily MVPA (min)	39 ( $\pm$ 29)	36 ( $\pm$ 19)	.679

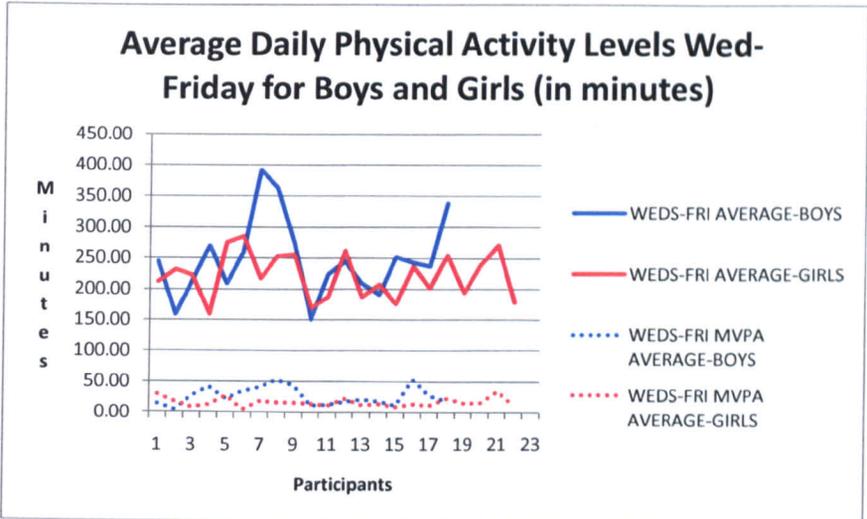


Figure 3.0

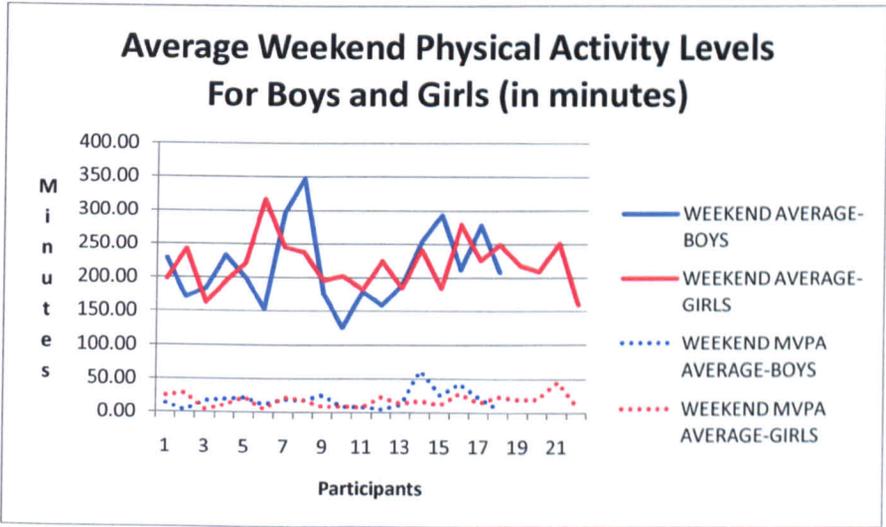


Figure 3.1

### **3.9.4 Summary of Physical Activity Data.**

Overall boys were more active than girls during Wednesday – Friday (mean difference 82 accelerometer counts per minute (95% CI 17 to 179,  $p < 0.101$ ) with 32 minutes more MVPA (95% CI 9.2 to 53,  $p < 0.006$  factor). No difference of MVPA levels were found between the genders at the weekend. Differences were noted between the mean MVPA activity counts during the weekday and weekend (95% CI 16 to 24,  $p < 0.000$ ). The difference between total daily activity counts on a weekday and weekend was 215 accelerometer counts per minute (95% CI 200 – 248,  $p < 0.000$ ). Only the boys mean accelerometer scores for weekday MVPA (78 minutes) achieved recommended physical activity guidelines (DH, 2004). Neither the boys nor the girls complied with physical activity guidelines during the weekend with boys achieving a mean daily score of 39 minutes of MVPA (21 minutes below than the requirement) and girls achieving only 36 minutes (24 minutes under the daily physical activity guidance). At this juncture, it is worth noting that the results of Study 2 are compared to age specific MVPA thresholds that have been utilised by previous studies (Cooper et al., 2003).

Although similar studies have adopted the same approach to Study 2 (Pate et al., 2002; Cooper et al, 2003; Riddoch et al., 2004) it must be noted that, at the time of completion of Study 2 Puyau et al. (2002) introduced alternative cut points. Trayers et al. (2006) initially followed the same MVPA thresholds as Study 2 but then re-analysed their data sets using the new thresholds present by Puyau et al. (2002). In this instance, they reported that the children who had previously been reported as active at the recommended level in their study fell significantly to only 7.2%. Study 2 did not repeat the analysis using the new cut point proposed by Puyau et al., (2002) as it was felt (during the time of analysis) that the threshold analysis should remain aligned to the most commonly used age specific thresholds utilised by predominant studies within the field of children's physical activity (Pate et al., 2002; Cooper et al, 2003; Riddoch et al., 2004).

The results of Study 2 suggest that there is a decline in children's physical activity rates (during the weekend) for children from more socially deprived areas (such as Knowsley).

However, the level of physical activity noted in study 2 are not comparable to previous studies that have adopted the same measurement and population sample (Trayers et al., 2006) as Study 2 findings reported much lower MVPA activity counts for both week and weekend activities. Similarly, studies that focussed upon UK primary school children from more affluent (i.e. high SES) areas also found that on the whole 98% of boys and 83% of girls were achieving daily physical activity recommendations (Cooper et al., 2003). In contrast to Study 2 data Higher MVPA trends have also been noted in American (Pate et al., 2002) and European studies (Riddoch et al., 2004). The finding of Study 2 compare more favourably with the Avon Longitudinal Study of Parents and Children (ALSPAC) which found that both sexes spent the majority of their day in *light* intensity activities.

Study 2 revealed MVPA levels were considerably higher for girls than previous studies (Science daily, 2007) with them averaging 46 minutes and 36 minutes of MVPA during weekdays and weekends but still well below the recommended guidelines. None of the girls in Study 2 adhered to the recommended guidelines at the weekend with a further 90% of the female sample undertaking less than 30 minutes of moderate activity a day during the week. This pattern of activity mirrors previous literature which reports that over one third of children in England are now increasingly inactive with only 1 in 4 (five to sixteen year olds) participating in sport on a regular basis (DH, 2005).

Similar to Pate et al. (2002) and Cooper et al. (2003), the boys did appear to be more active during the week than the girls (total daily mean minutes of MVPA 78). However, there was no significant difference between genders at the weekend with boys and girls only achieving a mean daily MVPA score of 39 minutes and 36 minutes respectively. The significant decrease in MVPA levels for both boys and girls at the weekends does suggest that the neighbourhood in which they reside, family members and their social environment may not provide adequate enough opportunities for the children to be active after school in contrast to the school day and week day after school services. However, the results were obtained during the spring term and therefore may not be a true representation of the children's activity levels across the year (Tucker & Gilliland, 2007).

Similarly, data capture was also concentrated on one particular geographical ward boundary and consequently should not be generalised to other groups of children (Trayers et al., 2006).

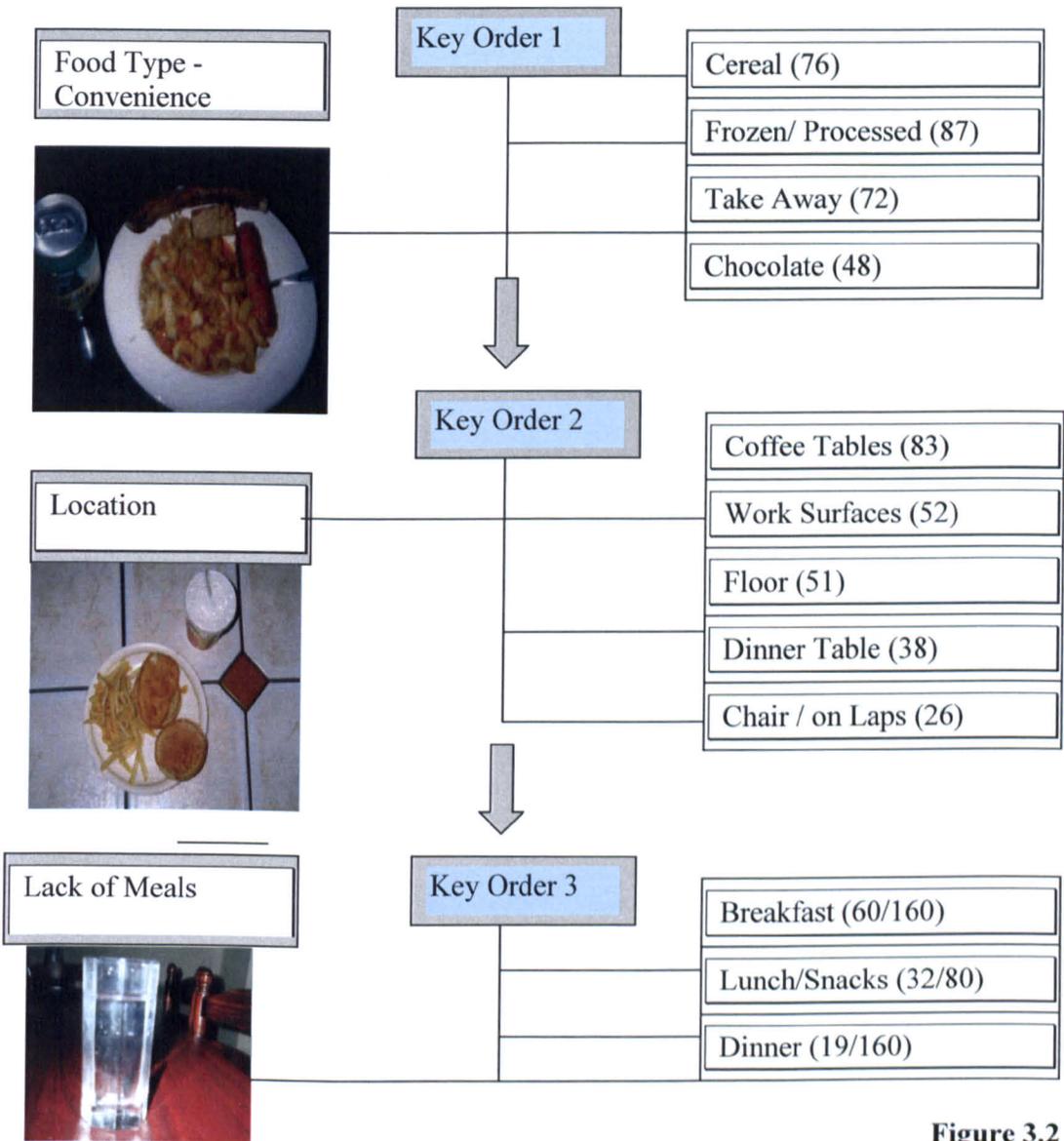
Previous studies have reported similar trends of physical activity engagement in children from deprived, ethnically diverse communities and children from more affluent neighbourhoods (Trayers et al., 2006) suggesting that low socio-economic status does not lower levels of MVPA in children. However, Study 2 indicates that the environment and or community / family membership at the weekend may inhibit MVPA engagement for this sample of children. However, 'deprivation' can only be attributed as one possible association for the insufficient levels of MVPA noted in Study 2's children during the weekend as the study did not make a direct comparison between affluent (i.e. high SES children) and the socioeconomic deprived ones of the Study.

Study 2 identified that the proportion of children were not meeting the recommended levels of moderate to vigorous physical activity using the threshold values for activity for accelerometer data. Consequently, if the study had adopted the more recently defined threshold values proposed by Puyau et al. (2002) the number of children defined as meeting the recommendations for activity would have been considerably lower (as alluded to earlier).

### **3.9.5 Results – Photographic Study.**

The following section provides examples of the key order themes of the photography study. An illustrative profile of what a 'typical' child eats during the week at home is also offered through four case studies (2 Male, 2 Female; Figure 3.2, 3.3, 3.4 & 3.5). The dominant key order themes extracted from all the photographs are displayed in Figure 3.2 below.

### Overview of the Children’s Dietary Photographs: Key Order Themes



**Figure 3.2**

**A Typical Weekend and Evening Meal Profile (Boy 1)**



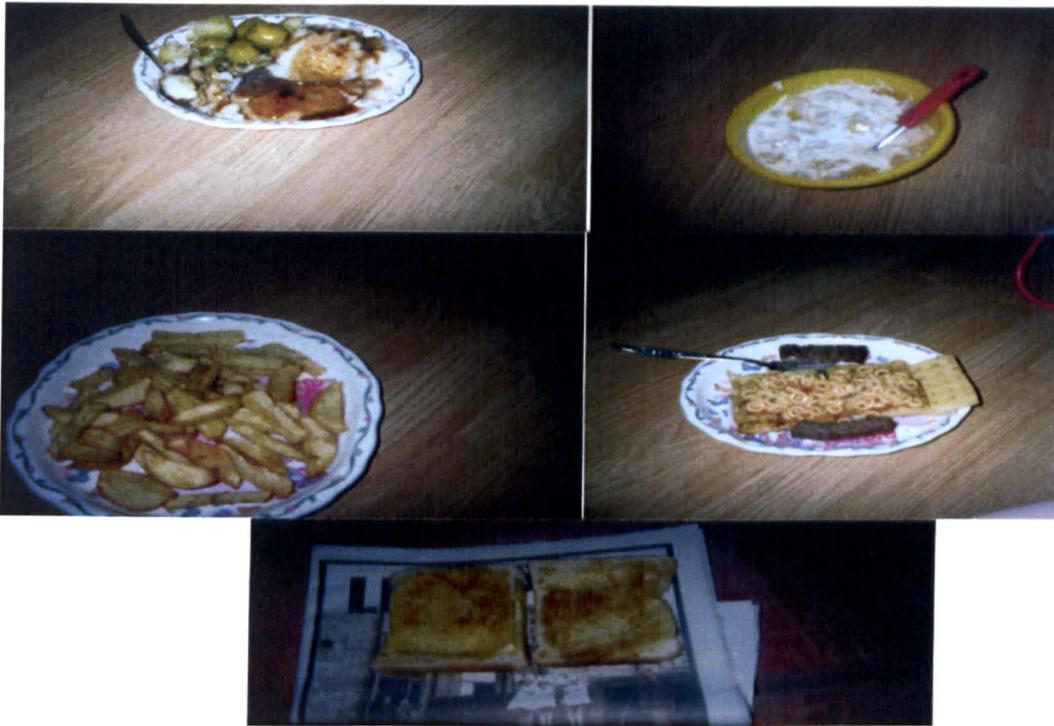
**Figure 3.3**

**A Typical Weekend and Evening Meal Profile (Boy 2)**



**Figure 3.4**

**A Typical Weekend and Evening Meal Profile (Girl 1)**



**Figure 3.5**

**A Typical Weekend and Evening Meal Profile (Girl 2)**



**Figure 3.6**

Table 3.1 indicated the main food source the children consumed during the data capture period was processed/convenience foods (i.e., ready and/or or takeaway meals) (87 photographs). Although breakfast was the main meal the children appeared to miss (60 from 160 photographs), 76 of the breakfast photographs taken were cereal based. The four predominant food types the children reported (i.e., over the four day period), were packaged (i.e., frozen, ready meals, cereal, take-away and chocolate). Only 36 out of 240 photographs (15%) appeared to show fresh or home-cooked meals.

**Table 3.1**  
*Frequency of Food Types Consumed Over the Collection Period*

Food Type	Frequency of Photographs	
	Photographs/ Diary Extracts	N
Frozen / Processed		87
Cereal		76
Take Away		72
Chocolate		48
Freshly Made		36
Toast		36
Sandwiches		31
Fruit		30
Crisps		25

Table 3.2 illustrates that tea and water were the most popular beverages consumed by the children during the data capture period with carbonated sugar drinks such as coca cola (17.5%) being the second most predominant choice. Eleven photographs from the sample only capture a beverage as their main meal, suggesting they missed or were not provided with a lunch or evening meal within their home environment.

**Table 3.2***The Percentage of Beverages Consumed by the Children over a Four Day Period.*

Type of Beverage	Percentage Consumed
	Photographs / Diary Extracts (%)
Tea	25
Water	25
Carbonated Sugar drinks	17.5
Fruit Juice	15
Hot Chocolate	12.5
Milk	5

### 3.9.6 Discussion

This section provides the reader with a general understanding gained from the photographic study. Initial reflections and findings relate specifically to research aims (A) and (B) but also provide further theoretical messages that reside with the data. Relevant literature is also utilised alongside the general findings of the photography study to guide and illustrate the complexities of capturing children's habitual dietary patterns as they occur within the home environment.

### 3.9.7 Contextual Reflection on the Photography Study

Although the study suggests that the children are not over eating within the home environment (Figure 3.2) it does appear to indicate that the typical meals they are consuming are of a poor quality (Figure 3.3 – 3.6). Similarly, Lewis et al. (2000) and the findings of the Food Standard Agency reported that UK children were consuming too much saturated fat, sugar and salt in their diet thus contributing to the childhood obesity epidemic (DH, 2004).

Figure 3.2 and Table 3.2 suggest frozen and packaged convenience foods are the main foodstuff being consumed. There also appeared to be a lack of meals with only 289 photographs being developed from an expected 400 (breakfast, lunch during the weekend and evening meals), resulting in a loss of 111 meals (Male: 68, Female: 43). Although the missing data could be attributed to some children neglecting to capture the image prior to their meal, a large percentage of the children who completed the diet diaries noted '*nothing*' against a meal time description category thus reinforcing the notion that some did not have a main meal in the home or were only provided with a beverage (11 photographs). Although the study can only postulate the reasons why this occurred (i.e. lack of routine, structure, chaotic environments) Baranowski et al. (1993) does attribute limited access to food within the home environment with an association to low socio-economic status (Knowsley is ranked the 5<sup>th</sup> most deprived area in England) (Knowsley Council, 2005). Similarly, 63.47% of household in Knowsley have no car and therefore will be reliant on the use of public transport, restricting the access to some large supermarket outlets which may offer healthier options thus being reliant upon local convenience. This may also be an attributory factor for why some of the children did not consume 3 main meals per day during the weekend (and particularly during breakfast periods).

There also seemed to be similarities to Brown & Ogden (2004) study illustrating the typical snacks the children consumed were unhealthy (illustrated in Figure 3.2, 3.3 & 3.4) with chocolate (48), crisps (25) and biscuits (11) overriding the overall intake of fruit (30) during the data capture period. Cereal was the main packaged food the children selected to eat for breakfast (with a high percent being of the sugar coated variety) (76 photographs). These types of food have been found to have a detrimental effect upon insulin dynamics and body composition in children (Pereira et al., 2002; Davis et al., 2006). Furthermore, the high consumption rates noted above of sweet, sugary beverages of the children have also been associated to weight gain in children (Malik et al., 2006).

Toast was also consumed (36 photographs) 34 of which were made from white bread (which constitute to the enriched grains groups of the food pyramid guide for children) (Shaw et al., 1992) and in conjunction with rice, cereal and pasta should be the main staple of a child's diet. However, only four photographs from all toast and sandwich images pictured wholemeal bread (wholegrain foods). The over consumption of simple (sugars) carbohydrates (i.e. pasta, white bread etc.) has been associated with chronic diseases (Hicks, 2005) including obesity (Harvard Medical School, 2004).

Gillman et al. (2000) reported that children who regularly eat as a family consumed more fruit and vegetables and less high energy dense food suggesting that the family plays a significant role in shaping children's patterns of behaviours. The second key order theme (Figure 3.1) of Study 2 was *location* (i.e., meal-time location) with only 38 out of 212 (18%) photographs captured on a dining room (or kitchen) table. The majority of photographs were situated in sitting rooms, on the edge of small coffee tables (83 photographs), on the floor (51 photographs) or on a child's knee (26 photographs) whilst sitting on a sofa. Although it cannot be assumed that the location of the photographed meal was the actual place where the meal was consumed, and a recognised limitation of the process, it is likely, that for a variety of meals that appeared to be positioned (and possibly consumed) on the end of a sofa, coffee table or were half eaten on a child's knee, that those children were not (normally) experiencing a regular structured family meal together (i.e., seated at a dining room or kitchen table).

Similarly, although the macro and micro nutritional content of the children's meals were not analysed for this study what can be confirmed through the photographs is the limited presence of vegetables and fruit consumed per meal period (Figure 3.3-3.6). On the whole the children's diets did not appear to conform to the Food Standards Agency (2005) recommendations of five portions of fruit and vegetables a day. Only 30 photographs from a possible 289 illustrated a portion of fruit (e.g., a banana, an apple or Satsuma) with only 36 photographs consisting of some fresh vegetables and meat / fish.

This trend is concurrent with data from the Health Behaviour in School aged Children Study (2007) suggesting only one third of children eat vegetables each day and approximately two-fifths of young people consume fruit on a daily basis (Pearson et al., 2008). It also began to expose the potential socio-cultural aspects of the 'type' of food sources predominantly being used by the parents (i.e., convenience foods) and the lack of meals some children noted in their diet diaries (with some homes only providing a beverage (11 photographs) as their main meal).

The extensive consumption of packaged and ready to-eat foods located in Study 2 (Figure 3.3 – 3.6) could suggest that the children and families patterns of eating behaviours were influenced (in some way) by *convenience*. Southerton (2007) believes that parents are investing less time on meal preparation and cooking due to work and lifestyle commitments in contemporary society. Vernon (2004) also found a 20% reduction in food preparation time over the years. The position of *convenience* purported by Southerton (2007) favours the preparation of more ready-to-eat accessible food sources which appear to dominant the food predominantly recorded by the children. With the price of food preparation time falling and ingredients becoming more expensive to purchase (Vernon, 2004) the ease of access to a variety of retail and fast food outlets for the parents of this Study may have encouraged them to opt for a less labour intensive method of food preparation and as such contributed to the high rate of unhealthy, convenience and fast-food sources located in this Study.

Whilst it has been observed earlier that parental control decreases as children develop (Gosling, Stanistreet & Swami, 2008) children still rely (more so in relation to their diet than activity participation) on their mothers in curbing their unhealthy food choice behaviours (Tilston et al., 1991). Wind et al. (2005) and Sanvik et al. (2005) believe that a child's daily intake (i.e. of fruit & vegetables) is associated with parental modelling, high self-efficacy, positive preference and knowledge of the national recommendation guidelines (Bourdeaudhuij et al., 2006). However, as of yet, the study has been unable to uncovered the parents capacity (and particularly in mothers of this sample) regarding instigating, willingness and/or ability to impart sufficient levels of parental control to curb the amount of unhealthy snacks and volume of energy dense foods their children were consuming in their home.

Whilst the employment of photography has been described above as a strength, such data collection methods (which are undertaken by children) are not without limitations (Morrow, 2001; Dodman, 2003). As Figure 3.2 illustrates, 289 photographs were developed from an expected 400 exposures (breakfast, lunch during the weekend and evening meals), resulting in a loss of 111 meals (Male: 68, Female: 43). Whilst some of the children did report eating 'nothing' at particular time points within the diet diary, it is also not within reasons to assume that some of the children forgot to capture and report their main meal thus over inflating the overall dietary trends of the cohort.

Equally, only estimates could be made from the images via content analysis (Glaser & Strauss, 1967) from observations made by the researcher to the types of packaged foods, fruit and vegetables illustrated within each image and recorded in the diet diary. Although this method illuminated the type, frequency and location of eating patterns parents provided for their children, the method could not document the exact portion size and cooking method utilised. Similar studies (Peter et al., 2001) have over come this dilemma through the introduction of measurement tools, marking and illustrating the size of a plate / bowl etc prior to photographic data capture but as previously discussed, Study 2 did not intend to analyse the macro and micro nutrients of each meal or analyse and extract the weight and measurement values of each meal for energy expenditure purposes.

While employing this method limited discussions have also been directed at the ethical dimensions of addressing children as social actors within the research process (Alderson, 1995). Numerous researchers (Morrow & Richards, 1996) have explored the issue of consent and access and proposed valuable guidelines (National Children's Bureau 2001) for researchers to observe whilst conducting studies with children. However, only a scarce few (Alderson, 1995) have acknowledge the importance and challenges of adopting participatory techniques to successfully respond to the ethical complexities associated with conducting research with children (Christensen & James, 2000). The adoption of photography within the context of a child's own home propelled additional challenges and responsibilities on the main researcher to ensure the children did not take any unsolicited images.

Child and parental guidance (Appendix B) was developed to decrease any potential risks and to ensure participants were made fully aware of the studies protocols.

Due to the familiarity of the surroundings in which the pictures had been captured there was also a heightened chance that a child's identity could be exposed (post coding). However, Study 2 aligned with Yates (1997; p494) belief that ethically sound research should be couched within the most appropriate medium to allow the participants to fully express their own voices and opinions. The self-report data of Study 1 inhibited some children from being able to fully recall their dietary behaviours and so it was felt that photography was the most appropriate vehicle to ensure all children's were actively engaged in the process

### **3.9.8 A Brief Reflection of the Research So Far**

Study 1 provided the reader with a foundational understanding of the baseline profile of children and families' current physical activity and nutritional patterns in Knowsley (UK). Only half of the children reported consuming a regular balanced diet, yet data observed from the parental questionnaire (i.e., Study 1) (outlining weekly consumption rates of fresh fruit and vegetables and take away foods) (per week), inferred otherwise and proposed that the children were eating a nutritionally balanced diet. Similarly, the physical activity data from the children suggested that nearly half of the sample exercised every day, with a further 19% (n=22) exercising 4-6 times a week. However, Study 1 was unable to follow up the intensity level of these activities and the relevance of whether the children's activity and dietary data was indeed adhering to current physical activity and nutritional guidelines (DH, 2004).

Whilst Study 2 only engaged a random sample of the children, the accelerometer data did assist in confirming the frequency and duration of MVPA during the week and weekend and, somewhat contrary to Study 1, highlighted the notion that the children engaged in insufficient levels of MVPA (and general physical activity) particularly during the weekend. However, Study 2 does not enable any assumptions as to which mediating variables and situational factors are responsible for insufficient activity patterns (for both sexes) during the weekend.

The photography study also extended the children's original self-report data and appears to confirm that the children mainly consumed energy dense foods. In this regard, such information appears to override the previous parental self-report data that suggested otherwise. The photographic evidence also highlighted the overwhelming consumption of packaged and ready-to-eat foods. The possible intricacies of why children consumed the diets they did and a discussion on the type of *environment* and *location* where the children consumed their main meals could only be discussed in a hypothetical sense against Study 2 data.

To conclude, Study 2 accelerometer study has strengthened the frequency and intensity level children currently engage in whilst the visual illustrations of the photographs exposed the type and frequency of food types cooked and consumed within the home environment. Both studies to date have provided a foundational platform to take further to assist in understanding how the children and families interact with their local environments with regards to these actual physical activity and food intake levels. The data will now be used to assist Study 3 & 4 in exploring *how* the environment interacts and may be a casual factor for the inactivity and poor dietary levels of the participants found within Study 1 & 2. Equally the data will be used to explore how the lived experience of the children and families, within the context of their home environments, affects, hinders or drives participation rates of physical activity and healthy eating. In essence, this will be a priority for Study 3 & 4 and will be explored further.

# CHAPTER FOUR

**STUDY 1: RECONNAISSANCE PHASE & CHILDREN AND FAMILY SELF REPORT QUESTIONNAIRES**

*Chapter 2 – Study 1 Aims:*

**(A). To (better) understand the habitual mental, physical and nutritional behaviours of children and their families in Knowsley (UK) thus creating a baseline of data to investigate further.**

5 Primary Schools, Mean age: 8.6 years (N: 115; M: 55, F:60) Parents (N: 57; M: 3, F: 54)

**STUDY 2: ACCELEROMETER & PHOTOGRAPHY (2 randomly selected primary schools from Study 1)**

*Chapter 3 – Study 2 aims to address aim (B) and:*

**(B). To adopt a multi-layered approach to data capture for children within the field of physical activity and nutrition to compliment the subjective methods employed earlier within the study.**

40 children; M: 18, F: 22; mean age 8.6 years



**STUDY 3: WRITE & DRAW with all five primary school children**

*Chapter 4 – Study 3 Aims to address Research Aim (D) and also:*

**(C). To explore the everyday experiences of children's after school physical activity opportunities in their local community to better capture the context, culture and environmental constraints placed upon their own current activity choices and future recreational aspirations**

N: 108; M: 50; F: 58 Mean age 8.6 years

**STUDY 4: ETHNOGRAPHIC ENGAGEMENT & CREATIVE NON FICTION**

*Chapter 5 – Study 4 Aims to address research Aim (A),(B), but also :*

**(D). To explore the micro (day to day existence) of a family in Knowsley MBC (UK) and observe their naturally occurring physical activity and nutritional behaviours within the context of their own home.**

1 family (1 female; 43years, 1 female: 12.6 years and 1 Male: 10 years).

#### **4.1 Study 3: Aims and Methodology – Write & Draw**

The opening strategy of accelerometers were utilised for Study 2 and a strong inference of low MVPA physical activity emerged to inform the original research question. However, the objective method of Study 2 (accelerometer data) provided no inference as to *why* the children's weekly habitual activity levels were so low nor could any contributory factors be aligned to this association. Following a similar position to Miller & Fredericks (2006) a combined inference to the research question was adopted for Study 3 utilising a qualitative component (Patton, 1990) (similar to the photography study adopted for diets) to offer a more extensive explanation of the phenomenon, within which quantitative measures could not achieve alone. Study 3 intends to enhance the level of understanding of children's physical activity engagement after school by adopting the following research aim;

**(C). To explore the everyday experiences of children's after school physical activity opportunities in their local community to better capture the context, culture and environmental constraints they place upon their own current activity choices and future recreational aspirations**

Research aim (C) in essence aims to engage the children in sharing their views and values of their local community documenting their future aspirations for the development of after school recreational services within their local community. It is anticipated that in doing so, the results will also capture the places and environments the children have access to after school and explore the cultural and environmental realities in which their physical activity engagement occurs.

#### **4.2 Study 3: Participants**

One hundred and eight children (n=108; M: 50, F: 58, Mean age 8.6 years) from each of the five primary schools participating in the Heart of Knowsley MBC (UK) longitudinal Study participated in Study 3.

### **4.3 A Rationale for adopting a Write & Draw approach**

When exploring health related behaviour and activity patterns of children it is worth noting some of the significant challenges that Study 3 may encounter when measuring and quantifying health and activity perceptions. Practical application issues are to be considered here to ensure the study acknowledged, justified and incorporated appropriate methods. Consequently, this section will demonstrate the methodological construction process of Study 3.

Historically there has been some resistance from practitioners to the value of qualitative research methodologies within the Sport Science domain (Oliver & Fishwick, 2003). For investigative organisational phenomena, mixed methodology research has now become an increasingly accepted approach (Johnstone, 2004). Moreover, ethnographies, observational studies, personal narratives and case studies are now more frequently observed within the sports management and sport psychology fields (Biddle et al., 2001). Although methods employed to explore children's habitual physical activity patterns have typically been quantitative in nature, some important insights have been offered by others who have utilised a more qualitative components (Mulvihill, Rivers & Aggleton, 2000). The useful nature of the draw and write technique was propelled into the health domain when William, Wetton & Moon (1989) reported the insights it offered to investigate the activities children engaged in to keep healthy. More recent literature (Aggelton et al., 1998) have also utilised interviews to explore the concept of children's health and found that children aged 8-10 years associate being physically active with their own health status. Similarly, a write and draw approach adopted by Burrow et al. (1999) provided data associated with the barriers 6-11year olds encounter when engaging in exercise, the most dominant being lack of motivation and time. Furthermore, previous studies which have successfully investigated children's lay concepts of health, illness and exercise through a write and draw approach have found the method to be a powerful one (Porcellato et al., 1999). Bradding & Horstman (1999) supported such notions, reporting that the write and draw technique furthered their studies understanding and knowledge of the children's experiences and perceptions.

Locating and assessing health and physical activity behaviours from the child's perspective may also assist in the design and implementation of appropriate and successful localized health education programmes (Pion et al., 1997). Yet despite the reliability and appropriateness of the write and draw technique (Morrow, 2001; Halocha, 2005) there are still limitations associated with the application of this method (Backett-Milburn & McKie, 1999).

The techniques of using drawings (in isolation) have had a mixed success rate (Pridmore & Bendelow, 1995; Punch, 2002; Ring, 2000; 2003; Backer & Weller, 2003 & Coats, 2004). To counteract the confusion of over interpretation that some researchers may draw out of the meaning of an image or the difficulty they may find in locating any against the true meaning to the child (Thomas & Silk, 1990) many authors (Pridmore & Bendelow, 1995; Bendelow et al., 1996) now utilize supplementary methods (i.e. write & draw & focus groups) (Coad & Lewis, 2004). Consequently, for Study 3 the analysis of both the illustrations and the writing that supplement each image will be adopted. However, even with the incorporation of supplementary methods of write & draw, the validity of an individual's view point to a child's image can still be continually called into question (McGregor, Currie & Wetton, 1998).

Visual methodologies (media, film, videos, photography and drawings) are increasingly common practice within social science research (Guillemin, 2004). However, for researchers attempting to obtain pre-adolescents understanding of health and exercise beliefs these methods are not without challenges or limitations (Piko & Bak, 2006).

Children's cognitive ability (Williams, 2002), skill level (Piko & Bak, 2006), gender and literacy competence were all factors that were considered prior to the implementation of a write and draw methodology (Pridmore & Bendelow, 1995). Moreover, the research team were also cautious of the subjective nature of the method and the risk (which previous researchers have encountered) when applying the data solely in a diagnostic way (Backett-Milburn & McKie, 1999) (i.e. resulting in the over-interpretation of the children's drawings) (Piko & Bak, 2006).

To reduce the chance of this occurring, Study 3 intended to draw upon previous studies data (Study 1 & 2) to ascertain and support the interpretation of the illustrations offered. Similarly, although Study 3 acknowledged that children's cognitive maturity is not equal to that of adults their ability to show pro-social behaviours such as sympathy and empathy during the previous studies also acted as a motive for further inclusion in this research study (Fisher, 2003). The age appropriate information which was applied throughout Study 3 enabled the children the opportunity to make competent decisions (Ireland & Holloway, 1996) and, as illustrated by Porcellato et al. (1999), dispel the illusions that very young children (aged four years and upwards) lack the ability of complex and abstract reasoning in relation to their own health and disease states. Similarly, traditional positivistic research which has viewed the child as an *object* of study (Munther, 1997) imposing adult interests (Hood et al., 1996) and adopting quantitative driven methods (which can be located in Study 1 & 2 of this thesis) have been replaced and combined with the adoption of a new methodological frameworks (write and draw, stories etc).

Owing to the longitudinal nature of this thesis, Study 3 was now able to create inclusive techniques that drew upon communicating with the children (Alderson, 2000; Christensen & James, 2000), strengthening their trust and confidence to participate in the study (Baker & Weller, 2003). Through the adoption of qualitative methods in Study 3 it was anticipated that the variance that was found between health knowledge and behaviour in Study 1 & 2 (when utilizing quantitative methods) could be co-joined (Kitzinger, 1995) with the aid of the qualitative form of enquiry utilised for Study 3. The naturalistic approach taken for the current Study should also enabled the children, as research informants, the opportunity to elicit their own experiences (Curtin, 2001) and voice their own opinions in an un-intimidating environment (Runciman, 2002).

At this juncture, a more philosophical debate is proposed for Study 3 with regards to whether the children will draw what they feel is an acceptable or idealistic representation of the question posed by the main researcher rather than their own personal view (Backett-Milburn & McKie, 1999). This is particularly pertinent to the environment in which the method is delivered.

Contextual characteristics (Scott, 2000) such as where the study is conducted have been found to affect the power balance and relationships between the researcher and the child (Clark & Moss, 2001). This is an especially complex issue for Study 3 as it was conducted within a school environment and this adult-led' context could have inhibited the children from expressing their views in an informal, relaxed and neutral setting (Punch, 2002). However, other authors (Horner, 2000; Ring; 2000) have dispelled such notions and believe the neutrality and familiarity of the school environment only assists the children in Study 3 in being more confidently assertive in their perspectives and opinions.

Nonetheless, the issues previously discussed relating to quantifying the data and drawing general conclusion to individual differences in the drawings required attention (Mansour, Lanphear & DeWitt, 2000). Comparable to Secker et al. (1995) Study 3 acknowledged this and proposed that the findings may not necessarily represent the 'absolute truths' of the children's views but feel it is a vital component of understanding why children's physical activity engagement were low in Study 1 & 2. Similarly, the approach adopted for Study 3 was also believed to further assist in the exploration of the children's current expectations and engagement levels of activity and leisure pursuits within their local community.

### **Study 3: Procedure for the Write & Draw**

All children and families were issued with a protocol information sheet (Appendix C) and signed a written consent form. All procedures adopted for Study 3 followed the same ethical approval as Study 1 & 2 via Liverpool John Moores University (UK).

Initial meetings were pre arranged with each head teacher by the principle researcher to discuss and distribute information on the study and clarify any concerns. These meetings were supplemented with follow up discussions with specific class teachers to explain the process and to ensure no disruption occurred to pre-determined lesson plans. All children were provided with a letter of introduction and child and parental consent form one week prior to the study. The study operated on an opt-out basis therefore parents failing to return the form or contact the researcher within the required timescale indicated consent for their child to participate.

The process ensured high participation rates occurred and avoided sample bias, allowing children previously neglected from research (due to low parental returns) to have the opportunity to participate. To sustain familiarity and trust with the participants and to maintain a degree of consistency, the principle researcher prepared and delivered the research to the children in the classroom setting.

Following a fifteen minute introduction and explanation of the procedure by the researcher (supported by the children's individual information sheets) children were asked to write and draw below each caption.

### **Exercise 1**

**\*\*** *“What Places are there to hang out after school where you live and what sort of things can you do there?”*

For this caption the researcher asked the children to imagine that a friendly alien had just landed and they needed to write and draw all the possible after school activities he/she could go and check out in their local community.

### **Exercise 2**

**\*\*** *“Where do you normally hang out after school and what sort of things do you do there?”*

For this caption the researcher asked the children to draw the main after school activities they did in a typical week (including weekends)

### **Exercise 3**

**\*\*** *“Where would you like to hang out and what sort of things could you do there?”*

For this caption the researcher asked the children to imagine they had a magic wand and with a swish of it; what they had drawn and wrote on their paper would be created in their local community. Each caption was individually read aloud to the children by the researcher and a 15 minute time allocation given to each exercise. The overall purpose of the write and draw exercises and aligned procedures were verbally described to the children by the main researcher.

It was explained that the drawings should include the places and things located in their home and neighbourhood that were i) available for them to access after school and ii) the typical places and activities that they usually engaged in. Similar to the procedure adopted by Hume et al. (2005) children were provided with a definition of the word 'home' as the "house, or place that you live and sleep in for most of the time/ week". The specificity of the boundaries of what the home environment included was 'any garden or yard up to the front, side and back fences of the children's home'. The word 'environment' was also explained as "the surrounding places and things that are around us" with the main researcher offering some verbal examples to the children prior to the start of the exercise. To assist the children in making sense of the question pertaining to drawing the activities and places that you could access in your local community after school, 'local community' was verbally described to the children as the "places and things you could easily walk or ride your bike to"(Hume et al., 2005).

An overhead projector was used to offer further assistance to children who had additional educational needs or low literacy levels. Following the administration of the sheets of paper a further 10 minutes was offered to the children at the end of the exercise to allow them to finish colouring their pictures and writing and to place their completed work in the envelopes provided.

#### **4.4 Analysis of the Write & Draw Study**

All of the children's drawings / images were cross-referenced to the respective child's verbal meaning (i.e. the author conferred with the children regarding the meaning of each image). Member checking of the researcher's own interpretation of each child's drawing was also conducted by the children at the end of each exercise. Moreover, any 'other' writing associated with the images were also used to help supplement and contextualise the meaning of the illustrations. Members of the research team performed individual content analysis (Kondracki et al., 2002) on the images and written text displayed within each drawing. Primarily, inductive analysis was applied to the data sets whereby categories and key order themes were formulated by interpretations as near as possible to the data (Tuckett, 2005).

The images and writing were read and re-read utilising a constant comparison approach (Glaser & Strauss, 1967) to enable the images and writing to be continually compared against one another. The images that were thought to represent the same concept were grouped together and assigned an appropriate label. Following individual constant comparison, peer triangulation was implemented to ensure the overall consensus of the key order themes matched and representative the labels produced.

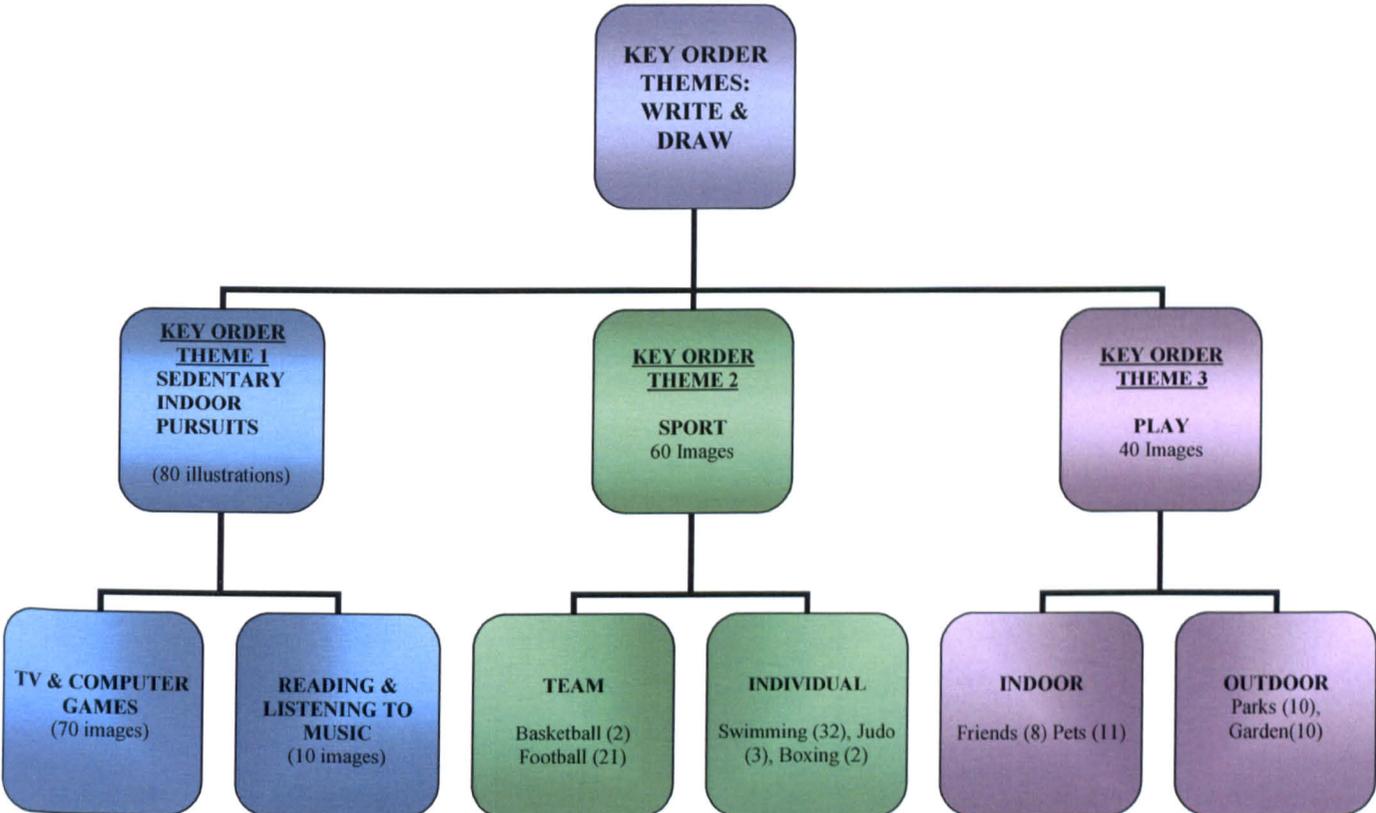
The visual images are presented in parallel with the more generic content analysis in the results section. The images offer a representation of the children's unique and individualistic ideas, interpretation and explanations to the reader (Backett-Milburn & McKie, 1999).

#### **4.5 Results**

The following section provides examples of Exercise 1, 2 and 3 of the draw and write Study. Illustrations of the children's images are situated alongside the key order theme of Exercise 2 and the dominant key order themes depicted in Exercise 3 to support and contextualise the themes further.

Figure 4.0 and Table 2.0 demonstrates that the predominant key order theme that children illustrated they engaged in (after school) in their community were safe, indoor sedentary pursuits (80 illustrations) with Sport (60 images) and Play (40 images) being the second and third most predominant after school activity the children engaged in within their local community.

**Predominant Themes: The Activities Children Regularly Engage in After School  
(All Five Primary Schools)**



**Figure 4.0**

The illustration a nine year old boy (Figure 4.1, School 2) has selected to describe the places and opportunities he has to hang out after school in his local community were predominantly in a barren landscape with refuge and land tipping (bath / bin and broken glass), he offers no insight from the picture of the ‘things he can do there’ (i.e., play).

**Table 4.0** *Supplementary Text located within Exercise 2 (Write & Draw)  
The Activities the Children Regularly Engage in After-School.*

	Descriptive Characteristics
Key Order Theme 1	<b>Sedentary Indoor Pursuits</b>
"Stay in my House"	"Watch the T.V" (CITV wrote on the images) (x43)
"Play on my PS2"	Computer consoles images (x27)
"Read books in my House" "Listen to my music"	"Look at magazines" Images of books (x10)
"Eat my Tea"	Images of food, plates, forks, knives, and drinks
Key Order Theme 2	<b>Sport</b>
"Go to the basketball club"	"Karate Club, Boxing Club in Hyton"
Play football with my friends at the Reccy (waste land)	"Go to football training after school" (Images of football fields / balls) (x21)
"Go to Hyton Leisure Centre (swimming)"	"Swimming with my mum / dad / brothers / sisters noted (x32 images / text)
Key Order Theme 3	<b>Play</b>
"Play out at the Reccy (waste land) with my mates"	"Play in my garden with my rabbit / dog / pets (x10)"
"Play out at the park"	Images of fields / waste land and parks
"Play in the house with my pet" (x11)	"Play inside with my brother / sister / friends" (x8)

Exercise 1: Current After-School Opportunities in the Local Community

Images of: 'The Places available to hang out after school & the sorts of things I can do there

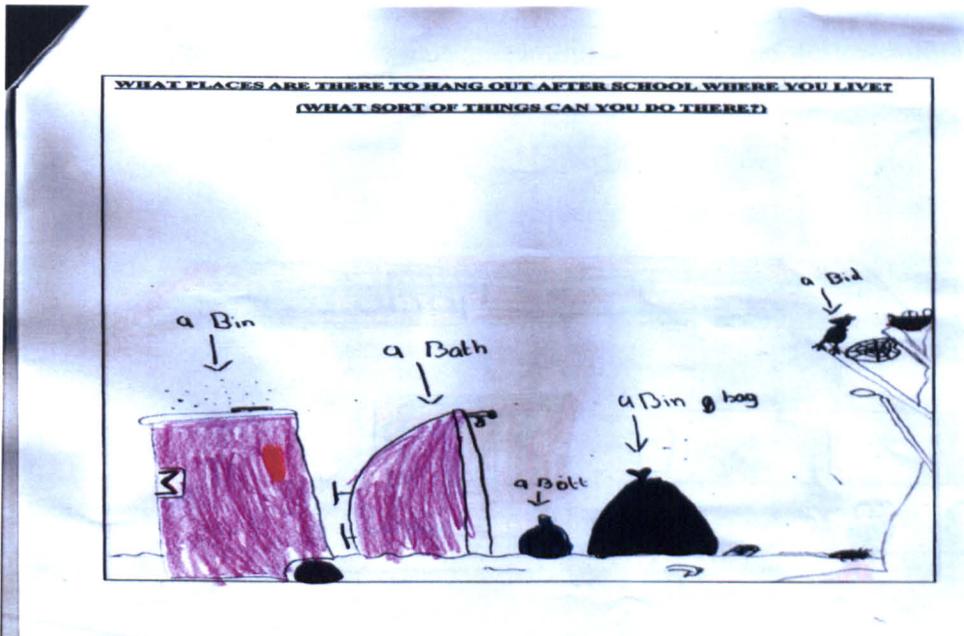


Figure 4.1 Drawing by a 9 year old boy (School 2)

Figure 4.2 depicts the places an eight year old boy (school 5) normally hangs out, after school, and the typical activities he engages in. The draw and write exercise illustrates the boy actively engages in computer games (at home), eating his dinner, watching television and visiting KFC (a fast food restaurant) within his local community.

Exercise 2: The places I normally hang out after school & the sorts of activities I do there.

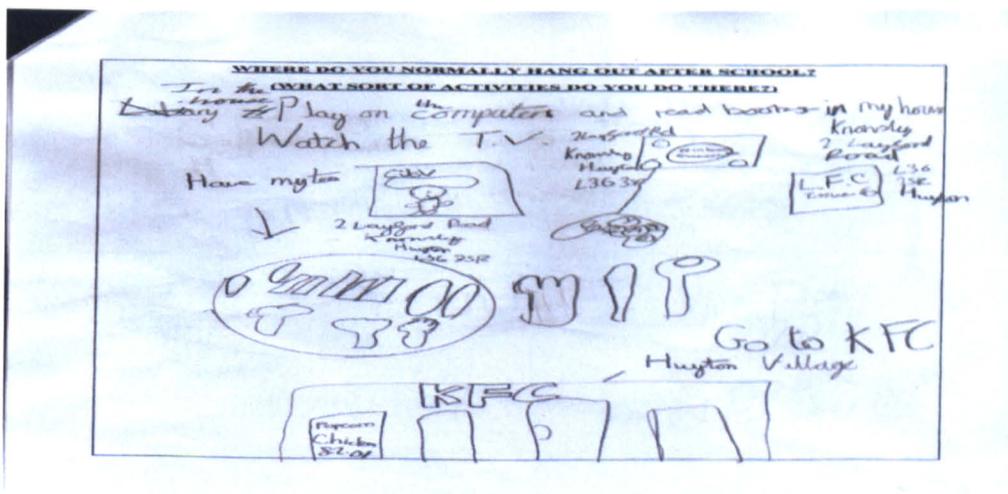


Figure 4.2 Drawing by an 8 year old boy (School 4)



## Writing by a 9 year old boy: School 2

*Typed: I want in ..... A football pitch and goal posts for the boys and somewhere for the girls to go and do girl things like skipping, talking, playing games, and many other things so that if your mates come from .....(other community) we haven't got anything to show off like them, so if we do get these things we'll be just as good as them.*

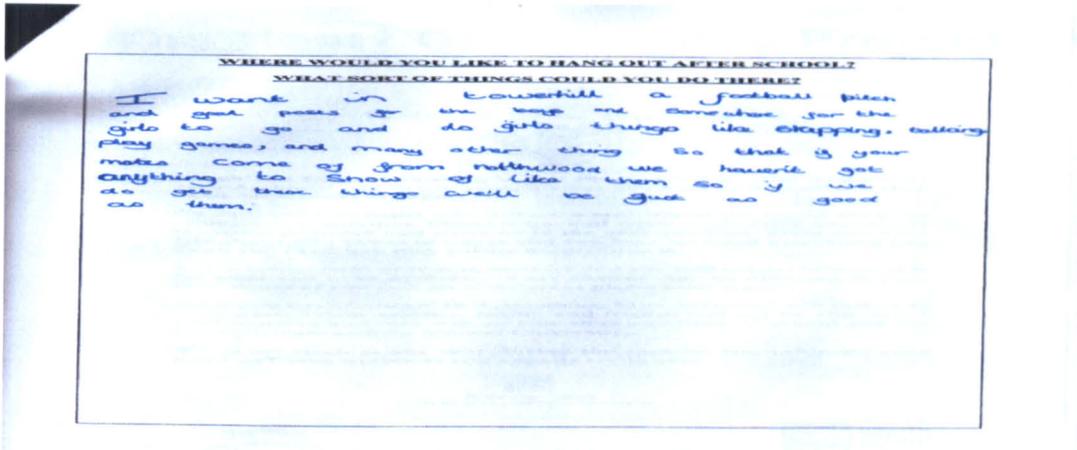
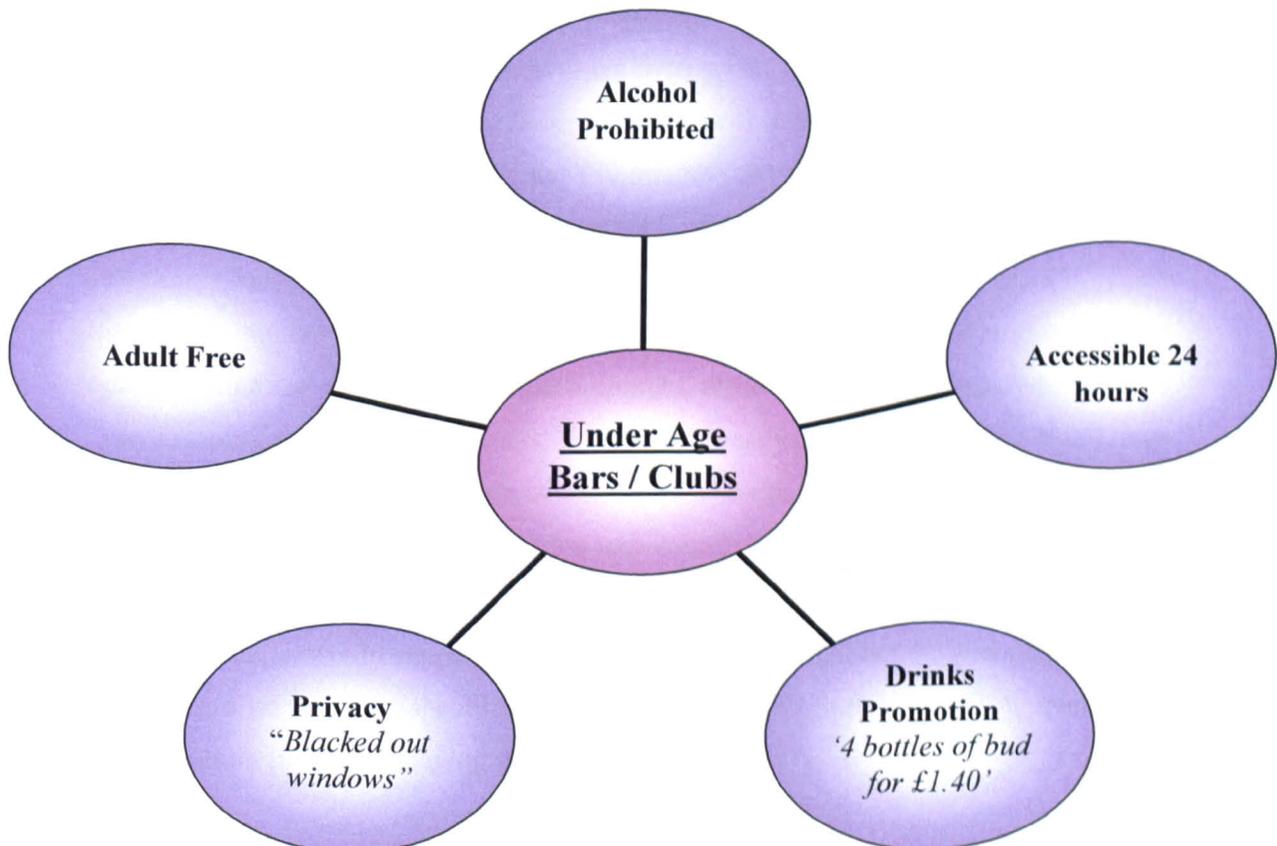


Figure 4.4 Write & Draw Exercise 3 (School 2)

## The Key Concepts Associated with the Children's Main After-School Aspiration Choices within their Local Community (Figure 4.5)



## **4.6 Discussion**

### **4.6.1 Contextual Reflection of the Write & Draw Study**

The original aim of the Study 3 was to utilise alternative qualitative methodologies to co-join the variance between the original quantitative method employed by self-report and CSA accelerometers (60 second epochs) in Study 1 & 2 to ascertain why the children's physical activity levels were so low. The write and draw method (Pridmore & Bendelow, 1995) exposed underlining factors and behaviours that did not present themselves within the original self – report questionnaire and accelerometer study.

Similar to Miller & Fredericks (2006) the Study's findings support the clear justification of how and why qualitative data is connected to the quantitative form of inquiry. Figure 4.1 clearly depicts cultural and symbolic images of the children's environment which may offer an insight into why the children currently do not engaged in physical activities after school (within their local community).

The predominant key order theme within Figure 4.0 (Boy: School 4 drawing) and Figure 4.1 for all five primary school children were: Indoor, safe, sedentary pursuits within the home environment. Key order theme 1 clearly depicts that the children watched TV, played computer games (70 images) or read and listened to music in the home environment (10 images) after school. This clearly supports earlier work by Saelens (2003) which acknowledges that sedentary behaviours such as; TV, video games, computers and listening to music are now vital elements of young peoples daily routine and existence. More disturbingly, these 'typically' sedentary behaviours are associated with increased risk factors of obesity (Sallis & Galnz, 2006) thus projecting them to the forefront of strategies to curb the childhood obesity debate. Although children in England are now increasingly inactive with only 1 in 4 (five to sixteen year olds) participating in sport on a regular basis (DH, 2005), Figure 4.0, Key Order Theme 2, would suggest the children in this study still regularly engage in sport (n= 60) after school (specifically; basketball (n=2), football (n=21), swimming (n=32), Judo (n=3) and Boxing (n=2)).

Similarly, although many children chose to illustrate a very barren, exposed landscape of where they ‘hung out’ after school, Key Order Theme 3 (Figure 4.1) clearly illustrates that ‘Play (n=40)’ both indoor (n=18) and outdoor (n=22) including, parks, open spaces still dominated the social choices of the children and their activity behaviours, after school, within their local community.

Werner & Smith (1982) and Grotbergs’ (1995) notion that the context children place upon their own environment can play a vital function with regards to shaping their own ‘health trajectories’ suggests the illustrations the children selected as a back drop to their after school activity choices should not be ignored and need further exploration. The images the boy has chosen to draw (Figure 4.1): ‘*A broken bottle, A rubbish bag, An old bath*’ within his local environment may merely be used by him as a canvass to illustrate the way in which he perceives his own community and may not necessarily inhibit his activity participation. Yet these captions should not be disregarded solely as they may also act as a catalyst to propose that socio-cultural variables are driving and inhibiting physical activity choices for these children. To the reader these culturally specific images clearly illustrate that they are not ‘safe, play sites.

The write and draw images displayed within exercise 3 would suggest that there are culturally unique characteristics associated with the children’s future after school activity choices (i.e., under age drinking). Interestingly, Boy 4 (Figure 4.5) clearly acknowledges the need for services not only for his male counterparts but also for the females within his community. More interestingly, Boy 4 (Figure 4.5) also displays embarrassment to his school peers at the lack of resource within his environment and his aspiration for service development to show to his peers (living outside of that community) that they are equal.

This statement again shows a clear insight into the cultural diversity and mix of the local children and the anxieties and perceptions they place on the lack of appropriate ‘built environmental service and resources’ in their local community. This finding would appear to align to Humbert et al. (2006) who purported that only low SES young people acknowledged the environment to be an important contributory factor for participation in physical activity.

Safe, accessible, low cost, well maintained equipment and facilities were identified as key factors for participation in physical activity by low SES young people (Humbert et al., 2006). These contributory factors and determinants for participation are supported further by various authors (Zakarian et al.,1994) who have found that having access to safe play environments correlates significantly with children's activity rates. Locating and assessing these important environmental and subsequent physical activity behaviours (from the child's perspective) may therefore assist in the future design and implementation of appropriate localized health education programmes (Pion et al., 1997).

Determinants of physical activity behaviours should similarly not be viewed in isolation, Rennie et al. (2005) considered the impact and ramifications of conflicting determinants. For example, if Boy 2 (Figure 4.4) has high motivation and self-efficacy for physical activity but the images he has displayed of residing within a neighbourhood that does not provide adequate, safe access to facilities what impact could this have on his overall health and well being and more importantly, to what extent would this determinant reinforce long term inactivity and unhealthy behaviours? This example emphasizes the need to explore the multiple levels of determinants 'simultaneously' in order to uncover the important social, environmental and personal influences impacting children's physical activity behaviours.

Exercise 3 (n=83 images) would suggest that the majority of the children at all 5 primary school sites would like the creation of a new after school club within their local community. However, as figure 4.5 demonstrates, the main themes related to this request were for the service: *to be unsupervised (adult free), Open 24 hours a day, free admission, age restricted (no over 13's)*. Figure 4.4 and Figure 4.5 clearly demonstrate the majority of the children drew and wrote the wish for a buildings with a 'bar in it' 'where you can have a bud with your mates' 'blacked out windows' and drink promotions '4 bottles of bud for £1.40'

In support of Curtin (2001) this method clearly allowed the children to become research informants and have the opportunity to elicit their own experiences. This is clearly visible in Figure 4.1 and 4.3 whereby the images the children chose to express were clearly without the imposition of adult control.

The technique of write and draw allowed the children to express very complex, unique characteristics which would not normally be expressed should the children have felt adult restriction were imposed (i.e. *'under age bars for kids, were you can have a 'bud' with your mates'*). Similarly, whilst the risk of conferring and peer influence was noted prior to the studies procedure (McGregor, Currie & Wetton, 1998) the researcher found this did not occur during the exercise as all children remained silent and engaged during the 45 minute task.

The write and draw exercises were conducted on the same day (i.e., on a rotational basis allowing all five primary schools to complete the task) and the same key dominant theme emerged from all five primary schools results (sedentary indoor pursuits and development of adult orientated after school services). Furthermore, whilst the studies data suggests the children were able to express their views in an un-intimidating environment (Runciman, 2002) it was felt that it was not perhaps the familiarity of the school environment (Horner 2000; Ring, 2000) that assisted their expression but perhaps the trust and rapport (Marrow, 1999) that had been built over a period of months during Study 1 & 2 by the main researcher and the children prior to the delivery of the task.

If the researcher had not conducted an extensive reconnaissance phase prior to Study 3, to obtain the children's cognitive abilities (Williams, 2002), skill levels (Piko & Bak, 2006) and literacy (Pridmore & Bendelow, 1995) the exercise may not have been tailored appropriately and the quality of the in depth data may have not occurred.

In contrast to Backett-Milburn & McKie, (1999) the researcher also felt the children did not draw what they felt was an acceptable or idealistic representation of the question posed rather their own perspectives. Figure 4.3 and 4.4 clearly supports such a position highlighting the key characteristics of what the children would have liked to have had developed in their local community. Had the children felt aligned to respond in a manner that reflected the adult's perceived position (Christensen & James, 2000) due to the adult -led, boundary organized environment of the school (Coad & Lewis, 2004) the images produced would have been more likely oriented towards sport and physical activity related services as opposed to the under age bars, alcohol consumption and vivid captions of blacked out windows and adult free

supervision they chose to express. These images clearly support that the children felt comfortable to express their own thought and perceptions without the pressure of responding to idealistic assumptions. The pro social behaviours (Fisher, 2003) located within the description of Boy 4 (Figure 4.4 ) data also heightens the notion that children do possess empathy and abstract reasoning in relation to their own physical activity perceptions and attitudes and should therefore strengthen the importance and motivation for others to include children in their research design.

#### **4.7 Conclusion**

The sedentary pursuits located in the write and draw exercise concur with the low physical activity levels located from the self-report and accelerometer data in Study 1 & 2. Study 3 does however acknowledge the subjective nature of the method and the risk of applying the data solely in a diagnostic manner (Backett-Milburn & McKie, 1999). The over-interpretation of children's drawings (Piko & Bak, 2006) was minimised in this Study by combining the objective and quantitative data sets (Accelerometer, self-report, observations) utilised in study 1 & 2 to the studies findings.

For Study 3 the utilization of a write and draw technique has enabled the 'reality' of the children's physical activity behaviours to emerge. More importantly, for this study, the approach reinforces the value of discovery, honouring the canvass and context in which children chose to illustrate their behaviours and activity patterns matched against a between method design.

#### **4.8 A Brief Reflection of the Research So Far**

Study 3 has enabled the 'realities' of the locations of the children's physical activity engagement choices (after school) to emerge. However, to truly understand the rationale for why they are seeking adult driven after school services and why they have drawn their current engagement to be predominantly within habitual indoor safe pursuits, a more realistic tale utilizing the techniques of participant observation (Denzin & Lincoln, 2005) and ethnography (Irwin et al., 2006) is recommended.

This approach will assist in the understanding of the nature of the actual physical activity and health behaviours performed and the key motivational drivers associated with them. Specifically, the focus of the final study (Study 4) will be to match the actual observations found in Study 1 – 3 to the reality of children and families actual health related behaviour and activity patterns as they occur within the boundaries of their local environment. Through the adoption of interpretive phenomenology, which seeks to arrive at a detailed description of human life as it is lived and reflected upon in its first person concentrates (Pollio et al., 1993) the final study of this thesis will endeavour to uncover significant reasons behind *why* children and families in Knowsley MBC adopted such health related behaviour and activity patterns.

# **CHAPTER FIVE**

**STUDY 1: RECONNAISSANCE PHASE & CHILDREN AND FAMILY SELF REPORT QUESTIONNAIRES**

*Chapter 2 – Study 1 Aims:*

**(A). To (better) understand the habitual mental, physical and nutritional behaviours of children and their families in Knowsley (UK) thus creating a baseline of data to investigate further.**

5 Primary Schools, Mean age: 8.6 years (N: 115; M: 55, F: 60); Parents (N: 57; M: 3, F: 54)

**STUDY 2: ACCELEROMETER & PHOTOGRAPHY (2 randomly selected primary schools from Study 1)**

*Chapter 3 – Study 2 aims to address aim (B) and:*

**(B). To adopt a multi-layered approach to data capture for children within the field of physical activity and nutrition to compliment the subjective methods employed earlier within the study**

40 children; M: 18, F: 22; mean age 8.6 years

**STUDY 3: WRITE & DRAW with all five primary school children**

*Chapter 4 – Study 3 Aims to address Research Aim (D) and also:*

**(C). To explore the everyday experiences of children's after school physical activity opportunities in their local community to better capture the context, culture and environmental constraints they place upon their own current activity choices and future recreational aspirations**

N: 108; M: 50; F: 58 Mean age 8.6 years

**STUDY 4: ETHNOGRAPHIC ENGAGEMENT & CREATIVE NON FICTION**

*Chapter 5 – Study 4 Aims to address research Aim (A),(B), but also :*

**(D). To explore the micro (day to day existence) of a family in Knowsley MBC (UK) and observe their naturally occurring physical activity and nutritional behaviours within the context of their own home.**

1 family (1 female: 43years, 1 female: 12.6 years and 1 Male: 10 years).

## **5.1 Introduction**

The aim of the final study was to further understand the ongoing health related behaviours and activity patterns of children and families in Knowsley UK. Study 1-3 identified that the children and families were (generally) not achieving the national physical activity recommendations (NICE, 2009) nor attending to or engaging in appropriate nutritional guidelines (DH, 2004). In order to explore the variables that may be inhibiting physical activity engagement and healthy eating it seemed appropriate to engage more closely with the children and families in their own home environment. The ideographical case study approach would therefore allow observations of the behaviours to occur in the natural setting (Burrell & Morgan, 2006)

Having provided an overview of the eclectic issues facing both children and family health and physical activity behaviours this section sets out to locate the nature of the final study. Prior to outlining the procedural effect of employing participant observation within the family home (Irwin et al., 2006), a philosophical and conceptual debate is offered with reference to how the location of the research was guided by paradigms, rhetoric issues of mode of representation (Creswell, 1998; Tierry, 1995) and ontological (Barritt, 1986) and epistemological (Guba & Lincoln, 1989) assumptions.

The following section is separated into two components. Firstly, to make sense of the nature of qualitative inquiry a discussion on the ontology and axiological (Creswell, 1998) issues faced by the researcher is presented, the section then concludes by highlighting the issues Study 4 faced in representing the multiple and diverse perspectives of the participants and the craft skills required to capture the realities of the day-to-day existence of the family (see Glesne & Peshkin, 1992).

## **5.2 Study 4: Aim and Methodological Principles**

The final Study is, to an extent, guided by abstract principles (Bateson, 1972) that relate to: ontological (what is the nature of reality to the study?), epistemological (the relationship between the family and the researcher) and methodological assumptions (How do I, the researcher, obtain knowledge of the environment and gain knowledge from the family?). According to Denzin & Lincoln (2005) the ontological, epistemological and methodological assumptions dictate how the researcher sees the environment and (subsequently) acts within it. Similarly, Guba (1990; p.17) noted these basic set of beliefs (epistemological, ontological and methodological) that guide actions, can be observed as a *paradigm*. Through the adoption of participant observations, contextual information (e.g., the values, barriers and family cohesion) will provide insights into the participant's reality and offer the reader the dynamic interaction between variables that drive their day-to-day physical activity and health behaviours. Therefore the final study intends to achieve this through adopting the following research aim;

**D). To explore the micro (day-to-day existence) of a family in Knowsley MBC (UK) and observe their naturally occurring physical activity and nutritional behaviours within the context of their own home.**

## **5.3 Participant Observation and Ethnographic Engagement**

Participant observation has been described as the "...backbone of ethnographic communication" (Hymes, 1962; p15). The method has been associated with the epistemological orientations of ethnography, ethnomethodology, and grounded theory (Ambert et al., 1995; Tsourvakas, 1997). Moreover, the first published ethnography (Malinowski, 1922) propelled the data collection method into the spotlight. Even within the 21<sup>st</sup> century, participant observations are still considered, by some, to be the most scientific method of social science inquiry (Gans, 1999).

Within the social and behavioural sciences, participant observations have been referred to as ... *“the fundamental base of all research methods”* (Alder & Alder, 1994, p389). Gans (1999, p.540) proposed that alternative empirical methods are limited to *“...only report on what people say”*, as opposed to participant observation that allows *“...people to observe what people do.”*

Historically, the field ethnographer was encouraged to separate their participant observations into (public) ‘scholarly’ monographs and (private) ‘personal’ memoirs (Denzin & Lincoln, 2005). This division between subjective (autobiographical memoirs) and objective (public ethnographic) monographs would clearly have moral and problematic issues within the 21<sup>st</sup> Century (Denzin & Lincoln, 2005). More recently, a cultural shift has been observed whereby researchers critically and actively engage and reflect on their *own* participation within the research process thus *“...undertaking the observation of participation”* (Tedlock, 2000; p.467).

Traditionally the ethnographer’s job has been to *“...make, report, evaluate and interpret observations of behaviour”* (Burgess, 1984; p28). In this sense conventional ethnographic accounts often attempted to ‘capture’ an accurate research experience in order to increase the ‘reliability’ and ‘validity’ of the research. Furthermore, Whyte (1984) explored the conventional processes of ethnography, believing that:

***“The participation of the researcher in the activities of the people being studied will be shaped in part by the degrees of difference in cultural background, race or ethnic identification... Where these differences are minimal the researcher may be accepted almost as native.” (p28.)***

However, not all ethnographic studies need or should be viewed in this framework. The notion of the ‘outsider looking in’ (Hopkins, 2002; p.149) has recently been replaced with a stronger emphasis upon participation over observation, thus the ‘pseudo-objective’ viewpoint of the traditional researcher has been disregarded in support of more subjective and personal accounts of the observational experience (Tedlock, 2000).

Further still, Rinehart (1998) emphasized that ethnographic writing should appreciate that post-structuralist ethnography raises and answers different questions and functions with alternative ways of knowing the 'truth' than the conventional ethnographic approaches (p.204).

Similar to Irwin et al. (2006) the final Study selected participant observations to become (progressively) closer to the participants and thus observe a deeper engagement of their lives within a phenomenological approach (Crotty, 1998). This method enabled the researcher to appreciate the complexities of children's perspectives whilst also administering empathic questioning. Similar to Lincoln & Guba (1985) it was not the study's intention to 'discover' the family's health related behaviours but allow them to 'emerge' and or be created (Quantz, 1992).

#### **5.4 Sampling Selection and Composition – Participant Observation**

The families that had participated in Study 1 – 3 were offered the opportunity via letter to engage in the last phase of this research Study. Three families returned the expression of interest form, however, due to the time constraints of participant observation and the invasive, time intense period of observation and engagement required with the researcher, the research team made a collective decision to randomly selected only 1 family: 2 females (1: 12.6yrs and 1: 43years) 1 Male: (10 years) to participate. This decisional based process is supported by Patton (2002) who felt a greater understanding of the phenomenon under investigation can be achieved through undertaking research with a purposive selective sample as opposed to collecting standardized information from a large, statistically representative sample. The family provided written consent and were informed that the actions and conversations shared during the observation phase would be re-crafted with their permission and their names altered to protect their identity. Comparable to Code's (1995) work the final Study approach was led by the assumption that shared conversations (between the researcher and participants) would lead to new understanding (Gunzenhauser, 2006) through the mutual contact and caring foundation that was created between the researcher and participants over time (Welch, 2000).

However, the '*commitment of knowing to care*' proposed by Code's (1995) study clearly emphasised the considerable effort and time required by the researcher to achieve this and is further illustrated by Dunier (1999) and Lather & Smithies (1997) in which they extended their 'bodily commitment' to their projects (extending their time in the field) by years to ensure the complexities of the community under observation were sufficient (Gunzenhauser, 2006).

The main researcher for Study 4 invested considerable time (approximately four years) with the local community and school children thus supporting the rationale for the '*commitment of knowing to care*' by Code (1995) and ensuring the observations undertaken were of value. Study 4 identified an alternative approach of knowing the truth (Rinehart, 1998). Interestingly, Shaffir (1999; p683) further reported that "terms of acceptance" are defined by the group that are being studied and not the researcher. The haste of some researchers to develop rapport and intimate relations with their participants may result in the researcher seeking total acceptance and wanting to be accepted as a *member* of the group. Shaffir (1999) supports such claims and discovered that significant boundaries emerged within the study that separated the researcher from the group. In addition, Shaffir (1999) also argued that unless a researcher conducted covert observations they may always remain "...*an outsider, although perhaps attached or an instrumental member.*" (p. 683).

Study 4 did not propose that the main researcher would nor should become an accepted member of the group but allowed the family to define the term(s) of acceptance. Similar to Tedlock's (2000) work, overt observations were selected for the present inquiry, embedded in the principles that with empathic questioning, deeper engagement and immersion into the daily existence of the family (Crotty, 1998), a greater understanding of the children and the family's physical activity and health behaviour choices would emerge. Although Shaffir (1999) advocated covert observations, it was felt that Study 4 should adopt what the author believed to be a more ethically and morally sound overt observation position (Tedlock, 2000).

## 5.5 The Tensions of Epistemology in Participant Observation

A further debate is the simultaneous epistemological and ethical challenges of the role of the observer to the researched. Whilst Gans (1999; p.542) argued for 'distance' between the researcher and the participants, Gunzenhauser (2006; p.622) advocated that quality qualitative research is borne out of the "...*quality of the relationship developed*" between the researcher and the participants.

Paul (1953; p.441) further commented that "...*participation implies emotional involvement; observation requires detachment. It is a strain to try to sympathize with others and at the same time strive for scientific objectivity.*" Whilst scientific objectivity was always sought, Study 4 was satisfied that the personal position the researcher held (as the research tool) warranted credence. Similarly, the present study aligned more to Gunzenhauser (2006) position who advocated *emotional commitment* and *engagement*, as opposed to Gans (1999) position of *detachment*, in order to strengthen the quality of the relationships previously formed. More importantly, and occasionally overlooked by (some) researchers, is the value and importance of the participants to the process.

For the present Study a personal contract was created (prior to the method being implemented) by the children and family, formally documenting their expectations of what to expect from the researcher during the process. A similar contract was deployed by the researcher (Appendix C). This approach enabled all parties to be aware of the expectations placed on them and the process, and ensured that if at any point the researcher or participants felt uncomfortable with the process, or were subjected to inappropriate physical or mental abuse, the contract could be terminated. This duty of care by the researcher ensured that the participants were able to make sense of the experience and benefit accordingly from the research process. Irwin et al. (2006) argued that the predominant role of a researcher should be to understand the experience of others. Within qualitative research this association can be linked to the concept of 'immersion' within the field setting; thus emphasising the epistemological 'immersion and emergence' concept that various researchers have chosen to adopt through interpretive and/or critical theoretical perspectives (Cotty, 1998).

The level of commitment and engagement by the family was discussed extensively with the research team for Study 4. Through consultation with the family it was agreed that the researcher would engage in a period of between 5 – 9 months of observation. The observations included various half-day or full day sessions (dependent on week or weekend dates) and operated on an ad hoc basis to ensure a variety of behaviours were captured. To minimise the potential *nuisance* of observing a family's habitual daily activities it was agreed that the researcher would call or text the family one day prior to a visit to minimise any disruption to the family unit. Similarly, it was proposed that the observations would be conducted regularly (once a week) on a rotational period at the convenience of the family. At any point the family were also able to cancel and reschedule a visit. The researcher spent a total of 9 months (equating to 288 hrs) observing the family in the present study.

## **5.6 Construction of Meaning in Study 4**

A problematic epistemological aspect to Study 4 was the relationship between the researcher and the participants. Some researchers (Spivak, 1988; Marcus, 1995) have called into question whether researchers possess the ability to construct meaning from observing the knowledge and practices of others. However, although Mitchell and Charmaz (1998) believed that the author should emerge throughout the story to help move it along, the dangers of this dominance (i.e., of the 'self') within the text must be addressed. Although the story is of the author's tale of the 'self' (i.e., 'I') and the 'other' which could have been legitimate processes used for the final study (as the researcher shifted from participant observation to the observation of participation throughout the research study) (Tedlock, 2000) it was felt important that the author (i.e., 'me') did not dominate the text.

As such, the study decided to biographically position the author (prior to the creation of the narrative) and address my own *value systems* prior to entering the observation phase (See Appendix C).

As supported by Denzin (2002) this included the ideological assumptions and facts that 'I' felt aligned to through my own belief systems. This exercise seems particularly relevant to ensure that I, the researcher, did not write the final accounts through my own value bias (i.e. influenced by my own cultural background, gender, socioeconomic status) (Caulley, 2008), as the truth about reality should be captured as it is found (Gutkind, 1997).

This exercise was a critical stage of the research journey which allowed me, as the researcher, to recognise my 'personal baggage' and uncover what my own value systems were (i.e., from my 'a typical' middle class upbringing) in relation to what my own health and physical activity beliefs and behaviour choices were. These personal value systems are explored and discussed in more detail later in the thesis (i.e., see research journey chapter) and will assist the reader in making their own assumptions as to how they felt I represented, dealt and indeed accepted my own value bias during the observation phase. This approach provided an alternative mechanism to represent and illustrate to the reader that my interpretations were plausible.

Moreover, Mitchell & Charmaz (1998) clearly acknowledge there are also procedural implications when collecting observational data. The use of a tape recording device and note taking tendencies were felt to be an obstacle and liability for the present study as the visual aids could prompt staged and unnatural behaviours to occur within the home environment thus affecting the existing trust and relationship built up over a substantial period of time. Note taking and the carrying of a tape recorder device were restricted to the confines of the main researcher's vehicle. However, due to the danger of being noticed talking into the dictaphone and taking notes prior to each visit, the vehicle was removed from the family home and parked at the other end of the estate. Such an approach prevented potential risks to existing and future access, creation of hostility and/or feelings of unrest for the participants involved (see Mitchell & Charmaz, 1998).

## **5.7 The Process of Selecting the Representation Mode of Study 4.**

The personal nature of Study 4 demanded an appropriate representational mode to fully capture and document the participants' real and lived experiences. Shaffir (1999) described ethnography as the description of the behaviour of a group borne from the observations made by the field researcher attempting to understand that culture. Whilst ethnography has been common practice in the field of social science for many years there are few studies (Swain, 2006; Wyeth, 2006) that have utilized ethnographic principles with children. Moreover, those that do (Swain, 2006; Wyeth, 2006) merely attempt this within a school environment, for a minimum number of hours (for example, Wyeth, 2006 study only spent a total of 12 hours observing the children) and tend to offer limited guidance to the reader as to the rationale for the representation mode they adopted for the process. Despite this, Richardson et al. (2004) stress that there must be a drive for the researcher to consider a range of representational styles when conducting ethnography to ensure the field experience is adequately captured. However, not all researchers abide by this principle (Krizek, 1998).

Creative non-fictional is an approach that many authors (Coffey and Atkinson, 1996; Sparkes, 2000; and Tierney, 2002) have begun to consider in order to present their research. However, 'telling a story' and utilising creative representational techniques should not to be undertaken lightly or without prior due-diligence. There are many stylistic and epistemological debates to wrestle with in adopting such a technique. Tierney (2002) exposed the crisis one may experience when trying to craft and represent what you have taken and understood from being immersed within the everyday context of people's lives. After protracted periods of observation, not only does the researcher firstly 'awaken' to the notion that they are one with the participant (Witz, 2007) they then awaken to 'articulating this research'. Study 4 sought to adopt a technique that would unite the variety of aspects that were observed in Paige and her mother Jayne (i.e., their personality, social and emotional character, moral reasoning) against the canvass in which these behaviours were captured (Witz, 2007).

Creative non-fiction was a vehicle in which Study 4 felt this could be achieved as;

*“Creative non-fiction tells a story using facts, but uses many of the techniques of fiction for its compelling qualities and emotion vibrancy. Creative non-fiction doesn’t just report fact; it delivers facts in the ways that move the reader toward a deeper understanding of a topic. Creative non-fiction requires the skills of the storey and the research ability of the conscientious reporter.”*

(Cheney, 2001; p.1).

Creative non-fiction offered the researcher the ability to “construct and convey *analyses* of social settings and social actions that are given a particular point or are impossible by other means...” (Coffey and Atkinson, 1996; p.128).

Similarly, the purpose of the Study 4 was to generate important questions to the reader (Barone, 1997) in relation to the children and family’s physical activity and health behaviors. Moreover, Study 4 wanted to invite the reader to take part, understand the complexity of *real* day-to-day existence and allow their own judgments to evolve with the researchers. The reality of the family is represented through a realist story that draws on the concrete details of real life that attempt to conjure up and draw the reader’s attention to the appropriate and relevant images and emotions that permeate family life (Caulley, 2008).

## **5.8 Moral and Ethical Issues Located in Study 4**

Although creative non - fiction allowed the recording of conversation to encapsulate reality (Gutkind, 1997) there is also a tangible sense of responsibility and ethical dilemmas for the researcher when selecting this mode of representation (Richardson et al., 2004). The researcher is immersed in the lives of others therefore living, in a sense, with the participants to develop the characters and plot and ensure they capture the truth (Sparkes, 2002). Yet the process of interpreting, re-constructing and crafting how others view their world, places significant pressure on the author particularly in longitudinal research as substantial trust has been built up between the participants and the researcher.

To continually engage with children in the research process, the representational style chosen to evidence the findings is paramount. Similar to Christensen et al. (2004) and O’Kane (2000) participant observations supplemented by participatory techniques can help assist and engage the participation of children. The representational style of creative non-fiction (Richardson, 2000) can be a useful epistemological medium through which data can be conveyed in an authentic and evocative manner. However, the knowledge obtained from the participants’ experience and how this is conveyed and utilised to assist the future well being of the participants is rarely accomplished within research (Gunzenhauser, 2006).

As highlighted earlier, the work of Gillian (1982) and Noddings (1984) refers to a notion of ‘ethical care’ and postulates that ethnographic work should not only connect the lived experience to the social phenomena under review and provide a voice to those who are vulnerable (e.g., children) but also ensure that the work is “...non exploitative and self-reflexive to the participant” (Gunzenhauser, 1999, 2004, 2006, p627). The ethical aspect of ‘knowing’ and how this knowledge is conveyed in a true representational mode, reflecting the participants’ lived experience, does however provide practical and moral dilemmas for the researcher (Smith & Deemer, 2003; p.449).

## **5.9 Capturing & Crafting the Data**

The present study attempted to capture significant details relating to the family home, environment, clothes, appearance, tone, facial/bodily features, accents and style in a fieldwork journal during each visit. These additional details were drawn upon when writing the creative non-fiction to offer the reader a sense of authenticity, realism and emotion (Caulley, 2008). Methods associated with creative non-fiction; the *dramatic* (‘show’) and the *summary* (i.e., the narrative = ‘tell’) were created in the form of a *secret diary* for Study 4’s findings and assisted in creating a plot for the narrative (Sparkes, 2002).

Within Study 4 the researcher employed a participant observer role. In this regard, it seemed appropriate to write in the 'first person' (i.e., enabling the scenes to unfold through the self and the others) (Cheney, 2001). The final Study also utilised parallel narratives. Specifically, the perspectives of each family member were used, relating to the same topic, but using *their* voice (i.e., the daughter and mother). Particular episodes within the diary were documented simultaneously. These parallel episodes of an event that were either witnessed by the researcher at the time of the study or shared by the participants (i.e., the mother and daughter) to the researcher during the process were interwoven into a '*time line*' of historical events, to allow the reader to capture significant moments in the family's lives which have shaped their current view point of physical activity engagement. *Character development* (Agar, 1995) was also critical to support the central storyline of the young girl (Paige), and her mother (Jayne) and to allow the reader to "...get to know and watch (them) develop as he or she follows them from scene to scene" Agar (1997; p.118).

### **5.9.1. Construction of the Narrative**

The notion that anyone can write creatively was dispelled early on in the construction of the narrative as the researcher had to undergo an extensive re-learning of 'writing' to establish how to stylize and craft the narratives observed and recorded during the observation phase. This was a lengthy and laborious process that took approximately six months to refine and shape (and re-refine) to ensure the established plot and characterization were a true representation of the author's and participant's existence. The tension and the crisis of conscious (i.e., that I had adequately captured the unique characteristics of each character) that the researcher encountered during this writing phase required continuous counselling by the research team. To assist in capturing the 'moments' I had observed within the field, creative non-fictional vignettes were used (Gilbourne & Richardson, 2005) as it was felt that the reader should know that these observations actually happened (Sparkes, 20020) (albeit crafted and dramatized utilizing creative techniques).

Triangulation was also adopted for the present study with member checking (Lincoln & Guba, 1985) occurring at every phase of the writing process.

This approach offered further opportunities for conversations with the family and assisted in strengthen how the family's meaning was to be conveyed within the diary extracts (Polkinghorne, 2007).

In constructing the narrative and establishing the 'characters' the participants were given the opportunity to create their own characters name. This varied from each re-work until both mother and daughter were happy with the name they had selected. The young girl (character name: Paige) also provided personal visual images / drawings of her life to supplement and support the text (Appendix C).

As previously discussed, although there was apprehensions in distributing the completed narratives back to the participants for reflection and feedback (in case they became shocked, upset or offended by how the researcher had portrayed their character and life stories) Study 4 believed this process would positively contribute to further emancipatory notions (Davis, 2002) and allow the participants additional time and opportunities to reflect and comment on the final draft.

The following narratives have been subjected to a number of re-workings of observations and practices (Caulley, 2008) and narrate the social experiences encountered by a child (Paige Winters, aged 12 years) (pseudonym) and her single mother of three (Jayne Winters, aged 45 years) (pseudonym) living in the cultural landscape and community of Knowlsey Metropolitan Borough Council. The reflections, perceptions and direct quotes offered to the researcher during the observations are embedded within the narrative and presented in *italics*.

Following the diary extracts and after reading works by Anderson (2000) the researcher has taken the position to allow the reader to digest the narrative in the genre of a creative non-fiction diary first then offers the reader a brief researcher reflective (i.e., both inductive and deductive) discussion relating to the narrative with the intention to assist and guide the reader further through the text.

**To See What I See**

**The Secret Diary of Paige Winters: Age 12  
years & Her Mum, Jayne.**

## **Introducing Jayne Winters – Single Mother of three, Knowsley MBC.**

In a straight-backed chair near the doorway to the well used kitchen sat a middle aged woman with shoulder length light brown hair. She wore little make up but her complexion appeared to glow. Her tired grey woollen tracksuit bottoms were two sizes too big. Her baggy T. Shirt was plain and well worn and she was wearing sparkling purple flip flops on her feet. Her arms were clasped around a warm mug of tea with her legs outstretched, one ankle over the other, she sat silently savouring the tranquillity of the moment. Her role of mother was just about to begin once more. My 'Hello' seemed to break her daze. She turned with a welcoming smile. She had a round face with a small nose and sparkling blue eyes. "*Cuppa?*" she enquired and began to slowly move from her chair. Her left leg appeared defiant, she used her right arm to gently give it the tug it needed. It appeared to be a slow and painful undertaking for her forty five year old body. It was hard to hide my sense of surprise. She acknowledged my confusion, "*Arthritis!*" she said with a weak smile. "*Some days are better than others but it's my own fault for playing so much squash when I was in my twenties. Sugar?*"

Squash? She certainly didn't look like a squash player! Nor would I associate squash with this area. Having only known her for five minutes I thought wise to keep those comments to myself and take the offer of the tea that was now outstretched in front of me.

I have come to understand that Jayne was indeed not a 'typical' resident of the Blue Bell Estate. By the time Jayne was twenty she had fallen in love with a man called Stewart and moved from Manchester and Hindley to the Estate for her man. It took time for Jayne to acclimatise. She was an outsider. A neutral accent. Not the usual Liverpoolian drawl that all of her new neighbours and acquaintances possessed and understood. She was different.

After twelve months living on the estate they were married, after three years together they had had their first child Harry (now eighteen) and she soon acclimatised to the pattern of local life. It was at this time in her life that she faced the biggest decision of her life. Soon Jayne was trading working as a draftswoman *and one of the first women to qualify as a civil engineer for a life as a housewife.* *"It was a happy time" Jayne recalls "I wouldn't go back to my old life and job. That was before the kids, all my efforts now go towards my children."* It is a selfless existence.

Two more kids, then a breakdown in the marriage followed. She could no longer rely on her husband for income. Once Harry was enrolled in high school and the other two children (Paige and Danny) could attend the local primary school she set about securing employment in the area. *"I'd always wanted to be an English Teacher, you know"* Jayne fondly reminisced *"But as soon as the divorce came through I had to stop having all those thoughts, I just couldn't afford it."* By the end of the summer of 1997 Jayne had successfully trained as a play worker and set up an after school club as part of her NVQ level. No one was more passionate or committed to the success of that club and the children than Jayne. She waited patiently for the assessors to visit and approve the club but no one ever did. Deflated and dejected Jayne faced a dilemma: give up or continue the fight. She had no more fight left inside her. Her divorce had taken it all, so she gave up and applied for a job in welfare at the local primary school.

Says Jayne: *"Once the club didn't take off I had to make a decision and a teaching assistant in the local school was the closest I could get to the real thing."*

Jayne remains as a teaching assistant in the local high school where her daughter Paige attends. She feels content that as a mother she can provide a home for her family. *"It's important to know that I can look after them, we can just about get by with my salary, we eat well but of course cheaply which is the important thing"*

...*"Biscuit with your tea?"*

## **Introducing Paige Winters –Daughter / Sister and resident of Knowsley MBC.**

There was a warm breeze blowing down the narrow garden of number 387 Newport Road. Crouched next to the weed strewn rockery was a young girl. Her back stooped low as if she was hiding something of great importance. Her slim frame wore blue tracksuit bottoms which had been beaten by her growth spurt. Her long, silky brown hair was tied back casually into a pony tail. She rose slowly to her feet. She was a tall, lean girl, much taller than the average eleven year old. *“Or hey Dipsy, what have I told you about hiding in the rockery? The cat will get you”* as she fondly kissed the top of the long eared, pearly grey rabbit’s head, now curled safely in her arms. As I approached I said ‘hello,’ she turned and smiled but her eyes remained down, she clutched Dipsy tighter to her chest as if he had suddenly transformed into her comfort blanket. She had a deep colouring to her face and similarly dark, well defined features. I could not decide whether she was hostile or shy and so approached with caution. I slowly moved along the path and directed my gaze and questioning to Dipsy who appeared unperturbed by my presence, continuing to eat his lettuce leaf.

Paige was a very intelligent and kind girl but overly cautious of strangers. She had lived at number 387 Newport Road all of her eleven years. For the first five years of Paige’s life no one paid her much attention, she spent most of her time whiling away the hours playing with her friends on the estate. Macy and Karla would regularly speed down the road on their scooters stopping to call for Paige to join them on their adventures.

Paige loved her life, sport, the fresh air and her friends but once she joined the local primary school everything changed. Those were tough primary school years. No longer did Macy and Karla call by, no longer was she welcome at the local after school club and no longer did she attempt to venture out to play.

She loved school but hated the bullies. She excelled in most subjects, especially music and English but feared the bullying and ridicule of those girls every day until her last at Primary school. It wasn't until her mum fought her case and the local authority finally granted her the right to transfer to a High School out of the Borough that the fog lifted and she regained her life. *"I've got a best friend now called Susan, she's great and I even get to stay over at hers at the weekend."*

Whilst most young people would feel the forty five minute commute too overwhelming to contemplate on a cold, dreary, Monday morning Paige thinks otherwise. *"I don't mind having to get up at 6am and catch two buses and walk some distances to school everyday because it's worth it."* Not only is she now left alone to enjoy her studies but is proud and confident of becoming a member of the canoe and pulling team and has regained her enthusiasm and love of sport.

After 5 minutes with Paige she looked up from her rabbit and smiled politely, *"You can stroke him if you want he's dead soft and wont bite."*

## **Fight Night**

**Friday 15<sup>th</sup> June 1999, 10pm, 2000**

Dear Diary

I'm scared, really scared. *I can't believe that psycho of a woman burst into OUR house and hurt mum.* She didn't even bother to knock. I was talking to mum in the kitchen at the time explaining how Danny had just pushed Kira over Shelia's garden wall. *Okay, so he shouldn't have done it cause she's a few years younger than him but I'd have done the same thing. She deserved it.* That ginger minger has been picking on him in the street for ages. *Only the other day she showed him up in front of ALL his mates shouting 'Mange boy – bet they won't be your mates soon when they realise how much you stink'*

He usually ignored it. Suppose you do when you're a boy and when you're with your mates trying to look cool don't you. *But today; today he just flipped. I've never seen him like that EVER.* I'm always winding him up. Like last night I hid his Harry Potter DVD just so I could watch my telly programme. You should have seen how angry he got. It was class! But he didn't try to hit me or owt it's just not his style. *That's why I reckon Kira must have really pushed him to his limit and it was ONLY a push, wasn't like she hurt herself or anything.*

But then things got really bad, my hands are still shaking writing this! *Her psycho mum came barging through our front door, screaming her head off at mum. You could tell mum wasn't expecting it. She just quickly ran to the hall to try and stop her coming any further. That's when the beating started. She just wouldn't listen to mum and started hitting her. Right there in front of us in the hall way!!! I tried my best to stop her. Me and Danny both did but she's enormous. At least 20 stone.*

*She's like a big, fat GIANT! So we just screamed and screamed as loud as we could for her to STOP and rang the police. Mum didn't try and fight back, she wouldn't. Mum's not like that. All she could do was put her hands over her face and try and shield herself from those horrid cow's punches. Eventually she did stop but *only* when she heard the noise of the police cars. It felt like hours. Mum was covered in blood and crying.*

*That stupid cow didn't even say sorry, she just smiled at mum when they took her away and shouted 'No one touches my kids – you got that Bitch, No one' We were all crouched on the hall carpet crying and hugging each other. Suppose I was relieved that it had finally stopped. Mum's okay, no serious damage but she's had some stitches. Her face is sooooo swollen it looks like my black fish Winston!*

*Mum's just got back from the station cause she's made a formal complaint. She deserves to go to prison for what she did. The worst thing is Danny feels it's all his fault. If he hadn't pushed Kira over the wall mum wouldn't have got hurt. I can see his point, but he wasn't to know that she had a psycho mum and that this was going to happen, and that's exactly what mum said.*

*It's been one of the worst days of my life. It's nearly 11:30pm and I still can't sleep. Hope mums going to be okay. How are we going to be able to walk down the street with *that* psycho still living three doors away. I'm scared, really scared.*

*Night night,*

*Love*

*Paige xxxxxx*

## **Fight Night**

**Friday 15<sup>th</sup> June, 11pm, 1999**

Dear Lol,

*I nearly wasn't able to write tonight what with the day I've had. I've had enough of living around here and I don't think I can take much more. Everything seemed to be going well up to around 2pm today. The kids were out front playing with their friends. Lindsey had called round in the morning for a cuppa and a good old natter and moan about how Steve still wasn't paying the maintenance for Riley and Suzanne. From what I remember Paige came in at 11am for a drink of water and then was back out there playing water bomb fights with Karla. We'd had a laugh at how she seemed to get wetter than the other team when she was trying to fill the balloons up with water as they kept bursting. They were only cheap Asada ones, so no surprise really!*

*Anyhow, I was just about to peel some potatoes for tea when Paige came flying through the hall, completely out of breath. At first I just thought she needed to fill up some more water balloons but then she blurted out how Danny had just pushed Kira over Sheila's front garden wall! No sooner had she finished what she'd said when Jo came flying down the hall in a fit of rage. Now I've been friends with Jo for year and we've never come to blows but she just looked like a demented monster! That's when I knew I needed to get her back to the front door. Paige was still in the house and I didn't want her to get hurt or see anything. Jo just wouldn't back down, I tried explaining that 'kids would be kids and that it would blow over soon enough' but she just kept lashing out.*

*She's a big girl is Jo, I didn't stand a chance and I was really worried for Paige and Danny's safety so I just held my hands over my face and prayed it would be over soon.*

Over all the shouting and the kids screaming I heard a police car. I have never been so relieved to see a police uniform in my life. It meant it was over and the kids were safe.

*I suppose the shock and adrenaline stopped the pain at first, but it's certainly kicked in now. I'm trying to put on a brave face for the kids but I'm struggling a bit. I keep going over and over it in my mind, why did Jo do such a thing? Only a few years ago we were the best of friend. When Jo needed someone to look after the kids while she went to work or shopping I was always the one to help out. Most weekends she'd be round for a cuppa laughing and joking about the kids and what they'd been up to. It just doesn't make sense? How can someone change from a trusted friend to a monster?*

*I can't actually believe she did what she did in front of my children too! It's as if she just didn't care? Gosh my lips swollen, it's a good job I'm writing this Lol as I don't think I would be able to speak! Anyway, the police seem confident that she will be prosecuted for what she has done so hopefully she won't be on the Estate for much longer. In the meantime we will have to make sure we keep our heads down. She's got a lot of mates on this Estate has Jo, I'll have to make sure the kids are safe. **There'll be no more playing out on the front. It's too dangerous.***

Night, Night

Jayne x

## Tick, Tack Toe

Monday 16<sup>th</sup> September 2000

Dear Diary,

*Auntie Linda came round after school today and gave me and Danny a tube of smarties to celebrate our first day in our new class. I can't believe mum let us eat them! Mind you she did tip the whole tube out onto the kitchen table and separated the blue and red ones before she gave them back to us. They were lush. My fave's are the orange ones so I didn't mind her taking the blue ones out. Mum and Auntie Linda seemed really excited about school. They kept asking about how my first day was and what the new teacher was like. I knew why, I bet mum wanted to find out whether she was stricter than Mrs Walsh and whether she would tell Macy, Tina and Chloe off for having a go at me.*

They looked so happy and excited I didn't have the heart to tell them the truth so I lied. Only a little one though!! Mum would kill me if I didn't tell the truth so I told them that Mrs Richmond was really strict and old and that she had already told Mat & Mark off for talking in class. Mrs Richmond was old and smelt a bit like mature cheddar cheese but she didn't even notice when kids were talking in class! This years gonna be worse than last. Ruth, Claire and Shannon were already waiting for me at the gates and even when I managed to sit on the blue table.....far, far, away from them they still managed to laugh and say horrid stuff about me. Claire shouted in class 'look, look Paige loves Richard, Paige loves Richard!' and everyone laughed - I could have died!!! I only asked him if I could borrow his pencil sharpener but cause of what they said he now won't talk to me.

Think I might have to tell mum next week if it carries on.

Lots & Lots of Love

Paige xxxxx

**Tick, Tack Toe**

**Monday 16<sup>th</sup> September, 2000**

Dear Lol,

It was the kids first day back at school after the hols. *I do miss them when there not here. The house always seems so quite. Mind you I have managed to get three loads of washing done and I made sure I got something nice in for tea. I made Danny's favourite, his cheese pasta dish with of course salad on the side. You can never have enough salad! Having a few problems getting Danny to eat healthily at the mo though, wonder whether it's his age? You hear all the time about eating 5 portions of fruit a day and all the dangers of unhealthy eating but when I've been trying to put his fruit in his pack-up it keeps coming back un eaten. He's saying it's because the bananas go brown so he won't eat them. Anyway, I've been to Lakelands today and found one of those pack lunch boxes that has a section were you can put your banana, so we will just have to see how it goes. If it still comes back uneaten then I'll have to have a word with him.*

*I collected the kids from school today and couldn't believe what I saw, there were loads of mums with huge bags of sweets for their kids! I did feel a bit tight going up with nothing BUT at least I'm not going to let my kids teeth rot. Speaking of sweets Linda called over after school for a quick catch up and brought some smarties round for them. As there are no sweets in the house the odd treat now and again doesn't hurt so I didn't mind them having them. I still couldn't bring myself to let them have them until I'd separated the colours though. Ever since Susan said they don't have blue and red ones in America it got me thinking that they don't have them in the tub for a reason! They've never done me any harm, after all, I'm the one that always has to eat them....but you can never be too careful can you!*

The kids seemed happy enough when they got in, but Paige seemed a little quiet, I do hope the bullying hasn't started again. Jayne x

## Choose or Loose

Saturday 3<sup>rd</sup> April, 2000

Dear Diary,

I cant believe what Karla has just made me do, I was happily playing Kirby with Karla, Macy and Karen on the backy when Karla said 'Pick' At first I didn't know what she was on about and thought we were going to switch games or sommat but then she put her hands on her hips and said 'You have to Choose'. I then kinda guessed it was about something more important 'Choose what?' I said 'Teams?' 'NOOOO Stupid' she said 'Pick which friend you want'. I couldn't believe it! So I asked her why I needed to pick friends when Karla, Macy and Karen were already my mates and had been for ages!!! She then said 'It don't work like that anymore and that on our Estate you could only ever have **one true friend**' and that I had to choose. I felt soooooo tight as I didn't want to hurt any of them cause they are all my mates and I enjoyed playing out with them. They all just stood there, staring at me waiting for my answer, my hands went dead sweaty and I felt sick. I didn't know who to choose! I couldn't cause if I did that meant the other two wouldn't be mates anymore.

'I can't pick' I told Karla. I thought she'd understand and that it was some kinda test or joke but she just looked at me, dead serious and said '**well you cant be anyone's true mate on the Estate then and so you can't hang out with us anymore.**' I thought Macy or Karen would have at least stood up for me or walk back to mine but they didn't. They just stood there staring and then carried on playing Kirby as if I was invisible!!!

I cried all the way home. **I HATE** the kids in this place there just not nice.

Paige xxxx

**Choose or Loose**

**Saturday 3<sup>rd</sup> April, 2000**

Dear Lol,

*The kids round here can be so cruel, I blame their mothers. Paige came home earlier besides herself. That her so called friend 'Karla' had made her choose one friend. What sort of friend does that!? I told her, "You're best staying right away from that lot in future. There not good kids, not good kids at all". In a way, I know I shouldn't admit it but I'm relieved, relieved that she wont be hanging out on the front anymore. There's so much trouble round here and it only takes getting in with a bad crowd (like our Harry) and you're stuck, stuck with those low lives' for ever. Not my Paige. She is a bright young thing, top of the class, she can go places, become something - A teacher or a musician.*

*She's already been having a tough time of it at school what with those bullies, so it's best if she doesn't go out around here. I'll make sure I walk her to places and she's not left to walk down the street on her own. You just can't trust these kids. It's not as bad for Danny because he's a boy, but Paige, no, I will definitely make sure I keep an eye on her as she's already very fed up at the mo. Why oh why can kids be so cruel?*

*I also had a nightmare with the Head today too. He just doesn't listen. Five times I've been into that school to see him about those horrid girls that are bullying Paige and **EVERY** bloody time he says the same thing, '**We are dealing with it.**' How can he be dealing with it if it's carrying on? If it's not the bullies then it's their brothers and sisters that are at the school! I'm at the end of my tether with this school and have a good mind to write to the Local Authorities to get her transferred. It's the only way I can see her getting any peace and starting to enjoy her school and sports again. There's also a rumour that he's in trouble with his bad budgeting. There's another side to that man, mark my words.*

**Love,**

**Jayne x**

## **Pop Goes the Weasel**

**Thursday 20<sup>th</sup> July 2000**

Dear Diary,

I had such a great day today, *Mr Wilson says that I'll only need a few more weeks practice and then I can go for my grade 4. How ace is that! I love playing my flute AND I've been asked to do a single recital (or sommat like that?) in the school musical!! I'm a bit scared though cause what if I muck up in front of all those people? But mum says he wouldn't have picked me if I wasn't good enough. I'm soooooo happy! Cant wait to go to High School too cause once I'm there mum says they might let me start playing the saxophone (if I'm good like). That's my dream.....can you imagine! Me playing the saxophone! I reckon if dad hadn't walked out when he did mum would have bought me one by now but there's no way we can get one now, I mean there as expensive as Stacey's dads car! Their just mega!*

*Mum also said the family trip to Wales is off this year. Don't think she can afford it. I'm a bit gutted but she's bought us some ace tents from Asda and said that we can camp out in the back garden every night in the summer hols instead. Can't wait, I might even let Dipsy and Flopsy sleep in my tent....I mean, I may as well as they live in a hutch in the garden anyway!*

*The sun was scorching today, red hot, all the girls at school were trying to get tans in the playground and were rolling their socks to try and get their legs burnt. Mine are quite brown all the time anyway so I didn't need to bother. Also, I know I said I was never going out in the Estate again but me and Danny were so bored when we got back and tea was taking ages that we had a quick game of Kirby while we were waiting. Can you believe that that fat psycho women from three doors down (Jo) tried to drive over our ball in the road. She even reversed and tried to run over it again! Me and Dan were dead scared. It didn't pop though. So we picked it up and legged it before she got out the car. Anyway must go, having Pizza and salad for tea with a nice big glass of water YUM*

Lots and Lots and Lots of Love,

**Happy Paige xxx**

## **Pop Goes the Weasel**

**Thursday 20<sup>th</sup> July 2000**

Dear Lol,

It's been a wonderfully sunny day today, both Danny and Paige have come home ecstatic. Dan apparently got a higher grade than you get for your year for History. His teacher said that he should be getting grades like that next year not now! And our Paige has been asked to do a flute recital at the school concert and they both brought home a beautiful picture. *Dan's was of a Kingfisher and Paige's was a self-portrait. I'll make sure I laminate them and put them on the wall with the others in the front room.*

*I'm so proud of my kids, there such good kids. A mum couldn't ask for better. They even took the cancellation of the annual family holiday to Wales well. I'm just relived that I managed to find two tents for £8 in Asda. I mean, you can't normally find bargains like that and they'll do the trick as there only camping in the back garden. It's been a tough day today though. The police rang and said that Jo is putting in an appeal for her case. Looks like its going to take a while longer and since putting the house up for sale not many people seem that interested. One smart looking, middle aged lady looked like a dead cert but as soon as I had to declare the problems and assault with the neighbours she ran a mile. You can't blame her really can you! I mean who would want to buy a house knowing that your neighbours beat you up and there's trouble. I wouldn't buy it. I just hope they evict Jo when the case goes to court. She doesn't own **her home** so they could kick her out over this! Don't want to be stuck living next to her for another twenty years! Especially as now I'm getting strange letters arriving to my address with her name on them.*

*It's so frustrating. I know whose writing them. It's her sisters' handwriting Janine. Their doing it on purpose but I'm not going to rise to it. I'm not like them. I must stay calm and just keep posting them back with 'return to sender' on. They can't get to me anymore.*

*Dan told me that Jo tried to pop their ball earlier today with her car. What type of **grown women does a trick like that?** The sooner we can move away from the area the better. *We don't belong in a place like this.**

Anyway must dash got to get the kids pack ups ready for tomorrow

Love

**Jayne x**

## **The Prison Sentence**

**Monday 8<sup>th</sup> September 2002**

Dear Diary,

I hate my life. I feel like a prisoner in my own stupid home. I don't have any mates; can't go to netball training after school cause 'Tina' and all those girls are there. Can't play out. To top it off Liam pushed me in the road the other day and I broke my wrist. Now I can't even play my stupid flute! ARGGGGHHHHH. He said it was an accident and looked dead scared when he heard I had to go to hospital. *You should have seen the look on his face! But he deserved it cause all I did was take MY ball back. He went crazy and snatched it so hard out of my hand that I thought my arm was gonna fall off! Then he pushed me. Right there in front of everyone into the road. Mum said it was lucky there were no cars coming or I'd have had more than a broken wrist! Bet he doesn't even get told off for it.*

*Why does everyone hate me? What did I ever do to those girls to make them pick on me so much? I couldn't even go to the new local after school club at the bottom of the STUPID road cause when I turned up they were all already there. So I had to go home. It looked really good, loads of music and art stuff. Sometimes I wish we could just be somewhere else. I'm not going to bother trying any of these new clubs on the Estate cause what's the point? If Tina isn't there then all her brothers and sisters will be. I can't win.*

*I'm sooooo bored I've got nothing to do apart from watching telly and stupid DVD's. What's the point of living here when there's nothing to do!!! Gonna have to stop writing now cause my wrists hurting a bit....*

**Love**

**Paige xxxxx**

## **The Prison Sentence**

**Monday 8<sup>th</sup> September 2002**

Dear Lol,

Well we've had fun and games this week. Poor Paige has broken her wrist after a fall out with Liam and now she can't do anything. *She's just cooped up in the house everyday with nothing to do. She's such an active girl. They both are. It isn't right that they have to stay in at their age but what can I do? I can't let them out on their own, it's not safe.* Even when I let Paige walk to the bottom of the road on Friday to try that new kids club she came back in floods of tears. *Besides, if they joined a club around here they would only be hanging around with kids from the estate and that's not good. The kids from the Estate are bad, through and through.*

No, I've decided, *I need to find them something to do after school, something that none of the other kids would ever consider going to or even know about. Shelia mentioned the Sea Cadets over at Rutherland Side. It might not be a bad idea. I mean, they'll get to socialise with some nice kids, there wont be any risk of any of these kids turning up and even if they did I bet they wouldn't last 5 minutes with the Corporal. They wouldn't be able to follow rules. They'd be kicked out before they even tried to pay their subs.*

I know it's a long way, but we've got the car, and *if it means the kids have something to do outside the Estate then it's worth a try. Think I'll give the number Shelia gave me for 'Corporal Karl Ward' tomorrow and see whether we can pop down next week for a visit. The fresh air will do the kids the world of good.*

**Love**

**Jayne x**

**'Eye Eye Captain!'**

**Thursday 20<sup>th</sup> February 2002**

Dear Diary,

I've just got my uniform. It's soooooo cool. I've even got a dark blue hat with red cord around the edges and everything. I look like I could be on 'Soldier Soldier' or maybe 'the Bill?' (cause its blue and white) but its still ace!!! *The lads have blue trousers and cause I'm the only girl at the mo the PO said I could wear trousers too. Phew I HATE skirts. Couldn't believe the PO let me cause he is dead strict. He normally only lets Rich get away with stuff cause he's his son and gets 'special' treatment but he was quite nice with me today. He came marching over just after drills and I thought he was going to 'bark' an order at me but he didn't, he just asked me to go to his office. That when I thought I'd done something really bad, but couldn't think of anything? So anyway, I knocked really quietly and he told me to sit down. He then said that he wanted me to try out as the Cox for the junior pulling team. Can you believe it!!! Me!!! In the junior team. I told him that I'd never ever been a Cox before but he just laughed and said, 'Nothing to it, all you have to do is shout orders, sure you'll get used to it!'*

*I think Danny's a bit jealous cause we've only been there a few months and he's not been selected for any teams yet. Sea Cadets is ace but deep down, I'd love to join the Marines. I've heard that girls can join now but you have to be thirteen and it's dead hard, so maybe I'll stay here for a bit and when I'm old enough try that out instead. Anyway gotta go as mum's making us pasta for tea, can you believe Dan ate 6 chocolate gingerbreads in half an hour. The pig!!!! Bet he won't be able to eat his tea and mum will kill him. Ha Ha..*

**Lots and Lots and Lots of Love**

**Paige xxxxx**

**'Eye Eye Captain!'**

**Thursday 20<sup>th</sup> February 2002**

Dear Lol,

*Picked the kids uniforms up today for Sea Cadets, they were a bit pricey but they do look smart and as the PO says 'You have to look the part if your in the platoon.' He's a bit intense is the PO. I think he lets the power get to his head and he definitely doesn't like having a woman around the place, but what can I do? For health and safety there has to be a female on site (at the stores) for Paige and until another girl joins he's stuck with me! It's great seeing the kids happy though with their nice new friends. Karl called by before for Dan on his bike. It's nice that he can go out now with the nice kids from the cadets. Their brought up right, to be polite, kind and not to get messed up in trouble. I'm a bit shocked that Karl's mum let him bike all the way here on his own though! But I suppose it's different for lads.*

*Oh I'm so proud of our Paige. The PO has asked her to try out for the cox on the pulling team and I think he's got his eye on her for the canoe and sailing teams too. She is such an athlete is our Paige. Reminds me of me when I was 20 years younger. I do miss sub aqua diving. Oh to be able to dive everyday in a hot climate and sea would be paradise. Not that I'll ever get the chance. I've not even been further than Wales in all my life. But a woman can dream!*

*My arthritis is hell at the mo. Must go back to the docs soon! I also think I've put a few pounds on recently and really should start thinking about doing some exercise. But when am I ever going to get the chance. What with driving them to swimming, the sea cadets and being at school...It would be nice just to have five minutes rest!*

**Love Jayne x**

### 5.9.3 Understanding Jayne Winters

Throughout Jayne's observations she continually aspired to provide a *better life* for her children. However, it appeared that this better life was one that continually rejected any current ties to their immediate community. It emerged that she saw herself as an integral component to the improvement of each of her children's social and physical development milestones. Although Jayne had no (apparent) aspiration to change her own patterns of physical activity and health behaviour, this did not deter her from investing all her efforts in doing so for her family. Jayne consistently displayed empathy and understanding for the children in the local community and had in previous years been a valued and active member of this community, investing time and effort (e.g., developing an after school service) to serve the community. However, Jayne believed her aspirations altered as a consequence of the assault she endured from a neighbour and previous long-term friend. The ongoing emotional pressure caused by the incident (i.e., fight night) and the long term bullying endured by Paige, only served as a spring-board for the family to detach themselves wholly from the community and find a solution. As a mother of three (i.e., to Paige, Danny and Harry, her eldest who no longer lives with the family), on a low income wage, Jayne felt her only viable option was to sell the home and start a fresh in a new environment. However, due to the seriousness of the assault and the requirement to disclose the incident (i.e., court case and evidence) to prospective buyers, the house never sold. Notably, the family (three doors down) that had instigated the offence were (unbelievably) allowed by the local authority to remain within their council owned premises. Essentially, Jayne and her children were trapped. The frustration this situation had caused clearly illustrated below:

*"...I don't want to be stuck living next to her for another twenty years! Especially as now I'm getting strange letters arriving to my address with her name on them. It's so frustrating. I know whose writing them. It's her sister's handwriting (Janine). Their doing it on purpose but I'm not going to rise to it."*

#### 5.9.4 Understanding Paige Winters

I first met Paige at the beginning of Study 1 (within the school context) and when her life was very different to that of Study 4. At the start of the research journey (i.e., Study 1-3) Paige rarely engaged in any after school pursuits as a consequence of the bullying she endured throughout her final years at her local primary school. It was visible that Paige had an inherent enjoyment of sport and recreational activities throughout her life but the opportunities were significantly restricted (mainly) as a consequence of the social isolation she endured. Paige attempted, on numerous occasions, to immerse herself in community after school projects and playing out in the street (in her earlier years). However, these episodes were regularly met with hostility and resentment from her peers:

*“ I thought Macy or Karen would have at least stood up for me or walk back to mine but they didn't. They just stood there staring and then carried on playing Kirby as if I was invisible!!!” ...*

*“..I cried all the way home. **IHATE** the kids in this place there just not nice.”*

The continuous representations made by Jayne to the local authority to allow Paige to attend a secondary school outside of the local catchment area were successful. Consequently, this had a remarkable effect on her sport and daily physical activity levels. Paige's confidence returned, and with it a new friendship group formed. During her schooling she was now able to enjoy her studies, excel in her favourite subjects and be part of the school sports teams. In addition, the sea cadets (which she then attended after school) with her brother also appeared to renew her confidence and physical ability. Recently she has been selected to be on the pulling and sailing team and was the first girl to be selected as a cox by the PO for competitions. Whilst this provided Paige with a new sense of freedom her mother still features heavily in the background. Although Paige is content with her life (at present) she still continually worries about what her future holds. The rumours that her new school may merge and become a 'super school' returning the old 'bullies' back to her creates anxiety and fear. Although Paige has managed to successfully craft a new life and social network for herself it has not gone un noticed that she can never truly relax and have a sense of belonging to the community that she lives within.

In accordance with Coffey and Atkinson (1996; pp. 128) the post-modern narrative adopted for Study 4 appeared to be the strongest vehicle to "...construct and convey *analyses* of social settings and social actions that are given a particular point which are impossible by other means. However, caution must be made to assume that through this approach the text provided has absolutist interpretation of the truth (Tierney, 2002). In this study, it was the narratives intention to draw the reader in, allowing them to engage with the material thus enabling them to make their own interpretation of its meaning. Similarly, in doing so, the study hoped to generate important questions for the reader (Barone, 1997) in relation to the children and families current and future physical activity and health behaviours.

The narrative provides an evocative insight into the tensions and belief systems of Paige and her mother, but interestingly, in doing so capture the unique differences and shifts in control of their physical activity and health perceptions. From the onset, the diary extracts appear to highlight critical '*life moments,*' and *experiences* that have influenced their activity and health aspirations. More specifically, these aspirations appear to be guided by what they feel they can achieve *outside* of the local community. The physical activity constraints noted by both characters within their local community were strongly associated with their own internal inter personal relationships with peers and community members (i.e., their interaction and past experiences with school peers and neighbours). Conversely, these unique characteristics (i.e., the bullying, assault, negative life experiences by local community members) were not uncovered in the findings of Studies 1, 2 or 3. This new approach disclosed a multitude of behaviours, namely; *Intrapersonal*: the psychological & behavioural determinants that emerged from observing the intention the family had to be active, their past experiences and their current engagement in the sea cadets, *Social*: emerging from the high level of family social support Jayne provided for her children to be active and healthy and *Environmental*: emerging from the 'fight night' episodes and the hostile community interaction with peers. These behaviours were implicit drivers for the chosen physical activity pursuits the family engaged in. Jayne's approach to her own activity engagement appeared '*diversionary*' prioritising her children needs as a tactic to excuse her from embarking on any form of physical activity herself.

However, it was evident that embedded in her own subjective norms and interpersonal experiences was a strong intrinsic awareness of the importance of being physically active and healthy. Consequently, she was driven to provide this opportunity for her children.

As a mother, Jayne was in control. She worked hard to manage the children's food consumption and restricted particular food types (e.g., not allowing sweets in the house, the children having to ask to place sugar on their cereal) and extra curricular activities (e.g., playing out on the estate with the local children) within the children's immediate local environment. Jayne also saw her role in society as a mother, first and foremost, and a teaching assistant second. Once I got to know Jayne I begin to see how she initially covertly masked her previous academic attainment and profession as a civil engineer (something which I had not expected), continually making reference to 'her old life,' 'the sporty times' as if they were now only a feature of her past life history and un retrievable due to her new life as a 'full time, single mother of three.' It was only after a period months getting to know Jayne that she began to make frequent reference to her past sports of 'squash, scuba diving and running' but disregarded the take up of any new opportunities for herself now due to her arthritis and her *busy* schedule - providing for her children.

Jayne has moved through social identity changes (Stryker et al., 2000) i.e., she had transitioned from her former identity (before the children) to a new formal and busy (social) identity role that perhaps prevents the morning of her old self. Akin to the social identity theory (Cote & Levine, 2002) Jayne's family had become part of her identity, with her main focus being their *protection*. The continuous emotional and physical abuse the family had encountered by local members reinforced the drive for Jayne to seek identity formation strategies to adapt to the local community she no longer felt connected to (Cote & Levine, 2002; p.2). From Cote & Levin (2002) typology Jayne had become a 'searcher' feeling disdain for imperfections within the community she and her family had encountered and thus became a 'guardian' choosing to disconnect fully from the local community.

In the pursuit for *'providing'* for her children Jayne made continual efforts to transport her children to extra curricula sports (outside the local environment) and selected premeditated activities (i.e., the sea cadets) to decrease the risk of *'those troublesome kids'* engaging in the club and mixing with her children. Whilst this process increased the isolation of her two children to the local children and any form of social cohesion to their immediate local community, Jayne never appeared concerned by this nor perturbed that the children could not access the local facilities (some 100 yards away) from her home.

In stark contrast she appeared, on numerous occasions, relieved that the children did not venture out to the park and ensured that if Paige needed to access public transport she would accompany her to the bus stop. During Studies 1-3 it was noted that whilst Paige attended primary school her physical activity level suffered and was noticeably lower than during Study 4. This appeared to be due to her restricted engagement in after school opportunities. Jayne made similar observations to this affect during Study 4, noting the marked increase and uptake of Paige's current sporting accomplishments (*'at school and at the Sea Cadets'*) in contrast to her former primary school years.

Paige (now as a 12 year old) also frequently reflected on her past and the episodes in her life that restricted her from being physically and socially active. Paige relied heavily upon the social support mechanisms of her mother and younger brother. There was an apparent implicit understanding by her that everything that was done for her by her mother was done so with her best interest at heart (i.e., emotional, social and physical wellbeing). Many of the aspirations and restraints to her physical activity and health behaviours directly mirrored that of her mothers and highlighted the socialisation influence of her parent on her activity engagement (Brustad, 1993). The substantial psychological and physical abuse she endured for a number of years by her local community peers only reinforced her desire to be removed from the environment (both within her education and recreational setting). In doing so, Paige reflected on the new sport, friendship group and after school recreational opportunities that were now at her disposal and her renewed vigour and confidence as a consequence of moving on.

### **5.9.5. Discussion**

Through an extensive period of participant observations (within an ethnographic framework) the micro (day-to-day existence) of a family and their naturally occurring physical activity and nutritional behaviours within the context of their own home emerged. The following section offers the reader a brief insight into the predominant issues concerning the role of the family, social support, socio-economic and demographic variables, personal and social norms which occurred from utilising this perspective. The significant factors that appeared to have impacted upon the family's health and physical activity engagement will be discussed in this section. Critical life moments and narratives will be drawn upon and inter woven into theoretical fabric to illuminate the main findings.

### **5.9.6. Physical Activity Engagement and Parental Facilitation**

Throughout the final study it was noted by the researcher that Jayne, a single mother of three, featured heavily within all her children's decision based processes. A clear illustration of this was offered early within the narrative when Paige described her mother's control over the sweets she was able to eat:

*...I can't believe mum let us eat them! Mind you she did tip the whole tube out onto the kitchen table and separated the blue and red ones before she gave them back to us*

From an observational perspective, Jayne imposed activity related and healthy eating parental regulation to Paige and her younger brothers Danny's choices but they did not seem at all phased by this level of control (in relation to their diet) and appeared happy for their mother to take the control in curbing their unhealthy food choice behaviours for them. From previous literature (Tilston et al., 1991) this parental role of control (especially in relation to diet) seems to be predominant construct within mothers.

Furthermore, it appeared that (perhaps) the current Department of Health (2004) guidance on healthy eating (or the 5 portions of fruit and vegetable marketing strategy) *had* permeated to Jayne (as a mother) and her subsequent motivation to instil healthy eating habit within her children:

*...Having a few problems getting Danny to eat healthily at the moment though, wonder whether it's his age? You hear all the time about eating 5 portions of fruit a day and all the dangers of unhealthy eating but when I've been trying to put his fruit in his pack-up it keeps coming back uneaten. He's saying it's because the bananas go brown so he won't eat them. Anyway, I've been to Lakelands today and found one of those pack lunch boxes that has a section where you can put your banana, so we will just have to see how it goes. If it still comes back uneaten then I'll have to have a word with him.*

Jayne's own parental modeling of healthy eating and positive reinforcement had ensured her children were (at least) aware of healthy behaviour habits and she was constantly encouraging them to eat a balanced and healthy diet. Wind et al. (2005) and Sanvik et al. (2005) stipulated that a child's daily intake (of fruit & vegetables) is associated with parental modeling, high self-efficacy, positive preference and knowledge of the national recommendation guidelines (Bourdeaudhuij et al., 2006). Interestingly, it is purported that parental control and influence decreases as a child grows older, particularly within the discipline area of physical activity (Gosling, Stanistreet & Swami, 2008). Although Paige is only 12 years of age and parental decrement may only take effect when she is between 16-18 years of age (as observed via her eldest brother Harry), on this instance, Jayne's influence on Paige and her younger brother (Danny) had not appeared to decrease. In contrast, it emerged that the children's physical activity and after school opportunities were governed by a series of complex behaviour mechanisms and determinants, with parental control featuring more often than their own personal choice (Gordan-Larsen et al., 2000). Jayne made frequent comments regarding her concern at the lack of local after school (and/or supervised) activities available for her children:

*...She's just cooped up in the house everyday with nothing to do. She's such an active girl. They both are. It isn't right that they have to stay in at their age but what can I do? I can't let them out on their own, it's not safe.*

The restrictions Jayne placed upon the after school opportunities her children could access also appeared to be governed by critical life moments (which will be discussed shortly in this chapter). I also felt the level of emotional and instrumental support Jayne provided for her children was (perhaps) deliberately executed to ensure she had control of where and whom the children socialised with. The narrative below clearly reflects this position;

*....If they joined a club around here they would only be hanging around with kids from the estate and that's not good. The kids from the Estate are bad, through and through.*

*...There's so much trouble round here and it only takes getting in with a bad crowd (like our Harry) and you're stuck, stuck with those low lives for ever.*

I sensed that, in my opinion, Jayne had an altruistic motivation to keep her children safe, happy and protected. Yet the emotional and instrumental levels of social support she continually offered (was at times) perhaps orchestrated to minimise the risk of her children socialising with the children on the estate:

*....I've decided, I need to find them something to do after school, something that none of the other kids would ever consider going to or even know about. Shelia mentioned the Sea Cadets over at Rutherland Side.*

*.... I mean, they'll get to socialise with some nice kids, there won't be any risk of any of these kids turning up and even if they did I bet they wouldn't last 5 minutes with the Corporal. They wouldn't be able to follow rules. They'd be kicked out before they even tried to pay their subs.*

Jayne also often referred to the fact that being a single mum offered her a valid (and easy) excuse to restrict her own physical activity engagement. Although lone parents in the UK do find it particularly difficult to locate additional time, financial resources and support to become physically active (Sport England, 2006), I did wonder whether Jayne was using this opportunity to her advantage to justify why she herself was not physically active and had no immediate intention of being so. Nonetheless, Jayne's behaviour mirrored that of research by Sport England (2006) which reported that single parents sacrifice their own fitness levels in order to support their children's participation in exercise and physical activity;

*...Think I've put a few pounds on recently and really should start thinking about doing some exercise. But when am I ever going to get the chance? What with driving them to swimming, the sea cadets and being at school...It would be nice just to have five minutes rest!*

Jayne's control over the type of sport and physical recreational activities that her children accessed has been alluded to earlier in the literature. Her presence was significant in assisting the children in establishing the foundation for long-term physical activity patterns. Although research by Nelson et al. (2005) identified that younger, white and higher SES status children appeared to engage more in sports with their parents Jayne did engage in recreational pursuits with her children but only through providing tangible support (i.e., transporting to and from the venue). However, it was noted that Jayne deliberately placed herself in her children's health choices during their development to act as a stabilising agent (Wing, 2000). She may not have 'physically' engaged in the activity herself but did ensure she maintained a 'presence' during all of her children's sea cadets and swimming practices. The children also appeared to have benefited from their mothers investment in positive health behaviours as Paige and her brother regularly commented and discussed abstract thoughts and reasoning regarding the importance and value of regular physical activity and healthy behaviours as a consequence of their mother's actions (Bandura, 1997; Troiano & Flegal, 1998).

However, although Jayne provided positive parental modelling she was not able to control the negative effects of the local community which appeared to be the main contributory factor that inhibited her family from accessing positive health behaviours (i.e., physical recreation, friendship groups) within their own local environment.

### **5.9.7 Physical Activity Engagement and the Local Environment**

The family's local environment played a critical part in the engagement and disengagement of physical activity behaviours. Humbert et al. (2006) purported that only low SES young people acknowledged the environment to be an important contributory factor for participation in activity.

Safe, accessible, low cost, well maintained equipment and facilities were identified as key factors for participation in physical activity by low SES young people (Humbert et al., 2006). These contributory factors and determinants for participation are supported further by various authors (Zakarian et al., 1994) who have found that having access to safe play environments are essential for engagement levels.

However, contrary to the research findings, it was not necessarily the cost, facilities or standard of maintained equipment that inhibited the family from engaging in the recreational pursuits but the community members themselves. The safety that Zakarian et al. (1994) alluded to in low SES communities does appear to resonate with Jayne and her family in Study 4 but their perception of safety is positioned to the 'type' of people currently residing within their own locale and not towards the 'built environment.' Frequently Jayne recounted her inability to allow her children to play outside, citing 'safety' as her paramount concern. She also reflects on the leniency of other 'nice' mothers in allowing their children to visit her son without being chaperoned:

*...I'm a bit shocked that Karl's mum let him bike all the way here on his own though! But I suppose it's different for lads.*

This fear of safety and lack of trust (i.e., of other young people on the estate) placed significant restrictions on her own children's physical activity freedom. Previous research suggests that physical activity levels in children correlate positively with outdoor play (Sallsi, Prochaska & Taylor, 2000). Moreover, Werner & Smith (1982) and Grotberg (1995) suggested that the beliefs that children place upon their own environment can play a vital function with regards to shaping their own 'health trajectories.' For Paige it was obvious that she viewed her own community as a hostile place and one in which she had attempted (on many occasions) but failed to connect with on a physical activity and recreational basis.

*...I feel like a prisoner in my own stupid home. I don't have any mates; can't go to netball training after school cause 'Tina' and all those girls are there. Can't play out.*

*...I couldn't even go to the new local after school club at the bottom of the STUPID road cause when I turned up they were all already there. So I had to go home. It looked really good, loads of music and art stuff.*

However, it would appear Paige possessed higher levels of the perceived benefits to being active over the significant perceived barriers she continually faced (Deforche et al., 2005). The significant effect of Paige's attitude on her 'intention' to engage in and on the level and duration of physical activity she is able to pursue was significant (Garcia et al., 1995; Craig, Goldberg, Dietz, 1996; Hagger, Chatzisarantis & Biddle, 2001). By reflecting upon the Social Cognitive Theory (Bandura, 1997) to the Final study's data it was evident that Paige and her mothers' environment did not possess the four crucial rudiments of the model; *connection, autonomy, skill-building and healthy norms* (Dzewaltowski et al., 2002, p.543). Work by Catalano & Hawkins (1996) resonates strongly within Study 4 with regards to the importance people place on having somewhere where they belong and feel connected to. In parallel to Catalano & Hawkins (1996) study, Study 4 findings have shown that Paige and her family felt disconnected and isolated from their own community and neither 'entered in,' 'wished to engage', nor 'returned' to being active within this environment..

*...I've decided, I need to find them something to do after school, something that none of the other kids would ever consider going to or even know about*

*...We don't belong in a place like this*

It was clear within Study 4 though that Paige possessed high motivation and self-efficacy to be physical activity *but* resided within a neighbourhood that restricted her to safely access these amenities. Study 4 raises concerns relating to the impact the local environment could have on Paige's emotional and physical wellbeing and to what extent could this determinant (i.e., fear of her community members) reinforce a long term inactivity behaviours if her mothers tangible support was removed.

Even though Deci and Ryan (1985), Bandura & Wood (1986), and Bandura (1997) have all postulated that an individual must be able to feel they have a sense of control over their behaviours within their community it is clear that the family within the final Study could only do so by engaging with others outside of their immediate community.

However, there does appear to be one critical flaw to Bandura's Model (1977) which is that the environmental variables proposed by the theory are not noticeably structured. Eccles et al. (1996) echoed this statement and offered that the 'environmental variable' should be labelled and broken down into 'social environments'; such as 'school-climate,' 'person-environment fit' (Maehr & Midgley, 1996; Dzewaltowski, 1997).

Within the final Study it was clear that Paige's after school environment did not incorporate 'critical elements' of these social environments (to match her psychosocial requirements) and contrary to current research which would normally predict that within the SCT Paige would decrease her motivation, performance and interest in that chosen behaviour (Dzewaltowski et al, 2002) this did not occur. Although the critical elements of Paige's social after school environments did not match her psychosocial requirement instead of decreasing her motivation and performance in being active after school she (with the assistance of her mother) overcame this by engaging in a social, after school environment which did match but was however, outside of her local community environment. This would suggest that if a child's drive and motivation is strong enough (and with adequate personal and instrumental support from the family) the environmental variable (i.e. of after-school climate) can be overridden.

Study 4 highlights the need to move the discussion along to explore the multiple levels of determinants that arose during the observations and to explore the important social, environmental and personal influences within Paige's physical activity behaviours. Moreover, one area that seemed to dominate Paige's more recent after school physical activity engagement was the lack of social support from her local community peers.

### **5.9.8 Engagement in Physical Activity via Social Support Mechanisms**

Social support can be defined as "*The existence or availability of people on whom we can rely, people who let us know they care, value and love us*" (Sarason, Levine & Basham, 1983; p128).

As such, it emerged over the nine month observational period that Paige and her brother received the majority of their social support from and through their family and sea cadet friends. This source of social support has been consistently found to influence participation in physical activity, across a wide spectrum of population groups (Sallis & Owen, 1998; Sternfeld, Ainsworth & Quesenberry, 1999; Steptoe et al., 1997). Social support for physical activity has also been reviewed from both a direct, tangible and/or instrumental angle (transportation to the activity) to an intangible, emotional motivational (e.g., praise) and observational (e.g., modeling of healthy behaviours) level (Springer et al., 2006; p.2). Interestingly, Study 4 observed higher levels of daily minutes of moderate to vigorous physical activity in Paige and her brother after school activities owing to the significant level of family social support received by their mother (Springer et al., 2006).

Aligned to Springer et al. (2006) Study, Study 4 also acknowledged that it was the *instrumental support* which assisted Paige and her brother in decreasing sedentary pursuits than actual family participation. Jayne's 'actual participation' in the leisure pursuit (as oppose to her encouragement) was not observed. However, there was a considerable level of instrumental support (i.e., to access the sea cadets) each week by Jayne coupled by extensive levels of *emotional social support* (i.e., praise, motivation) that maintained her children's enjoyment and engagement in the recreational pursuits.

Although there are limited published ethnographic physical activity studies with British families, I would propose that Jayne's attitudes towards health behaviours directly influenced the physical activity behaviour of Paige and Danny. The observations I have made would lean favourably towards this position as the healthy eating behaviours and intentions to be active of the children mirrored that of their mothers. Comparable with the literature (Lau, Quadrel & Hartman, 1990) Jayne (the mother) played an important role in the socialization of her children (Paige & Danny), exerting her social influence (Edwardson & Gorley, 2010) and her own belief systems associated with physical activity and healthy eating to her children, which in turn, shaped and influenced their physical activity preferences and healthy behaviours.

Even though Paige had been subjected to a great deal of bullying during her primary school years and even within her after school community activities she still possessed positive notions regarding the need and importance of being active and participating in sport. She regularly spoke about her enjoyment at her new school and the new found freedom she had of being able to do the sports she loved. She also regularly mirrored her mother's perception of the local community and the delight she now had for no longer being part of it.

The influence of a well-structured social and physical environment to the health behaviours and the capacity of an individual to change are well established (Barker, 1968; Bandura, 1996; Eccles et al, 1996; Forsyth, 2000) and appear to be established within this family's identity. Furthermore, if Forsyth (2000) argument is correct; that for long term adherence an individual needs a location where the normal practice is 'healthy behaviours' this would have favourable outcomes for Paige and her family as they have now located and established a suitable 'healthy' environment (e.g. the sea cadets and swimming). Previous research has alluded to this being a very challenging task for children and families residing within low SES environments (as they have been found not to generally promote positive social and physical opportunities within the local community or encourage healthy participation, Humbert et al., 2006). This position would resonate strongly with Study 4 findings as the family encountered very hostile behaviour from community members thus restricting the positive social opportunities on their own doorstep.

This theoretical framework of neighbourhood efficacy proposed by Sampson (1998) has recently been studied against health-related outcomes (Kawach et al., 1999). Egger & Raza (1999) also identified the existence of 'obeseogenic environments' (an obeseogenic environment is one where an imbalance between energy intake and energy expenditure exists i.e., caloric excess and low activity). Obeseogenic environments typically contain (even promote) high levels of physical inactivity. However, even though Jayne and her family resided in an area of low SES which have been noted as a typical indicator to obeseogenic environments, this seemed not to have dominated the family's life.

Similar to Kremers et al. (2006) it appears that there was no singular rudimentary environmental cause consistently associated to physical inactivity for this family – certainly for their diets the obeseogenic environments that dominated their local estate (e.g. the high number of fast food take aways, poor localised fresh food stores or restrictions of play / park spaces) did not alter their food choices (as they accessed the local supermarket i.e. Asda via the family car). Despite living in an obeseogenic environment, the family remain active by choosing to remove themselves from this ‘environment’ and becoming active and healthy elsewhere.

#### 5.9.9 Summary of Study 4

The ecological model of physical activity behaviour (Spence & Lee, 2003) is a useful model to turn to at this juncture to summaries Study 4’s findings as it was found that the family’s physical activity participation was influenced by all three elements of this model: i) *Intrapersonal* (biological, psychological & behavioural), ii) *Social* (Family support, modelling), and iii) *Environmental* (communities, facilities) (Sallis & Owen, 1999). Moreover, the interaction and relationship of the three elements have been considered and discussed concurrently when addressing Paige and her mothers activity rates (Humbert et al., 2006). Study 4 findings found all three elements of this model constantly interacted with the family’s physical activity behaviours and choices. Similarly, the intrapersonal factors observed and discussed throughout Study 4 have been previously utilised to review children’s activity levels. However, Sallis, Prochaska & Taylor (2000) argue that in this approach, researchers only address a fragment of the variance found within children’s activity levels.

Health related behaviour research has mainly focused its attention upon the cognitive determinants of behaviour change over the last decade (Crosby, Kegler & DiClemente, 2002). In support of Sallis, Prochaska & Taylor (2000) position Study 4 acknowledge that the children and family’s sedentary behaviours and physical activity levels are controlled via a complex system of decision-making processes (Epstein & Roemmich, 2001) with Paige’s attitude towards activity particularly being a predominant factor in her ‘intention to participate in physical activity.’

Aligned with King et al., (1995) one of the predominant overarching themes of Study 4's finding appeared to be the significant power and capacity a neighbourhood has to facilitate or hinder physical activity. In this sense, it would appear that this family's physical activity perceptions and behaviours were directed at a community level, which needed to be uncovered and observed to better understand the wider context in which physical activity choices are made. In conclusion, the realities of the day-to-day existence of a family and the reasoning behind their health related behaviour choices were understood and exposed during this final study and highlighted the somewhat difficult realities that restrict physical activity behaviour.

Moreover, all of the physical activity policy directives alluded to earlier in the literature do not take into account the multi-layered and complex process some families face by just making a collective and conscious decision to be 'healthy.'

The participant observations sourced and discussed in this chapter complimented by my own reflections, experiences and observations made on the ethnographic phase brings this chapter to a close. The thesis will now move on to discuss a more multi layered and broader discussion which will encompass and focus upon all four Study data sets.

# CHAPTER SIX

## **6.1 Discussion**

The salient themes of the thesis will be discussed in this chapter and a multi-layered critical discussion relating to the theoretical assumptions located within each study will be offered in an attempt to consolidate and synthesise the data, drawing a conclusion to the overall findings. The discussion will begin by addressing and critically reflecting on each research aim discussed within this thesis. On occasion some research aims will be discussed simultaneously due to the nature of the outcome achieved. The final section of this chapter will concentrate upon the methodological issues faced within the thesis and the personal journey the researcher took. This section will propose future ideas for conducting research in this discipline area. The chapter ends by discussing the emerging information the overall research has brought to light with regards to applied perspectives and practices in relation to physical activity and health behaviours which have significant implications for practitioners in the field of health promotion, physical activity, policy and strategic governance.

## **6.2 The Habitual Physical Activity and Health Behaviours of Children and Families**

The annual cost of inactivity in the UK has been recorded at £8.2 billion (Department for Culture, Media and Sport [DCMS] 2002). Similarly, approximately 3.2 million deaths in 2004 were attributed to inactivity (WHO, 2009). As the literature has previously alluded to, physical inactivity and unhealthy diets are among the main culprits in the development of the major non-communicable diseases, including cardiovascular disease, type 2 diabetes and certain types of cancer (WHO 2004). Moreover, now that CHD risk factors have been observed across young children (Young-Hyman et al., 2001) it is essential to understand the health profiles of the children located within Study 1-4 to ascertain whether they too may be of future risk to such non-communicable diseases.

Ultimately, this research was designed to provide Knowsley MBC (and the similarly aligned authorities and readerships) with a level of understanding of the barriers and facilitators that families encounter to be healthy and which may assist future policy directives to initiate future intervention programmes that encompass a life-course approach to being physically active and healthy (HEA, 1998).

Located within Study 1 (questionnaire phase) it appeared that the children and families, on the whole, were not meeting the physical activity and nutritional guidelines (DH, 2004). The Department of Health (2005) stipulates that over one third of children in England are now increasingly inactive with 1 in 4 (five to sixteen year olds) only participating in sport on a regular basis. Concurrent with this trend, the day before the questionnaire was administered only 37% (n=43) of children attended any form of club (including sports, recreation or music). Similarly, over a typical week, only forty seven percent of the children in Study 1 reported exercising *every day*, after school, within their community with a further forty five percent (n=52) accumulating only *one hour or less* of exercise (across a typical after school week). Although at this stage no association could be made with regards to the children's overall accumulative P.A profiles (and intensity levels) across a typical waking day, what could be ascertained was that nearly half of the children were not regularly active within their local community environment. This trend was also comparable to the sedentary behaviours that the children reported engaging in (i.e., the day before the questionnaire was administered) such as; TV watching (60%, n=68), playing video games (30%, n=34), computers and listening to music (25%, n=29). Consequently, these 'typically' sedentary behaviours have been associated with increased risk factors of obesity (Sallis & Galnz, 2006). Other authors (see Biddle et al., 2004; Dworak et al., 2007) dispute such notions and propose that the level of TV viewing of children has remained relatively stable during the past five decades therefore suggesting that sedentary behaviours (i.e., TV viewing) may be independent of physical activity engagement and as such should not be viewed in isolation (Biddle et al., 2009).

Due to the research methods employed for Study 1, the after school activities could not be viewed as a single benchmark indicator to suggest that the children were not achieving the current physical activity guidelines (DH, 2004) nor could these sedentary behaviours be attributed to future chronic health risk factors.

With regards to the parental data, Study 1 found 30% (n=12) of the families accumulated 31-60 minutes (per week) of strenuous exercise 1-2 times a week. This figure rose to 43% (n=22) when families stated participating in moderate levels of exercise 7-8 times per week yet only 25% (n=10) of this sample were found to accumulate 11-30 minutes of activity (per week). Caution must however be observed in making any strong assumptions against the adult data due to low returns. However, the trend seems to concur with current literature that suggests that only 32% of British adults are achieving the threshold level (30 minutes of moderate exercise, five times a week) (Pretty et al., 2003). Similar to the 63% of men and 75% of women in the UK who do not participate in enough physical activity to obtain any health benefits (DH, 1998; Sport England, 2002; DCMS, 2002), eighty two percent of the parents (n=47) reported either not being regularly active or not participating for long enough to work up a sweat. The graded dose-response relationship that has been observed across low physical activity to high mortality rates and discussed previously in the literature (Paffenbarger et al., 1986) would suggest that the parents (based on their low MVPA profiles) are at a heightened risk of this and the future onset of obesity, disability, chronic diseases (Ainsworth, 2000). It is unsurprising that for these reasons the British government have now called for a 'culture shift' to increase the physical activity rates observed across England (DH, 2005).

Moreover, four and a half percent of the overall burden of disease and deaths in Europe has also been attributed to low intakes of fruit and vegetables (The World Health Report). Similarly, fruit consumption during childhood has now been found to offer a protective affect against cancer in adulthood (Maynard et al., 2003) with further drives to reduce sugar intake and increase fibre content of children's diets. Aligned with the current literature that infers that the average UK consumption rates of fruit and vegetables are approximately 3 portions a day (DH, 2000), the parental returns from Study 1 reported that their families consumed fresh fruit and vegetables (at least) 2-3 times per week.

However, the predominant food sources the children reported to eat, most often, were not fruit and vegetables but generally low nutrient dense sources (chocolate: 51%, n=59; crisps: 36%, n=42, fizzy pop: 46%, n=53 and biscuits/cakes: 35%, n=41). These types of food have been found to have a detrimental effect upon insulin dynamics and body composition in children (Pereira et al., 2002; Davis et al., 2006). Furthermore, the high consumption rates noted above of sweet, sugary beverages of the children have also been associated to weight gain in children (Malik et al., 2006).

Some studies have also proposed that higher engagement patterns in physical activity are associated with increased uptakes of fruit and vegetable consumption and decreased levels of drug and smoking behaviours (Escobedo, 1993; Pate et al., 2000). Although this was not an initial intention of Study 1, it appeared that, contrary to Pate et al. (2000) there was no association between higher physical activity levels and greater fruit and vegetable intake. Indeed, half of the cohort reported high activity engagement levels but all children appeared to have poor nutritional profiles. Only a small sample of the children (20%; n= 23) reported trying smoking once (some as young as 2 – 5 years old) but a small, yet worrying (and startling) sample (n=4) of eight year olds purported that they were regular (i.e., everyday) smokers. The study could not propose that this association was attributed to low physical activity engagement levels yet if policy directives (as aforementioned in the literature) are concerned with the longevity of children's health and activity levels throughout lifespan, then the consequential risk behaviours found within Study 1 (i.e., for eight year olds smoking behaviours) should also be embedded within the guidance and holistic intervention strategies proposed.

Overall the parents included in Study 1 reported that their family *did* have a balanced diet, only having take aways (i.e., fast food) once per week. The children documented consuming 'hardly ever' or 'never' for quantities of bran, brown bread, fish, grains and vegetables. It was these discrepancies uncovered within the parents' and children's self-report data that began to establish a need for locating alternative methodological dimensions for Study 2.

The self-report data discussed above (from Study 1) should not be taken at face value as authors are now challenging the reliability of survey-based physical activity data as a true indicator of children's physical activity records. Basterfield et al. (2008) found a gross overestimation of Annual Health Survey data when they compared it to accelerometer readings.

Consequently, Aim (B) of this thesis began to attempt to capture a more reliable measure of the children's physical activity intensity and duration levels. Through incorporating an alternative physical activity tool the findings could now deposit that the boys were in fact achieving current physical activity guidelines (DH, 2004) during the week day (Wed – Friday) achieving 78 ( $\pm 44$ ) daily minutes of moderate to vigorous physical activity (MVPA). This level of the activity (i.e., moderate - vigorous recreation) has been explored against mental well-being with Steptoe & Butler (1996) suggesting that marked improvements in adolescent emotional well-being occur when young people engage in a moderate to vigorous level of physical activity. Similarly, higher MVPA scores have been noted to assist in healthy 'CVD' profiles in later life for children (Twisk et al., 2002) and may offer some protective effect for this cohort. Furthermore, it could now be suggested that the sedentary pursuits in which the boys engaged in (i.e., Monday-Friday) did not have a negative impact upon their actual MVPA physical activity scores. However, this association could not be made for the girls or for both genders during the weekend as the figure fell considerably to only 39 ( $\pm 29$ ) MVPA of daily minutes of activity being reported for boys. Study 2 reinforced previous literature (Science Daily, 2007) in establishing that both genders did not comply with the physical activity guidelines (boys achieving a mean daily score of 39 minutes of MVPA; 21 minutes below the recommended guidance) and girls achieving only 35 minutes (25 minutes under the daily physical activity guidance) during the weekend.

However, these specific threshold levels are not comparable to previous studies which have adopted similar measures in low SES population samples (Trayers et al., 2006) nor against more affluent UK primary school studies (Cooper et al., 2003) as both observed higher achievement levels of daily physical activity levels than in Study 2.

The declines noted in children's physical activity rates during the weekend could be attributed to the location in which the children reside, as more socially deprived areas (such as Knowsley) have been found to suffer the most with regards to having safe access to physical activity opportunities (Andersen et al., 1998). Cautioned must be reserved in citing that the children's 'deprivation' index may have had a direct association for the insufficient levels of MVPA reported in Study 2, as Study 2 did not make a direct comparison between affluent and socioeconomic deprived children. Nonetheless, this noteworthy observation warrants discussion as it assisted in the development and rationale of Aim (C) & (D) of this research and will be further discussed later in this chapter.

Similarly, although the parents reported that (on the whole) they ate take away (fast food) only once per week and (on the whole) maintained a well balanced diet, the relationship between parents' overall happiness to their current health and diet status differed. The data suggested that only 17% (n= 10) of parents were currently very happy with their overall health and only 9% (n=5) happy with their diet. The parental dietary responses also appeared to conflict with their own children's data and suggested that there may have been mis-reporting of the children's diets by the parents. It was this observation that highlighted the potential limitations associated with the sole use of self-report measures within the study's research design and the relevance of incorporating further qualitative principles within Study 2 (Tesch, 1990; Atkinson and Hammersley, 1994). Alongside the accelerometer study (located within Study 2) the research team made a collective decision to incorporate a photographic component to uncover what the children consumed in their home environment during the same week to assist and clarifying the very conundrum stipulated above. The use of photography (within Study 2) as a research vehicle provided an insight into the children's eating behaviours at home and suggested the children (as opposed to their family) gave a more balanced and accurate view of their own diets against their self-report scores. This has significant implications for policy and social science researchers as it emphasises that children from age eight years (and upwards) do have the cognitive capabilities and capacity to recall *their own* health behaviours and should be engaged in research and policy development in contrast to the over-reliance of some authors in engaging parents for reports on their child's health status.

Furthermore, this additional data allowed the researcher to see (visually) that the children's diets did not appear to conform to the recommendations of five portions of fruit and vegetables a day (DH, 2004). Only 30 photographs, from a possible 289, illustrated a portion of fruit (e.g., a banana, apple or satsuma) with only 36 photographs consisting of (some) fresh vegetables and meat or fish. This trend is concurrent with data from the Health Behaviour in School aged Children Study (2007) suggesting only one third of children eat vegetables each day and approximately two-fifths of young people consume fruit on a daily basis (Pearson et al., 2008). It also began to expose the potential socio-cultural aspects of the 'type' of food sources predominantly being used by the parents (i.e., convenience foods) and the lack of (healthful) meals that some children noted in their diet diaries (with some homes only providing a beverage (11 photographs) as their main meal).

Although the children were found not be over eating within the home environment, the typical meals they were consuming appeared to be of poor quality. Previous literature (Lewis et al., 2000) alluded to this and replicated findings from the Food Standard Agency which found that UK children were consuming too much saturated fat, sugar and salt in their diet, thus contributing to the childhood obesity debate (DH, 2004). Coon and colleagues' (2001) review of children and parental dietary correlates also found that lower socioeconomic status was associated with lower levels and/or frequency of fruit and vegetable intake; particularly associated to family income (positive correlation from 14 of 14 studies). A relationship between limited access to food within the home environment and the children of Study 2 (whom resided within a low socio-economic status ward) could be proposed as Knowsley is ranked the 5<sup>th</sup> most deprived area in England (Knowsley Council, 2005). It may be postulated that a 'lack of wealth' within this community could explain why some of the children did not consume 3 main meals per day during the weekend (and particularly during the breakfast periods). Similarly, forty seven percent of households in Knowsley have no car and will be reliant upon good public transport networks to access large supermarket outlets.

Aim (B) of Study 2 achieved a greater visual understanding of the eating behaviours of the children and families and exposed the types, frequency and location of food sources.

Yet the accelerometer component (located in Study 2) which was conducted at the same time, did not, and was derived from a positivist epistemology lens (Burrell & Morgan, 2006). The accelerometer study adopted a quantitative dominant design strategy (Miller, 2003) to view the children's activity levels through. Subsequently, a significant limitation to the physical activity data derived from Study 1 & 2 was that although it provided some collective evidence of physical activity trends at an individual level (Nelson, 2005) it offered no real understanding of the barriers, determinants and health choice of the participants involved. The study to this point was only able to cite the MVPA scores of the children involved. No further knowledge was obtained to inform the reader (and the researcher) as to *why* the children's activity data was so low during the weekend periods.

At this juncture the thesis began to evolve once more and understand that in order to gain a more insightful grounding of the children's and families' health and physical activity behaviours the position which had previously been the foundational structure of the study (from the sociological positivism perspective) needed to be altered to achieve the third (C) and final aim (D) of the study. The study had focussed until now on hard, external, objective reality, one that focussed upon the analysis of the children and families' physical activities, health and eating patterns in relation to discovering whether they conformed to the National and International guidance (as previously discussed).

The study needed to interpret the children and families behaviours as they occurred and functioned within the collective social world thus shifting to a parallel perspective approach within an experimental interpretive paradigm (Kuhn, 1970) to enable the researcher to evacuate an objective interpretation of the existence of the other.

The previous sociological positivistic approach had provided the platform to inform the study of the data trends occurring within the children and families lives but could assist no further. The realities of the every-day existence of the children and family's and why the children had opted to engage in predominantly safe, sedentary pursuits after school was now the main priority of the Study.

Study 3 enabled the realities of the children's day-to-day physical activity behaviours to emerge through a write and draw methodology (Pridmore & Bendelow, 1995). The predominant images the children had drawn clearly support data trends from both the earlier self-report and accelerometer studies and reconfirmed that on the whole children in this location engaged in: Indoor, safe, sedentary pursuits within the home environment watching TV and/or, playing computer games (70 images) or reading and listening to music in the home environment (10 images) after school. Some of the visual illustrations offered by the children do however suggest that after school sport (N: 60) (specifically; basketball (n: 2), football (n: 21), swimming (n: 32), Judo (n: 3) and Boxing (n: 2) are very much part of the children's lives but many of the illustrations exposed the barren landscape of *where* the children 'hang out' after school.

Voluntary sector organisations (Youth Sport Trust, Play Council, The British Heart Foundation etc) are cited as playing a pivotal role in changing children and adolescents' participation rates (for example; *The Neighbourhood Play Toolkit*). Furthermore, one approach taken by the Play Council is through implemented measures to provide good access to safe community play sites for children. However, the back drop the children chose to illustrate in their drawing of, for example, 'a broken bottle, a rubbish bag, an old bath' clearly suggest that perhaps the NICE (2007) guidance adopted within the Neighbourhood play tool kit (2006) is not reaching this community.

The barren images drawn by the children have been acknowledged by previous young people in low SES areas as an important contributory factor to low participation rates in physical activity (Humbert et al., 2006). However, there are mixed reviews as to whether SES can predict physical activity in children with Epstein et al. (1996) only reporting a variance of 6.8%. Nonetheless, Humbert et al. (2006) purported that safe, accessible, low cost, well-maintained equipment and facilities are key contributory factors for participation in physical activity by low SES young people.

The writing below (derived from the write and draw exercise) suggests that some of the children were being disadvantaged as a consequence of the play environment that surrounded them.

*“I want a football pitch and goal posts for the boys and somewhere for the girls to go and do girl things like skipping, talking, playing games, and many other things so that if your mates come from .....(other community) we haven't got anything to show off like them, so if we do get these things we'll be just as good as them”..*

This narrative offered a real insight into the cultural diversity and mix of the local children and the anxieties and perceptions they place on the lack of appropriate ‘built environmental service’ and resources within their home environment even though the children are perhaps achieving recommended health markers (National Healthy School Standards) one thing that is starkly obvious is that these health behaviours (including diet) are not being transferred to the home environment.

On a more promising level, data from Study 2 acknowledged that during the week-day physical activity was observed across the children. The World Health Authority (2004) has acknowledged the responsibility that schools must take in promoting activity to young people. Furthermore, as children in England (aged 5-16years of age) are entitled to a free place at a state school and, on the whole, the majority access this type of provision (Direct.gov.uk , 2009) school-based physical activity interventions appear to offer a good opportunity to engage with a large spectrum of children (Zahner et al., 2006). This therefore includes access within lower socioeconomic populations (Fox et al., 2004) for which the children of Knowsley (UK) reside.

Although the mean accelerometer daily MVPA levels for the boys (Wed-Friday) was within current national physical activity guidelines, data taken from all three studies provided evidence to suggest that both genders disengage with MVPA at weekends (within their local community). The ‘whole school approach’ adopted through active travel plans, cycling and national healthy schools programmes (PESSCL) within Choosing Health (DH, 2004) and Health Challenge England (2006) plans suggest that regardless of the children’s after school and weekend MVPA trends the potential to improve the children’s activity profiles could be warranted through further investment within the school setting. This well-structured social and physical environment could enhance the children’s current health behaviour and empower (or better enable) them to engage in positive behavioural change (Barker, 1968; Bandura, 1996; Eccles et al., 1996; Forsyth, 2000).

Similarly, if the holistic health of every child (from 0 – 19 years) is a central driver of Every Child Matters: Change for Children (DfES, 2004); ensuring that every child is supported in staying safe, being healthy, enjoying and achieving and making a positive contribution, then the socio-cultural issues that have emerged across the sample needs further attention. Policies and Government Directives may (as I did) naively assume that eight year old children operate from the same behavioural constructs and mind set and consequently require the same tailored approach to service provision and development in their local community, when in fact, the write and draw exercise exposed that this is not entirely the case and there are indeed culturally specific contextual nuances and attitudes to consider. There may be significant ramifications for the successful outcome of any policy and strategic development plan that is rolled out to this community which assumes a ‘one size fits all’ approach to tackle the unhealthy and inactive behaviours of the community members.

The requests made by the children for a new after school club within their local community cited for it to: *to be unsupervised (adult free), open 24 hours a day, free admission, age restricted (no over 13's)* with some children wishing for their buildings to have a ‘*bar in it*’ ‘*where you can have a bud with your mates*’ ‘*blacked out windows*’ and drink promotions ‘*4 bottles of bud for £1.40*’ appear unique and culturally specific to the children and their community and as such cannot be generalized to the lay public.

Overall, the types of after school activities and food choices the children recorded across Study 1-3 may simply be determined by the local resources the parents have access to (Welk et al., 2003). Ball et al. (2006) further suggested that it may not necessarily be one determinant that overrides physical activity participation for the family (i.e., not just the ‘built environment’). There appeared to be a variety of neighbourhood level influences encountered for the children and families but Study 1-3 could not yet understand the climate in which these behaviours occurred. The final study needed to locate the physical activity engagement of the children and family’s as it occurred through their day-to-day existence through observing their environmental, personal and social determinants.

As alluded to earlier the final phase of this thesis (Study 4; Aim D) was able to do this from adopting a post-positivistic ideographic position i.e. allowing the participants day-to-day existence and physical activity and health behaviours to unfold during the process of observations (Blumer, 1969).

By adopting an interpretive paradigm (Burrell & Morgan, 2006) the critical tenets of the families' physical activity and health behaviours emerged. Just as a butterfly has to sit on its empty shell, following its emergence from its chrysalis, in order to expand and harden its wings before flight, Study 4, waited, during a 9 month period to collect the thoughts, actions and narratives that would shape and express Study 4's findings.

The procedural tenets of the final Study, utilising observations (Denzin & Lincoln, 2005) with a family case study (located in the natural setting of the family home) was motivated to provide an insight into the generalisations made from the mixed methodological framework of Study 1-3 data. Similar to various other authors (Becker et al., 1961; McCormick, 1994; Asmussen & Creswell, 1995; Pugach, 1998) the choice of a singular instrumental family case study was embraced to advance the understanding of Study 1-3 to the '*lived experience*' and attempt to locate the determinants behind *why* children and families within Knowsley were predominantly found to have poor physical activity and health behaviours

The following section offers the reader a brief insight into the predominant correlates associated to health related behaviours (i.e., the role of the family and social support, socio-economic and demographic variables and personal and social norms) which occurred from utilising an ideographical perspective for Study 4. The significant factors that appeared to impact the family's health and physical activity engagement are discussed in this section.

One construct that never emerged throughout Study 1-3 which was established early on in the final study was the role (and influence) a parent takes in a child's physical activity and eating behaviours. Stack (1996) defined 'family' as:

*"The smallest, organized, durable network of kin and non-kin who interact daily, providing domestic needs of children and assuring their survival"*  
(Stack, 1996, p; 31)

Comparable with the literature (see Lau, Quadrel & Hartman, 1990) Jayne (the mother) played an important role in the socialization of her children (Paige & Danny), exerting her social influence (Edwardson & Gorley, 2010) and her own belief systems associated with physical activity and healthy eating to her children, which in turn, shaped and influenced their physical activity preferences and healthy behaviours. This was the main overarching construct that was consistently observed and seemed to navigate (and dominate) the family's current and future physical activity choices. The single mother (Jayne) featured heavily within all her children's decisional based processes.

A clear illustration of this was offered early on within the narrative when Paige describes her mother's control over the sweets she was able to eat:

*...I can't believe mum let us eat them! Mind you she did tip the whole tube out onto the kitchen table and separated the blue and red ones before she gave them back to us*

This is further supported by Jayne's narrative (the mother's beliefs) and behaviours of curbing and controlling the level of sugary foods and intake of fresh fruit and vegetables they consume as a family:

*...As there are no sweets in the house the odd treat now and again doesn't hurt so I didn't mind them having the smarties...*

*..You can never have enough salad! Having a few problems getting Danny to eat healthily at the mo though, wonder whether it's his age?*

*...You hear all the time about eating 5 portions of fruit a day and all the dangers of unhealthy eating but when I've been trying to put his fruit in his pack-up it keeps coming back un eaten....*

From an observational perspective it suggests that Jayne imposed activity related and healthy eating parental regulations but that the children were happy for their mother to take this level of control (in relation to their diet) curbing unhealthy food choice behaviours for them. Tilston et al. (1991) reported that this parental control (especially in relation to diet) was more consistent across mothers. Similarly, the narratives provided a clearly indication of Jayne's intrinsic motivation to ensure her children were attempting to adhere to the Department of Health (2004) dietary recommendations the best they could. Apart from the 5-a day initiative, from a Policy perspective, the majority of key governance (alluded to earlier in the literature) set in place by the Department of Health and Children Schools and Family Services to curb the obesity trends and increase physical activity participation appeared difficult for the family to embrace and/or operationalise.

Comparable to the literature (see Voorhees et al., 2005; Price et al., 2008; Jago et al., 2009) the social factors within Paige and her brother's local neighbourhood were notably associated with their low participation rates of physical activity. Although Jago et al. (2009) have only recently raised the concept of neighbourhood friends and how this could facilitate or hinder physical activity and eating behaviours, the perceived threat the children of Study 4 felt from their community peers had ramifications to their active commuting, physical and mental health status. Paige used to live within a 1-2 mile radius of her school and as such was able to walk more often to school (Environmental Protection Agency, 2003) but due to the consistent bullying from her peers (throughout her primary school education) she was allocated an alternative school outside of the Borough. Paige subsequently had to take 2 buses and a train journey every day to commute to her new school which clearly restricted the level of 'active commuting' she was able to do on a day-to-day basis.

The community did appear to provide access to a variety of after school provisions within the local environment but as the narrative below indicates, the 'invisible' barriers the family encounter which aligned to neighbourhood friends inhibited Paige from accessing these provisions:

*...I couldn't even go to the new local after school club at the bottom of the STUPID road cause when I turned up 'they' (i.e., the girls that bully me) were all already there. So I had to go home. It looked really good, loads of music and art stuff.*

(Paige)

The narrative below indicates, again, the anti-social behaviours of both the adults (parents of other peers) and the neighbourhood children who only served to increase the anxiety and danger Paige and her family faced if they wished to engage in localised physical activity provision:

*...I don't have any mates; can't go to netball training after school cause 'Tina' and all those girls are there. Can't play out. To top it off Liam pushed me in the road the other day and I broke my wrist.*

(Paige)

*...She's a big girl is Jo, I didn't stand a chance and I was really worried for Paige and Danny's safety so I just held my hands over my face and prayed it would be over.*

(Jayne)

The perceived danger and threat Jayne continually alluded to for her children's safety during the nine month period of observations resulted in the family having no intention to try the sporting opportunities on offer within the ward boundary.

The apparent lack of acknowledgement within any of the policy documents aforementioned to the 'hidden' and 'social' community barriers that could occur within a physical activity community framework planning is concerning. Most planning frameworks address and target the 'built' environmental barriers and 'attitudes' to exercise and sport but none address the underlining importance that 'neighbourhood friends and communities' must have in supporting new and remaining infrastructures of physical activity interventions.

Similar to Cale & Harris (2005) it was evident that whilst policy focus promoted 'sporting opportunities,' there has been limited promotion of unstructured, lifetime physical activity initiatives for health. Although social support from neighbourhood friends was not visible in Paige and her brother's physical activity behaviours, consistent with the literature (see Steptoe et al., 1997; Sallis & Owen, 1998 & Sternfeld, Ainsworth & Quesenberry, 1999) the positive social support received from their mother correlated notably with their uptake and engagement levels of physical activity.

Regardless of the hardship the family had endured within their local community Paige and her mother's attitude (and pre-disposition) towards the importance of being physically active appeared to have been a predominant factor in their 'intention to participate in physical activity' (irrespective of what they had previously encountered within their local community). As previously alluded to in Study 4, Paige and her mother's environment did not possess the four crucial rudiments of the Social Cognitive Theory (SCT) model (Bandura, 1997)(i.e., connection, autonomy, skill-building and healthy norms) (Dzewaltowski et al., 2002, p.543). However, I have attempted to illustrate, through modifying the Fishbein & Yzer (2003) model of physical activity behaviour prediction (see Figure 6.0 below), that the family (despite being disconnected and isolated from their own community neither 'entering in,' 'wishing to engage', or 'returning to activity there') (Catalano & Hawkins, 1996) did override the 'environmental construct' of the model by finding solace and gaining control over their own health behaviours elsewhere.

# An Integrative Model of Behavior Prediction

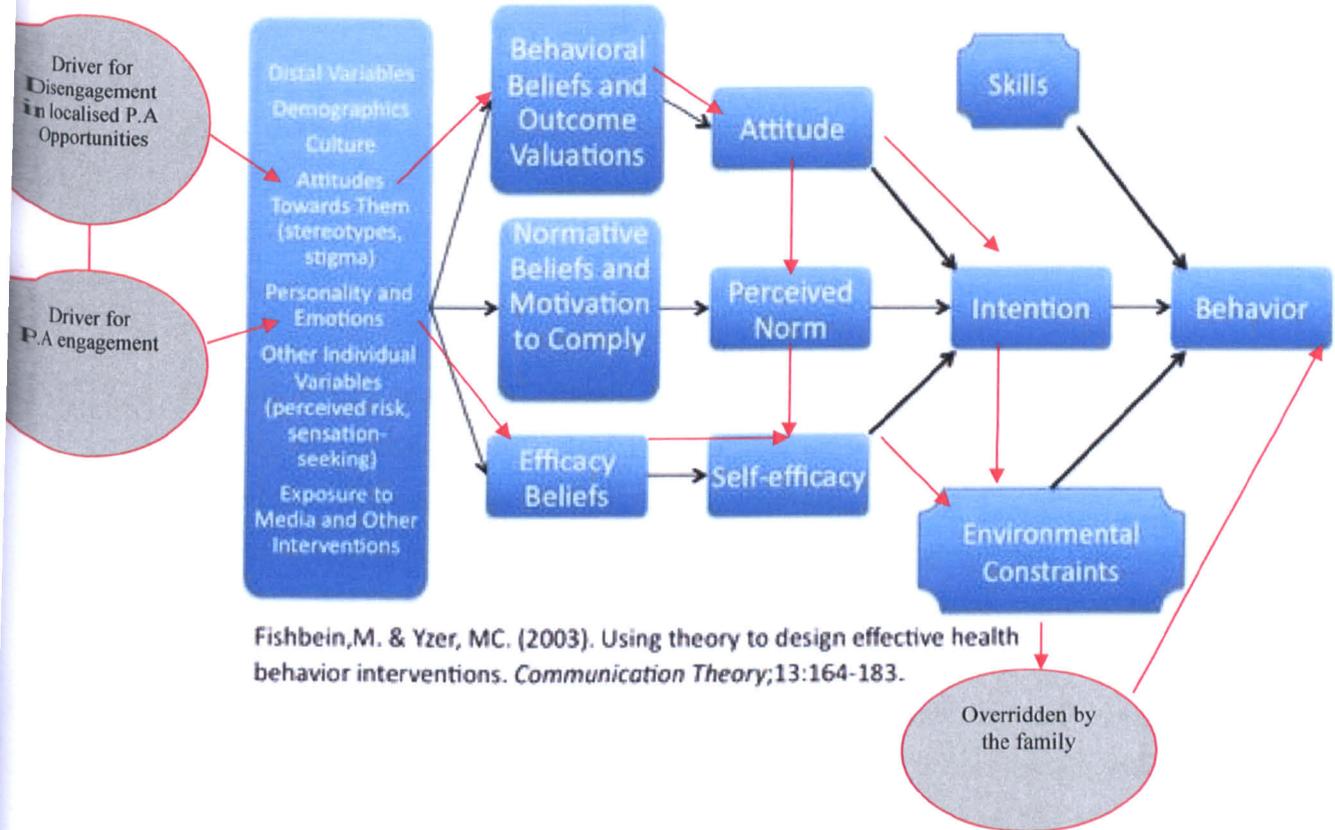


Figure 6.0.

The well-structured social and physical environment that the sea cadets and swimming practices provided (outside of the family's local environment) indicates that irrespective of environmental barriers, children and families do have the capacity to change their health behaviours (Barker, 1968; Bandura, 1996; Eccles et al, 1996; Forsyth, 2000), 'if' they are strongly motivated to do so.

Forsyth (2000) suggested that in order to achieve long term adherence to a positive behavioural change an individual needs a location where the normal practice is 'healthy behaviour'. The final study suggests that, perhaps for Jayne and Paige anyway, this can be achieved outside an individual and immediate local facility.

However, it must be stressed that if the access to the family car was restricted, or even removed, then the ability of the family to pursue positive health behaviours may have been very different.

It would appear that this motivation to pursue positive health behaviours may not have been present within the main cohort of the children in Studies 1-3 (and also for Paige during the accelerometer phase – prior to her mothers intervention) as (on the whole) the majority of the children’s accelerometer data (including Paige’s) suggested that during the weekend none of the children achieved the required threshold levels of MVPA and so were not seeking activity participation elsewhere.

If I reflect back to the SCT Theory within the Final Study it would also seem likely that the reciprocal interaction of the family’s environment, personal factors, and behaviour do engage one another. Yet the influence each had upon their physical activity levels were not necessarily of equal strength or proportion. The model of causation (Bandura, 1989) within SCT emphasises the sheer complexity of this theory. It would appear that Jayne and Paige are both the *producers* and *product* of their environment. The negative and at times, physical abuse, endured by the family determined this aspect of their environment to which they were exposed, and perhaps this behaviour, in turn, enabled them to modify their physical activity levels through disengaging with the environment in which the negative behaviours occurred. If this disengagement had not occurred then it is likely that (similar to others within this locality and Study 1-3) their physical activity engagement would have remained low.

Nonetheless, inherent within reciprocal determinism, although Jayne felt she was unable to change some circumstances of her life (i.e., financial restrictions, unable to sell the family home and feeling trapped in a community she no longer belonged) she was still able to influence her children’s destiny by ensuring she provided a more ‘suitable’ environment for them to form lasting friendships and become physically active within.

It is these basic capabilities of behaviour; symbolizing, vicarious, forethought, self regulatory and self-reflection (Bandura, 1986;1989) within the SCT that were observed within the Final Study which were found to determined what direction Jayne and her children's physical activity behaviour would take. The Social Cognitive Theory also highlights that there are biological personal factors to consider within the family (sex, ethnicity, temperament, and genetic predisposition).

Yet within Study 4 the overriding determinants of physical activity behaviour for both Jayne and Paige was their expectations, beliefs, self-perceptions, goals, and intentions that assisted them in shaping and directing the behaviours. The bi-directional interaction that interestingly occurred between the local environment and the personal characteristics (Bandura, 1989) (i.e., beliefs expressed) by the mother (Jayne) were notably absorbed by Paige and her brother Danny. The observations of their mother's emotional reactions to convey information about their local community (i.e., 'the kids around here aren't nice kids') clearly activated emotional reactions such as modeling of similar behaviours for the children. During the 9 month period of observations it was clear that Paige and Danny continually mirrored the views of her mother in relation to her own thoughts and actions of physical activity engagement within her local community.

There have been mixed reviews regarding the significance of parental, sibling and friendship modeling of physical activity to children's own physical activity rates, with no significant findings being recorded across 96 independent samples (Ferreira et al., 2006). However, comparable to Davison et al., (2003) the children's uptake of physical activity (within Study 4) appeared to be positively associated with the level of logistic support (i.e., enrolling their child in sea cadets, attending events) provided by their mother (Jayne).

The high level of social support noted across Study 4 did influence participation in physical activity and healthy eating behaviours and appears to strengthen the notion that a range of social support is vital for young people's engagement in healthy behaviours (Steptoe et al., 1997; Sallis & Owen, 1998; Sternfeld, Ainsworth & Quesenberry, 1999).

A consistent positive association of parental modeling to healthful food uptake in children has also been found across a number of studies (see Cullen et al., 2001; Bere & Klepp, 2004) with several studies (see Gibson et al., 1998; Kratt, Reynolds & Shewchuk, 2000; Cullen et al., 2001; Fisher et al., 2002; Bere & Klepp, 2004; Cooke et al., 2004; Vereecken et al., 2004) advocating the importance of parental uptake of fruit and vegetables to children's consumption of healthy foods. Parental modeling, intake and home availability of fresh fruit and vegetables was observed throughout Study 4 and seemed to be strongly associated to Paige and her brother's eating patterns. Gillman et al. (2000) noted that repeated exposure to the foods that children observe their parents eating seems to increase the likelihood of those children requesting these food sources. This perspective was echoed across Study 4 with Paige's request for salad and water (mirroring her mother).

In the context of physical activity, it appears that the considerable level of instrumental support (i.e., to access the sea cadets) each week provided by Jayne coupled with extensive levels of emotional social support (i.e., praise, motivation) increased the children's enjoyment and engagement in the recreational pursuits. However, it ought to be noted that the high level of emotional and instrumental support offered by the mother were, in my view, deliberately executed, not because of an altruistic need for her children to be healthy and active but to ensure she had control of where and whom the children socialised with. This ideographical observation clearly emphasises that the level of motivation and social support a parent offers to their children (regarding their dietary and physical activity choices) may not be as clear cut as previously thought and that there may be 'hidden' drivers and 'motivators' for the parents' actions.

It is apparent from the (overwhelming) evidence from the thesis that the local environment plays the most critical part in the engagement and disengagement of physical activity behaviours of the children and families. It is suggested by Humbert et al., (2006) that only low SES young people acknowledged the environment to be an important contributory factor for participation in activity. Within Study 3 the illustrations and writings offered by the children clearly reflected this position and heightened the need for safe, accessible, low cost, well maintained equipment and facilities in order to enhance participation levels in physical activity.

Contrary to the findings of Study 3, the prolonged engagement with the family during the final study suggests that it was not necessarily the cost, facilities or standard of maintained equipment that inhibited the family from engaging in the recreational pursuits but rather the neighbourhood members themselves. The notion of ‘safety’ that Zakarian et al. (1994) alluded to in low SES communities does appear to resonate strongly with Jayne and Paige. However, their perception of safety is positioned not towards the ‘built environment’ but within the very ‘community members’ with which they reside.

From reviewing the research journey this thesis has taken (specifically located within Study 3 & 4) it would seem to suggest that the theoretical framework of neighbourhood efficacy proposed by Sampson (1998) resonates strongly with the children of Study 3 and the family of Study 4. Study 3 and particularly Study 4 exposed that communities have the capacity to facilitate or hinder physical activity (Jago et al., 2009). In this sense, it would seem reasonable to propose that family’s physical activity perceptions and behaviours are directed at a community level, which can only be truly uncovered by observing the day-to-day existence of the community members that reside within that locality. Policies aforementioned appear to neglect the intricacies and/or nuances of local neighbourhood that ultimately impact the effective operationalisation of any policy judgement.

The multi-layered and complex process some families face by just making a collective and conscious decision to be ‘healthy’ needs further thought by policy and development officers prior to expecting change. In this sense, it would appear wise for policy development officers to explore the physical activity perceptions and behaviours at a neighbourhood level, to better understand the wider context in which physical activity behaviours occur prior to implementing directives for change.

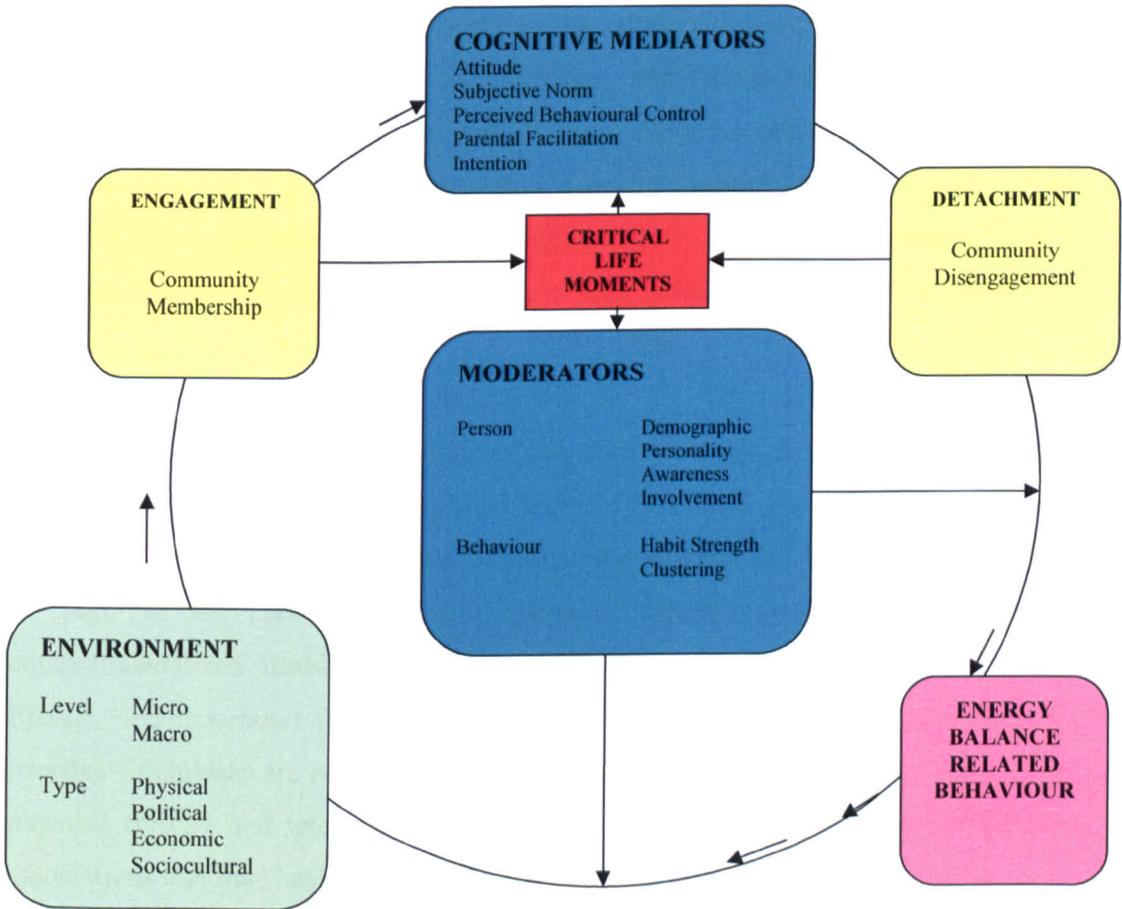
Furthermore, this thesis has begun to understand that health related behaviour theorists need to conduct physical activity and nutrition research in new ways, just as Baranowski (2006, p; 3) stated ... *“change is random and cannot be predicted.”* The intrinsic and complex nature of the family suggests that perhaps the new non-linear ‘Chaos and Dynamic System Models’ proposed by Resnicow & Vaughn (In Press) need to be explored further within this field.

However, in order to do so, they must not neglect the significance of the inter-relationship between psychosocial and behavioural predictors (Kremers et al., 2006; Cullen et al., 2003) emotional manipulation (Bagozzi & Gaither, 2005; Richardson et al., 2006), environmental (Jago & Baranowski, 2006), biological influences (Rankinen & Bouchard, 2006) and the importance of neighbourhood characteristics (i.e., where we live) (Jago, Baranowski & Baranowski, 2006) that emerged from Study 4 and appeared to condition and predict individual dietary and activity behaviours.

The application of a conceptual framework that embraces the environment has recently been proposed and developed in this area and applied to both physical activity and diet. The Environmental Research Framework for Weight Gain Prevention (Kremers et al., 2006) in conjunction with the model recently developed by the Committee on Prevention of Obesity in Children and Youth (Koplan, Liverman & Kraak, 2005), offers a more functional and insightful understanding of the potential determinants of an individual's health behaviours. I have attempted to illustrate this to the reader by modifying the framework stipulated below (Figure 6.1). My intention for this is to demonstrate from what I have learnt during Study 4 that it is 'the critical life moments' (as illustrated within the family diaries) that occur within a person's life cycle that dictate their engagement or disengagement with activity and that their local environment (neighbourhood friends and relationship formation) play a key driver in this process. In turn, what I have tried to emphasise by incorporating the new constructs of '*critical life moments, engagement and attachment*' to this model is that physical activity behaviours seem dependent upon the 'critical life moments' that occur with a person's life cycle (i.e., these 'critical life moments' (either positive or negative) occur within the local environments and are formed by the *engagement and interaction* with others. These personal interactions strengthen the moderators and cognitive mediators of that person. If the critical life moments (i.e., during the engagement of physical activity behaviours) have impacted negatively upon a person, this will have a negative impact upon the moderators and mediators of that individual. This would result in weakening the affiliation of physical activity opportunities to that membership group.

Similarly, if the critical life events remain positive and occurred within the individuals local membership group this in turn will strengthen the cognitive mediators of the person, reinforcing positive habit formation and connection to the aforementioned community member's thus strengthening long term positive physical activity change.

**A Conceptual Framework of the Children and Family's Physical Activity & Health Behaviours Determinants**



**Figure 6.1.**

The concluding findings of the thesis suggest that consistent with previous literature the over arching correlates that appear to be instrumental in the children's engagement of healthy eating and activity remains to be the family.

The strongest personal and environmental correlates associated with children's physical activity were found to be within the home and the neighbourhood context. Imposed activity and dietary related parental regulations were also dominant within Study 4 and warrants further investigation across a wider population sample. Similarly, the differences across MVPA weekend and week-day pursuits within the family home context have been highlighted by others (Jago et al., 2009) and were found to be of significance within Study 2. There was however an assumption (across Study 1-3) that the children's home environment remained consistent and stable across the weekday and weekend. However, during the last century society's definition of 'family' has undergone a rapid transition and has come to include single parents, biracial couples, blended families and unrelated individuals living cooperatively among others (Crawford, 1999, p; 271). As such, a percentage of the children from Study 1-3 may occupy single parent families and consequently have access to two home environments and neighbourhoods. Subsequently, their weekend activities opportunities and MVPA levels may have reflected a different home environment.

Future investigation into the dynamic of the 'family' would be advantageous across families to ascertain whether weekend and weekday P.A and dietary profiles are impacted and regulated by different environments and parents. Moreover, in support of Jago et al. (2009) children's physical activity constructs need to be compartmentalized further into the three distinct friendship groups (i.e., school friends, neighbourhood friends and other friends such as children of the parents' friends). If children are part of multiple groups and, in turn, their normative beliefs of physical activity and television and computer habits are shaped by them then the associations that they have across these groups needs to be established.

At this juncture, those within strategic positions should reflect on the findings offered and review what current infrastructures they have in mapping the needs and physical activity provision of their communities.

### **6.3 Methodological Reflections of the Research Process**

The following section will firstly provide the reader with an overview of the limitations acknowledged across all of the studies. The second section of this chapter will then be written within a more personal tone and is separated into three components. Firstly, to make sense of the methodological developments located within this thesis a critical reflection of the synthesis of data collected from Study 1 – 4 is offered. This is followed by a review of the contention I encountered between the various paradigms and the ontology and axiological (Creswell, 1998) issues I faced as a researcher with the participants, and in particular, in representing their multiple and diverse perspectives. Finally, the section concludes by highlighting several ethical reflections concerning my relationship with the participants and will focus particularly on the ethnographic stages of this thesis to offer thoughtful insights for future researchers engaging in similar fields.

#### **6.3.1 Limitations of Study 1 -4**

Self-report questionnaires and screening questions are purported to be the most commonly used measures to explore children and adolescent dietary intake (McClain, 2009) and physical activity levels (Kohl et al., 2000). Although the study was guided by these reliability measures for assessing dietary intake through dietary recall and records (Gibson, 1990; Barreti-Connor 1991) the literature precludes that only 10% of studies reviewed by McClain et al. (2009) used dietary recall techniques and 16% for dietary records (McClain, 2009). Despite the protocols used to help assist in understanding the children and parents' dietary and physical activity levels, some limitations of Study 1 cannot be ignored. The diet and physical activity questionnaires utilised for the parents and children could have resulted in an overestimation of associations between physical activity and health behaviours. Traditionally, self-report of dietary intake and physical activity measures have been shown to be unreliable with issues of mis-reporting and under-reporting of diet among children (Livingstone & Robinson, 2000).

Similar issues could also have been reported for children generalising their overall health status *through ticking a box*.

Although the four month reconnaissance phase was factored in by the author (i.e., extensive immersion and engagement within the respective school settings) in an attempt to minimise these errors (see Methodological Reflections of the Research Process below for further guidance) the overall health and dietary profiles of the children and families presented in Study 1 must be approached with a note of caution. The reliability of different types of intensity levels for physical activity using the Leisure Time Exercise Questionnaire (Eisenman et al., 2002) and the three day physical activity recall (Pate et al., 2003) have been observed across studies. However, the author notes that the physical activity recall techniques utilised throughout Study 1 (i.e., for the parents and children) were still subjective in nature and provide a less accurate estimation level than those that had adopted more objectively sourced methods (e.g., doubly labelled water, direct observation and accelerometer) (Janz et al., 1995).

Consequently, to remove the potential bias (under or over estimation of physical activity) that was noted earlier, Study 2 employed accelerometers and photography in order to provide an objective measurement of the children's behaviours. However, since the completion of Study 2 it must be recognised that further debates have arose within the field of accelerometry pertaining to the use of shorter epochs of 1 minute (Troost et al., 2005) for children's activity. This is borne from the literature that highlights the general sporadic and more frequent movement patterns that occur across children's activity profiles (Bailey., et al., 1995). Consequently, the epoch selected for Study 2 could have underestimated the children's levels of PA and reported MVPA scores. The validity of using shorter epochs would be a critical consideration if the study were to be repeated. Therefore, investigating the validity of higher frequency sampling methods using 1-2s epochs would (now) be recommended (Baquet et al., 2007). Similarly, across both the physical activity and nutrition studies it must also be recognised that the children may not have been able to capture all of the behaviours that were unattainable through photography (i.e., snacking and missed meals) and the accelerometer methods (e.g., cycling and swimming).

It is possible that such incidental physical activity and eating behaviours that were to be reported by the children in the self-report diaries provided may have been omitted (i.e., through a lack of re-call, or forgetfulness) therefore limiting the certainty of the conclusion to the data. Due to time and financial constraints a smaller cohort from the original study (Study 1) was also selected for the accelerometer study. As with most studies of this nature, the availability of participants, limiting resources and time ultimately constrains the researcher's ability to generalise the findings against the overall population sample under exploration.

To gain a wider understanding of the context in which children participated in physical activity and sedentary behaviours a write and draw (Pridmore & Bendelow, 1995) methodology was used for Study 3. Whilst the technique of write and draw affords the children the opportunity to voice their opinions (i.e., through basic writing and visual techniques) in a non-threatening and non-invasive manor, it must be recognised that any analysis portrayal, utilisation and subsequent interpretation of these images must be contextually relevant. It should also be noted that previous authors have highlighted concerns with the potential over-interpretation of such data technique by others (Punch, 2002). The author minimised any risk of over-interpretation of the data by conferring (at the end of the exercise) with the children regarding the meaning of each image and supplementing this with the writing the children had provided against each picture. Comparable to Seckler et al. (1995) the main researcher acknowledged that the pictures and writing analysed may not represent the *absolute truths* of the children's views but did nonetheless add to the understanding previously obtained from the earlier studies' results relating to low and sedentary patterns of behaviour. Throughout Study 3, data from the previous studies were also drawn upon to ascertain and support the interpretations of the drawings. However, there is a considerable level of variance found across different measures (i.e., objective vs. self-report / write and draw) as different measures capture alternative aspects of physical activity and nutritional behaviours in children (Ferreira et al., 2006). In this regard, the researcher is mindful that this approach may have restricted the generalisation of the findings used from one data set against another.

For the final study, similar to Irwin et al. (2006), participant observations were utilised to become (progressively) closer to the participants and thus observe a deeper engagement of their lives through a phenomenological approach (Crotty, 1998). A limitation of utilising this method was that, although it offered a detailed description of every day life, it remained an ideographical perspective and as such, the overall findings of the family may not necessarily represent the views of the community under exploration. To ensure that the author's interpretation of the participants' experiences and events were a representative portrayal of their reality the author's diary writing, field notes and reflections were shared with the participants (Lincoln & Guba, 1985) at every phase of the writing process. This approach ensured that the researcher's interpretations were contextually relevant, and ultimately offered a plausible account of the participants' experiences. The process of sharing the author's portrayal of the participants' day-to-day existence also offered further reflexive moments and opportunities for conversations with the family. Such reflexive moments assisted in strengthening the participants' meaning and how this was conveyed within the diary extracts (Polkinghorne, 2007). Creative non-fiction was the representational approach that was adopted for Study 4. Creative non-fiction is now an approach that many authors (Coffey & Atkinson, 1996; Sparkes, 2000; and Tierney, 2002) have begun to consider in order to present their research. However, 'telling a story' and utilising creative representational techniques offered many stylistic and epistemological issues that are associated with adopting such a technique. Tierney (2002) espoused the crisis that any researcher, and subsequently author may experience when trying to craft and represent what you have taken and understood from being immersed within the every-day context of people's lives. Due to the complexity of utilising this style/approach a comprehensive review of the ethical and epistemological dilemmas the researcher encountered is provide for the reader in The Methodological Reflections of the Research Process illustrated below.

### **6.3.2 Methodological Shifts and Paradigm Conflicts: Study 1- 4**

The preconceived ontological, epistemological and methodological beliefs I possessed at the start of this research journey did, to an extent, dictate how I viewed the environment and acted accordingly within it. My initial background prior to this study was taken from a typical *hard* science position.

I had (subconsciously) generated a preconditioned inquiry alliance to a 'positivistic' paradigm. I naively positioned myself within a 'functionalistic paradigm' (Burrell & Morgan, 2006) believing that through the adoption of nomothetic (i.e., self-report and accelerometer methods) I could objectively measure and capture the phenomena under enquiry and subsequently locate the objective reality of the individual's physical activity behaviours. On reflection, this approach appears not too dissimilar to the first moment within the eight moments of research proposed by Denzin & Lincoln (2005). The first moment (i.e., the traditional period) was certainly aligned to my own search and quest for 'validity (internal / external), reliability and objectivity.' However, my faithfulness to objectivism did not appear provide the answers that I craved. Study 1 provided a platform to establish some foundational understanding of the children and families' behaviours but the discrepancies noted within the results from both the parental and children's perspective created conflict.

Similarly, the exposure some authors (aforementioned) now reported against the trustworthiness of some of the methods I had adopted (i.e., self-report Health Survey data) created tension. Whilst the use of accelerometers (as an objective measure of children's physical activity levels) complimented the self-report and drew out any discrepancies noted within the earlier studies, what it could no longer do was direct *reason* and *cause* for those data trends. Although I was still fighting the post-positivistic demons (i.e., the difference between post-positivist from positivist being that the researcher and known cannot be separated), I had begun to recognise that there had been some significant changes that had occurred within the movement of social science research (Denzin & Lincoln, 2000) which my research could benefit from. I began to challenge the faithfulness of the objectivism that I previously assigned my research to, and, began to question my original assumptions (i.e., that one can measure physical activity behaviours as an empirical facticity).

Prior to moving to the next phase of my research journey I began to search for alternative ways of knowing the truth about (and from) my participants. Through observing past literature, I slowly, but purposively began to see that social research itself was originally developed out of an inherent interest to 'understand' others (Denzin & Lincoln, 2000) and was not too dissimilar to the answer I was now searching for within my own research.

Similar to the processes I had previously (and subconsciously) undertaken for Study 1, I now recognised that if I were to become a qualitative researcher I must again assign my studies to a basic set of ‘assumptions, beliefs (i.e., ultimately paradigms) which would direct my investigations (Creswell, 1998). I reflected upon how I would now, not only just observe the environments but contribute within them. At this juncture, whilst I recognised my position was not too dissimilar to the quantitative research strategy I had previously implemented, I became very aware that the immersing poststructural / postmodern debate challenged me as a researcher much further i.e., to understand that I could not obtain the absolute truths nor accept one singular meaning and existence within the text (Denzin & Lincoln, 2005).

However, as a new ‘qualitative’ researcher, I was reticent (as other authors have been; Delamont, Coffey, & Atkinson, 2000) to apply a ‘moments time period and approach’ from the eight moments of qualitative research to my study. However, Denzin & Lincoln (2000, p; 18) argue “...the multiple or fractured histories of qualitative research now make it possible for any given researcher to attach a project to a canonical text from any of the....historical moments.” At this stage of the research journey, I lacked the confidence to do so.

On reflection, I believe my apprehension was due to the fact that within the respective sub-disciplines of Sport and Exercise Sciences, qualitative research was developing at different rates (Sparkes, 2002). Whilst sport psychology was apparently operating under the ‘second, modernist’ moment (Denzin & Lincoln, 2000) during the 1990’s, and yet to encounter the crisis of representation and blurred genres (Sparkes, 1998), the influence of postmodernism (the fourth moment: crisis of legitimation) *had* emerged within the sports sociology and physical education (Gore, 1990; Cole, 1991; Bain, 1992; Evans, 1992; Foley, 1992; Lyons, 1992; Tinning, 1992). I was reluctant to position myself within a moment, because, like other authors (Sparkes, 2002), I believed, the sub division of ‘physical activity’ had not yet evolved at the same pace as others, and as such I was anxious about being radical or moving away from what felt ‘safe’ and ‘expected’ within my field.

Thankfully, once I had absorbed Anderson's (1999) work I felt less apprehensive in questioning the assumption as to whether I needed to state the progression of moments approach utilised by Denzin & Lincoln (1994, 2000; 2005) within each of my research studies. I became more confident and attuned to the fact that diversification of the moments, as opposed to 'succession', could enhance existing methods of inquiry as opposed to motioning their displacement:

*"The development of new ethnographic moments or genres does not seem to signal the demise of previously existing ones, but rather adds more options in the styles and analysis available to qualitative researchers. New genres proliferate, vying with earlier ones, rather than displacing them."*

(Anderson, 1999, pp. 453)

Similar to Vidich & Lyman (2000) I began to acknowledge that the qualitative research methods I was intending to pursue would be inherently able to be judged against its ability to "...communicate(s) or 'says' something to us" (p.39). I was confident that I could now achieve this through the adoption of a more purposively aligned methodology that was true to the nature of the phenomena I wished to investigate. For the purpose of Study 2 & 3, I adopted write and draw and photographic methodologies. These more visual methodologies enabled the 'realities' of the children's physical activity behaviours to emerge. However, I subsequently engaged in content analysis to 'make sense' of the data. One predominant criticism of adopting content analysis is the concern that the richness of the qualitative resource becomes a set of de-contextualised sections and insular themes (Biddle et al., 2001). More importantly, I also found a conflict arose in my positioning. Was I searching for validity, objectification and reliability by 'quantifying' the children's write and draw images into tabular themes, disconnecting them from the individuals themselves and grouping them within significant occurring themes? If this was the case, was I not converting back, yet again, to a positivist paradigm? In my defence, content analysis was needed due to the sheer volume of write and draw images provided, all of which, needed to be managed and the evidence deliver in a manner that was thematically coherent and accessible for the reader.

I made a conscious decision (from a post-positivistic viewpoint) that equal value should be placed on the importance of 'discovery' for the reader by viewing the children's write and draw images thus allowing them to make their own personal assumptions of what the data meant. I did not merely want to provide key order themes and lose the context in which the picture and images were located. I chose to provide examples of the children's write and draw illustrations side-by-side the key order themes to reinforce the value of discovery for the reader whilst also honouring the canvass and context in which children chose to illustrate their behaviours and activity patterns.

The mixed methodological journey of Study 1 – 3 had uncovered alternative ways of exploring the children and families physical activity and nutritional behaviours. Yet I did not anticipate just how challenging the final study (Study 4) would be to match the actual observations found in Study 1 – 3 to the reality of children and families actual health related behaviour and activity patterns as they occurred within the boundaries of the family's local environment.

The triple crisis of the fifth moment proposed by Denzin & Lincoln (2005) appeared to align well to my anxieties of the postmodern and poststructuralist *experimental writing* of this moment (Sparkes, 2002). Entrenched within the dialogue of postmodernism & poststructuralism (Vidich & Lyman, 2000) the three crises have on countless occasions been named and related to "*the critical, interpretive, linguistic, feminist, and rhetorical turns in social theory* (Denzin & Lincoln, 2005, p.19). These new paths merge and also obscure the answers to the questions they produce (Landson-Billings, 2000; Schwandt, 2000; Smith & Deemer, 2000).

Consequently, the ideology of the 'aloof researcher' was discarded and more "*action, participatory, and activist-orientated research was on the horizon*" (Denzin & Lincoln, 2005, p; 20). Just like the postmodernism era that questioned the universal claim that any one theory, method or discourse had the authoritative knowledge. "*No method has a privileged status...The superiority of "science" over "literature"- or, from another vantage point, "literature" over "science"- is challenged* (Richardson, 1994, p; 518). I began to raise the same questions within my final study.

Moreover, I finally understood that the principle of postmodernism was that it enables me to “know something” without professing to know everything. Richardson (1994) further supports this argument stipulating that “postmodernism recognizes the situational limits of the knower” (p.518).

To conclude, the Final Study was to an extent guided by abstract principles (Bateson, 1972) that related to: ontological beliefs (‘what is the nature of reality of the study?’), epistemological (the relationship between the family and myself) and methodology (How do I obtain knowledge of the environment and gain knowledge from the family?). Only by undertaking extensive periods of ethnography (within the family’s home), within a deductive and inductive lens, was I able to finally locate some of the answers I was searching for.

#### **6.4 Addressing the Challenges of Researching ‘with’ Children within Study 1, 2, 3 & 4**

At the beginning of the research journey (i.e., for Study 1 and the accelerometer phase of Study 2) I believe, similar to previous studies, that as a researcher, I was more focussed and concerned upon issues of ‘confidentiality and informed consent’ (Alderson, 1995; Morrow & Richards, 1996; Thomas and O’Kane, 1998; France et al., 2000; Lewis and Lindsay, 2000). I reviewed extensively the Children’s participation rights that have now been embedded within the UN Convention on the Rights of the Child 1989 (United Nations, 1989). Two of the Convention’s 54 articles state that parties should assure (1):

*“The child who is capable of forming his or her own views the right to express those views freely in all matters affecting the child, the views of the child being given due weight in accordance with the age and maturity of the child (12)*

*The right to freedom of expression (including) freedom to seek, review and impart information and ideas of all kinds... ..through any other media of the children’s choice (13)*

I began to question early on within my thesis how many research studies involving children adhere to these rights?

Although it is widely acknowledged that children's consent and participation in research activities must be obtained, predominantly this is obtained via adult gatekeepers, to protect their potentially more vulnerable position against the unequal 'power relationship' of the adult researcher and child participant (Punch, 2002). Although children's co-operation and verbal consent is highlighted within numerous research studies (Morrow and Richards, 1996; Lewis and Lindsay, 2000 etc) I wonder whether the desire of researchers to expand knowledge in their subject truly reflects the children's human rights (i.e. using the correct level of informed consent) or whether they still opt for written consent from the 'adult gatekeepers (i.e. the teacher) for ease and convenience.

Numerous University Medical Ethics Committees still actively approve studies that only require written consent from the head teachers of schools and *or* parents/guardians (with co-operation obtained from every child). The view that children are now perceived as competent social actors, no longer consumed under the heading of the 'family' (Qvortrup et al, 1994; James and Prout, 1997) would perhaps call into question this process of consent. Similarly, many research designs have also been developed purposefully within a school setting to alleviate the issues of access and consent to children (Mauthner, 1997).

I felt that although the majority of my studies would occur within a school context, I would obtain informed, written consent from all parties (parental, school and children - as opposed to just verbal assent). I made this decision in an attempt to re-address the power balance of the children and researcher. This approach enabled the children in the studies to participate on their own terms and respect their basic human rights. However, ethical disparities can still be evidenced within this approach, as the over-protective stance of parents/guardians can reduce children's ability to participate in research (Marrow & Richards, 1996) this further poses risk to the researcher as non-engagement within the studies ultimately means 'non-engagement' equating to no participants.

This position raised some interesting and challenging dilemmas when I began to execute Study 3 Write and Draw activities (delivered within a classroom context). It became apparent that there was a conflict of interest between a small number of the wishes of the parent and the child; (i.e., the child indicating their interest in participating in the study whilst the parent officially not consenting to this). This research issue was a pertinent reminder to me of the 'adult restrictions and control' still apparent when trying to engage emphatically with all children. To alleviate these disparities, during Study 3, I decided upon an honest approach to the child in question; highlighting their parents' wishes for them not to participate in the research exercise but openly explaining to the child that they could engage in the class topic (if they so wished) with the knowledge that their data would not be included or analysed in the overall research sample and findings. This ensured no child was excluded from this activity thus minimising any risk of isolation or feelings of indifference that the study could have caused to a child.

During the qualitative elements of my thesis I also began to feel that there had been limited efforts directed at the ethical dimensions of addressing children as social actors within qualitative research paradigms (Alderson, 1995). Numerous researchers (Morrow & Richards, 1996) appeared to explore the issue of consent and access and proposed valuable guidelines (National Children's Bureau, 2001) for researchers to observe whilst conducting studies with children. However, only a scarce few (Alderson, 1995) acknowledged the importance and challenges of adopting participatory techniques to successfully respond to the ethical complexities associated with conducting research with children (Christensen & James, 2000).

What I had begun to understand from collating the findings of Study 1 & 2 was not too dissimilar to Yates' (1997; p. 494) viewpoint that "...there is not one overriding methodological framework that transcends all others." Ethically sound research should be couched within the most appropriate medium to allow the participants to fully express their own voices and opinions. From the reconnaissance phase, Study 1 and a review of its findings, it became apparent that the cohort struggled to make sense of the more formal methods adopted (i.e., self-report questionnaires).

I purposely developed a mixed methodological approach for the thesis, over a five-year period, to allow me to explore a wide range of questions through innovative styles of enquiry (Tierney, 1997) thus supporting the educational levels, confidence and cultural diversity of the group (Petrou, 2003).

Although the core ethical principles adopted for the thesis transcend across all methodological research approaches they were less problematic than within Study 4. Owing to the emerging and complex relational ethical issues that arose within Study 4 only the practical and operational models developed for the ethnographic phase will be critically debated further within this section. Moreover, I attempt to theorise and discuss the epistemological and ethical relationship of myself (as the researcher) and the family within the research design and process (Code, 1995; Welch, 2000). The innovative and alternative ethical procedures that were developed to protect the participants *and* the researcher during the final Study of the thesis are addressed.

In doing so, this chapter ends by discussing what constitutes 'ethical' participant observation within children's research and how the power imbalance of the 'researcher and participant' may be re-addressed throughout the research process and design.

## **6.5 Objectivity versus the Ethics of Care**

The connection between children's behaviours at school and home have long been acknowledged (Newsom, 1963; Douglas, 1964; Blyth, 1967; Plowden, 1967; Croft, 1970), yet ethnographic studies that explore children's experiences have, on the whole, tended to be implemented within the school environment (Mac and Ghall, 1988; Gillborn, 1990, Wright, 1992). Former qualitative methods of enquiry that have used ethnography and participant observations within the family home are relatively scant within the UK. This process brought, myself, (as the researcher), and the participants into relatively un-chartered water.

Prior to the start of the Study 4 I was faced with the many ethical dilemmas that this method could pose, both to me (the researcher) and to the family (i.e., conflict of professional responsibilities, accountability, political correctness and basic human rights). I found that the official Code of Ethics Guidelines provided by Liverpool John Moores University did not necessarily extend to support me in the ethical conflicts I was to encounter through observing the 'almost normal' everyday life and culture of the individuals. I had many questions that needed answers from my research team prior to embarking upon the ethnographic stage (i.e., addressing what assumptions I possessed as a researcher, in relation to the status of children, and whether this would impact upon the choice of method I would employ to narrate these experiences) (James et al., 1998). My own value bias was also discussed and logged (Appendix C) prior to entering the home environment as I had to address what value systems had *created* me (and subsequently carried with me) and how I intended to address these during the observational phase. Similarly, I began to focus my attention not only on the 'status' of the children within this research paradigm but also the ethical considerations I needed to make within the whole research process; from design, method, participation and analysis. I had to ensure I made ethical assessments and considerations (with myself and my research team) as to whether the research question itself was worthy of being asked within this particular mode. I was acutely aware that any study judged as "bad science (in any field of practice) is bad ethics" (Thomas & O'Kane, 1998, pp; 28 – 29).

During the final phase of this Study I felt apprehensive and anxious at the sheer lack of *data* and reading I could draw upon to guide me through safeguarding both myself and the family. The Universal Code of Ethics guidelines and principles highlight that "No significant harm to an individual is permissible," where harm can include "harmful social or psychological consequences, such as loss of self-esteem." (Bibby, 1997; p.116). The guidelines, I felt, were too restrictive for researchers pursuing ethnographic research with children and families. For example, the guidelines did not outline the long - term effect and/or the risk on the participants nor did they stress the importance of clear exit strategies to support the final transition and closure of the participant observations.

In addition, as the Study had conscientiously abided by the ethical tenets of 'informed consent and confidentiality' the Final Study felt compelled to further secure its position with the children and families participating in the study.

Although not stipulated as a requirement within the codes of ethics guidelines, Study 4 informed the research participants (both verbally and within the consent literature) that confidentiality could not be absolute and may be overridden if appropriate behaviour or circumstances (observed whilst conducting the research) became apparent that may have related directly to child protection issues. In parallel to earlier work by Punch (1989) the study was cautious of suggesting to the participants that anonymity could be assured because as Punch (1986; p.46) affirms "...anonymity rings hollow because, with the close relationship developed, the long stay and richness of description in the findings, it is easy for some insiders, including the main players, to recognise each other and themselves."

Although Code of Ethics applications require an outline of the level of risk or hazard to an adult or child, the procedures and risk management systems focus specifically upon the *subjects'* participation and not on *me* as a researcher within that field. I felt that participating in ethnography within a family's home posed substantial risks for me as a researcher too. Although the study was unable to draw upon previous models of safe practice developed from ethnographic studies within family homes, Study 4's research programme compiled and submitted a comprehensive risk assessment exercise that ensured and limited the potential harm to both parties prior to entering the phase of research (Appendix C). As I was unable to locate any previous academic guidance literature on safeguarding myself during the ethnographic phase, I completed this exercise through drawing upon my past experiences and practices used within the field of Play Development and Children's Services.

In addition to this procedure, individual contractual agreements (Appendix C) were also drawn by the child and the researcher outlining their expectations during the study. This agreement again attempted to redress the power imbalance that may occur when conducting research with children.

It also allowed all participants involved to acknowledge that if any unnecessary physical or emotional harm was inflicted upon the *researcher* (whilst in their presence) that the researcher could choose to terminate the study and contract, and vice versa. Interestingly, working with the children and families throughout this process also heightened their expectations of what they felt was important from the 'researcher' within their home environment. The main attribute Study 4 participants' cited as important (within the contractual agreement, see Appendix C) was for the researcher to '*just be themselves*'. At this moment, I certainly would question whether this was ever achieved. I entered and left their home each week as an active researcher and as such could not (wholly) fulfill their brief to '*just to be myself*.'

## **6.6. Selecting the Research Context and Setting**

Over a period of months, the family certainly appeared to 'be themselves' within their own home. I began to understand that the environment clearly enabled the family to feel more empowered within the research process (Oliver & Fishwick, 2003). However, conducting ethnography within a family home was continually challenging and isolating for me (as the researcher). On reflection, I certainly believe the choice of participant observation for Study 4 (within a family home context) would not have been contemplated had the positive and fostering relationship between the researcher and participant, over an extensive period of time (i.e., 4 years prior to ethnography) not occurred. The children and family appeared to feel more empowered and less apprehensive of the research project during the final Study, yet I was apprehensive of going into the unknown. Malin (1999) clearly supported the relevance of adopting such a method as it enables the researcher to give a voice to those that are silence; "*Not to look, not to touch, not to record, can be the hostile act*" (Malin, 1992; p.27-8). In parallel with numerous studies (Sapkota & Sharma, 1996; Boyden & Ennew, 1997) Study 1, 2 & 3 had all provided rich sources of promising data which were conducted within a school context. I had felt these environments provided me with an 'adult oriented environment' which was safe for a researcher to be within.

The power and safety that the 'school and community centre' previously provided me with was removed during Study 4 and was replaced with an unfamiliar context where perhaps the power balance was now equal (if not stronger) for the participants.

### **6.7. The Relationship**

James et al. (1998) conveyed that many researchers who perceive children as very different from adults use ethnography to understand the child's world and views. I would contest this statement and argue from my own research experience that ethnography and children's participant observations are documented not because I believe children to be *different* from adults, but because alternative innovative research methods obtained from this study did not disclose the reasoning behind *why* children and families health related behaviours and activity patterns were low. Only through looking beyond the traditional research methods and paradigms can the answers to some research questions be answered.

At this juncture I also felt the level of commitment and time spent by the researcher building rapport and getting to know the children prior to engaging in ethnographic work was critical to the successful level of data obtained within my study. Ultimately, this may also lie with the skills the researcher already possessed in respect to building rapport and trust with, not just the children, but the adult gatekeepers such as the parents too (Marrow, 1999). I believe that not everyone can, nor should, conduct ethnographic work, as they may not possess the craft skills necessary for this type of research. The experiences of Study 1 and Study 2 showed me that rapport and trust can only be developed over time and within the setting in which the research will be delivered. Whilst I was able to foster the relationship between myself and the family over an extensive period of time, I am also acutely aware that time is an essential commodity that many researchers may not have. I successfully fostered this relationship with the family during a process of observations (i.e., as noted within the family's reflective diaries, see Appendix C) but as a researcher, I became anxious of how I could sustain this power balance relationship throughout the whole research process (from conception to completion). As such the representational style selected was an important issue to consider.

I was fearful of using more 'artful forms of representation' for my research but knew that I needed to use a style of representation and literary that would reach the family and the community (i.e., a wider range of audiences than just the academics).

## **6.8 Alternative Forms of Representation**

Initially I felt apprehensive at the beginning of Study 4's writing process, to align my notion to that of Denzin and Lincoln (2000; 2005) (that we are all now operating under the seventh and eight moment post-experimental), whereby fictional ethnographies, poetry and multimedia text are accepted as the norm across disciplines. Particularly as Sparkes (2002) continually contests the above position has occurred within the subject discipline area of physical activity and sport. This only assisted further to increase my anxieties for selecting a new paradigm and representational shift within my thesis.

However, I chose to develop a creative, non-fictional children's story to enhance the interpretation of the subject area and enable the reader to explore the lives and personal experiences of the family (which I had experienced first hand) through the eyes of the participants, 'Jayne and Paige.' Through selecting this writing style I was not only able to articulate an evocative, personal reflection of the children and families personal beliefs to touch and move the reader in ways that are not only symbolic but "heartful" in its writing (Ellis, 1997 & 1999) but also able to accommodate the level of literacy and understanding of a community that suffers from some of the highest standard mortality ratios and coronary heart/lung disease in the North West of England.

I purposively developed a child friendly form of representation to enable Paige and her mother, Jayne, to acknowledge their importance and commitment to the study from its inception to its end. I had continually engaged with the family throughout the research process, and knew that the representational style I chose to evidence our (mutual) findings was paramount.

Similar to Christensen et al. (2004) and O’Kane (2000) I found that the participant observations supplemented by participatory techniques, helped assist and engage Paige in the final phase of the research process. The representational style of creative non-fiction (Richardson, 2000) became a useful epistemological medium through which the data was conveyed in an authentic and evocative manner. However, I believe the knowledge obtained from the participants’ experience and how this was conveyed and utilised to assist the future well being of the participants/ (Gunzenhauser, 2006) is rarely accomplished within other research. In parallel with earlier work by Gillian (1982) & Noddings (1984) Study 4 was enveloped by the notion of ‘ethical care’ and encapsulated that ethnographic work connects the lived experience to the social phenomena under review. In this sense, such an approach provided a voice to those who are vulnerable (i.e., Paige) also ensuring the work was “...non exploitative and self-reflexive to the participant” (Gunzenhauser, 1999, 2004, 2006, p.627).

To conclude, I felt this was the most challenging aspect of the Study for me. The ethical aspect of ‘knowing’ and how this knowledge would be conveyed in a true representation mode that truly reflected the family’s lived experience provided practical and moral dilemmas for me (as the researcher) (Smith & Deemer, 2003; p.449).

Although Paige contributed throughout the process by providing pictorial illustrations to supplement the reflective diaries, and highlighted her enjoyment and sense of ownership at being involved with the project, I became very anxious that they could have taken offence at how they felt that I had portrayed them. I had built a considerable level of trust with the family and knew that consulting them on the draft diary extracts could have (potentially) shattered this.

As Saukko (2002) purports “...we can never capture ourselves, others or the social world, but that research is always located in the interactive space between these three worlds” (p.252).

As I was effectively the research vehicle in the final Study, I was apprehensive as to how the family felt that I had captured the relationship between ‘the self’ and ‘the other’ in the heart of this inquiry.

Although I had purposively chosen not to use my own voice in the main findings, I was acutely aware that my own thoughts and experiences of what I had observed were dialogically interwoven with those of the family, forming an ‘inter world’, and thus forming the common structure of the diaries. An individual’s own experience of the presence, and of themselves, is subjective and personal. If my accounts of their world were felt to contradict their own subjective norms of reality then this could have caused (significant) emotional harm to them.

Within these processes it became apparent that essentially the experience I had been allowed to share with the family needed to be agreed in principle by them and then more importantly offered to others (i.e., the reader) to firstly, have and secondly, make sense of those critical life experiences.

## **6.9 Conclusion**

The research ultimately set out to obtain a greater understanding of the physical activity and nutritional behaviours of children and families as they occurred within the natural setting of their home environment (Knowsley, MBC). This research has offered a unique and extensive multi-layered approach to understanding the physical activity and nutritional determinants of children and families that are embedded within a social and cultural setting (as opposed to isolating them as objective, measurable variables). The research simultaneously observed the complexity of health behaviours (together) within the context in which they occurred.

In conjunction with the research’s overarching aim, Study 1 utilised a reconnaissance phase and self-report parental (Andrews & Withey, 1976; Godin, 1985) and child’s health related behaviour questionnaire (s) (Baldings, 1997) to understand the habitual physical and nutritional behaviours of children and their families in Knowsley (UK). This reconnaissance phase created a baseline of data to aid and directed the study.

Through the adoption of accelerometers (Pearson et al., 2009) and photography (Banister & Booth, 2005), Study 2 embraced a multi-method approach to data capture that complimented (and extended) the previous methods employed within Study 1. The emergence of physical ‘inactivity’ data from Study 2 guided the principles of data capture for Study 3. Study 3 captured the everyday experiences of children’s after school physical activity opportunities in their local community utilising a write and draw approach (Pridmore & Bendelow, 1995) and highlighted the context, culture and environmental constraints that children placed upon their own current activity choices and future recreational aspirations. Study 4 explored the micro (day-to-day existence) of one family from the original Study 1 cohort through longitudinal participant observations (Irwin et al., 2006). The subsequent observations were then crafted into personal diaries utilising techniques associated with creative non-fictional writing (Coffey & Atkinson, 1996; Sparkes, 2000; and Tierney, 2002). This approach captured, disclosed and illuminated the particular beliefs, motivations and situational constraints that maintain particular behaviour patterns of a family. Such intimate experiences have been found to be especially difficult to capture in previous research studies (Abraham, 1999).

Predominantly, the methods employed to explore children’s habitual physical activity patterns have tended to be of a quantitative nature, with scarce and insufficient qualitative data focussing on the reasoning as to *why* children’s energy expenditure and activity rates are specifically low within their local communities (Ben-Arieh & Ofir, 2002). Basterfield and colleagues (2008) clearly emphasized the need for studies to look beyond subject methods of data capture in order to obtain a more complete view of children’s habitual physical activity daily profiles. In this sense, the adoption of a multi-layered approach (Johnstone, 2004) to this Study has enabled just this.

Global findings from the thesis suggest that (on the whole) the children and families are not adhering to the physical activity and healthy eating guidance set out by the aforementioned policy directives.

Even though all five primary schools were recognised with the National Healthy Schools Status (NHSS) the research exposed that the main policy driver, (i.e., to encourage young people to be regularly physical active and eat healthily) did not transcend to the home and day-to-day existence of the family. In order for physical activity and healthy eating guidance to be consumed by children and families there is a need to move away from the general public health strategies (i.e., those that focus on impacting large population samples) and focus more upon the *macro and micro* level change that can impact the whole group of children (and families) within a local community. This approach can only be achieved through stepping into the shoes of the community members and observing their culturally unique behaviours as they occur naturally within their day-to-day existence.

Global findings also highlight that, at certain times, physical activity levels are directed via a complex system of decision-making processes (Epstein & Roemmich, 2001). Some of the common determinants associated with the children's uptake of sedentary pursuits and unhealthy food choices (McGarvey, 2004; Humbert et al., 2006; Springer et al., 2006) resonate with many of the predominant issues noted in the children and families of Knowsley. A number of moments of particular significance appear to stand out (e.g., the barren landscape and lack of environmental resources illustrated by the children in their write and draw images; the high level of convenience foods noted in the children's dietary photographs; Jayne and Paige's reluctance to engage in activities due to the physical and emotional abuse caused by a fellow member of the community, and Paige and her mother's attitude, access and parental control and modelling which assisted them in making their physical activity choices) .

More elusive and latent strands of engagement of sedentary pursuits and barriers to physical activity only emerged through the application of longitudinal participant observations. Moreover, Study 4 highlighted that in reality (i.e., irrespective of the common determinants which encouraged inactivity) a family's (albeit one that is unique and perhaps not a typical representation of Knowsley) can engage in an active and healthy lifestyle if their intention and motivation to do so is greater than the significant barriers.

Similarly, through becoming progressively closer to the participant's day-to-day existence I saw the significant power and capacity a neighbourhood can have in facilitating or hindering physical activity engagement.

Viewed collectively, all studies appear to illustrate a compilation of personal and community life experiences alongside critical situations that relate to the *struggle* to become physically active and healthy within a community landscape. The common threads located within this study may be unique to the landscape of Knowsley and do not pretend to be generalizable (Witz, 2007). However, whilst remaining cognisant of Witz (2007) position, the nature and role of this qualitative work may act as a catalyst to assist in understanding other community groups.

The contribution the children and families have made to this research, coupled with my own ethnographic engagement, has enabled suggestions and recommendations for future localised practice. Key implications for the universal practitioners in the field of health promotion, physical activity, policy and strategic governance are also proposed. Given the complexity of what has been covered within the final discussion, it is not feasible to incorporate all the recommendations that have been aforementioned, as such, a brief summary of some of the main implication of the study are provided and offered to the reader below:

- **The researcher acknowledged low physical activity and nutritional profiles across the children and their families. It could be argued that these physical inactivity and unhealthy dietary behaviours may increase the risk of major non-communicable diseases, including cardiovascular disease, type 2 diabetes and certain types of cancer.**
  
- **Findings across all studies emphasise the need for practitioners and policy development managers to look at how individuals interact within the *social* and *physical* environment of their localised community. The hidden socio- cultural barriers that I have witnessed throughout this study would prevent initial and subsequent long term engagement of physical activity for some families in this community.**

- **This research recognised the potential benefit from moving away from the traditional physical activity and nutrition techniques that dominate this discipline area (Sparkes, 2002) The data drawn from this thesis encourages practitioners to explore a mixed methodological approach (from both a quantitative and qualitative domain) to capture health behaviours. A person centred approach to undertaking research should be undertaken that enables the participants to actively understand and fully engage in the process.**

- **The experience of moving away from traditional research techniques to protracted interactions and participations of writing in a more purposeful and creative manner improved the researchers own reflective practice and personal development. Practitioners and researchers alike should not feel fearful of moving away from the traditional research techniques and representation modes. Future research in the area of sport and exercise science is encouraged to consider the value of experimenting with alternative genres and writing practices that suit and engage the reader and participants throughout the research process.**

**What has been learnt from undertaking this study is that physical activity and eating behaviours should not be de-compartmentalised and isolated from behaviour (per se). Subsequently, future physical activity research should galvanise with the more traditional theories of behaviour that already exists within the discipline areas of mainstream sociology and psychology to learn how physical activity and eating behaviours could operate and be directed within them.**

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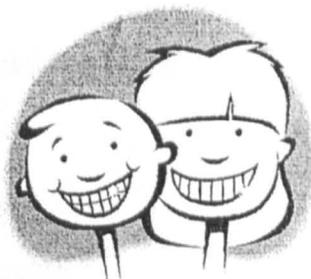
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# **Appendix A**

**BEST COPY  
AVAILABLE**

**TEXT IN ORIGINAL  
IS CLOSE TO THE  
EDGE OF THE  
PAGE**

**TEXT  
BOUND INTO THE  
SPINE**



## **THE HEALTHY HEART PROJECT**

### **PRIMARY SCHOOL QUESTIONNAIRE**

Thank you for helping us with this questionnaire. By answering these questions you will help us to find out more about what you like to do in your spare time, at school and with your friends.

Your answers will only be looked at by Miss Archbold and the research team at Liverpool John Moores University. They will **NOT** be seen by your parents, teacher or friends. There is also no need to write your name on the questionnaire.

Once you have finished all the questions you can put the questionnaire in the envelope provided and seal it.

Each question has instructions and will tell you whether you need to circle your answer, tick a box or write in the space provided. Don't worry if you get stuck, the researcher will read each question aloud and wait until everyone has finished before proceeding to the next question. Take your time to read and listen to each question and answer the best you can. **Remember we only want YOUR opinions, it is NOT a test and there are no right or wrong answers.**



*Knowsl@ Council*

LEISURE & COMMUNITY SERVICES



**health  
action**



These questions are about you and your home

1. What is your postcode?

2. You Have  brothers and  sisters

3. How many brothers and sisters are OLDER than you?



These questions are about you and your health

4. How healthy do you think you are?

*Please tick one box*

Very healthy

Quite healthy

Not very healthy

5. In general, how do you feel about your life at the moment?

*Please tick one box*

I am very happy

I feel quite happy

I don't feel very happy

I'm not happy at all

6. After school YESTERDAY, did you spend time.....

*Please circle YES or NO on each line*

Watching TV/ videos? YES NO

Listening to radio, CDs, tapes? YES NO

Playing with your friends? YES NO

Playing any computer games? YES NO

Reading a book/ magazine/comics? YES NO

Going to a club? (include sports, clubs, choirs etc)? YES NO

Doing homework? YES NO

Doing something else? (please write) YES NO





These questions are about EXERCISE....

7. **OUTSIDE SCHOOL HOURS:** How **OFTEN** do you usually exercise in your **FREE TIME** (so much that you get out of breath or sweat?)

*(Please tick one box)*

Every day

4-6 times a week

2-3 times a week

Once a week

Once a month

Less than once a month

Never

8. **OUTSIDE SCHOOL HOURS:** How many **HOURS** a **WEEK** do you usually exercise in your **FREE TIME** (so much so that you get out of breath or sweat?)

*(Please tick ONE box)*

None

About half an hour

About 1 hour

About 2-3 hours

About 4-6 hours

About 7 hours

9. How **OFTEN** do you spend time with **your friends** straight **AFTER SCHOOL?**

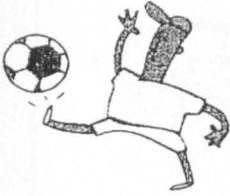
*(Please tick one box)*

4-5 days a week

2-3 days a week

Once a week

Never



These questions are about your leisure time & recreation

9. How **often** do you play or do any of these things in your **OWN TIME** or **IN SCHOOL CLUBS?** (NOT School lessons)  
 (Please circle 1 number on EACH line)

	Hardly ever Or never	Once or twice a month	Weekly	Twice a week or more
Going for walks	0	1	2	3
Riding your bike	0	1	2	3
Dancing/ gymnastics	0	1	2	3
Football	0	1	2	3
Swimming	0	1	2	3
Rugby/mini rugby	0	1	2	3
Roller skating	0	1	2	3
Judo/karate	0	1	2	3
Netball	0	1	2	3
Hockey	0	1	2	3
Cricket/kwik-cricket	0	1	2	3

Any other **physical sporting** activities you do (please write in the box and circle)

.....0.....1.....2.....3



10. On average how many **HOURS** a **DAY** do you usually watch TV?  
 (Please tick ONE box)

- Not at all
- Less than half an hour a day
- Half an hour to an hour
- 2-3 hours
- 4 hours
- More than 4 hours



These questions are about the food you eat

11. What did **you eat and drink** before coming to school **TODAY**?  
 (Please circle)

- Nothing      Drink of milk      Fruit juice      Tea or coffee
- Cereal      Toast or bread      Porridge/Readybrek      Crisps
- Fruit      Chocolate      Cooked breakfast      Fizzy Drinks
- Other (Please write)

12. **How often do you eat these foods?**  
 (Please circle 1 number on each line)

	Hardly ever Or never	Less than once a Week	1-2 times a week	3 or more times a Week
Brown bread	0.....	1.....	2.....	3.....
White bread.	0.....	1.....	2.....	3.....
Other bread	0.....	1.....	2.....	3.....
Nan, Pitta etc				
Bran cereals	0.....	1.....	2.....	3.....
Sugar coated cereals	0.....	1.....	2.....	3.....
Rice, noodles or pasta	0.....	1.....	2.....	3.....
Chips or roast potatoes.	0.....	1.....	2.....	3.....
Meat (e.g. lamb, chicken, Pork, sausages etc)	0.....	1.....	2.....	3.....
Fish or fish fingers	0.....	1.....	2.....	3.....
Eggs	0.....	1.....	2.....	3.....
Cheese	0.....	1.....	2.....	3.....
Milk or milk on cereal	0.....	1.....	2.....	3.....
Vegetables	0.....	1.....	2.....	3.....
Salad	0.....	1.....	2.....	3.....
Fresh fruit	0.....	1.....	2.....	3.....
Baked beans	0.....	1.....	2.....	3.....
Chocolate or sweets	0.....	1.....	2.....	3.....
Cakes & Biscuits	0.....	1.....	2.....	3.....
Crisps & crisp-type snacks	0.....	1.....	2.....	3.....
Fizzy pop	0.....	1.....	2.....	3.....



These questions are about smoking...

13. Have you ever tried smoking (even one puff)? YES NO

14. If YES, how old were you when you first smoked or tried a cigarette?

I was ..... years old.

15. Now read all of the following sentences and tick the box next to the **one** which you think is **most** like you...

I have never smoked

I only ever tried smoking once

I used to smoke sometimes, but I never smoke cigarettes now

I sometimes smoke cigarettes now, but not as many as one a week

I smoke at least one cigarette a week, but I don't smoke every day

I smoke every day



These questions are about your feelings...

*(Please circle one word from each line)*

16. Do you think your parents usually like to hear about your ideas? YES NO Don't Know

When you have to say something in front of teachers in class, do you usually feel embarrassed? YES NO Don't Know

Are there lots of things about yourself you would like to change? YES NO Don't Know

Do other pupils in the school often fall out with you? YES NO Don't Know

Do you often feel lonely at school? YES NO Don't Know

Do you think that other pupils in the school often say nasty things about you? YES NO Don't Know

When you want to tell a teacher something do you usually feel silly? YES NO Don't Know

Do you often have to find new friends because your old friends are with someone else? YES NO Don't Know

Do you usually feel foolish when you talk to your parents? YES NO Don't Know

Do other people often think that you tell lies YES NO Don't Know



These questions are about yourself...

17. Is it **easy** or **difficult** for you to make new friends?  
Please tick one box
- Very easy
- Easy
- Difficult
- Very difficult

18. Is there anything about your **body** you would like to **change**? YES NO
- If YES, what would you change?.....

19. Do you **think** your **body** is:  
Please tick one box
- Much too thin
- A bit too thin
- About the right size
- A bit too fat
- Much too fat
- I don't think about it

19. Do you think you are:  
Please tick one box
- Very good looking
  - Quite good looking
  - About average
  - Not very good looking
  - Not at all good looking
  - I don't think about my looks



These questions are about growing up...

20. If you had a **problem** who would you share it with **first**?  
 (Choose the most likely person)

I would share it with ..... first.

21. How **often** do you **worry** about the following?  
Please circle one number on each line

	Never	Sometimes	Quite often	Very often
School work / tests	0	1	2	3
Being bullied	0	1	2	3
Your health	0	1	2	3
Family	0	1	2	3
Falling out with friends	0	1	2	3
Growing up	0	1	2	3
Moving to Secondary School	0	1	2	3
Your height	0	1	2	3
Your weight	0	1	2	3
The way you look	0	1	2	3



School of Sport and  
Exercise Sciences

**THANK YOU FOR COMPLETING  
THE QUESTIONNAIRE**

**ONCE YOU HAVE FINISHED  
FILLING IN ALL THE  
QUESTIONS  
PLEASE PLACE THE  
QUESTIONNAIRE IN THE  
ENVELOPE PROVIDED AND SEAL  
IT.**



*Knowsl@ Council*

LEISURE & COMMUNITY SERVICES



health  
action  
zone

Dear parents of children at [REDACTED]:

As you may be aware Knowsley has some of the highest cancer and coronary heart disease rates within the North West of England. In addition, there are also growing concerns about the number of children not receiving enough physical activity throughout the day. Therefore, the School of Sport and Exercise Sciences at Liverpool John Moores University are undertaking a research project in conjunction with Knowsley Sports Development, funded by **Merseyside Health Action Zones** to look at "Assessing Children and Families Health Related Behaviour and Activity Patterns in Knowsley." With the help of the children and families involved we hope to develop a health and physical activity programme that is accessible and useful to the whole community.

The health related project requires your child / children to complete a short questionnaire. All of the research will take place at your child's school and we would like your permission for your child to take part in this study. Please find attached an additional information sheet explaining more about the study. **Please could you fill in the consent form and return it in the envelope provided to the school as soon as possible.** We would also be grateful if you could also complete a brief questionnaire attached below and a consent form for yourself and or your partner / family members (aged 16 years and over) to complete and also participate in the study. All information we receive will help us to understand in more detail the health related behaviour patterns and activity levels of families within North Huyton and Kirkby and enable us to create a realistic and beneficial health related programme in your community.

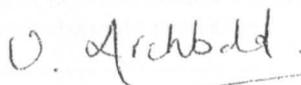
All information gathered from yourself and your child will be anonymous and treated as strictly confidential. If you have any concerns or would like more information about the study please complete the consent form attached including your telephone number and a member of the research team will be happy to contact you for further assistance.

In addition, as agreed with your child's Head Teacher, if the permission form is not returned within 7 working days, your child will automatically be included into the project.

Thank-you for your time and co-operation

I look forward to your response

Yours Sincerely



Victoria Archbold  
(Liverpool John Moores PhD Researcher)

I DO / DO NOT (please delete as appropriate) GIVE PERMISSION  
FOR [redacted] Grey TO PARTICIPATE  
(Child's full name)  
IN THE "HEALTHY HEART RESEARCH PROJECT"

Permanoban [redacted]  
(Parent's signature) (date)

### PARENTS QUESTIONNAIRE

YOUR REPLY WILL REMAIN CONFIDENTIAL AND ANONYMOUS

Your Child's name is: Elliott [redacted]

Your Child's School is: [redacted] Junior School

Your child's date of birth is: [redacted]

I am the child's:

Mother  Father  Other

My occupation (if any) is: Care assistant

My husband/wife/partner's occupation (if any) is: Engineer

The following questions are a simple way of measuring your physical activity level, diet and health. The questionnaire is strictly confidential and there is no right or wrong answer. Please answer all the questions as honestly as possible.

(PLEASE TURN OVER)



**Please ring the number which best shows how you feel**

How satisfied are you, in general, with your family life?

- A) Very satisfied.....1
- b) Satisfied.....2
- c) Dissatisfied.....3
- d) Very Dissatisfied.....4

How would you describe your health now?

- a) Excellent.....1
- b) Good.....2
- c) Fair.....3
- d) Poor.....4

How satisfied are you, in general, with the area you live?

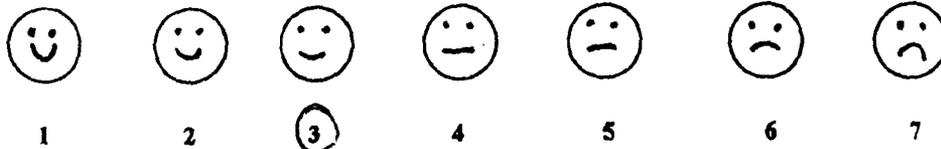
- a) Very satisfied.....1
- b) Satisfied.....2
- c) Dissatisfied.....3
- d) Very Dissatisfied.....4

How much can you do the things you enjoy in your spare time?

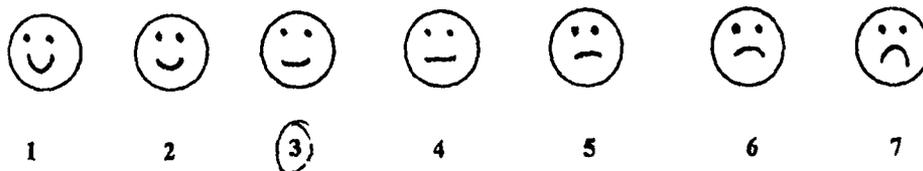
- a) Often.....1
- b) Sometime.....2
- c) Rarely.....3
- d) Never.....4

(Adapted Baker (1994) Life Fulfilment Scale)

**Which of these faces best describes how you feel about your HEALTH as a whole? (Please circle)**



**Which of these faces best describe how you feel about your DIET as a whole? (Please circle):**



(Adapted Andrews and Withey (1976) Faces Scale)

**PLEASE TURN OVER THIS IS THE LAST PAGE.....**

[REDACTED]  
[REDACTED] Junior School  
Southdean Rd  
Huyton  
[REDACTED]

Miss V Archbold  
PhD research Student  
Liverpool John Moores  
School of Health and Human Sciences  
Sport and Exercise Science Dept  
Rodney St  
Liverpool

20.10.02

Dear Mrs Taylor,

As [REDACTED] may have informed you, last year St Dominic's Junior School agreed to be one of the schools participating in a longitudinal study, over a three year period, tracking and assessing the health related behaviour and activity patterns of children and families in Knowsley. I understand that Mr McNerney has retired from his position and would like to take this opportunity to identify whether the school would still be willing to continue to participate in the study. I have enclosed the research proposal to enable you to be familiar with the main aims and objectives of the study and would be very happy to meet and discuss the research further.

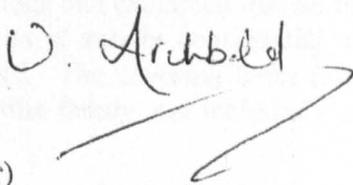
Last year I worked with ~~the children~~ year 4 class observing the health related behaviour patterns and attitudes of the children through low-key observational analysis. This term however, we are seeking basic baseline information and consent from the parents and families of the children in Miss Lambert & Wilson's class (as the children from the previous year have been split into the two year 5 classes). I have discussed the process with Miss Lambert/Wilson and explained that all the information we will be sending to the children's parents is strictly confidential and coded to protect the identity of each family and child. The covering letter (attached to this document) briefly explains the research to the family and includes a consent form and a basic family questionnaire.

I understand response rates for questionnaires and consent forms are low from parents of schools within Knowsley and have taken the liberty to state that if a consent form is not returned within 7 days their child will automatically be entered into the study. I anticipate to wait at least 14 days before any basic baseline information is obtained from the children. I hope this procedure is suitable and if you have any concerns regarding the documents enclosed could you please contact me as soon as possible on ~~01704 721014~~ to discuss them. I have attached all the baseline research tools that will be sent out to the parents of the children in Miss Lambert/ Wilson's class and will be distributing the documents to the children within the following week. Once consent forms are obtained I will also administer a very brief and simplistic health related questionnaire to the children and will enclose a copy for your attention in the coming weeks.

If you would like to meet to discuss the research further please telephone the number provided.

Thank you for your time and support and hope that you will be interested in continuing the research within your school.

Yours Sincerely



Miss V Archbold

(Vicky Archbold: PhD researcher)



Knowsley Council

LEISURE & COMMUNITY SERVICES



Merseyside  
health  
action  
zone



Department of Sport and  
Recreation

[REDACTED]  
[REDACTED] Primary School  
Hillside Avenue  
Huyton  
[REDACTED]

Miss V Archbold  
PhD research Student  
Liverpool John Moores  
School of Health and Human Sciences  
Sport and Exercise Science Dept  
Rodney St  
Liverpool

20.10.02

Dear [REDACTED]

As you are aware, last year I worked with ~~Mr Hogg's~~ class observing the health related behaviour patterns and attitudes of the children through low-key observational analysis. This term however, we are seeking basic baseline information and consent from the parents and families of the children in ~~Mr Hogg's~~ year 5 class. I have discussed the process with Mr Hogg and explained that all the information we will be sending to the children's parents is strictly confidential and coded to protect the identity of each family and child. The covering letter (attached to this document) briefly explains the research to the family and includes a consent form and a basic family questionnaire.

I understand response rates for questionnaires and consent forms are low from parents of schools within Knowsley and have taken the liberty to state that if a consent form is not returned within 7 days their child will automatically be entered into the study. I anticipate to wait at least 14 days before any basic baseline information is obtained from the children. I hope this procedure is suitable and if you have any concerns regarding the documents enclosed could you please contact me as soon as possible on [REDACTED] to discuss them. I have attached all the baseline research tools that will be sent out to the parents of the children in ~~Mr Hogg's class~~ and will be distributing the documents to the children within the following week. Once consent forms are obtained I will also administer a very brief and simplistic health related questionnaire to the children and will enclose a copy for your attention in the coming weeks.

Once again, I would like to take this opportunity to thank you for your ongoing support regarding the research, and feel the next two years promise to identify some very interesting findings on the schools children and families health related behaviour patterns.

Yours Sincerely  
Miss V Archbold

*V. Archbold*  
[Signature]

(Vicky Archbold: PhD researcher)





School of Sport and  
Exercise Sciences



*file copy*

To: Deputy Head  
CC: [REDACTED] Junior School  
From: Victoria Archbold (PhD Research Student)  
Date: [REDACTED]  
Re: The Healthy Heart Project

---

Dear Val

Thank you for the list of children and their details I will now be able to process and code each child and family for confidentiality. The process will be complete before the February half term but feel it would be perhaps more appropriate to distribute the envelopes to yourself (to be given to the children at home time) after the half term break as I feel the break may jeopardise the level of response and consent from parents. As such, I will deliver the letters to the school during the first week back after the February Half Term.

Thank you for your support

I look forward to seeing you very shortly

Kind Regards

Victoria Archbold (PhD Researcher)

If you need to contact me at any time, please do not hesitate to call

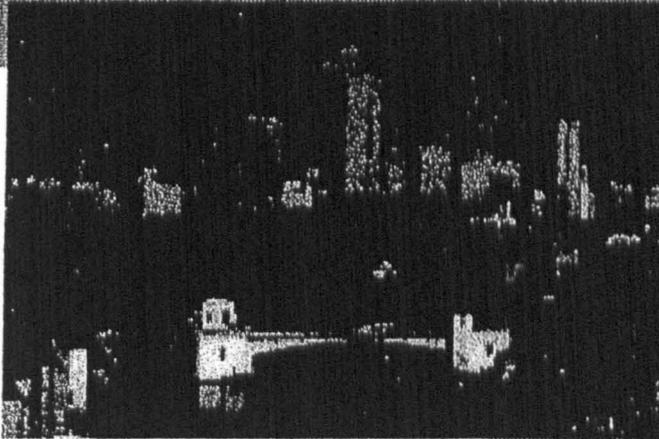
My mobile number is [REDACTED] or alternatively on my work number: ([REDACTED])  
I can be contacted any time on the above numbers



Knowstey Council  
LEISURE & COMMUNITY SERVICES

# Profile of Knowsley

## Statistical overview of the Borough



### **Background information:**

- Population size
- Indicators of Poverty and social Exclusion
- Measures of Income
- Measures of work/ unemployment rates
- Types of employment
- Measures of Health
- Education/skills and training

**Date: 01.06.02**

## INDICATORS OF POVERTY AND SOCIAL EXCLUSION

DATA	National	District	National Rank	Area	Neighbourhood (ward)		Notes
					Score	National Rank	
Index of Local Deprivation 1998		33.69	9		14.03	79	Score is a composite of various indicators
Index of Multiple Deprivation 2000		58.22	2		80.80	8	Score is a composite of various indicators. District Score is Average of Ward Scores, population weighted
Geography of Misery Index (based on 1991 Census)		13.86	26		20.97	30	Score is a % dissatisfied with neighbourhood conditions.
Breadline Britain Index					47.41	5	Ward Index Only
CASE Index of Work Poverty					63.13	1	Score is the % of people of working age not working, studying or training. 1991 Census data. Ward Index Only

## MEASURES OF INCOME

1991 CENSUS DATA	National	District	Area	Neighbourhood	Notes
% households with no car	32.41%	51.9%	63.47%	76.86%	
% children in households with no earner (as % of all children 0-17)	9.84%	34.41%	52.74%	86.18%	

**IS CLAIMANTS: KNOWSLEY**

Source: DSS (Information Service)

FIGURES	National		District		Area		Neighbourhood		Notes
	1998	1996	1998	1996	1998	1996	1998	1996	
No of IS claimants	3895355	5703345	22656	31724	6541	9339	1683	2446	
No is IS claimants 60+	1679543	1801574	7289	7567	2032	2108	415	428	1996 figure = 'Pensioners'
No IS claimants disabled and 'other'	1249727	1339536	9032	10081	2690	3095	683	832	1998 figure = 'other <60'
No IS claimants lone parents	966085	1030853	6335	6620	1900	1955	585	603	

Source of population figures: National = Office for National Statistics; District, Area, Neighbourhood = Oxford University Population estimates for Wards in England Mic Year 1998

CLAIMANTS AS % OF 16+ POPULATION	National		District		Area		Neighbourhood		Notes
	1998	1996	1998	1996	1998	1996	1998	1996	
No of IS claimants	8.48%		19.27%		25.6%		33.00%		
No is IS claimants 60+	3.66%		6.20%		8.06%		8.14%		
No IS claimants disabled and 'other'	2.69%		7.68%		10.35%		13.39%		
No IS claimants lone parents	2.10%		5.39%		7.54%		11.47%		

**CHILDREN IN 'IS' HOUSEHOLDS**

1991 CENSUS DATA	National		District		Area		Neighbourhood		Notes
	1998		1998		1998		1998		
No of children under 16 in IS households	2,013,653		15,715		4816		1445		
No of children under 16 in IS households (as percentage of all children under 16)	18.9%		42.6%		52.4%		68.8%		

Population figures at national level supplied by Office for National Statistics. Others from Oxford mid year population estimates 1998. IS figures supplied by DSS (Information Centre)

## MEASURES OF WORK AND WORKLESSNESS

1991 CENSUS DATA	National	District	Area	Neighbourhood	NOTES
work age females unemployed as % of all working age persons	GB = 2.28%	4.68%	5.57%	6.72%	
work age females inactive as % of all working age persons	GB = 15.61%	20.86%	25.19%	31.44%	
work age males unemployed as % of all work age persons	GB = 5.08%	10.39%	13.61%	16.58%	
work age males inactive as % of all work age persons	GB = 7.0%	9.54%	10.93%	11.78%	
work age people unemployed as % of all work age persons	GB = 7.36%	15.61%	19.18%	23.31%	
work age people inactive as % of work age persons	GB = 22.6%	26.16%	32.36%	39.82%	
Unemployment by ethnicity (% of all unemployed)					
White	89.49	99.03	99.57	99.58	
Black carib.	2.4	0.2	0.07	0.14	
Black Afro.	1.16	0.07	0.07	0	
Black other	0.62	0.26	0.04	0	
Indian	2.29	0.05	0.04	0	
Pakistani	1.73	0.01	0	0	
Bangladeshi	0.59	0	0	0	
Chinese	0.57	0.08	0	0	
Asian other	0.3	0.05	0	0	
Other	0.85	0.25	0.22	0.28	
% lone parents in work (out of all lp)	35.38%	16.4%	12.15%	7.76%	

**TYPE OF EMPLOYMENT:**

Note: All Work Employment Type data is taken from the 1991 Census

TYPE OF EMPLOYMENT	National	District	Area	Neighbourhood	Notes
No working in agriculture, forestry and fishing % (of 16+ employees and self employed)	1.85%	22 0.45%	1 0.12%	1 0.79%	
No working in energy and water % (of 16+ employees and self employed)	1.82%	58 1.19%	6 0.75%	0 0	
No working in mining % (of 16+ employees and self employed)	2.87%	143 2.94%	17 2.12%	0 0	
No working in manufacturing using metal % (of 16+ employees and self employed)	9.32%	652 13.4%	102 12.7%	15 11.9%	
No working in other manufacturing % (of 16+ employees and self employed)	8.61%	348 7.15%	59 7.35%	9 7.14%	
No working in construction % (of 16+ employees and self employed)	7.3%	367 7.54%	65 8.09%	11 8.73%	
No working in distribution and catering % (of 16+ employees and self employed)	20.64%	978 20.1%	155 19.3%	28 22.22%	
No working in transport % (of 16+ employees and self employed)	6.38%	385 7.91%	77 9.59%	16 12.7%	
No working in banking and finance % (of 16+ employees and self employed)	12.26%	385 7.91%	69 8.59%	8 6.35%	
No working in other services % (of 16+ employees and self employed)	28.05%	1473 30.28%	239 29.76%	32 25.4%	

**MEASURES OF HEALTH**

Limiting Long Term Illness

1991 CENSUS DATA	National	District	Area	Neighbourhood	Notes
% of those with LLTI (under 65) as % of all under 65s	6.09%	10.13%	11.79%	12.18%	
No. of those under 65 with LLTI		15404	4122	933	
% of those with LLTI (over 65) as % of all over 65s	6.02%	5.53%	5.96%	5.43%	
No of those over 65 with LLTI		8406	2084	416	

# MORTALITY RATES

Source: Public Health Common Data Set

All Area and Neighbourhood data provided by Local Health Authority

DATA	National		District Health Authority		Area		Neighbourhood		Notes
	1995-97	100	1995-97	100			1995-97	145	
BASE RATE: E+W = 100									
Deaths from all causes, all ages	100	100	120	100			145		Neighbourhood ward figure is actually for the period 1996-98
Deaths from all causes, males	100	100	123	100					
Deaths from all causes, females	100	100	118	100					
Deaths from Coronary Heart Disease	100	100	127	100					
Deaths from Stroke	100	100	103	100					
Deaths from all cancer	100	100	122	100					
Deaths from all cancer, males	100	100	126	100					
Deaths from all cancer, females	100	100	117	100					
Deaths from Asthma	100	100	69	100					
Deaths from accidents	100	100	125	100					

**SUICIDE**

DATA	National	District Health Authority	Area	Neighbourhood	Notes
BASE RATE: E+W = 100 UNLESS STATED	1995 -97	1995 -97			
Death rates from suicide and undetermined injury	100	72			

**INFANT MORTALITY**

DATA	National	District	Area	Neighbourhood	Notes
Infant mortality rate per 1,000: Under 1 year	1997 5.9	1997 9.3			

**LOW BIRTHWEIGHT BABIES**

DATA	National	District	Area	Neighbourhood	Notes
% babies weighing under 2500g	1997 7.8	1997 8.5		1997 9.4	

**SEVERE DISABILITY ALLOWANCE**

Source: DSS

DATA	National		Area		Neighbourhood		Notes
	August 1998	January 1998	January 1998	January 1998	January 1998		
Number of Severe Disability Allowance recipients below pension age	330,000	1676	420		85		
% of 16+ population who are receiving SDA	0.79%	1.4%	1.7%		1.7%		

**INCAPACITY BENEFIT**  
**Source: DSS**

DATA	National		District		Area		Neighbourhood		Notes
	1998		1998		1998		1998		
Number of Incapacity Benefit (short term and long term) recipients below pension age	1,530,000		9,117		2259		432		Those eligible for IB who are not paid ("credits") are not included in the count
% of population 16-59 who are IB recipients (as defined above)	4.94%		10%		12%		11%		

**MEASURES OF HOUSING**

**DWELLINGS/SPACE**

1991 CENSUS DATA	National	District	Area	Neighbourhood	Notes
No of dwellings	20,855,115	57241	13390	2881	
No of dwellings with residents	19,645,459	55714	13003	2828	
% dwellings with residents	94.20%	97.33%	97.11%	98.16%	
No of dwellings vacant		1455	367	49	
% dwellings vacant	4.62%	2.54%	2.74%	1.7%	

## MEASURES OF EDUCATION, SKILLS AND TRAINING

CENSUS DATA	National	District	Area	Neighbourhood	Notes
Proportion of 16-18 year olds not in FT education (as % of all 16-18yr olds)	46.41%	56.83%	61.03%	65.55%	
Residents with an HE qualification (diploma/above) as % of all people 18+ with dip./above:					
18-29 years:	21.74%	25.09%	26.87%	40%	
30-44 years:	40.36%	40.78%	40.3%	20%	
45 -- pensionable age:	26.11%	24.91%	20.9%	30%	
pension + :	11.79%	9.22%	11.94%	10%	

## SECONDARY SCHOOL ABSENCE RATES

% half days missed through unauthorised or authorised absence

Source: Dfee School Absence Tables

	1994	1995	1996	1997	1998	1999	2000
Schools in Area							
- School A	13.1	15.4	15.0	12.9	11.9	11.4	10.4
- School B	15.6	16.1	17.3	13.6	14.8	16.2	15.9
- School C	16.7	20.0	18.7	13.3	12.5	12.0	11.9
- School D	16.8	17.1	16.9	15.8	13.8	12.5	12.0
District	15.4	15.5	14.9	13.5	13.0	13.1	12.4
National	9	9.2	9.4	8.9	8.8	8.7	8.6

**GCSE PASSES**

For all GCSE tables source: DFEE

% attainment of total pupils

GCSE passes (5A*-C)	1994	1995	1996	1997	1998	1999	2000
Schools in Area:							
-School A	24	16	19	19	18	21	15
-School B	36	27	22	18	18	17	21
-School C	8	12	12	20	22	19	14
-School D	16	17	19	23	16	19	26
L.E.A.	21.3	19.2	23.6	23.4	22.9	23.6	25
National (England)	43.3	43.5	44.5	45.1	46.3	47.9	49

GCSE passes (5A*-G)	1994	1995	1996	1997	1998	1999	2000
Schools in Area:							
-School A	66	78	68	78	72	77	82
-School B	76	71	72	76	72	79	75
-School C	81	68	73	69	67	82	73
-School D	70	63	79	76	71	78	81
L.E.A.	66.3	68.9	69.1	73.2	74	77	78
National (England)	85.6	85.7	86.1	86.4	83.2	88.5	89

% of pupils with no passes (A*-G)	1994	1995	1996	1997	1998	1999	2000
Schools in Area:							
-School A	19	15	18	12	14	10	8
-School B	16	13	17	11	15	12	17
-School C	14	22	15	15	23	10	13
-School D	15	23	11	10	19	14	10
L.E.A.	19.8	18.8	19.5	14.7	16.2	13.5	11
National (England)	7.7	8.1	7.8	7.7	8.1	6	6

**PRIMARY SCHOOL PERFORMANCE**

**For all Primary School tables source: DfEE**

% achieving level 4 or above at key stage 2 (age 11) ENGLISH	1996	1997	1998	1999	2000
Schools in Area:					
-School A	38	50	28	50	61
-School B	52	49	60	65	63
-School C	47	45	51	42	50
-School D	44	52	56	61	60
-School E	40	55	26	56	75
-School F	29	40	54	51	51
L.E.A.	48.7	53.9	58.7	63.5	69.7
National (England)	56.3	62.5	64.1	69.7	75

% achieving level 4 or above at key stage 2 (age 11) MATHS	1996	1997	1998	1999	2000
Schools in Area:					
-School A	45	59	34	38	52
-School B	56	77	44	65	53
-School C	59	43	36	42	41
-School D	29	38	36	59	57
-School E	17	47	26	56	69
-School F	24	48	54	43	57
L.E.A.	45.4	56.8	53.8	63.6	68
National (England)	53.2	61.3	57.9	68.2	72

**LOW LITERACY SKILLS**

Source = Basic Skills Agency

DATA	National (England)		District		Area		Neighbourhood		Notes
	1996-97		1996-97		1996-97		1996-97		
Estimation of 16 - 60 year old population with low/very low literacy skills as % of all 16 - 60 year olds.	15		22.3		27.1		30.5		<ul style="list-style-type: none"> <li>Population figures used to calculate percentages are 1995 estimates calculated from 1991 census data.</li> <li>Note: New surveys are being carried out classifying literary skills under different categories to those used in 1996/97. The 96/97 data will shortly be available under these new categories.</li> </ul>

**NOT IN FULL-TIME EDUCATION**

Source = 1991 Census

DATA	National		District		Area		Neighbourhood		Notes
% of young people 16-18 not in Full-Time Education		46.41%		56.83		61.03		65.55	

% achieving level 4 or above at key stage 2 (age 11) SCIENCE	1996	1997	1998	1999	2000
<b>Schools in Area:</b>					
-School A	52	50	31	38	58
-School B	64	77	60	75	82
-School C	63	47	61	71	79
-School D	35	36	41	69	89
-School E	14	30	29	60	92
-School F	25	48	57	59	71
L.E.A.	57.1	62.2	63.6	73.9	83.9
National (England)	61.2	68.1	68.6	77.9	85

### SPECIAL EDUCATIONAL NEEDS

Source: DFEE

Number of pupils with special educational needs (statemented and non-statemented) as percentage of Roll of School	1995	1996	1997	1998	1999	2000
<b>Secondary Schools in Area:</b>						
-School A	15%	13%	12%	17%	18%	19%
-School B	9%	11%	10%	7%	15%	25%
-School C	11%	15%	17%	22%	21%	24%
-School D	10%	11%	11%	13%	14%	15%
<b>Primary Schools in Area:</b>						
-School A		35%	34%	31%	34%	35%
-School B		10%	12%	15%	22%	27%
-School C		18%	24%	23%	23%	26%
-School D		31%	27%	25%	32%	33%
-School E		4%	21%	27%	28%	29%
-School F		31%	43%	53%	48%	48%

**SCHOOL LEAVER DESTINATIONS**

**1998/99 Yr 11 Cohort**

**Source: Local Careers Service**

Note: totals do not add due to rounding

Destinations of school leavers, % going into:	National (England)		District		Area		Neighbourhood		Notes
	1998-99	1999-00	1998-99	1999-00	1998-99	1999-00	1998-99	1999-00	
Full Time Education		70.6		49.6					
Employment		11.9		9.15					Includes training which confers employee status.
Training		5.1		22.26					
Not Settled		7.3		12.08					
Other		5		6.9					

**3 & 4 YEAR OLDS**

**Source: Local Authority Performance Tables**

DATA	National		District		Area		Neighbourhood		Notes
	1998-99	1999-00	1998-99	1999-00	1998-99	1999-00	1998-99	1999-00	
Children under 5 in LEA schools as a % of all 3 and 4 yr olds.	62		94	95					
% of all 4yr olds in nursery places provided or funded by the Council through a government approved plan.	89		98	93					

## MEASURES OF CRIME AND ANTI-SOCIAL BEHAVIOUR

District: Knowsley, Police Force Area: Merseyside

Sources: For all crime figures national and police force area data comes from the Home Office and District, Area and Neighbourhood Data comes from local police forces. Data in the 'area' column relates to crimes in the police beats corresponding most closely to the Overtown area. Because of the lack of population estimates for police beats, 'rates' cannot be calculated.

### CRIME RATES

DATA	National, 2 <sup>nd</sup> column: rates per 100,000	9745	140874	13104	14238	9216	1634	Neighbourhood, 2 <sup>nd</sup> column: rates per 100,000	Notes
Total crime	5,109,104	9745	140874	13104	14238	9216	1634		
Violent crime	605,797	1155	15711	1112	1124	728	167		
Burglaries of households									
Theft of or from a vehicle	1,480,467	2835	40733	3789	3174	2054	280		
Criminal damage	879,572	1685	27465	1943	3205	2074	447		
Total burglary	953,187	1826	26498	1875					
Other theft - "Theft and handling"	710,989	1362	1831	1703	1255	812	141		

**MEASURES OF THE SOCIAL ENVIRONMENT (THE EXTENT TO WHICH PEOPLE ARE OF  
FEEL SOCIALLY ISOLATED OR EXPERIENCE PERSECUTION OR DISCRIMINATION  
OR EXCLUSION**

Knowsley

**TEENAGE CONCEPTIONS**

DATA	England and Wales			Merseyside		Area			Neighbourhood			
	1997	1998	1999	1997	1998	1999	1997	1998	1999			
Numbers of Conceptions to women aged 13-15	8271	8452		222	234							
Conceptions to women aged 13-15 per 1000 women aged 13-15	8.9	9.0		8.2	8.5							
Numbers of Conceptions to women aged 15-17	NA	44100		NA	1400							
Conceptions to women aged 15-17 per 1000 women aged 15-17	NA	47.0		NA	50.5							
Numbers of Conceptions to women aged 15-19	96000	NA		3000	NA							
Conceptions to women aged 15-19 per 1000 women aged 15-19	62.6	NA		68.4	NA							

Source: Office for National Statistics

Knowsley

**'AT RISK' REGISTER**

**Source: Local Authority Performance Tables**

DATA	National			District			Area			Neighbourhood		
	97/8	98/9	99/0	1997/8	1998/99	1999/0	1997/98	1998/99	1999/00	1997/98	1998/99	1999/00
Number of children on the 'at risk' register with home address in the area (per 1000 children)	3	3.1	2.8	4.0	4.0	2.4						
% who have been on the register for more than two years continuously	10.2	8.7	10.6	29.0	20.0%	17.2						
Proportion of registrations on the register during the year who have been previously registered			13.5	NA	NA	23.0						

Note: 1999/0 figure for "% who have been on the register for more than two years continuously" is actually "the percentage of children on the register who have been on the register for two years or more when deregistered – now as Dept of Health PAF indicator C21 change from original indicator."

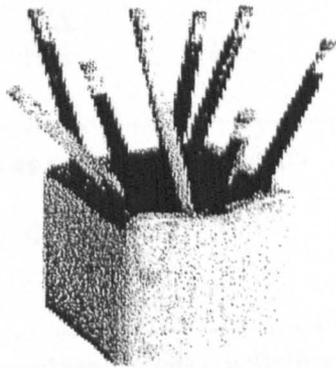
**'LOOKED AFTER' CHILDREN**

DATA	National			District			Area			Neighbourhood		
	97/8	98/9	99/0	1997/8	1998/99	1999/0	1997/98	1998/99	1999/00	1997/98	1998/99	1999/00
Number of children from the area 'looked after by the local authority' per 1000 children	5	5.2	5.5	6.0	NA	6.0						

Source: Audit Commission Local Authority Performance Indicators

# Profile of Knowsley Primary Schools

Statistical overview of the selected Primary  
schools of the Borough



## **Background information:**

- Population size
- Indicators of Poverty and Social Exclusion
- School Absence Rates
- Primary Performance Indicators— school league tables DFEE
- PANDA Report
- Measures of Health & After School Activities

**Date: 01.06.02**

**Park View Primary School**  
**Twig Lane**  
**Huyton**  
**L36 2LL**

**Information: School League Tables 2001 & Inspectors Report 2000:**

<b>No on roll:</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
Your School:				<b>555</b>	
National Aver	240	242	244	243	243

**% Pupils known to be eligible for free school meals:**

Your School:	N/A	N/A		<b>63.4</b>	
National Aver	N/A	N/A	20.3	19.7	18.6

**% Pupils speaking English as additional language:**

Your School:	0.0	0.0	0.0	0.0	0.0
National Aver					

**% Pupils with Special Educational Needs (including statements):**

Your School:				<b>30.8</b>	
National Aver	19.9	19.9	20.8	23.2	23.7

**% Pupils with Statements of Special Educational Needs:**

Your School:				<b>7.9</b>	
National Aver	1.4	1.5	1.6	1.7	1.8

**St Dominic's R.C Junior School**  
**Hillside Avenue**  
**Huyton**  
**L36 8EQ**

**Information: 2001 PANDA Report:**

<b>No on roll:</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
Your School:	277	292	278	278	242
National Aver	240	242	244	243	243

---

**% Pupils known to be eligible for free school meals:**

Your School:	N/A	N/A	73.7	69.1	72.3
National Aver	N/A	N/A	20.3	19.7	18.6

---

**% Pupils speaking English as additional language:**

Your School:	0.0	0.0	0.4	0.4	0.4
National Aver					

---

**% Pupils with Special Educational Needs (including statements):**

Your School:	42.6	53.1	47.8	47.8	57.0
National Aver	19.9	19.9	20.8	23.2	23.7

---

**% Pupils with Statements of Special Educational Needs:**

Your School:	1.1	1.0	3.6	1.8	2.5
National Aver	1.4	1.5	1.6	1.7	1.8

---

**St Dominic's R.C Junior School**  
**Hillside Avenue**  
**Huyton**  
**L36 8EQ**

**Information: 2001 PANDA Report:**

<b>No on roll:</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
Your School:	277	292	278	278	242
National Aver	240	242	244	243	243

**% Pupils known to be eligible for free school meals:**

Your School:	N/A	N/A	73.7	69.1	72.3
National Aver	N/A	N/A	20.3	19.7	18.6

**% Pupils speaking English as additional language:**

Your School:	0.0	0.0	0.4	0.4	0.4
National Aver					

**% Pupils with Special Educational Needs (including statements):**

Your School:	42.6	53.1	47.8	47.8	57.0
National Aver	19.9	19.9	20.8	23.2	23.7

**% Pupils with Statements of Special Educational Needs:**

Your School:	1.1	1.0	3.6	1.8	2.5
National Aver	1.4	1.5	1.6	1.7	1.8

**Overdale Primary School**  
**Roughwood Drive**  
**Northwood**  
**Kirkby**  
**L33 9UW**

**Information: School League Tables 2001 & Inspectors Report 2000:**

<b>No on roll:</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
Your School:					<b>351</b>
National Aver	240	242	244	243	243

---

**% Pupils known to be eligible for free school meals:**

Your School:	N/A	N/A			
National Aver	N/A	N/A	20.3	19.7	18.6

---

**% Pupils speaking English as additional language:**

Your School:	0.0	0.0	0.0	0.0	0.0
National Aver					

---

**% Pupils with Special Educational Needs (including statements):**

Your School:					<b>38.1</b>
National Aver	19.9	19.9	20.8	23.2	23.7

---

**% Pupils with Statements of Special Educational Needs:**

Your School:					<b>1.7</b>
National Aver	1.4	1.5	1.6	1.7	1.8

---

**St Columba's Primary School**  
**Hillside Rd**  
**Huyton**  
**L36 8BL**

**Information: 2001 PANDA Report:**

<b>No on roll:</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
Your School:	358	358	334	317	319
National Aver	240	242	226	243	226

**% Pupils known to be eligible for free school meals:**

Your School:	N/A	N/A	68.8	67.9	66.9
National Aver	N/A	N/A	20.3	19.7	18.6

**% Pupils speaking English as additional language:**

Your School:	0.0	0.0	0.0	0.0	0.0
National Aver					

**% Pupils with Special Educational Needs (including statements):**

Your School:	5.0	27.4	27.8	26.2	29.8
National Aver	19.9	19.9	20.8	23.2	23.7

**% Pupils Statements of Special Educational Needs:**

Your School:	0.8	0.6	0.3	1.9	2.8
National Aver	1.4	1.5	1.6	1.7	1.8

## Knowsley Education League Tables 2001

This Table lists primary schools in the area ranked on the basis of the aggregate score in their 2001 Key Stage 2 National Curriculum test results: 300 being the maximum possible.

**Columns:** APS = Position based on average point score

AGG = position based on aggregate score & the actual score

**Results:** E% = English, M% = Maths, S%=Science

Name	APS	AGG	E%	M%	S%	
Prescot Primary School	1	1	300		100	100
Holy Family Catholic Primary	2	2	290	97	93	100
Our Lady's Catholic Primary	4	3	288	96	92	100
St Joseph's Catholic Primary	8	4	281	89	92	100
Blacklow Brow Primary	10	5	278	96	81	100
Cronton Cof E Primary	5	6	276	100	82	94
Halewood Cof E Primary	11	7	274	89	91	94
Evelyn Community Primary	6	8	274	84	94	97
Huyton-with-Roby CofE Primary	3	9	273	90	87	95
St. Anne's Catholic Primary	7	10	270	93	81	96
St Leo's Catholic Primary	12	11	268	88	84	96
Whiston Willis Community	13	12	267	86	86	95
St Albert's Catholic Primary	20	13	266	83	83	100
Halsnead Community Primary	9	14	263	83	87	94
Kirkby CofE Primary	19	15	262	82	82	97
<b>St Columba's Catholic Primary</b>	<b>21</b>	<b>16</b>	<b>259</b>	<b>80</b>	<b>83</b>	<b>95</b>
<b>Plantation Primary</b>	<b>18</b>	<b>17</b>	<b>257</b>	<b>87</b>	<b>79</b>	<b>90</b>
St Mark's Catholic Primary	29	18	256	81	81	93
St Brigid's Catholic Primary	14	19	253	88	78	88
The Sylvester Primary	15	20	252	85	72	94
Westvale Primary	16	21	251	81	79	91
Malvern Primary	25	22	250	76	79	96
St Andrew The Aposle R.C	24	23	250	78	81	92
Mackets Primary	23	24	250	77	80	93
St Margaret Mary's R.C	17	25	247	81	75	90
Simonswood Primary	27	26	246	79	71	96
Roby Park Primary	22	27	243	61	83	100
St Lawrence's R.C	26	27	243	76	70	98
St John Fisher R.C	30	29	242	84	68	89
Longview Community Primary	37	30	240	77	66	98
St Gabriel's CofE Primary	38	31	239	76	70	94
Roseheath Community Primary	33	32	238	71	71	97
Cherryfield Primary	40	33	236	71	71	93
Park Brow Community Primary	34	34	233	75	71	87
Mosscroft Primary	28	35	231	83	65	83
Knowsley Village School	35	36	229	71	67	90
Millbrook Community Primary	31	37	226	76	68	82

## Knowsley Education League Tables 2001: Continued

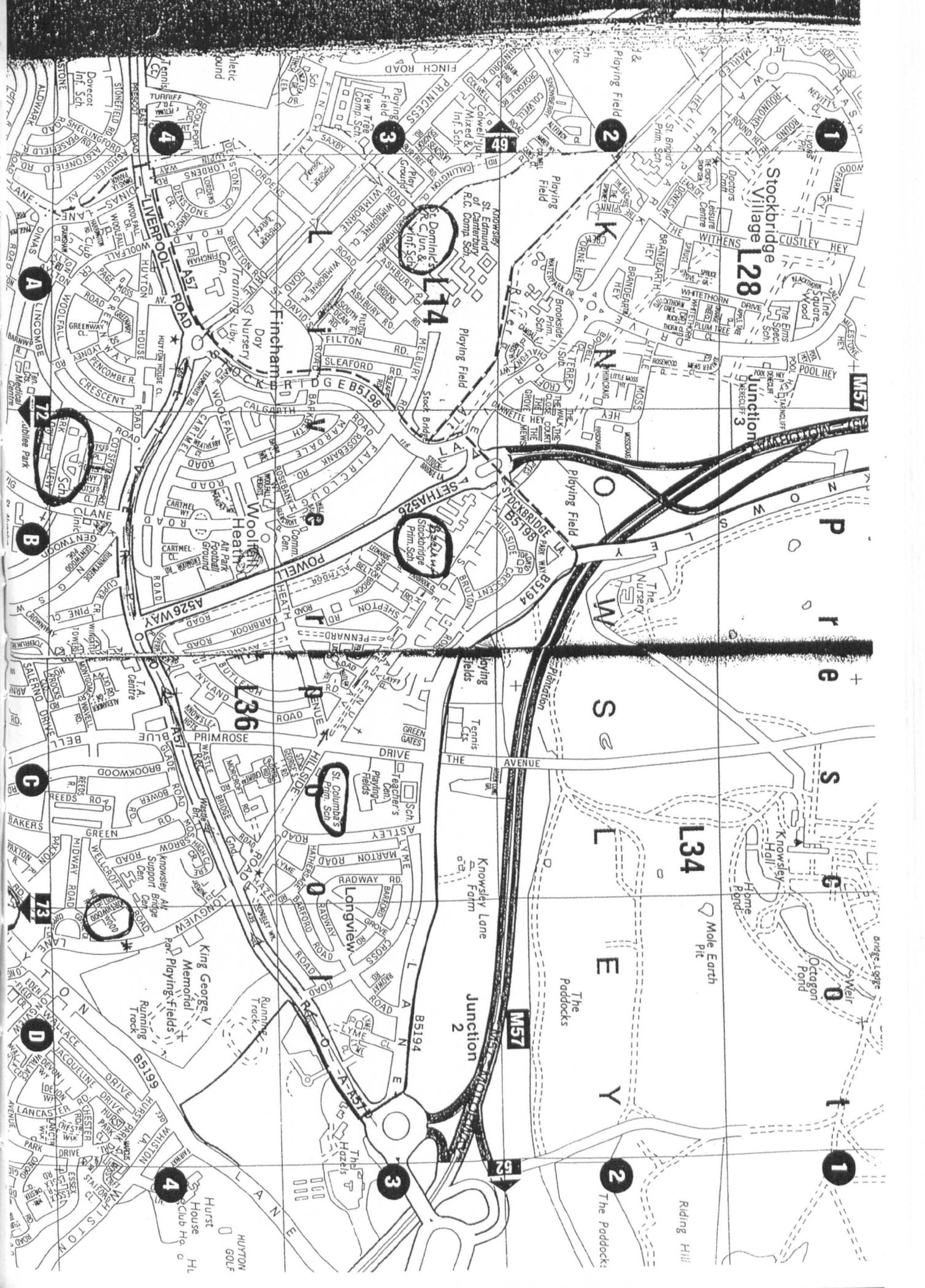
Name	APS	AGG	E%	M%	S%
St Joseph the Worker R.C	32	<b>38</b> 219	78	59	81
Holy Family Catholic Primary	44	<b>39</b> 219	69	53	97
Holy Angel's R.C Primary	46	<b>40</b> 218	66	66	86
Brookside Community Primary	39	<b>41</b> 216	71	62	82
Ravenscroft Community Primary	48	<b>42</b> 216	56	65	95
New Hutte Community Primary	45	<b>43</b> 216	65	68	84
Saint Peter and Paul R.C	50	<b>44</b> 211	70	57	84
St Agnes R.C Primary	36	<b>45</b> 210	55	70	85
St Aloysius R.C Primary	43	<b>46</b> 209	59	54	96
St Aidan's R.C Primary	41	<b>47</b> 207	71	56	80
St Marie's R.C Primary	54	<b>48</b> 205	64	64	77
St Luke's R.C Primary	49	<b>49</b> 203	58	55	89
Eastcroft Park Primary	42	<b>50</b> 202	60	58	84
St Mary & Paul's CofE	47	<b>51</b> 194	47	59	88
Southmead Community Primary	51	<b>52</b> 190	65	40	85
Nine Tree Primary	52	<b>53</b> 189	44	52	93
<b>Beechwood Primary</b>	<b>53</b>	<b>54</b> 179	<b>59</b>	<b>52</b>	<b>69</b>
Sacred Heart R.C Primary	56	<b>55</b> 170	55	45	70
<b>St Dominic's R.C Junior</b>	<b>57</b>	<b>56</b> 169	<b>51</b>	<b>46</b>	<b>72</b>
<b>Park View Primary</b>	<b>55</b>	<b>57</b> 160	<b>47</b>	<b>42</b>	<b>71</b>
<b>Overdale Primary</b>	<b>58</b>	<b>58</b> 138	<b>36</b>	<b>28</b>	<b>74</b>

### Colour Key:

**Blue = Control School**

**Green = Selected schools for research**

**Red = Selected schools for intense research**



Stockbridge Village L28

Stockbridge Junction

Stockbridge Paddock

Stockbridge Paddock 2

Stockbridge Paddock 3

Stockbridge Paddock 4

Stockbridge Paddock 5

Stockbridge Paddock 6

Derrin's R.C. Jun. & Inf. Sch.

Stockbridge Paddock Prim. Sch.

St. Columba's Prim. Sch.

A

B

C

D

4

3

2

1

3

2

1

49

52

M57

M57

L36

L34

L14

A

B

C

D

4

3

2

1

A

B

C

D

4

3

2

1

3

2

1

49

52

M57

M57

L36

L34

L14

A

B

C

D

4

3

2

1

A

B

C

D

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M57

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L36

L34

L14

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M57

M57

L36

L34

L14

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L14

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C

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A

B

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D

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M57

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L14

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L36

L34

L14

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A

B

C

D

4

3

2

1

3

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1

49

52

M57

M57

L36

L34

L14

A

B

C

D

4

3

2

1

A

B

C

D

4

3

# **APPENDIX B**

# The Heart of Knowsley Project

Name of Reseracher: Miss Archbold

Liverpool John Moores University: School of Sport and Exercise  
Sciences.

## Write & Draw Exercise



Thank you for participating in this short exercise. The Researcher Miss Archbold will firstly explain what you have to do and will then hand out 3 pieces of paper.

On each piece of paper you will see a sentence at the top of the page asking you a question. Please draw and write your OWN answers in the space provided and move on to the next question. Once you have completed all 3 pieces of paper and you have included everything you think you need, you may colour the pictures in.

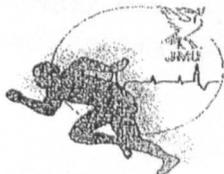
There are no right or wrong answers and you will not get into trouble for what you write or draw. Your answer may be different to your class mates as you may go to different places after school.

Once you have finished all 3 questions, Miss Archbold will collect in your work. Your teacher, family and friends will not be able to see your answers and they will only be shown to Miss Archbold and the research team at John Moores University.

If you get stuck at any time during the exercise you can raise your hand and Miss Archbold will happily try to help



Knowsl@ Council  
LEISURE & COMMUNITY SERVICES



School of Sport and



# **THE HEART OF KNOWSLEY** **PROJECT**

*Assessing Health Related Behaviour and activity patterns in children and families of Knowsley*

**Name Of Researcher** Miss Victoria Archbold  
Dr Dave Richardson, Professor Don MacLaren and Dr  
Lindsey Dugdill

**Liverpool John Moores University: School of Sport and Exercise Sciences and**  
**Knowsley Sports Development KMBC**

**Dear Parent/ guardian**

As you are aware from the previous letter you received from me last week via your son / daughter, your child will be receiving his / her accelerometer and heart rate monitor today which will track their activity patterns over the week. Your child will also receive an activity diary and dietary log that they will complete during the monitoring period and a full explanation of how to wear the equipment and complete the diary has been conducted by myself to your child at their school.

In addition to this, your child has also been given a disposable camera (that will remain in your home) so your child can take photographs of their main meals during the study. A full explanation has been given to your child about the process and they understand that they must return the cameras to school the following week. Your child has been asked to take a photograph of their breakfast (including drink) and their tea and or supper (before they eat it!). The photographs will enable myself and the research team to identify how much energy your child has expended during each day. All the data will be strictly confidential and coded to ensure only the research team have access or will be aware of your child's individual activity pattern and diet. The images we receive will only be used against their heart rate and accelerometer activity scores.

If you are at all concerned about any of the procedures mentioned above please do not hesitate to contact myself or Jonathan Goodwin (undergraduate assistant) on the previous telephone number provided.

If you are interested in receiving an overview of your child's general activity patterns/scores during the week I will be more than happy to distribute a copy to yourself at your request once we have collected all the findings.

Thank you for your ongoing support and assistance in the study

Yours Sincerely

Vicky Archbold (PhD research student)

**\* This project is funded through Merseyside Health Action Zones \***



Knowsley Council

Leisure and Community Services



# The Heart of Knowsley Project

## My Diet & Activity Diary File



Name:

Date of Birth:

School:



School of Sport and Exercise Sciences

# THE HEART OF KNOWSLEY PROJECT

## Physical Activity Diary

It is very important that while you wear your accelerometer and heart rate monitor you fill in your activity diary.

The diary is split into sections throughout the day, to help you remember what the activity was and when it took place.

In the diary there are 3 symbols representing the level of physical activity carried out:



### LOW LEVEL

Activities that do not require much effort. (Examples washing Dishes, doing Homework)



### MEDIUM LEVEL

More effort required. Your heart beats a little faster, breathing a little heavier. (Examples: fast walking, riding a bike not fast!)



### HIGH LEVEL

Great deal of Effort. Your heart beats fast and you breath heavily. (Examples: running football, dancing)

### Each day you will need to:

- Write down the type of activity you have been doing by shading in the boxes
- The diary is split into time periods but don't worry if during one period you have done a little low level activity (school work) and then a little medium level of activity (because it was play time and you were playing games).
- All you need to do is shade in the boxes to show which activity lasted the longest

I.e. Shade in 3 boxes - activity done for the longest time

Shade in 2 boxes - next longest time

Shade 1 box -shortest time

- You must also write down how long the activity lasted for.
- Example: I had lunch for 35 mins and then had football practice for 30mins. Football practice was the longest activity - so more boxes are shaded.




LOW

Activities:.....

Duration:.....

12:00 - 1:05pm




MEDIUM

Activities:.....

Duration:.....




HIGH

Activities:.....

Duration:.....

Name: .....

Date: .....

# MORNING



I got out of bed at.....

How I travelled to and from school (tick the box)



8:30 – 10:25am

**LOW**

Activities:.....

Duration:.....

**MEDIUM**

Activities:.....

Duration:.....

**HIGH**

Activities:.....

Duration:.....

10:25 – 10:45am

**LOW**

Activities:.....

Duration:.....

**MEDIUM**

Activities:.....

Duration:.....

**HIGH**

Activities:.....

Duration:.....

10:45 – 12:00

**LOW**

Activities:.....

Duration:.....

**MEDIUM**

Activities:.....

Duration:.....

**HIGH**

Activity:.....

Duration:.....

# AFTERNOON

<b>12:00 – 1:05</b>	<b>LOW</b>	<b>MEDIUM</b>	<b>HIGH</b>
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Activities:..... .....		Activities:..... .....	Activities:..... .....
Duration:.....		Duration:.....	Duration:.....

<b>1:05 – 3:45</b>	<b>LOW</b>	<b>MEDIUM</b>	<b>HIGH</b>
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Activities:..... .....		Activities:..... .....	Activities:..... .....
Duration:.....		Duration:.....	Duration:.....

<b>3:45 – &gt;</b>	<b>LOW</b>	<b>MEDIUM</b>	<b>HIGH</b>
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Activities:..... .....		Activities:..... .....	Activities:..... .....
Duration:.....		Duration:.....	Duration:.....

<b>Tea time &gt; Bedtime</b>	<b>LOW</b>	<b>MEDIUM</b>	<b>HIGH</b>
	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Activities:..... .....		Activities:..... .....	Activities:..... .....
Duration:.....		Duration:.....	Duration:.....

I Went to bed at: .....

I removed the Accelerometer at:.....

I removed the Heart Rate monitor at:.....

Today was: .....

(Please Tick)

- A typical Day
- A more active than usual day
- A less active than usual day

## THE HEART OF KNOWSLEY PROJECT



### Food Diary

It is very important that while you wear your accelerometer and heart rate monitor you also fill in your food diary.

The diary is split into sections during the day to help you record what you have eaten. It is very important that you describe everything you have eaten in detail e.g. if you had 2 pieces of toast for breakfast what type of bread was it - brown or white?

When you are having your breakfast, tea and or supper it is also very important that you take a photo of it (before you eat it!) with the disposable camera provided. Don't worry, your parent / carer will help you with this task. In your diary this symbol  will help you remember when you need to take the photograph.

Below is an example of a typical completed food diary:

Meal Times	Name of Food Eaten	Size of Portion (i.e. Large bowl cornflakes, 2 packets of crisp, 1 Kit Kat)	Drink (fizzy drink, cup of tea glass of water)
<b>Breakfast</b> 7:00 – 8:30am	Piece of toast (white bread) with jam and butter	2 slices	Small glass of milk
<b>Snacks</b> 7:00 – 9:00am	Mars Bar	1 (large)	
<b>Break:</b> 10:00 – 11:00am	Walkers salt and vinegar crisp	1 packet	Can of Coke
<b>Lunch:</b> 12:00 – 1:00pm	(White bread) Ham and Cheese sandwiches Strawberry yoghurt Apple Minstrels (chocolate)	4 1 small pot 1 1 bag	Glass of Chocolate milkshake

**Feeling and Thoughts for Today:** I felt good today, had lots of energy and ran about a lot in the play ground with my mates.



Name:.....

Date:.....

Meal Times	Name of Food Eaten	Size of Portion (i.e. Large bowl cornflakes, 2 packets of crisp, 1 Kit Kat)	Drink (fizzy drink, cup of tea glass of water)
<b>Breakfast</b> 7:00 – 8:30am 			
<b>Snacks</b> 7:00 – 9:00am			
<b>Break:</b> 10:00 – 11:00am			
<b>Lunch:</b> 12:00 – 1:00pm			
<b>Break:</b> 2:00 – 3:00pm			
<b>Home Time:</b> 3:00 – 4:00pm			
<b>Tea Time:</b> 4:00 – 6:30pm 			
<b>Snacks:</b> 6:30 – 7:00pm			
<b>Supper:</b> 7:00 – 9:00pm 			

Thoughts and feelings for today:

.....

# The Heart of Knowsley Project



DAY 2

# APPENDIX C

# The Heart of Knowsley Project

Name of Researcher: Miss Archbold

Liverpool John Moores University: School of Sport & Exercise Sciences.

## Whats the study about?...



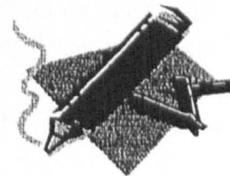
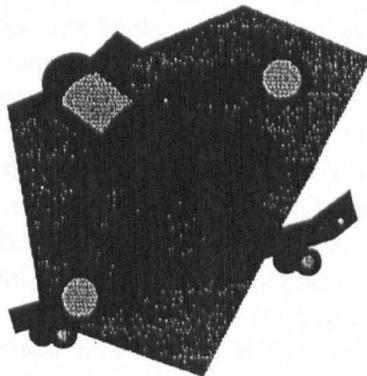
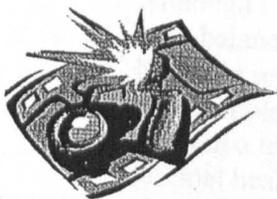
The study is by Liverpool John Moores University and will be finding out what you think about your health and your community. It is also going to look at what you enjoy doing in your spare time, at school and at the weekend.

Do you enjoy sport? What are your favourite leisure time activities?

It will also find out what you like to eat and drink and what foods you don't like!

## What will you be doing?

You will not be doing anything different than what you normally do after school and during weekends.



The only difference is that Vicky Archbold (a researcher at John Moores University) who you completed questionnaires, drawings and wore accelerometers for in your primary school, will be joining you at your home (once a week after school or of weekends) to get to know you and your family better.

Occasionally she may ask you questions about your health, diet and physical activity level but these will be your opinions and do not have a right or wrong answer.

Please turn over.....

my  
Lars

## THE HEART OF KNOWSLEY STUDY

### CRITICAL REFLECTION – RESEARCHERS VALUES AND BELIEF SYSTEMS

Prior to embarking upon the final phase of the research process it is essential to directly address my own values and beliefs systems to ensure I consciously respect the different behaviours the families may display within their homes and community. Through addressing my own value system I believe I will be able to display respectful and compassionate interactions with the families being researched.

- Brought up in a typical 'white middle class environment' – (two parents and one brother) has meant that certain values and process have been embedded within my soul. I was brought up and educated in a traditional & 'strict' catholic manner with brothers, priests and nuns using their authority within the education establishments to discipline when appropriate. Education has been a very positive feature within my family and progression routes via A' Levels and Degree programmes taken as the norm
- Having no family members, close friends or partners that smokes I do feel angered and disappointed when parents smoke in front of their children. I feel this behaviour not only affects their own health and the health of the children but also sends an inappropriate subconscious message that smoking is acceptable.
- From an early age and even through to adulthood I have never heard my parents use foul language to others or myself. As a consequence I very rarely swear in public and believe that such behaviour should not be used or heard by children in their home. Again I feel saddened when I hear such language being used by young children and even more so when the parents feel it is an acceptable behaviour.
- Although I have had a varied diet I strongly believe that children should eat a balanced and healthy diet. Having no children of my own I can only highlight my own value bias, which is that children should be encouraged to eat wholemeal bread, fresh fruit and vegetables and on occasion be allowed a treat (once a week). Processed food is damaging to the child's internal health and should be avoided if at all possible.
- I have been brought up from a very early age to be polite and respectful to others. This has meant being respectful of other people's religions, opinions and beliefs and always remaining optimistic and positive.
- Having such a warm and supported family has also meant that any difficulties I have encountered along the way (psychological or financial) have always been resolved by the help of my parents. I suppose you could say I am spoilt! From an early age I have had a very positive and close friendship with both my mother and father.

From an early age physical activity has always been promoted. From a very young age numerous sports were encouraged and participated in. This has allowed me to form a very positive view of sport, recreation and physical activity. Computer games and sedentary pursuits were never an option within my home. Instead winter walks, picnics, ballet, swimming and holidays were the priority. I strongly believe physical activity within a family is important and should be promoted. T.V, computer games and sedentary pursuits are now a norm for many families and feel this would be unacceptable if I had a family of my own.

On reviewing my own values I can observe I take a very strict & 'traditional' view of health related behaviours in general. Although I have my own value bias, my experience of observing many dysfunctional families over the years has also allowed me to understand that we are all different. It has also taught me that although many families have different beliefs and value systems to myself they also have to live in very difficult circumstances – and ones which I have not encountered. I feel that although my own values will be called into question when observing the families, I have the appropriate empathy and compassion to understand and respect the values of others. More importantly, I have the experience to know that to bridge the gap between myself and the community I must not transfer my own belief system to the families being researched.

JMU:	PO	School	Sport & Exercise Sciences	Design stage	1
Project No:	24710188	Project Name:	Family Case Study: Participant Observations		
RA undertaken by:	V Archbold	Original RA date:	15.04.05	RA revised by:	
				Revision date:	
				Revision Ref:	Sheet No: 1 of 2

**WORK ACTIVITY / ACTIVITIES:**  
 Family Participant Observations (Ethnographic Principles)

HAZARDS	WHO MIGHT BE HARMED?	RISK MANAGEMENT MEASURES	CRITICAL DESIGN ASSUMPTIONS	WILL RISK BE ADEQUATELY CONTROLLED BY MEASURES & RESEARCHER'S NORMAL CONTROLS?	ISSUES REQUIRING SPECIAL CONSIDERATION BY THE RESEARCHER
List project specific significant hazards	List groups of people at significant risk (e family members, researcher etc)	List any measures to be taken by the research team to remove / mitigate risk	List any design assumptions which have critical implications for safety or health		List any issues that are unusual, but obvious or will be difficult for the researcher to manage
Risk of Physical attack / abuse or injury from a family member	Researcher	A personal contract agreement will be designed and drawn up by the researcher and selected families:re: acceptable behaviour prior to phase. Termination of observations following breach of contract	Never to be left alone in the home with 1 other member	Yes. Incident Report Form will be completed (such an incident should arise)and submitted to research team for further action	Prior to each visit - researcher to contact family (15 minutes before contact) and speak to mother / carer to confirm relevant members are home and will not be left in a vulnerable situation.
Risk of verbal abuse / inappropriate behaviour by family member / child	Researcher	Refer to contract agreement. Discuss inappropriate behaviour with parent / guardian and research team	N.A.	Yes	N.A.

Reflective Diary of: ~~Sam Ellis~~ (Mum)

The Heart of Knowsley Study - Family Study

Below is the opportunity for you to write how you felt being part of the study & your feelings whilst the researcher (Vicky) was in your home conducting the research. You can be as honest as possible as all information will be treated with anonymity.

Below are a variety of reflective questions that might help you to get started and think about how you felt at the beginning & throughout the research journey. Remember these are your feelings and thought - so there are no right or wrong answers! -Good luck

1. How did it feel to be selected for the study?
2. Did you feel confused or anxious about anything?
3. When Vicky first arrived at your home what were your initial thoughts/ impressions of her were you surprised, nervous etc?
4. What were your thoughts each week when Vicky visited you?
5. Had there been times you wished she wasn't going to come?

Overall how do you feel about Vicky's presence in your home and the overall process so far?

(The above questions are only suggestions to help you get started - you don't have to answer them)

Please Write below and use additional paper if required - Thank You

When I first heard that my daughter had been selected for the study I must admit I was a little apprehensive. My first thought was that we would have to change our eating habits or our exercise habits as a family.

At our meeting Vicky explained that the study was about existing eating habits in Knowsley. It was also about existing eating habits and exercise, so that she could get a wider picture on how we live in Knowsley. I was a little worried that I would have to make big changes to our diet etc. but found that we do eat rather healthy - a lot of fruit & veg nearly everyday. Our children are quite active with their sports at school and the activities they do in the Sea Cadet Corps. I must admit though I could do with being a little more active myself.

first time Vicky visited our home I was expecting  
one older. I think I expected someone who was  
doing a study about the Health & fitness of families in  
Wesley would be a lot older.

Next week Vicky came to meet it was more like a friend  
meeting not someone doing a study. Her approach was very  
easy & friendly.

My visits were always welcome therefore I never wished  
she wouldn't come one week. My daughter & Son looked  
forward to her visits, usually enjoying chatting with her about  
what they had done that week either at school or Cadets.

I find it very interesting that this type of study could  
change people's views on diet & exercise & that  
my daughter has been chosen to help change <sup>these</sup> views.

Looking in school I see the type of food that today's child  
is getting up on snacks, crisps chocolate & fizzy drinks instead  
of real food. I also see that quite a lot of children do not do  
much exercise & there is a high proportion in school who  
are overweight even obese.

My own children have healthy packed lunches but I don't  
see a problem with them eating crisps chocolate etc as long  
as it is in moderation.

We do need to educate people to eat healthy & take moderate  
exercise & studies like this could be the first move to  
making healthier children & adults in knowledge.

When I was chosen for the study, I felt excited as I thought that it would be fun to look at how much exercising and what I ate and take more interest in my health.

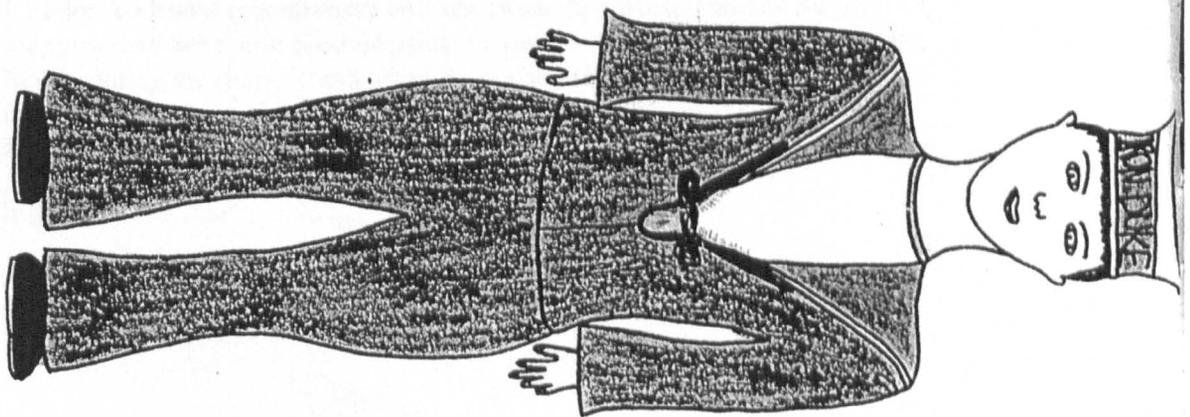
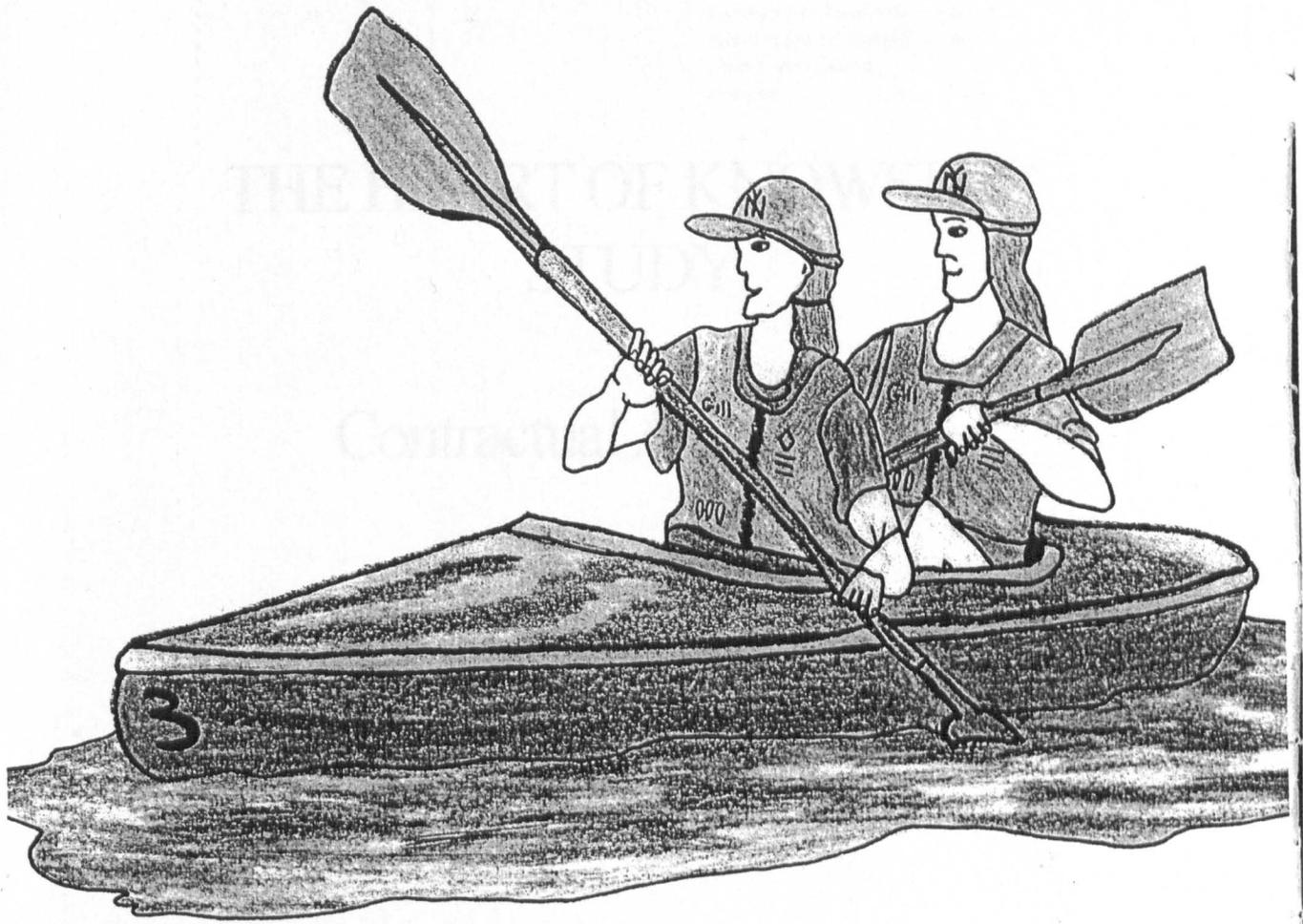
When Vicky first came to my house I felt a bit nervous as I didn't <sup>really</sup> know what she was like, but the longer I spent talking to her the less nervous I was and I became really interested in what she was saying about what the study was about.

Each week when Vicky comes I was interested to find out all of the things that was going in the book and the descriptions of me and my family.

I have been happy to have Vicky coming around to talk and there hasn't been a week when I wish she wasn't.

Overall I have found Vicky's visits fun and interesting and they have helped me try and be more ~~interesting~~ healthy and active even though I try and do sport at school and with cadets. I think this study can help other people become more healthy and active in the future.





# THE HEART OF KNOWSLEY STUDY

## Contractual Agreement:

The below conditions are set out by ~~Samantha Ellis~~ (participant) and Vicky Archbold (Researcher). Failure to adhere to the conditions could result in Samantha or Vicky requesting the termination or participation in the study.

### For the duration of the study:

I ~~Samantha Ellis~~ (participant) will not be disrespectful or use any aggressive behaviour (both physical or emotionally) towards Vicky Archbold whilst participating in the study. I will try to be as kind, happy and honest as possible. If I feel I do not wish to participate in the study any longer I will inform Vicky as soon as possible.

Signature: ..... ~~Samantha Ellis~~ .....

I Vicky Archbold (researcher) will not swear, be disrespectful or use any inappropriate behaviour (both physical or emotional) towards Samantha or her family during the study. I will try to be as kind, happy, understanding and be myself. If the study has to be postponed (due to illness etc) I will inform ~~Samantha~~ as soon as possible.

Signature: ..... V. Archbold .....