PRIMARY TO SECONDARY SCHOOL TRANSFER AND ADJUSTMENT: THE ROLE OF PHYSICAL EDUCATION

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ABSTRACT

This study examined the relationships and differences amongst selected physical education and psychological characteristics of boys before and after secondary school transfer. The purpose of the study was to determine the significance of boys' attitudes to physical education, motor performance and physical education self-esteem (self-perceptions of performance in physical education) at the age of school transfer, and establish the role of physical education before and during adjustment to secondary school.

Independent samples of Primary schoolboys (n = 50) and secondary schoolboys (n = 107) formed a cross-sectional study, whilst twenty-five primary school transferees formed a small-scale longitudinal study. Pupils' attitudes towards physical education, motor performance and physical education self-esteem (PESE) were assessed during the last term at primary school and on two occasions (December and June) during the first year at secondary school. In addition, global self-esteem and anxiety were measured at each stage, and a self-report school transfer questionnaire was administered at the end of the transfer year. From these sources, low self-esteem, high anxiety and negative attitudes to secondary school were used as indicators of poor school adjustment.

Differences amongst the psychological variables across transfer revealed that the move to secondary school appeared to be a positive experience for most boys. However, those boys identified as poorly adjusted to secondary school were less sure of themselves, more anxious, and recorded lower global and physical education self-esteem. Correlational analysis and discriminant analysis of low, average, and high motor performers (actual and perceived) revealed that poor motor performance was *not* consistently associated with low global self-esteem, high anxiety, or poor school adjustment. In contrast, low physical education self-esteem was associated with negative psychological characteristics and all the indicators of poor secondary school adjustment. Findings also suggested that physical education self-esteem may serve (1) as a mediating variable between actual motor performance and global self-esteem, and (2) as a mediating variable between physical education experiences and school adjustment.

On the basis of the results, a preliminary model of secondary school adjustment incorporating physical education is presented for discussion and empirical test. Also in light of the study's findings, the National Curriculum for England and Wales is analysed to consider the extent to which physical education experiences are likely to assist children's motor and psychological development before transfer and during secondary school adjustment.

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DEFINITION OF TERMS

a) Physical Education

Physical education is defined as "... a process of learning, the context being mainly physical" (DES,1991,p.7). It is suggested in the national curriculum that through physical education children acquire specific knowledge, skills and understanding, and develop their physical competence. Whilst many physical activities (including sports) may contribute to, and be incorporated within, the learning process, it is the child's development of physical competence which is central to physical education and not the activities themselves (DES,1991).

b) Primary to Secondary School Transfer

School transfer, in this context, refers to an educational stage where children are required to leave their primary school and move to a 'new' school with different buildings, staff, peers and curriculum. For most children in England, this transfer to secondary school occurs between eleven and twelve years of age.

c) Secondary School Adjustment

In this study, three indicators were used to identify boys experiencing adjustment difficulties at secondary school. Two were psychological indicators, i.e., low self-esteem and high anxiety (defined under global self-esteem and state and trait anxiety), and the third was derived from pupil responses to specific school and

transfer related questions (adapted from the Secondary Transfer Project: Stoll, 1987). In this latter case, boys who suggested: (1) they had not settled at secondary school, (2) liked secondary school less that their primary school, or (3) did not like secondary school much or at all, were classified as 'poorly adjusted' to secondary school.

d) Global Self-Esteem and Stability of Self-Image

Global self-esteem and stability of self-image were selected to serve as indicators of the 'self' dimension. According to Rosenberg (1965,p.30.) self-esteem is defined as, " A positive or negative attitude towards a particular object, namely the self." The Global Self-esteem scale presented by Rosenberg (1965) provides a measure of an individual's perceived general self-worth. Rosenberg suggests (1965,p.31):

> High self-esteem, as reflected in our scale items, expresses the feeling that one is 'good enough' The individual simply feels that he is a person of worth; he respects himself for what he is, but he does not stand in awe of himself nor does he expect others to stand in awe of him. He does not necessarily consider himself superior to others.
>
> Low self-esteem, on the other hand, implies self-rejection, self-dissatisfaction, self-contempt. The individual lacks respect for the self he observes. The self-picture is disagreeable, and he wishes it were otherwise.

In addition, Rosenberg (1965,p.151) states that the Stability of Self-image scale determines the extent to which individuals, "tend to have shifting and unstable self-pictures." Subjects who record a low score on this scale have changeable pictures of themselves and unstable self-conceptions. High scores represent stable self-pictures.

e) State and Trait Anxiety

In this study, levels of anxiety were represented by scores on the State-Trait Anxiety Inventory for Children (STAIC: Speilberger,1973). State anxiety, in this inventory, may be considered as a measure of self-reported apprehension or tension at a particular moment in time. Trait anxiety reflects the individual's perception of their emotional feelings towards situations in general. Therefore, high state anxiety represents intense feelings of apprehension to a particular situation at a given time, whilst high trait anxiety indicates that the individual is likely to respond more often with state anxiety.

f) Physical Education Self-Esteem

Physical education self-esteem may be considered to be the child's perceived self-worth in the physical education context. The Physical Education Self-Esteem scale was devised for this study and measures children's self-perception of performance in physical education. A high score on the scale indicates that the subject feels worthy and capable in physical education classes. A low score on the scale implies that the subject feels their performance in physical education is inadequate.

g) Physical Self-Perceptions & Perceived Physical Competence

Studies which have considered physical self-perceptions often refer to subjects' personal estimations of their own physical performance and physical appearance. The term 'physical self-perception', therefore, subsumes the concept of perceived

physical competence. For the purposes of this study, 'physical self-perception' and 'perceived physical competence' may be considered synonymous.

h) Motor Performance

Although a strict definition of motor performance is elusive, the field of motor development helps clarify its nature and characteristics. According to Malina and Bouchard (1991,p.171), "Motor development is the process by which a child acquires movement patterns and skills," where patterns and skills are distinctive in terms of their generalist and specialist nature. Most children can perform the basic movements involved in a physical task (the motor pattern) but few can perform with increasing accuracy, precision or economy of effort (indicative of motor skill). In this study, motor performance was indicated through proficiency on the tasks of the Western motor Ability Test (Yuhasz,1967). A high score on this test implies that the subject is highly competent (in relation to peers) on all or many of the motor tasks in the test. A low score on the test indicates that many of the subject's peers are better at all or most of the test items.

i) Attitude to Physical Education

Children's attitudes towards physical education were inferred from their responses to four questions comprising the General Attitude to Physical Education scale (Figure 6). A high score on the scale indicates a positive disposition towards physical education whilst a low score reflects negative feelings towards the subject.

j) Body Mass Index

The Body Mass Index (BMI) provides an indication of body dimension and proportion. The BMI compares weight to height and is calculated by dividing weight (Kg) by height (m^2). It simplifies weight and height tables and may estimate ideal body weight for height (Health and Physical Education Project,1988). Malina and Bouchard (1991) suggest that the relationship between weight and height can indicate if the child's weight is adequate, too heavy or too light for their stature. The higher the body mass index, the higher the weight relative to height.

k) Skinfold Measures

Skinfolds, taken at specific body sites with the use of calipers, may provide an indication of subcutaneous body fat (Malina & Bouchard,1991). Recommended levels vary according to age and gender, but a lower level of total body fat is generally considered more beneficial to health and performance. In this study, the sum of skinfold measures at three recommended sites (Fox,1979) was used to indicate boys' fat levels.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

The transfer from primary to secondary school is a significant event in a child's education. It is a stage when attainment is formally assessed, potential predicted, and familiar surroundings abandoned. It represents a phase of schooling which demands pupil adjustment to new status, habits, teachers and friends. For the majority of children satisfactory adjustment to secondary school appears to occur, and transfer is an experience which encourages a positive attitude to schooling (Alston,1988).

However, a significant proportion of children find the transition to secondary school a particularly unsettling experience which is reflected in their behaviour and lack of progress (Alston,1988; Youngman & Lunzer,1977). Indeed, Hargreaves (1984) notes that disaffection, absenteeism and underachievement have their origins before and during secondary school transfer.

The precise scale of the problem remains unclear.Youngman and Lunzer (1977, p.12), reporting on 1500 transferees, suggested that, " approximately 10 percent do find transfer, or more correctly the secondary school, a distressing experience, and this is a feeling which persists for at least two terms." Runham (1986) noted that six percent of a sample of transferees (n = 1600) suggested that they had not settled well after two terms, whilst teachers in the same study identified fourteen percent of children who, in their opinion, had displayed adjustment difficulties. More recently, Keys, Harris and

Fernandes (1995) reported negative attitudes towards school and learning for ten to thirteen percent of first year secondary school pupils (n = 1009) compared to only seven percent of final year primary school pupils (n = 1265). If these figures represent a national perspective, it is evident that a large cohort of children each year are negatively affected by school transfer, and poorly adjust to secondary schooling.

The reasons why some children have difficulties adjusting to secondary school may be many and varied, and be the consequence of both school and out-of-school experiences. The combination of these personal experiences, positive and negative, particularly influence the formation of the unique psychological characteristics developing within the child. One such psychological characteristic is self-esteem; a measure of perceived self-worth which is closely allied to anxiety (Hart,1986; Rosenberg,1965) and an indicator of school adjustment (Measor & Woods,1984; Spelman,1979; Staines,1971; Stoll,1987; Thompson,1974b; Youngman & Lunzer, 1977). Simmons, Rosenberg, and Rosenberg (1973) suggested that many adolescents experience a significant detrimental 'disturbance' to their self-esteem which does not appear to be age dependent, and may be the direct consequence of school transfer. McKiddie and Maynard (1997) also acknowledge the potential negative affects of the transition from primary to secondary school. They endorse Harter's (1982) supposition that the secondary school ethos, new teachers, and an extended peer group affect the transferee's ability to judge personal competence and, therefore, influence global and specific self-perceptions.

Profiles of children who poorly adjust to secondary school reveal a greater incidence of low self-esteem, higher anxiety, poorer attitudes and motivation to school, and lower academic performance (Galton & Simon,1980; Spelman,1979; Stoll,1987; Youngman & Lunzer,1977). Gallahue (1982) further stresses the importance of self-image and suggests low self-esteem is associated with behaviour problems, underachievement, delinquency, and high anxiety. Nevertheless, identifying factors which predispose low self-esteem is not straightforward. Each child enters secondary school from backgrounds which influence their values, beliefs, experiences and expectations, each of which may shape their self-perceptions and ability to adjust to secondary school. Indeed, the impact of school transfer on self-perceptions may be more dramatic for children from particular social and cultural backgrounds. In this regard, some British studies report inferior self-ratings and poorer secondary school adjustment amongst children from lower social classes (Atherley,1990; Cox,1978; Nisbet & Entwistle,1969; Stoll,1987). Findings are not, however, conclusive and further study is necessary to determine the associate characteristics of low self-esteem, and whether it is a prerequisite or consequence of poor adjustment to secondary school.

Accompanying psychological development during childhood are the more obvious physical and motor advances. Growth of bone and muscle affect height and weight which, in combination with a developing nervous system, influence the child's ability

to perform movement tasks such as running, jumping, balancing, and general co-ordination (Zaichkowsky, Zaichkowsky, & Martinek,1980). Relationships among children's physical and psychological characteristics have received attention, and Gallahue (1982, p.324) acknowledged the specific relationship between self-image and motor performance suggesting:

> Motor abilities and movement skills are only one avenue by which self-image may be enhanced. It is however, a very important one for most children, because so much of their daily life experiences are centred around the need for efficient and effective movement.

Drowatzky (1981) similarly recognised the motor ability and self-image relationship, but speculated that it may vary at different ages and levels of physical maturity. He suggested that the relationship is most potent during childhood when great emphasis is placed on physical characteristics and abilities, and it reduces through to adulthood as alternative ways of gaining recognition and enhancing self-esteem are realised. More recently, Fox (1988b) suggested the individual's *self-perception* of physical ability is a more important predictor of overall self-esteem than actual ability. Indeed, Stein (1996) suggests that physical self-perceptions may not necessarily relate to actual physical performance and, " Research on physical self-concept may enable practitioners to intervene before a child's poor physical self-image can negatively affect his or her developing global self-concept," (p.389). Nevertheless, to date, the importance of children's actual and perceived physical competence during transfer and adjustment to secondary school has yet to be established.

One subject in the school curriculum which may have a specific bearing on physical competence (actual and perceived) and self-esteem development is physical education. Moreover, the National Curriculum (DES,1991, p.5) states that physical education, "...helps establish self-esteem through the development of physical confidence." It is the statutory physical education lesson that provides pupils not only with an opportunity to learn and practise physical skills and develop confidence, but also witness and judge the physical abilities of others. Cratty (1979) and Drowatsky (1981) suggested children who are physically able, particularly boys, tend to acquire greater status amongst their peers, and that this may positively influence their self-esteem. Weiss (1991, p.338) states, " For boys, athletic competence is clearly related to peer acceptance and popularity, a fact corroborated in the research literature." In contrast, McHugh (1995) suggests poor physical education experiences prohibit some children acquiring physical *and* social skills which may lead to their exclusion from groups and activities, and encourage feelings of inferiority. Of note, the popularity of physical education amongst pupils does not appear to be confined to those who excel. Studies reveal that attitudes towards physical education appear to be almost universally positive before and after transfer to secondary school (H.M.I.,1991; Jones, 1988; McIntosh,1988; Scott & West,1990). However, further investigation is necessary to determine how these attitudes arise, why they are held, and their relationship with motor performance (actual and perceived) and global self-esteem.

It appears, therefore, that certain physical, psychological and motor characteristics may be significant during childhood, and might be especially important at the age of secondary school transfer. It is also apparent that physical education may contribute to the development of these characteristics. What is less clear is the relative importance of positive attitudes to physical education and high motor competence (actual and perceived) during transfer and adjustment to secondary school, and the extent to which the physical education national curriculum can enhance these attributes.

CHAPTER TWO

LITERATURE REVIEW

Introduction

Although transfer from primary to secondary school is an accepted and normal rite of passage, it presents considerable personal and educational changes for many children. How children cope with these changes as they enter secondary school is often considered in terms of adjustment. The first sections of this chapter discuss the nature of secondary school transfer from the pupil's perspective, and review the different instruments and methods used to indicate adjustment to secondary school. The findings for pupils' academic performance, attitudes, behaviour, anxiety and self-esteem across transfer are presented in order to highlight the effects of the transition on children's personal and educational development. In this way, several important transfer questions are examined. For example, is secondary school transfer a traumatic or positive experience for most pupils? For how many children is transfer a distressing experience? What aspects of secondary schooling assist children's adjustment? Does school transfer disturb pupil self-esteem?

Other sections in this chapter focus on physical education. To provide background, the nature and findings of previous transfer studies which have incorporated aspects of physical education are presented. This is followed by a review of those physical education themes of relevance to this study, notably children's motor performance, self-perceptions of motor performance, and attitudes towards physical education. To understand the role of these characteristics at the age of secondary school transfer, consideration is given to the relationship between motor and physical development, and the relative importance of *actual* and *perceived*

motor performance in physical education to children's psychological development. With respect to the latter, Sonstroem's (1978) Model of Physical Activity Participation is analysed, and consideration is also given to how positive physical self-perceptions in physical education may develop during childhood.

The closing sections of the chapter focus on the possible effects of socioeconomic status, race and ethnicity at the age of secondary school transfer. Interrelationships amongst the characteristics are considered, as well as their possible influence on self-perceptions, attitudes, and performance in physical education.

To conclude the chapter, two schematics are presented to illustrate the hypothesised links between physical education and school adjustment. These are based on the theoretical and empirical evidence, and provide the framework for the present investigation. In these ways, chapter two provides the context from which this study derived.

2.1 SECONDARY SCHOOL TRANSFER AND ADJUSTMENT.

Given the upheaval that school transfer creates each year for groups of pupils, parents and teachers, it is somewhat surprising that the transfer process has only been subjected to detailed analysis in relatively recent times. One reason for this is summarised by the Birmingham Educational Development Centre's (1975) report on 'Continuity in Education' which suggests, " The fact that the children who

experience long-lasting difficulty in adjusting to their new schools are in the minority, perhaps leads to their relative neglect," (p.10).

The study of Scottish pupils during the transition to secondary education (Nisbet and Entwistle:1966,1969) is widely considered to be the first major British school transfer project. Although the focus of this study was largely on the identification of the most suitable age for school transfer (see also Hadow,1926; Plowden,1967) it provided an important basis for future investigation. Further large-scale British studies have followed, and been conducted with pupils in England (e.g., Alston, 1985; Birmingham Educational Development Centre,1975; Galton & Willcocks, 1983; Keys, et al., 1995; Youngman & Lunzer,1977) and Northern Ireland (Spelman,1979). In addition, a range of smaller projects have been undertaken to investigate the many facets of school transfer.

Despite this apparent breadth, all transfer studies have tended to fall into one of two categories: (1) those which concentrate on school and teacher centred issues, e.g., school transfer policy, organisation and administrative procedures, induction programmes, curriculum continuity, etc., or (2) those which consider the pupil experience, where the effects of transfer on children's development are the focus of attention. For the purposes of this particular study, this review of literature is limited to the latter perspective, and considers pupils' educational and personal characteristics affected by school transfer and associated with school adjustment.

2.1.1 THE NATURE OF SECONDARY SCHOOL TRANSFER AND ADJUSTMENT

According to Measor and Woods (1984) both developmental and school factors typically influence pupils during transfer:

> It is a time when children are undergoing profound physical and physiological developments. New social identities are assumed, with the gender factor prominent. New horizons appear with the expansion of curricula and division of labour. Yet though there is growth, there is also the experience of loss - loss of status as they move from the top of one ladder to the bottom of another, and loss of 'family' ethos that characterises many of our primary schools, as they move into the more functional climate of the secondary. (Measor & Woods,1984, p.4).

The sudden change of school related habits and personal circumstances at the time of transfer necessitate pupils to undergo a process of adjustment, and it is reasonable to expect that children's ability to adjust will affect their performance at secondary school (Rushton,1966; Youngman & Lunzer,1977).

Simmons et al.(1987) identify several major organisational differences between primary and secondary education to which pupils must adjust. They highlighted the significant increase in pupil numbers at secondary school, and also peers within the same year group. In addition, there is the abandonment of one main teacher and a small, stable set of classmates which characterises primary schooling. Hirsch and Rapkin (1987) also note how the departmentalised structure of the typical secondary school necessitates students to move between teachers and possibly peer groups, and how this lessens the opportunity to establish secure teacher and peer relationships at a time when many adolescents may be at peak conflict with parents.

Although a process of adjustment to secondary school clearly exists, the nature of adjustment is complex and multi-dimensional. Youngman (1979) acknowledges that the concept of school adjustment has no generally accepted meaning, and chooses to assess pupils' *behavioural* adjustment to secondary school (see also Slee,1993). Other studies prefer to consider *personal* adjustment (Pumfrey & Ward,1976; Thompson,1974), *social* adjustment (Elliot & Punch,1991; Thompson,1974) and *academic* adjustment (Nisbet & Entwhistle,1969). Simon and Ward (1982) acknowledged that there are a range of non-intellectual factors, such as attitude to school and anxiety, which may also influence the process of adjustment and which require investigation.

With respect to the nature of secondary school adjustment, Elliot and Punch (1991) present a three-stage map of adjustment applicable to newcomers in secondary school. Although their study depicted 'migrant' newcomers (pupils joining the secondary school from outside the normal catchment area) their schematic model of the stages of adjustment illustrates common characteristics appropriate to all transferees. In summary, the first stage - on arrival at secondary school - demands the newcomer: (1) "to make some sense of a series of confusing experiences," (p.167), (2) to gain essential school information necessary to function on a day-to-day basis, e.g., teachers' names, school facilities, classroom location, etc., and (3) to familiarise themselves with the social environment, e.g., friendship groups and acceptable fashions. It is suggested that this stage is typically brief as most pupils quickly acquire the necessary 'survival' skills. The second stage is characterised by the search for friendship, initially amongst classmates

probably of the same gender. The newcomer continues this search until they attach to a group in which they are comfortable and accepted. The time-span for this stage may be short or lengthy depending on how quickly a suitable group is found. Within the group, the individual starts to earn status, and the third stage of adjustment is achieved once they have acquired a sense of belonging such that the feelings of being new have faded.

Simmons et al.(1987) reported on pupil adjustment in the broader context, and considered the impact of several life-transitions operating at the time of school transfer to High school. It was noted that, at this time, some children have to cope with a number of dramatic biological, sociological and organisational changes. As a consequence, it was hypothesised, "that it is the timing or 'synchonicity' of life transitions during early adolescence that jeopardizes the child's ability to adjust," (Simmons et al.,1987, p.1221). Five life-changes were considered: school transfer, pubertal change, early dating, family disruption and geographic mobility. Children transferring to junior high school were compared with similar aged pupils remaining at elementary school, and measures of self-esteem (Rosenberg Global Self-esteem Scale), grade-point average (GPA) and extracurricular activities were recorded for a total of 621 children. Findings for self-esteem revealed that school transfer had a negative effect for girls and a positive effect for boys. None of the other life-changes had an independent effect on self-esteem, or more correctly, no statistically significant differences for self-esteem were evident between children who had experienced the life-change and those who had not. GPA was, however, detrimentally affected by each life-change except pubertal development. With

respect to the effect of these changes in combination, the more life-changes experienced at this age the lower the GPA and extracurricular participation for both genders. Girls also reported lower self-esteem. Whilst these findings provide useful insight, it is not clear at what stages during transfer assessments were conducted, and this could be influential. In addition, the implications of these findings for British pupils during transfer remains speculative.

Slee (1993) also considered the effects of stressful life events on school adjustment. The behavioural characteristics of 1,114 Australian children aged between 5-13 years were recorded by teachers using a thirty-eight item questionnaire (Teacher-Child Rating Scale). Teachers also rated children's overall adjustment to school on a five point scale ranging from 'very well adjusted' to 'very poorly adjusted' The criteria for this scale was not, however, presented, and its subjective nature poses the question of reliability, particularly when employed by several different observers/teachers. Children in the study also completed the Stressful Life Events (SLE) questionnaire, a twenty-five item scale which served to identify children's exposure to a range of selected anxiety provoking experiences. The findings revealed that children experiencing a greater number of stressful life events were judged to be more poorly adjusted to school, and highlighted the need for early identification of such children. Of interest, Slee (1993) suggested that although the number of events may serve as an indicator, it is the individual's ability to cope with stressful situations which, in the long term, will influence adjustment. Perhaps inclusion of some qualitative research methods

(e.g., interviews, participant observation, etc) may have developed this aspect and revealed *how* children cope, or attempt to cope, with certain stressful events.

From this brief discussion, it is evident that a range of factors exist which have the potential to influence children at the age of transfer and during the adjustment to secondary school. As a consequence, a variety of methods have been devised for assessing school adjustment.

2.1.2 ASSESSING SCHOOL ADJUSTMENT

Transfer to a different school inevitably creates change, and pupils' adjustment to the new school is of primary concern to all interested parties. However, assessing adjustment is not straightforward. Indeed, defining adjustment in this context is difficult. Nevertheless, two distinct procedures for addressing the issue are apparent in the literature. The first method involves comparing particular pupil characteristics (e.g., academic performance, behaviour, attitudes, anxiety and self-esteem) before and after transfer, with differences providing a general indication of pupils' secondary school adjustment. The second method incorporates the use of specially prepared adjustment inventories. These inventories may be pupil focused and be designed to record pupils' attitudes to transfer and aspects of school life, or be teacher focused and provide a means for staff to subjectively rate pupils' adjustment to school according to a given criteria. The following list is presented to illustrate the diversity of instruments and methods used to assess the effects of transfer and pupils' adjustment to secondary school.

(1) Pupils' Attitudes Towards School and School Transfer:

Structured Essays (Alston, 1985; Short, 1992; Spelman, 1979; Murdoch, 1966);

School Attitude Questionnaire (Alston, 1985; Simon & Ward, 1982; Spelman, 1979; Youngman & Lunzer, 1977).

(2) Academic Performance Tests:

London Reading Test (Stoll, 1987);

NFER Tests: Sentence reading, non-verbal reasoning, reading test, arithmetic progress (Nisbet & Entwistle, 1969);

Richmond Tests of Basic Skills (Galton & Willcocks, 1983).

(3) Teachers' Subjective Ratings:

Rating of Adjustment (Dowling, 1980; Slee, 1993; Thompson, 1974b);

Rating of Competence (Harter, 1982).

(4) Children's Behaviour:

Systematic Observational Technique (Galton & Willcocks, 1983);

Behavioural Adjustment Measure (Youngman, 1979).

(5) Psychological Scales:

Anxiety ratings (Galton & Willcocks, 1983; Simon & Ward, 1982; Spelman, 1979; Youngman & Lunzer, 1977);

Self-Esteem Measures (Simmons et al., 1973; Simon & Ward, 1982; Stoll, 1987; Youngman & Lunzer, 1977).

2.1.3 SECONDARY SCHOOL TRANSFER & ADJUSTMENT: THE EMPIRICAL EVIDENCE

Although secondary school transfer is widely perceived to be an unsettling experience for children, the findings, using the aforementioned methods, are not conclusive. Whilst the move to secondary school seems to hinder the academic and/or personal development of some children (Galton & Willcocks,1983; Youngman & Lunzer,1977), for others, it provides a necessary stimulus and encourages positive school attitudes and academic progress (Alston,1988; Whalen & Field,1973). The exact scale of the problem is, therefore, unclear. Murdoch's analysis of essays by pupils after six weeks in secondary school (n = 552), as part of the study by Nisbet and Entwistle (1969), revealed that approximately sixty per cent (57% boys, 64% girls) had experienced recognizable difficulties adjusting to their new school. However, it was reported that, "after six weeks about eighty per cent of the children had adjusted to the new school and methods of teaching," (Nisbet & Entwistle,1969, p.87). Although this method of assessing pupils at secondary school relied upon Murdoch's interpetation of their essays, it allowed children to comment with feeling on those aspects of transfer of personal relevance. In contrast, Youngman and Lunzer (1977) used a questionnaire survey and drew conclusions based upon children's responses to prescribed questions. Via this analysis, it was suggested that approximately ten percent of a sample of 1500 pupils had reported distress associated with their secondary school; a condition that lasted at least two terms.

While the general pattern of pupil adjustment is clearly important, some studies have chosen to monitor particular pupil characteristics (academic performance, behaviour, attitudes, anxiety and self-esteem) in order to assess the specific effects of transfer on children's personal development. Findings for these variables have also been used to indicate pupil adjustment to secondary school. Hirsch and Rapkin (1987) highlight the need to identify specific transfer subgroups for whom, for example, self-esteem declines. Analysis of these groups, they suggested, enables research to focus on individual and environmental factors and address, "... the complex and highly differentiated nature of adjustment during the transition to JHS *(Junior High school)*," (Hirsch & Rapkin,1987, p.1242).

In recognition of the diversity of school adjustment, the following sections consider the findings across transfer for five established adjustment indicators: academic performance, behaviour, attitudes, anxiety and self-esteem.

(i) EARLY ACADEMIC PERFORMANCE AT SECONDARY SCHOOL.

During the first few days and weeks at secondary school, pupils increasingly familiarise themselves with their new environment and routines of working. Inevitably some pupils acclimatize quicker than others to the new demands. Galton and Willcocks (1983, p.157) suggest:

> For most children, however, this period of adjustment is very short, so six weeks into the term the pattern of schooling is well established and the only decision left for individual pupils is whether to go along with it.

These sentiments are supported by findings from other studies (Murdoch,1966; Youngman & Lunzer,1977). At this time, it is often pupils academic performance at secondary school which is of considerable interest to all concerned. Teachers may choose to interpret pupils' early accomplishments as a reflection of successful induction procedures, or good teaching by staff. On the other hand, parents may consider children's academic progress an indicator of general adjustment to secondary school and, in particular, the challenges created by new subject disciplines. For these reasons, transfer studies have analysed pupils' academic attainment at secondary school.

Research reveals that no standard academic tests have been used consistently. However, most transfer studies assess children's reading, writing and mathematical abilities. Galton and Willcocks (1983) re-tested eighty-one pupils at the end of their first year after transfer using the Richmond Tests of Basic skills (mathematics, language skills and reading comprehension). They reported that academic performance in absolute terms had deteriorated for thirty percent of the sample following transfer and, in addition, average progress rates were lower during the post-transfer stage; a trend previously acknowledged by Nisbet and Entwistle (1969). However, Alston (1988) reported findings which did not support a general decline in children's progress and attainment after transfer, and performance had only deteriorated for a small minority of children, although the precise scale was not quantified.

Although the general trend of academic performance after transfer is clearly revealing, it is perhaps more important to determine *why* some children progress and others regress. Youngman and Lunzer (1977) analysed the effect of transfer on groups of children of upper and lower academic ability. Children within each group were also classified according to particular personality characteristics (identified through selected attitude scales). The high-ability types were classified as either 'academic', 'disenchanted', or 'uncertain', and the low-ability types as 'contented', 'non-academic', or 'worried' Through analysis of pupils' scores for non-verbal intelligence (NFER BD test), reading comprehension (GAP reading test) and mathematical understanding (NFER DE test) it was determined that post-transfer progress was evident only for the 'academic' (high-ability) and 'contented' (low-ability) children. Academic attainment deteriorated for the 'disenchanted' (high-ability) and 'worried' (low-ability) pupils. It was concluded that although ability most consistently related to achievement after transfer, other factors had undoubtedly influenced pupils' progress. In a later study, Youngman (1980) attempted to determine whether particular non-academic characteristics had independent effects on achievement and progress in reading and mathematics. He concluded that neither pupils' attitudes to school nor personality characteristics (self-concept, academic motovation and anxiety) showed any independent effect on academic performance.

School transfer studies have also considered the relationships between academic attainment and other pupil characteristics. The following list of concomitant variables indicates the multidimensional nature of academic performance, and the

range of potentially influential school factors. Academic achievement after transfer has been shown to be positively associated with: attitudes to school/transfer (Behrens & Vernon,1978; Spelman,1979); attitudes to teachers and teaching (Nisbet & Entwhistle,1969; Spelman,1979); pupils age (Spelman,1979); pre-and-post transfer self-concepts (Behrens & Vernon,1978; Stoll,1987; Youngman & Lunzer,1977); pre-transfer academic achievement (Alston,1988; Youngman & Lunzer,1977); academic or school motivation (Galton & Willcocks,1983; Nisbet & Entwistle,1969; Youngman & Lunzer,1977); parental encouragement (Nisbet & Entwistle,1969), social maturity (Nisbet & Entwistle,1969); and social-economic factors (Nisbet & Entwistle,1969). In contrast, pupil attainment after transfer has been reported to be *negatively* associated with: pre-transfer apprehension (Youngman & Lunzer,1977); secondary school anxiety (Nisbet & Entwistle,1969; Rushton,1966; Youngman & Lunzer,1977); and neuroticism (Nisbet & Entwistle, 1969).

Finally, analysis of pupils' self-perceptions in the academic domain has provided further insight the educational effects of transfer. Harter (1982) reported that the relationship between perceived and actual academic competence steadily increases during childhood and adolescence, only interrupted by a sharp drop at the seventh grade (approximately thirteen years). Whilst this was suggested to indicate that children are increasingly able to match their perceptions with their actual academic competence, the move to junior high school at seventh grade appears to disrupt this ability. Unfortunately, no similar analysis was evident for perceived and actual *physical* competence, and further study is necessary with British transferees.

(ii) PUPILS' BEHAVIOUR AT TRANSFER

Since children's behaviour in the classroom is not only likely to influence their own learning but also the learning and progress of others, teachers are understandably keen to promote good classroom conduct, and control the development of any disruptive behaviour. At transfer, pupils' behaviour has been used as a predictor and a criterion of secondary school adjustment. Dowling (1980) reported that behaviour scores recorded in the final year at primary school (Child Scale B(2):Rutter,1967) significantly correlated with post-transfer behaviours, attitudes and attendance. However, since correlations were low, it was suggested that the change in some pupils' behaviour could have been the result of either the traumatic or stimulating effect of transfer.

Galton and Willcocks (1983) used systematic observation and interaction analysis to study the behaviour of children across transfer. These methods provided detailed descriptions of the ways pupils responded to teaching and learning at secondary school. However, this approach is labour intensive and, as a consequence, data were collected for only a limited number of children (n = 103) in six transfer schools. With respect to poor adjustment, Galton and Willcocks (1983) suggested that the increasing demands imposed at secondary school, and the prevalence of whole class teaching with less opportunities for children to discuss personal work problems with the teacher, may account for some childrens increasing deviant behaviour.

With regard to other behaviour assessment methods, few instruments and techniques are currently available to enable data gathering for large samples. Even with fairly simplistic behavioural rating scales (see Slee,1993) problems tend to exist, either because of varying perceptions of pupils by different teachers, or different interpretation of given criteria by individual teachers. For these reasons, correlations with and between such scales are inclined to be low (Dowling,1980). In addition, Zaichkowsky et al.(1980) suggest that behavioural assessments become increasingly difficult with older children who conceal their emotions more than younger children. Zaichkowsky et al.(1980) also contend that well-behaved children in class may be highly anxious, and this may go undetected in a behavioural assessment completed by the teacher.

(iii) PUPILS' ATTITUDES AT TRANSFER

Several studies have considered pupils' attitudes to transfer and their new school in an attempt to further explain children's progress at secondary school. The importance of developing positive pupil attitudes early at secondary school is illustrated by Woods and Measor (1984, p.468) who note, "By the summer term, school attitudes had stabilised and hardened." Figley (1985) suggests that the most common rationale for attitude development is that students with positive attitudes are more likely to achieve in the subject area. Spelman (1979, p.90) considers the relationship between attitude and school adjustment and suggests there are, ".... values, attitudes and interests customarily regarded by schools as essential prerequisites for successful pupil adaptation to secondary education." Although

there appears no dispute that positive attitudes to school are desirable, the effects of transfer require investigation, and key questions need to be addressed. For example, does transfer improve or damage pupils' attitudes toward school? What aspects of secondary school encourage or discourage positive attitudes?

Keys et al. (1995, p.91) suggest that a commonly held view is that, "... pupils' attitudes towards school deteriorate sharply after transition to secondary school." Nevertheless, Runham (1985) reported increases in positive attitudes towards school amongst pupils (n = 1600) during their first term at secondary school. Pre-and-post transfer analysis of data indicated that thirty-eight percent of pupils at primary school had recorded liking school (or liking it a lot), and this opinion had risen to sixty percent by the November after transfer. The features most liked by the secondary school sample were particular lessons (18%) followed by 'dinner' (9%). Features most disliked by this sample ironically included particular lessons (6%) and fear of bullying (4%). It is noteworthy that seventy-seven percent of the sample suggested there were no aspects of the new school which they disliked. A later bulletin (Runham,1986) indicated the preferences of the same sample after two terms at secondary school, and reported that the percentage of pupils liking their secondary school (or liking it a lot) had fallen to forty-nine percent. Particular features enjoyed by the children still included specific subjects (6%) and 'dinner' (4%) but, in addition, sports and games were highlighted by five percent of pupils. Of interest, eighty-one percent of the sample at this time did not dislike any particular feature of school. Of those who did, however, specific school subjects (4%), fear of bullying (3%) and teachers (2%) were dominant themes.

Galton and Willcocks (1983) compared attitudes of pupils (n = 75) before and after transfer and found similar findings. By the November after transfer, pupils' general motivation and enjoyment of school had increased, yet by the following June these feelings had decreased below the pre-transfer level. This trend was even more marked for those pupils whose academic attainment had deteriorated after transfer. For these children (n = 24) school motivation and enjoyment were higher in the November, but significantly lower than the pre-transfer values by the June after transfer.[1] Simon and Ward (1982) also reported significant decreases ($p<0.001$) in school attitude for transferees in their first year at secondary school.

To determine the effect of school transfer on pupils' attitudes to school, Jennings and Hargreaves (1981) compared the findings for forty-six children transferring from primary to secondary school (experimental group) with forty-six middle-school children of similar age who remained at the same school (control group). Pupils' attitudes to various aspects of school (Questionnaire S.7: Barker Lunn,1970) were recorded five weeks before the end of the Summer term, and five weeks after the start of the Autumn term. High scores on each of the ten scales of the questionnnaire represented positive attitudes. In contrast to other studies (e.g., Galton & Willcocks,1983; Runham,1985) the findings indicated that the experimental group's general attitude to school had decreased after transfer, whilst the control group's had risen. It is noteworthy, however, that the experimental group's pre-transfer attitudes started significantly higher, and even though these decreased after transfer, they still remained higher than the elevated attitudes of the

[1] Statistically significant at the five per cent level.

control group. Although not discussed in the article, perhaps the imminent move to secondary school had created eager anticipation for many in the experimental group, and this was reflected in their particularly positive pre-transfer attitudes. In contrast, the control group, having no way of gauging the changes or positive aspects ahead, recorded lower pre-transfer attitudes. The decrease in attitudes five weeks after transfer may indicate that many of the experimental group were still acclimatizing and judging their secondary school environment. The control group, on the other hand, without having to deal with new buildings, teachers, and peers may have settled quicker and been more able to respond to positive aspects of schooling. Jennings and Hargreaves concluded, "Our results clearly demonstrate that the transition from junior to comprehensive school has detrimental short-term effects upon the attitudes of children who make it as compared with those who proceed in more familiar surroundings," (p.38). Perhaps in light of previous comments, a more circumspect conclusion would have been appropriate.

Youngman and Lunzer (1977, p.14) found pupils' post-transfer attitudes to school to be normally distributed, "with a slight tendency to pile up towards the high scores." These were interpreted to represent generally favourable attitudes. The low correlations between attitudes to secondary school and academic measures led to the conclusion that liking school was not related academic performance, and the combined evidence in the study suggested about ten percent of pupils were disatisfied with secondary school. With respect to particular likes and dislikes, favourable comments towards sport were noted at the June pre-transfer stage and

the September and December post-transfer stages, whilst there was also evidence indicating pupils' strong *dislike* for academic features.

Dowling (1980) used children's attitudes to school (Fitt Questionnaire, 1956) and three other adjustment indices (behaviour, adjustment ratings, and secondary school attendance) to determine the extent to which children's adjustment to secondary school could be predicted from primary school test scores. Pupils before transfer completed tests for personality (Junior Eysenck Personality Inventory), behaviour (Child Scale B2 - Rutter, 1967) and intelligence (Moray House Verbal Reasoning test 91, and NFER SR- reading comprehension test). Correlations amongst the adjustment indices and the predictor variables were calculated for children (n = 482) in their final year at primary school, and again one year later at secondary school. Although several significant correlations were evident, it was concluded that the low relationships amongst the variables possibly reflected a degree of unreliability in the measuring instruments, or different perceptions of pupils' adjustment by the primary and secondary school teachers employing the adjustment ratings. Importantly, the mismatch between the secondary school pupils' self-perceptions of adjustment and their teachers' perceptions, not only called into question the validity and reliability of the Attitude to School scale (Fitt, 1956) but also suggested that reliance on teachers judgements may be misleading. Dowling (1980) noted that Merton (1975) had also found little agreement between children's perceptions of their own adjustment and teachers' ratings of pupil adjustment.

(iv) PUPILS' ANXIETIES DURING SCHOOL TRANSFER

This section considers anxiety in childhood, and particularly focuses on pupil anxiety during transfer and adjustment to secondary school. Firstly, an overview of anxiety theory, pertinent to this study, is presented. Consideration is given to the nature of childhood anxieties, the association of anxiety with school achievement, and the ways children's anxiety levels are assessed. This is followed by the research findings for pupils' anxiety during transfer from primary to secondary school.

(a) The Nature Of Anxiety in Childhood

Anxiety is most commonly perceived as a negative emotional response and condition. Speilberger (1966) presents it as a two-dimensional concept, with State anxiety (A-State) defined as, "..a complex reaction or response - a transitory state or condition of an organism that varies in intensity and fluctuates over time," (p.12). Trait anxiety (A-Trait) is considered to be a more enduring personal characteristic indicative of anxiety-proneness. Therefore, whilst high A-State anxiety represents an individual's intense feelings of apprehension to a particular situation at a given time, high A-Trait anxiety indicates that the individual is likely to respond more often with state anxiety.

Given Speilberger's widely accepted interpretation, anxiety is dependent upon the individual's perception of a specific situation, and is a response to that situation. Whilst numerous potentially anxiety-producing situations exist, some situations and experiences are unique to children. For example, Sarason (1966) reports the

distress of the preschool child separated from mother on the first day of nursery school. Abandonment, as an important source of worry in the early years, is also highlighted by Zaichkowsky et al.(1980) who broaden the notion to include the *threat* of separation. They cite the relatively innocuous parental remark, "If you don't come now, I'll leave without you," (p.187) as sufficient to evoke worry in a child up to five or six years. A different perspective of childhood anxiety is presented by Guttman (1987) who reports on children who perceive evaluative situations as threatening (Trait Test anxiety). With the introduction of formal assessment at the end of each key stage of the National Curriculum in England and Wales, trait test anxiety may become an important research perspective. Other major sources of worry during late childhood include peer acceptance (Brown & Armstrong,1982; Elliot & Punch,1991; Evans & Roberts,1987) and concerns over academic performance (Zaichkowsky et al.,1980). In this latter respect, Cattell (1966) acknowledges that anxiety is often a cognitive disorganizer which inhibits learning, and he also notes the generally negative impact of anxiety on academic achievement.

(b) The Measurement of Anxiety

Although it is possible to identify situations or experiences which may induce anxious responses from children, measuring the response is not straightforward. Research indicates three methods commonly used to measure anxiety: behavioural assessment, physiological responses and psychological questionnaires/inventories. There are, however, inherent problems associated with each method which question the validity of findings. The general difficulties associated with

behavioural assessment have already been noted, and again apply in this context. In this regard, Zaichkowsky et al.(1980) suggest the behavioural manifestations of anxiety become less easy to witness as older children, particularly boys, learn to conceal their emotions. With respect to anxiety related physiological responses (e.g., increased heart rate, blood pressure, respiration rate and electrical skin resistance) a fundamental weakness is that responses only indicate state anxiety. To further understand trait anxiety, a series of situation-specific state anxiety assessments would need to be conducted, and even if this approach was practicable, it assumes that anxiety provoking situations pertinent to each individual can be easily and readily determined. In addition, Zaichkowsky et al.(1980) report that there is little evidence of consistent relationships amongst the physiological measures, nor relationships with other psychological indices. Finally, with regard to self-report anxiety scales, two main credibility issues dominate: (1) whether highly anxious children, according to the scale, actually experience an intense and debilitating state of anxiety which is either observable or hidden (Sarason,1966), and (2) whether denial serves as a defence mechanism which leads highly anxious children to falsely respond to questionnaire statements and therefore go undetected (Zaichkowsky et al.,1980). Nevertheless, despite these limitations, the questionnaire remains arguably the most creditable and widely used method for assessing anxiety.

(c) Pupils' Anxiety At Transfer

In an attempt to understand the personal impact of, and trauma associated with, the transition to secondary school, some studies have monitored pupil anxieties across transfer (e.g., Galton & Willcocks,1973; Simon & Ward,1982). Other studies have only recorded anxiety at secondary school since, "..... adjustment to school would imply a low anxiety score" (Youngman & Lunzer,1977, p.14). In their study, pupils' anxiety levels generally reduced throughout the first year at secondary school, and this was interpreted as indication that most children had adequately adjusted to the new environment. However, differences between a city sample and a rural sample of new secondary school pupils revealed higher levels of anxiety for the city sample. It was suggested,

> In view of the growing concern over vandalism and truantism in cities, then it may be that the disillusionment over secondary schooling shown by some children does start at transfer. (Youngman & Lunzer, p.52).

Spelman (1979) analysed data for over 3000 transferees at four different types of secondary school (Grammar, Secondary, Bilateral and Junior High) in Northern Ireland.[2] He reported that anxiety to school did not appear to be a feature of any of the four types of school, although higher levels were reported amongst pupils attending the grammar or bilateral schools.

[2] The bilateral schools in Spelman's study received a minimum of 10% intake of pupils who had passed the selection procedure for grammar school, or accepted 60% of pupils who had not been entered for the selection process. The junior high schools provided pupils for senior grammar or senior technical college at age 14+.

As part of the Inner London Education Authority Secondary Transfer Project (Alston,1985) pupils completed a transfer related questionnaire, and wrote a personal account of their first day at secondary school. These were undertaken three to four weeks after joining their new school. Analysis of these accounts led the project team to report that a major source of anxiety for new pupils was meeting teachers, older children and peers (Aston,1985). However, it was concluded that these anxieties appeared to be generally short-lived. Indeed, Woods and Measor (1984) suggest that by the beginning of the second term most transfer related anxieties have disappeared, and this marks a stage where pupils start to consider 'take-over' of teacher's control.

In contrast, Brown and Armstrong (1982) reported that children's anxieties towards specific aspects of school actually increased during their first year at secondary school. In their study, twenty-two different categories of 'worries' were identified from children's transfer essays (n = 173) completed soon after entering secondary school. A questionnaire, based upon the worry categories, was later administered to the same pupils after two terms. Whilst it was recognised that the prescribed items included in the questionnaire could have influenced and inflated the response rate, an interesting overall pattern emerged. During the first term, worries were principally associated with making and/or keeping friends (reported for 84% of the sample) whilst during the second term, worries about school work and routines dominated the responses of eighty percent of children. Also noteworthy was the lack of correlation between the rank-order of worry categories identified by the children and their first-year form teachers. Schoolwork related worries provided a major concern for the children, although this was given a low

priority amongst the staff. As a consequence, it was suggested that pastoral care programmes aimed at assisting pupils during transfer may be inappropriate if they only satisfy teachers' perceptions.

Surprisingly few studies have compared anxiety levels across the primary-to-secondary divide. Galton and Willcocks (1983) used an adaptation of the 'What I do in school' (WIDIS) questionnaire to compare pre-and-post transfer anxiety levels for 133 pupils. They reported that anxiety was highest in the June prior to transfer, and generally lower by the November and June stages following transfer. However, in this regard, it was not reported whether pre-transfer data had been collected before or after pupils knew their secondary school destinations. This could have anxiety related implications for all or particular children and, as an issue, was omitted from discussion. In cases where particular groups of pupils had recorded higher post-transfer anxiety levels, the inadvertent remarks of their primary school teachers were cited as one explanation. In attempting to reassure pupils that school life would be very similar after transfer, these teachers had played down the increased workload and pressures associated with 'banding' at secondary school. As a consequence, it was suggested that the harsher reality after transfer probably led to increased anxiety. Nonetheless, the generally lower post-transfer anxiety levels amongst pupils were consistent with findings from other investigations (Nisbet & Entwistle,1969; Youngman & Lunzer,1977). Simon and Ward (1982) also reported a decrease in mean anxiety levels for two groups of primary pupils ($n = 70$ and $n = 63$) transferring to secondary school, although it is unclear when pre-and-post assessments were conducted.

There is consensus in all transfer studies that high pre-transfer anxiety is as much to do with excited apprehension for some children, as worry of leaving primary school and concern about the secondary school for others. Therefore, whilst it is widely recognised that pre-transfer and initial encounters at secondary school may be stressful and even distressful for some pupils, anxieties appear generally short-lived for most children.

(v) PUPILS' SELF-ESTEEM DURING SCHOOL TRANSFER

This section considers self-esteem in childhood, particularly at the age of secondary school transfer. It focuses on the nature of self-esteem, and consideration is given to its measurement and association with other psychological characteristics. The research findings for pupils' self-esteem during school transfer are also presented.

(a) The Nature of Self-Esteem

The significance of positive self-perceptions to general psychological well-being is widely acknowledged. However, literature provides a glut of confusing self-terms (e.g., self-concept, self-acceptance, self-confidence, self-identity, self-image, self-efficacy, etc). According to Zaichkowsky et. al. (1980) many of these terms appear to have overlapping definitions, but Fox (1988b) differentiates between those which serve as self-descriptors (e.g., self-concept) and terms such as self-esteem which carry a distinctive evaluative component. According to Rosenberg

(1965, p.30) self-esteem, "..is a positive or negative attitude toward a particular object, namely, the self, " where attitude includes facts, opinions and values.

Relatively recent developments assert the multidimensional nature of self-concept. Indeed, Shavelson, Hubner and Stanton (1976) proposed six further definitional characteristics: (1) theoretically organised, (2) hierarchically structured, (3) developmental, (4) stable, (5) evaluative, and (6) differential from other constructs. With respect to multidimensionality and hierarchical structure, Shavelson et al. (1976) contend that an individual's overall self-esteem, at the apex of the model, is influenced by self-evaluations in a range of different domains (e.g., academic, physical, social and emotional). These form a lower-order tier, and it is theorised that these are further underpinned by evaluations of personal experiences in particular situations. In this way, self-esteem is considered an organised structure of perceptions (Fox,1992). The hierarchical structure of self-esteem has been supported empirically. For example, Byrne and Shavelson (1986) showed that general self-concept correlated highest with the immediate lower-level domain, correlated next highest with subject-specific self-concepts, and least with subject grades. They concluded that correlations between adjacent levels of the hierarchy should be higher than correlations between non-adjacent levels. Empirical evidence of this kind, supporting the hierarchical structure of self-concept, has also been provided in studies reporting correlations between general self-worth, physical self-worth and lower-order physical subdomains (Welk, Corbin & Lewis, 1995; Whitehead,1995).

Although the components of Shavelson et al.'s (1976) model have been subsequently contested, the importance of their work cannot be underestimated. It is evident that much of the exploratory and theoretical research over the past twenty years has derived from their conceptualisation of self-concept, and the framework they provided. Marsh and Hattie (1996, p.59) suggest the Shavelson et al. model, ".... provided a blueprint for a new generation of multidimensional self-concept instruments that have had significant influence on the field."

Of particular interest is how positive or negative self-evaluations develop. Harter's (1983) examination of the self-system provides a thorough analysis of the emergence of 'self' during infancy, childhood and adolescence. Particular attention is given to cognitive development during this period which enables the *infant* to increasingly recognise their own unique personal characteristics, and the *child* to develop awareness of judgements to these characteristics from significant others (e.g., family, peers, teachers, etc.). Harter (1983) further suggested that arising from this heightened self-consciousness, the capability to self-evaluate develops, and this is reflected in the adolescent's ability for introspection and reflection on personal thoughts, feelings and motives. It is recognised that this ability will vary from individual to individual, and that each person may adopt their own reference criteria (with particular weightings of importance) in establishing their self-esteem. Weightings of importance are further discussed later in this review.

With respect to stability of self-esteem, it has long been suggested that global self-esteem at the apex of the hierarchy remains relatively stable whilst domain and

subdomain self-perceptions vary according to positive or negative experiences (Shavelson et al.,1976). This assumes that the processes which integrate personal evaluations in different components of self-concept are sufficiently complex that specific perceptions at the base of the hierarchy cannot significantly disturb global self-esteem. Marsh (1996) refutes this and suggests, "Rather, students seem to rely substantially on recent experiences that might be more easily available to them," (p.261). Indeed, Bagley, Mallick, and Verma (1979) and Rosenberg (1981) also contend the importance of the immediate social context and stress how self-evaluations tend to be unstable as a consequence of these personal experiences. These remarks imply that specific encounters and situations may provoke positive or negative self-evaluations which increase or lessen global self-esteem, respectively. Perhaps school transfer may be considered one such encounter?

(b) Perceived Competence

One dimension of self-evaluation considered to be particularly influential during childhood is perceived competence. According to Novick, Cauce and Grove (1996, p.241), " ..the way a person views his or her competence is generally accepted as an important determinant of feelings of self-esteem." In addition, Roberts (1992) postulates that perceptions of incompetence lead to anxiety and reduced motivation. Clearly, perceptions of competence may apply to a range of skill domains, and Harter (1982) proposed that by eight years children have not only developed a view of their general self-worth, but are also capable of self-

evaluating their competence in different skills. In recognition of this, and of the limitations of some unidimensional self-esteem scales, Harter (1982) devised the Perceived Competence Scale for Children (PCSC). This multidimensional scale originally incorporated just three specific skill domains: cognitive competence, social competence and physical competence. Later versions of the scale, apart from the pictorial form for younger children, include six domains (Scholastic Competence, Social Acceptance, Athletic Competence, Physical Appearance, Behavioural Conduct, and Global Self-Worth) and is known as the 'Self-Perception Profile For Children' (Harter,1985). These adaptations were under-taken partly in recognition that self-esteem becomes more differentiated as children get older. Horn and Claytor (1993) acknowledge this developmental trend and suggest that changes in *global* self-esteem are, therefore, more likely during childhood because children perceive themselves in fewer domains. This perhaps underlines the potential importance of perceived physical competence during childhood and early adolescence.

Unlike most other self-esteem scales of its time, Harter's Perceived Competence Scale and Self Perception Profile for Children also include a general self-worth subscale which is independent of the skill domains. Harter (1982) suggests that one shortfall of many self-esteem inventories (e.g., Coopersmith,1967; Piers & Harris, 1964) is the tendency to sum the responses to an array of disparate items in the assumption that collectively they reflect the individuals general self-worth. Such scales assume children apply equal weighting and importance to the different competence domains; a notion which appears unlikely. As a consequence, Harter's

scales assume the hierarchical structure of self-esteem, suggesting that individuals construct a higher order view of their general self-worth, of which their judgements within the competence domains form one lower-order dimension.

(c) The Importance of Different Competencies.

To further understand the the development of global self-esteem and its relationships with lower order domains, the importance of domain specific self-perceptions has received attention. It is widely theorised that global self-concept will only be influenced by self-perceptions in those domains considered important by the individual (Marsh,1993; Simmons et al.,1973; Whitehead,1995). Accordingly, the global self-concept of an individual who perceives their physical performance as poor will only be negatively affected if physical self-concept is of personal importance. Whitehead (1995) provides some empirical evidence to support this supposition. He reported lower levels of global self-esteem amongst children and adolescents who perceived themselves as incompetent in achievement areas they considered important. Along this line of enquiry, Marsh (1993) examined whether unweighted averages, constant weighted averages (i.e., weightings differ for each domain but not for individuals), or individually weighted averages (i.e., weightings differ according to domains and vary between individuals) provided better predictions of global self-concept. He acknowledged that a particular domain may be more important than others across all individuals, but contends, "..its effect does not vary for individuals who judge the domain more or less important," (Marsh, 1993, p.975). Recent findings go further, and suggest that predictions of

global self-esteem are no stronger when importance, importance weighted averages, or importance discrepancy models are applied (Ebbeck & Stuart,1993, 1996; Marsh & Sonstroem,1995). In addition, there is the question of who determines what is important. With respect to Western culture, Novick et al. (1996) suggest:

> ....we are living in a society where certain competencies such as scholastic and athletic ability are highly valued. Therefore, aspirations and standards in these areas are typically quite high, making it difficult for those who feel inadequate to discount their importance. In addition, these domains are often considered important by others, particularly parents and peers. (Novick et al.,1996, p.244).

Ebbeck and Stuart (1993, 1996) similarly highlight and distinguish between individual and group importance. They suggest that adolescents may be particularly susceptible to group values, and that these values may be more influential on self-esteem than the importance an individual attaches to a particular attribute. The influence of a particular group on an individual's self-perceptions may be more difficult to ascertain. As Ebbeck and Stuart (1993, p.261) suggest, " Obviously every individual belongs to a variety of social groups and the values of each group are likely to differentially influence the individual." Maybe group norms and values are more (or only) likely to effect children with low self-perceptions? In their later study, Ebbeck and Stuart (1996) concluded that younger children's self-esteem related most to their perceived athletic competence and perceived parental importance, whereas self-esteem of older children related most to perceived athletic competence and perceived team importance. Whilst these findings are allied to developmental trends in sources of competence information (Weiss et al.,1997), it is noteworthy that both studies (Ebbeck & Stuart,1993;

1996) included boys only, and were games specific (football and basketball, respectively).

(d) Frames of Reference

Developing this theme of importance, and deeply entangled in the process of self-evaluation, are the frames of reference used by individuals to judge personal achievement. Individuals, even elite performers, who set high personal standards or unrealistic ideals in a particular domain, may develop negative self-perceptions if their actual achievements do not match up to expectations (Marsh, 1994). Combining this notion of actual-and-ideal discrepancy with 'importance', Marsh (1994, p.310) speculates, "...falling short of one's ideals only has a substantial effect on self-esteem in domains that are important to the individual." This clearly has potential implications for relations between global and specific domain self-concepts, i.e., low specific and global self-perceptions may arise if high ideals are set in a domain perceived to be important and not matched by actual or perceived competence. Additionally, it is speculated that individuals may be more critical of themselves in domains of personal importance, resulting in negative self-perceptions (Marsh & Sonstroem, 1995).

With regard to the sources children use to evaluate their competence, Marsh (1986) proposed the internal/external frame of reference model. This proposal was initially developed to explain the distinctiveness of mathematical and verbal academic self-concepts, which form part of Marsh and Shavelson's (1985) revision

of Shavelson et al.'s (1976) representation of self-concept. One perspective in the frame-of-reference model suggests that an individual may compare their competence in a particular domain against their competence in other domains (internal comparisons). A second perspective posits that individuals compare their competence in a particular domain against their peers, and self-perceptions are, in this instance, based upon external social comparisons (Marsh & Hattie,1996). In this way, group membership is likely to influence values and standards of performance used to self-evaluate (Marsh,1987). Bagley et al. (1979) provide evidence to suggest that similar processes appear to influence levels of self-esteem amongst Black adolescents in British classrooms. They report, ".. a significant trend for the self-esteem of Black pupils to be enhanced at greater levels of ethnic concentration," (Bagley et al.,1979, p.186).

Marsh and Parker (1984) and Marsh (1987) discuss how children compare their academic achievements against their peers and how different peer groupings may influence children's academic self-concepts. In particular, they suggest a high academic achiever in a class with lesser able peers is likely to have a higher academic self-concept than if they were amongst similarly able students. This frame-of-reference effect is referred to by Marsh and Parker (1984) as, 'the-big-fish-little-pond-effect' (BFLPE). Marsh (1987) suggests the potential of BFLPE is likely to be strongest during childhood where children may only be aware of their achievements in relation to their immediate classmates. As children age and become aware of a broader frame of reference, they evaluate their academic performance according to peers in other classes (particularly where ability

streaming exists), or peers in other schools. " In such a setting the determination of the standard of comparison is likely to be more complex, and BFLPE may be smaller,...." (Marsh,1987, p.282). With respect to average achievers in a class of more able peers, Marsh (1987) suggests that they may have: (1) high academic self-perceptions as a result of group status and prestige, (2) lower academic self-perceptions due to feelings of academic inferiority, or (3) matching average self-perceptions.

From a broader perspective, it is reasonable to suspect that similar processes influencing self-perceptions may operate in other school achievement situations. Indeed, Marsh (1990) reported relationships amongst fifteen school subject self-concepts (including physical education) for boys (n = 758) attending one Catholic boys secondary school in Sidney, Australia. In contrast to Shavelson et al.'s (1976) hypothesis that different school subject self-concepts would interrelate significantly and could, therefore, be embodied under a single academic self-concept domain, Marsh concluded (1990, p.635):

> Apparently, students differentiate self-concepts in different school subjects to a much greater extent than was previously recognised. This finding has important practical implications for researchers who are interested in studying self-concept in particular school subjects.

Of particular importance to the present study, Marsh (1990) also reported that four higher order factors were necessary to explain relations amongst the fifteen school subjects, with one higher order factor being physical education. Though it is evident that these conclusions were drawn from data for a sample of boys

attending one Catholic school in Australia, the potential importance of self-perceptions in physical education is highlighted.

In summary, acknowledgment of the multidimensional nature of self-esteem has given rise to a range of research initiatives, and investigators continue the struggle to identify the most salient domains and subdomains. In addition, the relationships between lower-order domains and global self-esteem, the interrelationships amongst the lower-order domains, and the multidimensional nature of the lower-order domains, remain central concerns. From this brief introduction, it is evident that perceptions of competence, as well as actual competence, can contribute to self-esteem development. The particular importance of physical competence will be further explored later in this chapter.

(e) Measurement of Self-Esteem

Although a common definition of self-esteem is elusive, numerous scales are available to record self-opinions and feelings of self-worth. Some unidimensional scales have, however, been criticised for attempting to assess global (general) self-esteem through the summation of responses to a range of unrelated, and identically weighted, life situations (Fox,1988b). These scales fail to recognise that global self-esteem is only likely to be influenced by those aspects of importance to the particular individual (Marsh,1993; Simmons et al.,1973; Whitehead,1995). Partly in recognition of these concerns, the Perceived Competence Scale for Children (Harter,1982) was developed to assess self-esteem in a range of specific domains

(cognitive, social and physical) as well as general self-esteem via a separate non-domain specific subscale. Subsequent modification and development of the scale in pictorial form for younger children (Harter & Pike, 1984) now provides researchers interested in analysing changes in specific components of self-esteem with the opportunity to establish self-perception profiles for both older and younger children. Other multidimensional scales are now available (e.g., the Multi-dimensional Self-Concept Scale: Bracken, 1992; Self-Description Questionnaire I: Marsh, 1988), each of which purport to assess self-esteem in particular domains. In addition, there are also multidimensional domain-specific self-esteem scales (e.g., the Academic and Social Acceptance Subscales of the Self-Perception Profile for Children: Harter, 1985; Perception of Ability Scale for Children: Boersma & Chapman, 1992; and the Physical Self-Perception Profile: Fox, 1990). Further reference to physical self-concept scales occurs later in this review. Of the established scales assessing global self-esteem, Rosenberg's Self-Esteem Scale (1965) is an instrument which has received particularly favourable reviews (see Sonstroem & Morgan, 1989; Wylie, 1974). Unlike other unidimensional instruments, the Rosenberg scale does not select specific content areas of unknown importance to subjects, but allows individuals to self-evaluate from a personal and general perspective. The value of this approach is such that several multi-dimensional instruments have based their general self-scales on Rosenberg's Self-Esteem scale (Keith & Bracken, 1996).

(f) Psychological Correlates of Self-esteem: Anxiety and Stability of Self-image

The association between self-esteem and anxiety is widely reported (Burns,1979; Fallon,1965; Hart,1986; Rosenberg,1981;Youngman & Lunzer,1977). Studies generally show a negative correlation, indicating that low self-esteem is related to high anxiety, and high self-esteem with low anxiety. Rosenberg (1965) also noted that subjects with low self-esteem reported greater incidence of various physiological indicators of anxiety (hand trembling, nervousness, insomnia, heart pounding, headaches, fingernail biting, sweaty palms and nightmares). With respect to causality, it has already been noted that anxiety is frequently a cognitive disorganiser (Cattell,1966) and Burns (1979, p.258) contends that, " The anxious child may be less free to examine his own behaviour and self conceptions which may preclude his acquiring of a realistic self conception." Rosenberg (1965) argues that low self-esteem may serve as a precursor to high anxiety. He suggests that individuals with low self-esteem tend to: (1) have unstable self-images; (2) present false fronts to the outside world; (3) be more vulnerable to criticism; and (4) experience feelings of isolation; all of which may create anxiety.

With reference to stability of self-esteem, Harter (1983) reports test-retest correlations which indicate that self-esteem is a relatively enduring characteristic amongst most children. However, she suggests that to further understand this issue both age and environmental factors need to be considered. From a developmental perspective, there appears to be consensus that *global* self-esteem decreases throughout childhood and early adolescence, stabilises during adolescence, and

increases during late adolescence and early adulthood (Marsh,1989). More specifically, Harter's (1982) findings and those of Simmons et al.(1973) indicate that self-esteem generally decreases upon arrival at High school, suggestive of the effect of environmental change. This theme provides the focus of the following section.

(g) Self-Esteem, Secondary School Transfer and Adjustment

The importance of self-esteem at the age of school transfer and its association with school adjustment is widely acknowledged (Alston,1988; Measor & Woods,1984; Alban Metcalfe,1981;Youngman & Lunzer,1977). According to Spelman (1979, p.340),

> How children perceive themselves and how they are perceived by others are commonly regarded as being fundamental to both their psychological well-being and their successful adjustment to school systems.

Measor and Woods (1984) consider the impact of transfer on self identity and suggest:

> ...that this transition raises basic questions about the pupil's identity. It threatens to strike at some of the foundations of self, so carefully nurtured hitherto, but still insecure because limited, and untried in wider theatres. The prospect of marginality- they were not yet members of the new school, but already phasing out of middle school- put the pupils in a kind of limbo where the referents they used to identify themselves either no longer applied or were as yet unknown factors in the future. (Measor & Woods,1984, p.9).

The limited research findings comparing pre-and-post transfer 'self 'measures are conflicting. The self-concept scale used as an indicator of school adjustment by Youngman and Lunzer (1977) revealed that *personal* self-concepts of a city

sample of Nottinghamshire school children (n = 359) decreased after transfer, whilst *social*, *academic* and *personal* self-concepts all reduced for a rural sample (n = 290). However, it is not reported whether these differences were statistically significant.

In contrast, findings for the 'Me at School' questionnaire (forming part of the ILEA Secondary Transfer Project) revealed that the majority of secondary pupils (n = 1600) had fairly positive self-concepts and generally higher self-concepts after transfer (Stoll,1987). This finding was interpreted as indicative of overall school adjustment for most pupils. In addition, It was suggested that the positive relationship between pupils' pre-and-post transfer self ratings illustrated consistency in pupils' perceptions of themselves, i.e., stability of self-esteem across transfer. Both Hart (1986) and Hirsch and Rapkin (1987) report similar significant increases in students self-esteem after transfer. However, in Hirsch and Rapkin's study, the increase was only evident by the end of their first year at Junior High school, and no significant change in self-esteem was evident by the middle of the transfer year for the 159 students in the study.

Alban Metcalfe (1981) analysed changes in children's self-concepts and attitudes to school following transfer, and particularly considered the effects on children with reported high or low self-concepts at primary school. Self-concepts (Piers-Harris Scale,1964) and attitudes to school (NFER- S7) were recorded for boys (n = 55) and girls (n = 46) in their final term at primary school, and again one year later at secondary school. Comparisons between pupils' pre-and-post transfer self-

concepts were not significantly different. It was suggested that the time interval between testing was perhaps too large to reveal any transfer-induced changes, and by the end of the first year, pupils self-concepts may have re-established to the pre-transfer level. In addition, boys (n = 14) and girls (n = 11) with reported high self-concepts at primary school had significantly lower self-concepts at secondary school. In comparison, girls with low self-concepts (n = 11) before transfer recorded significantly higher levels after transfer, but there was no significant difference for a similar group of boys (n = 14). It was suggested that high self-concepts amongst certain pupils before transfer may have been the result of relatively high achievement within the primary school, and the subsequent reduction in self-concept due to less distinguished attainment at the secondary school. Conversely, Alban Metcalfe (1981) suggests that some academically less-able children at primary school may feel happier in a streamed class at secondary school. In this environment, their academic status may be less threatened, enabling some gain in self-esteem. Indeed, this interpretation appears a forerunner to Marsh's (1986) frame of reference model. Of further interest, the boys and girls with high self-concepts in Alban Metcalfe's (1981) study recorded different attitude and personal characteristics at the pre-and-post transfer stages. At primary school, boys with high self-concept recorded high attitudes to school, and the girls had low anxiety. After transfer, these boys had low anxiety and high social adjustment, and the girls recorded high attitudes to school as well as high social adjustment. Although no explanation for the particular gender differences was offered, it is apparent that a range of 'positive' characteristics were evident amongst boys and girls with high self-esteem during school transfer.

Simon and Ward (1982) also reported findings for children's self-concept, anxiety and attitudes across school transfer. Mean differences between pre-and-post transfer data revealed significant increases in self-concept (Lipsitt Self-Concept Scale) for two groups (n = 70 and n = 63) of British primary school transferees. A reduction of anxiety at secondary school and a deterioration in school attitudes after transfer were also reported. Explanations forwarded for the positive changes in self-esteem and anxiety included age and maturational factors as well as transfer related issues. Without comparable data for a 'control' group of pupils (i.e., children who did not transfer to secondary school) the age/maturity explanation is highly speculative. Indeed, Simmons et al. (1973) examined differences between transferees and non-transferees and reported that self-esteem *reduced* after transfer. They studied American school children aged eleven to fourteen (n = 2625) and, through analysis of similar aged children, reported that self-esteem was only significantly lower for those pupils who had transferred to junior high school. They concluded that disturbance in the children's self-esteem did not appear to be age related but influenced by the environmental change accompanying school transfer.

The importance of age and maturity during secondary school transfer was also examined by Nisbet and Entwistle (1966). They investigated relationships among age, maturation, intellectual ability, personality and attitudes of Scottish pupils (n = 3286) at ages eleven to fourteen years and reported:

> ....very early and very late developers may have some emotional disturbance caused by their difficulty in identifying themselves with peer-group norms: they feel themselves to be different. (Nisbet & Entwistle,1966, p.50)

Their findings also indicate that chronological age rather than physiological maturity is more closely associated with emotional maturity. In a later report, Nisbet and Entwistle (1969) suggest that transfer from primary to secondary school:

> ....presents a greater problem in adjustment to the younger child within each six-month age-group. In the senior secondary school the older pupil starts off with the advantage of greater physical and mental maturity with which to tackle the intellectual and emotional challenges of the secondary school. (Nisbet & Entwistle,1969, p.81).

Given the wide variations in the age at onset of puberty and the differing rates of physical, intellectual, social and emotional development, this inference that marginally older pupils experience less problems of adjustment is contentious. Of interest, the same authors expressed a similar sentiment in an earlier report (Nisbet & Entwistle,1966, p.15).

Although the findings associating age, growth and maturation factors with the characteristics of school adjustment appear conflicting, it is evident that any study of pupils during transfer should examine, or at least consider, the possible influence of such factors.

2.2 PHYSICAL EDUCATION & SECONDARY SCHOOL TRANSFER

Even within the large-scale transfer studies, specific secondary school subjects have rarely been highlighted for individual attention. The exceptions to this have been english and mathematics, where pupil attainments before and after transfer have been used to indicate academic ability and progress (Alston,1988; Galton &

Willcocks,1983; Youngman & Lunzer,1977). Other school subjects have been identified when pupils' attitudes and interests have been recorded, and in this regard, physical education has been acknowledged in numerous studies (Alston et al.,1985; Measor & Woods,1984; McIntosh,1988; Scott & West,1990; Short, 1992). The following section reviews transfer studies which have considered aspects of physical education.

2.2.1 ATTITUDES TOWARDS PHYSICAL EDUCATION AT TRANSFER

Physical education is widely reported to be amongst the most popular subjects in the school curriculum. At the pre-transfer stage, Alston et al.(1985) reported that over twenty-five percent of pupils named physical education their favourite school subject, with thirty percent of boys and twenty-four percent of girls recording the preference. In other studies, both McIntosh (1988) and Scott and West (1990) reported thirty-four percent of primary school pupils expressed favouritism for physical education. The popularity of physical education is also evident after secondary school transfer (Coe,1984; Measor & Woods,1984). Runham (1985) reporting on subject preferences amongst pupils (n = 1007) in their first term at secondary school, noted that physical education was second most popular subject (16%) behind mathematics (18%). However, amongst the sample of boys (n= 476) physical education was most popular (21%) ahead of mathematics (16%). After two terms at secondary school, physical education was the most popular subject amongst the whole sample (n =1348) as well as amongst the boys (n = 671) receiving eighteen percent and twenty-three percent respectively (Runham,1986).

Scott and West (1990) reported thirty-nine percent of boys and twenty-nine per cent of girls in a secondary school sample named physical education as their favourite subject, and Dickenson and Sparkes (1988) noted that only six percent of a sample of pupils (n = 100) aged eleven to sixteen years did not like physical education.

Howarth and Head (1988) undertook a small-scale study considering curriculum continuity in physical education across the primary-to-secondary divide. They reported detailed views of twelve pupils of mixed gender and ability in physical education, and their findings elucidate the aforementioned statistics. The more-able performers found their primary school physical education repetitive, but enjoyable; the average and low ability children reported a dislike for the subject. All the children preferred physical education after transfer. The reasons for this preference appeared to be down to the specialist subject teachers at secondary school. Pupils recognised that their primary school staff were less experienced in physical education and had not received the same in-depth training as the secondary specialists. A negative aspect, of particular note amongst the girls at secondary school, was changing and showering. " Most of us don't look forward to P.E.; not because we don't like playing games; just because we have to go and change and go and shower," (Howarth & Head,1988, p.243). Although the tentative nature of the findings was acknowledged, the comments and observations of this small sample of adolescents provide food for thought.

Short (1992) considered school transfer and the multi-racial dimension. Asian pupils (n = 67) and Black pupils (n = 37) were questioned about their transfer apprehensions and aspects they were looking forward to at secondary school. The study was conducted six weeks before secondary school transfer. Sport was 'keenly anticipated' by both groups and seen as a particularly positive aspect of transfer by the Black students. These findings were reported as similar to those previously noted by Carrington (1983). The association of race and ethnicity with sport and physical education is further explored in the final section of this review, 'Socio-economic status, Race and Ethnicity, and Physical Education'

It is evident that attitudes towards physical education amongst many pupils at the age of transfer appear to be generally positive. However, further investigation is necessary to determine how these attitudes arise, why they are held and their relationship, if any, with school adjustment. In addition, although certain aspects of physical education have been included in previous transfer studies, the importance of children's motor competence at the age of transition from primary to secondary school has been neglected. The following section focuses on this aspect of physical education and explores its significance during childhood.

2.2.2 MOTOR PERFORMANCE & PHYSICAL DEVELOPMENT IN CHILDHOOD

Observation of any active group of similar aged children not only reveals obvious disparities in size and shape, but also differences in their movement capabilities. Comparing children of varying ages, accentuates these differences. Both Gallahue

(1982) and Rarick (1989) suggest that children's motor improvements may be explained by natural biological advances and increasing motor experiences which inevitably accompany ageing. Malina and Bouchard (1991) similarly acknowledge this view, and identify several interactive factors which influence motor development and performance, namely, neuromuscular maturation, growth and maturity characteristics (including size and body composition), previous motor experiences, and the nature of the new motor experiences. Although all related research recognises the combined influence of *nature* (physical growth and development) and *nurture* (movement experiences) in determining the performance outcome, what is less clear is the relative importance of each during different stages of childhood. This poses an interesting question. Are children's performances, at any particular age, more heavily governed by their physical development or their experiential learning? To address this issue is not easy. It necessitates the monitoring and quantification of children's movement experiences and experiential learning, which presents enormous practical difficulties. As a consequence, research has focused heavily upon the association and possible influence of physical development on motor performance during childhood. In this regard, Seils (1951) compared first, second and third grade children (approximately 7-9 years old) for gross motor skills and physical growth. He reported higher average increases in motor performance at the higher grade levels, but little or no correlation between physical growth and motor performance. Hensley and East (1982) analysed 563 children in grades one to four (approximately 7-10 years old) and reported similar low to moderate correlations between selected biological characteristics and physical performance. Indeed, with respect to age, body composition, stature and

weight, most studies report moderate positive correlations with motor performance during childhood, and low to moderate negative correlations between absolute or relative body fatness and tests of agility, speed and jumping (Thomas,1984). Thomas and French (1985) indicate a significant relationship between age and performance on twelve of twenty selected motor tasks, and similarly acknowledge rapid performance differences, particularly in boys, after onset of puberty. These changes are generally attributed to increases in muscular strength which, in boys, normally rises linearly to age thirteen or fourteen years, where upon acceleration is more pronounced (Buenen et al.,1988; Thomas & Thomas,1988). Nonetheless, the empirical evidence, although not conclusive, is perhaps best summarised by Thomas (1984, p.21) who suggests, " the overall contribution of age, height, and weight to variation in motor performance is generally low."

The specific influence of biological maturity on physical performance has received relatively limited attention. This appears to be largely due to the specialist techniques and expertise necessary for measuring and interpreting this form of maturity. Skeletal maturity, for example, may be determined from radiographs - typically an X-ray of the hand-wrist (Malina & Bouchard,1991). Somatic maturation may be indicated through the determination of peak height velocity, but this requires serial data gathered over at least a four year period (Roche, Tyleshevski, Rogers,1983). Sexual maturation may be established through analysis of the development of the secondary sex characteristics. For example, boys' genital and pubic hair development and girls' breast development may be recorded and classified according to five-stage pictorial scales, representing

development phases from childhood to adulthood (see Malina & Bouchard,1991). The invasive nature of this technique is clearly a major consideration, and one which is likely to inhibit its use, particularly with adolescents. In addition, the subjectivity of this form of examination, and the inevitable variations between individuals at all ages, raises questions of validity and reliability.

Findings from studies which report relationships between motor performance and skeletal maturity for boys in childhood tend to reveal positive and moderate correlations (Malina & Bouchard,1991). However, Buenen et al.(1988) suggest that during adolescence these correlations tend to be stronger. Comparisons of early, average and late maturers reveal that increases in strength, which accompanies larger body size and muscle mass, appears to give an advantage to early maturing boys, particularly in power tasks such as jumping, sprinting and throwing for distance (Buenen et al.,1988). Malina and Bouchard (1991) suggest that similar findings are evident where indicators of sexual maturation have been used. Boys, for example, demonstrating early sexual maturation tend to be stronger and perform better physically. Of interest, although girls who reach menarche at an early age tend to be stronger than similar aged females, those who attain menarche late tend to be more proficient on motor tasks (Malina & Bouchard,1991). No explanation for this phenomenon is currently acknowledged, and it is unclear whether this occurrence is due to biological, neurological, hormonal, psychological or sociological factors acting independently or in combination.

It is possible that the varied and inconclusive findings may be the result of the type of motor test or tasks administered. Thomas (1984), amongst others, acknowledges that tests which require the individual to propel themselves (e.g., running and jumping tasks) tend to disadvantage the heavier individual. In contrast, the bigger child, who tends to be stronger, is advantaged on tasks which require an object to be thrown.

It is evident that there are great variations in the rate and extent of physical and motor development in children during any given period. As a consequence, generalisations about samples of children tend to obscure important personal milestones. Nevertheless, the recurrent positive correlations between physical growth indicators and motor performance suggest that older children and those more physically mature tend to perform better than their younger or less physically developed counterparts.

In summary, children at the age of secondary school transfer are a particularly interesting population group with respect to physical, motor and psychological development. Not only are most facing the imminent onset of puberty and adolescence, but all are embarking on a physical education experience at secondary school which includes specialist tuition in a broad range of sport-specific activities. For these reasons, transferees at age eleven years may be entering a phase where biological, psychological and experiential interactions are at their most complex. The following two sections further explore these interactions.

2.2.3 MOTOR PERFORMANCE & CHILDREN'S SELF-ESTEEM

The association of motor performance with global self-esteem during childhood is widely postulated (Chesson et al,1991; Drowatzky,1981; Gallahue,1982; Rowland, 1990). According to Zaichkowsky et. al. (1980, p.167):

> The ability of a child to function well physically has important implications for manifestations of self-image. This is especially true with preadolescents who are far more concerned with physical characteristics such as size and strength than with other aspects of the body.

Gallahue (1982) suggested that children who move successfully experience positive reinforcement of their self-image, whereas those with movement difficulties:

> ....encounter repeated failure in their everyday play experiences. As a result, they often encounter difficulties in establishing a stable view of themselves as worthy beings (Gallahue,1982, p.329).

Hughes (1980) suggests that the self-concept/motor performance relationship is more likely to be realised in situations where performance is significant to the social relationship between the pupil and their teacher or peers. Indeed, Chesson et al. (1991), reporting on children with motor/learning difficulties, endorse this view and suggest those who persistently perform poorly at games and are reluctant to participate in sport activities are often socially isolated, and this unacceptance by their peers can damage an already fragile self-esteem.

The empirical findings are, however, less conclusive. Biddulph (1954) studied high school males (n = 461) and compared high athletic achievers with low athletic achievers for self-adjustment (a reported measure of self-worth) using the California Test of Personality. Findings indicated that the high athletic achievement

group recorded a statistically significant higher mean score than the low achievement group on this scale (mean difference = 5.90 with a critical ratio of 2.72, $p<0.01$). In the same study, the relationship between athletic performance and self-adjustment was also found to be statistically significant ($r = 0.112$, $p<0.05$). However, Keogh (1959) reported no significant relationship between motor ability (Larson Motor Ability test) and self-acceptance, a scale on the California Psychological Inventory (CPI), for college males ($n = 167$). In contrast, Merriman (1960), also using the CPI, did find a significant relationship between motor ability (Phillips JCR test) and self-acceptance ($r = 0.21$, $p<0.05$) with 808 high school males. Martinek et al. (1977) reported a non-significant relationship ($r = -0.01$, $p>0.05$) between motor skill performance (The Body Co-ordination test) and self-concept (Martinek & Zaichkowsky Self-concept scale for Children) for a sample of elementary school children ($n = 345$) grades one to five and concluded:

> This information provides little support for the contention that self-concept and motor skill are related. Therefore, it is questionable to assume a child who performs well on motor tasks also possesses a healthy self-concept. (Martinek et al.,1977, p.356).

Schempp et al.(1983) reported similar nonsignificant relationships between motor skills (Johnson Fundamental Skills Test) and self-concept (Martinek-Zaichkowsky Self-concept Scale) with a sample of first to fifth grade elementary school children ($n = 208$). Correlation coefficients ranged between -0.058 and 0.074, $p>0.05$.

Salokun (1994) found a significant positive correlation between gain in sports skill and increases in total self-concept for groups of twelve-to-fourteen and sixteen-to-eighteen year old boys and girls ($n = 288$). In addition, findings revealed that

trained subjects recorded significantly higher self-concepts than untrained children. It was concluded,

> ..... athletic success is positively associated with the personal and social adjustment expressed as individuals' feelings of worth and self-esteem. Successful individuals more than unsuccessful peers tend to perceive themselves positively. (Salokun,1994, p.754).

In summary, it is widely theorised that good motor performance during childhood can contribute to positive self-esteem (Chesson et al.,1991; Drowatzky,1981; Gallahue,1982; Zaichkowsky et. al.,1980). Whilst findings for high and low motor performers tend to reveal matching levels of self-esteem (Biddulph,1954; Chesson et al.,1991; Salokun,1994), studies which have examined the specific relationship between children's motor ability and self-ratings are less conclusive. Some report a significant positive correlation (Biddulph,1954; Merriman,1960) whilst others report a non-significant relationship (Keogh,1959; Martinek et al.,1977; Schempp et al.,1983). It is, however, recognised that the sample groups in these studies vary according to age, physical and psychological maturity, as well as geographical location and, probably, social status. Nevertheless, it is contended that the association between children's motor competence and self-ratings may be most potent during childhood when great emphasis is placed on motor ability (Drowatzky,1981). Further study into the developmental nature of these associations is clearly necessary.

2.2.4 CHILDREN'S PERCEIVED PHYSICAL COMPETENCE

Many studies acknowledge the significance of physical self-perceptions with regard to global self-esteem and exercise behaviour (Fox,1988a; Harter,1982; Horn & Hasbrook,1987; Luke & Sinclair,1991). This section examines the relationships between children's perceived physical competence, their actual (demonstrated) motor performance, attitudes towards physical activity, and general self-esteem. Consideration is also given to when and how children develop positive or negative physical self-perceptions. In this way, this section discusses the significance of physical self-perceptions at the age of school transfer.

(i) Measuring Perceived Physical Competence

As a result of the increasing awareness of the limitations of some unidimensional self-esteem scales, a number of multidimensional scales have been developed over the past twenty years which reflect contemporary understanding of the self-esteem construct. All include a physical domain, and most require self-evaluation of competency in physical or sporting settings. One of the early multidimensional scales to include a physical domain was Harter's (1982) Perceived Competence Scale for Children. The *physical competence* domain relates specifically to self-evaluations of skill at sports and outdoor games. Seven item-statements are included: (1) do well at all sports, (2) better at sports, (3) do well at new activity, (4) good enough at sports, (5) first chosen for games, (6) play rather than watch, and (7) good at new games. Preliminary findings for the scale from four samples of

American children (n = 1010) in grades three through nine (approximate ages nine to fifteen years) indicated high intercorrelations between the physical domain and the social domain across all ages and samples (r = 0.46 to 0.58). The physical domain and general self-worth subscale were similarly highly related (r = 0.40 to 0.52) and Harter (1982) noted:

> This pattern suggests that ones popularity during the elementary and junior high school years, as tapped by the social subscale, is dependent to a considerable degree on one's prowess at athletics. Ones academic performance bears less of a relationship to one's popularity or one's physical skills. The teacher' ratings are in agreement with the pupils in recognizing that one's peer popularity is very directly related to the pupils skill in sport. (Harter,1982, p.95).

With respect to the relationship between perceived and actual physical competence, Harter's findings (1982) provide only limited insight. Childrens *actual* competence was not demonstrated, but inferred from teachers' perceptions of children's motor competence. Whilst this method yielded a moderate correlation (r = 0.62) between perceived and actual competence for the Colorado sample (n = 209) where a gym teacher rated the children, correlations were consistently lower (r = 0.41 to 0.43) for other samples where regular classroom teachers assessed children's competence. Ulrich (1987) argued that these correlations may merely indicate pupils' ability to reflect their teachers perceptions. Other studies have, however, reported a significant association between physical self-perceptions and demonstrated motor performance. Boling and Kirk (1982), for example, used four motor ability test items as performance indicators and found the group who recorded high physical self-perceptions (upper third of 120 fifth-grade boys) were also better performers. To further understand the relationship between perceived and actual physical performance, Ulrich (1987) suggested that investigations

should assess specific sports skills which are also appropriately represented in the perceived competence items.

Granleese et al.(1988,1989) report similar general findings to Harter (1982), but disclose further limitations of the original study. Harter's empirical findings were the result of combined data for boys and girls, and Granleese et al.(1988) draw attention to important gender differences for both perceived physical competence and general self-esteem amongst a sample of final year primary school children. Boys (n = 102) recorded significantly higher mean values than girls (n = 88) for both indices. So, although correlations between perceived physical competence and general self-esteem were significant for both boys ($r = 0.32$, $p<0.001$) and girls ($r = 0.65$, $p<0.001$) it was concluded that separate gender analyses are necessary to gain understanding of the relative importance of each domain to boys and girls.

In a later study with similar aged primary school children, Granleese et al. (1989) reported no significant mean differences between boys (n = 36) and girls (n = 38) for each domain (academic,social and physical), although correlations between the physical domain and the general self-worth subscale were different for these gender samples. No significant correlation was evident for the boys ($r = 0.15$, $P>0.05$), yet the relationship was highly significant for the girls ($r = 0.72$, $P<0.001$). This non-significant correlation for boys contrasts with their earlier findings (Granleese et al.,1988), and is surprising given the widely accepted view that physical self-perceptions are particularly important amongst primary schoolboys (Evans & Roberts,1987).

(ii) Physical Competence & Perceived Physical Competence

The relative importance of actual and perceived physical competence is probably best illustrated through reference to Sonstroem's Psychological Model of Physical Activity Participation. Figure 1 shows the model as presented by Fox and Biddle (1988) and indicates the cyclic relationship between attitude to physical activity, involvement in physical activity, physical ability and perceived physical ability. The Psychological Model of Physical Participation infers that a positive attitude to physical activity is likely to lead to increased voluntary physical involvement, which in turn leads to increased physical ability and higher self-perceptions of ability. As a result, these developments not only perpetuate the positive attitude, thus completing the cycle, but also serve to enhance the individuals global self-esteem (Dishman,1978; Fox & Biddle,1988; Sonstroem,1978).

Sonstroem's model was originally developed from correlational data gathered in three studies of American adolescent males (Neale et al,1969; Sonstroem,1974; Sonstroem,1976). The samples in these studies included boys in grades seven-to-twelve (n = 165) from two Minneapolis high schools, boys in grades nine-to-twelve (n = 187) from three Rhode Island high schools, and boys in grades seven-to-eight (n = 112) and ten-to-twelve (n = 109) from four Rhode Island schools. Subjects were assessed (1) for fitness, (2) for global self-esteem (Rosenberg's Self-Esteem Scale; Bills' Self-Acceptance Scale; Tennesee Self-Concept Scale) and (3) on the Physical Estimation and Attraction Scales (PEAS) devised by Sonstroem. Whilst

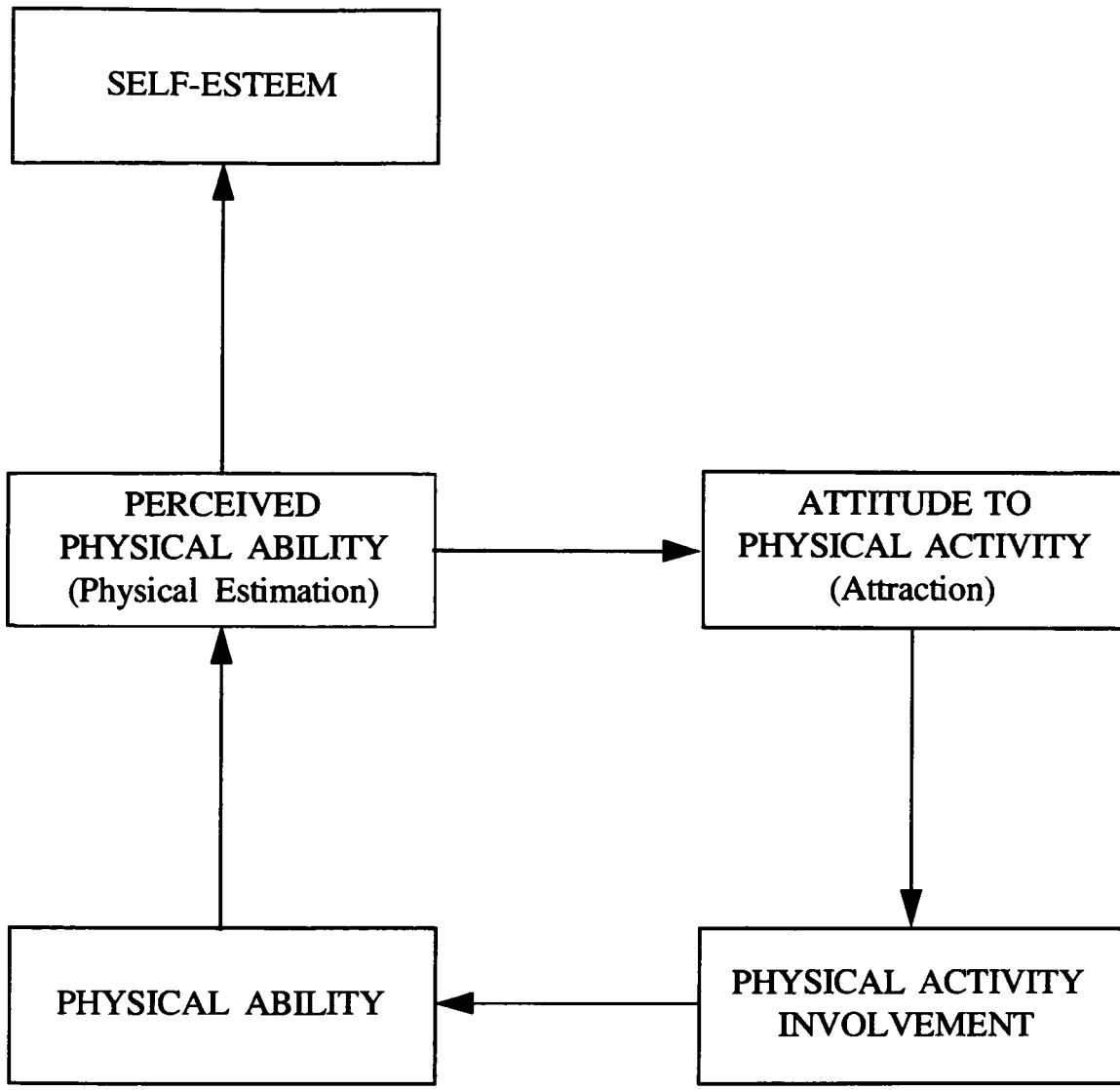

Figure 1 Sonstroem's Psychological Model of Physical Activity Participation
(Fox and Biddle, 1988)

correlations between global self-esteem and fitness were non-significant in all three studies, significant relationships were reported between physical estimation (perceived ability) and fitness, and physical estimation (perceived ability) and global self-esteem (Sonstroem,1978). It was therefore suggested that physical self-perceptions, "may constitute a mediating variable between physical ability and self-esteem in relatively large numbers of adolescent males," (Sonstroem,1978, p.101).

Despite empirical evidence supporting the interrelations in Sonstroem's model (Maeland,1992; Marsh & Peart,1988; Ulrich,1987), Dishman (1978) suggested that the motivational state of subjects needs to be considered when interpreting such performance relationships. He concluded this after finding a significant correlation between estimation of physical ability and aerobic performance ($r = 0.369$, $p<0.05$) for young adult males when using a non-motivation dependent physiological measure of fitness (peak VO_2), and a nonsignificant relationship between the same variables ($r = 0.272$, $p>0.05$) when using a motivation dependent fitness field test (Cooper's 12-minute run). Given that level of motivation may influence test performance, perhaps Harter's use of teachers' perceptions of children's competence is a credible alternative. However, as previously mentioned, the subjectivity of this approach and problems of reliability between and amongst teachers' perceptions raise other issues of validity.

Evidently, the relationships in Sonstroem's model (Figure 1) have been tested in terms of demonstrated and perceived *physical fitness* (Dishman,1978; Neale et al, 1969; Sonstroem,1978). Ulrich (1987), however, provides additional support for

the relationships using motor skill/ability as the performance domain. She reports that children's perceptions of physical competence were significantly related to their demonstrated motor competence on nine motor tasks, which suggests that children had fairly accurate perceptions of their level of motor ability.

Sonstroem's model has also been examined with respect to special populations. Maeland (1992) studied perceived competence and general self-esteem amongst ten-year-old Norwegian children with and without motor co-ordination problems. Nineteen children (15 boys, 4 girls) were identified as possessing motor co-ordination problems according to scores on the Test of Motor Impairment (TOMI), and a similar size control group (matched only for gender) was randomly selected for comparison. Harter's Perceived Competence Scale for Children was administered to determine self-perceptions of competence and general self-esteem. In support of Sonstroems model, significant correlations between physical self-perceptions and general self-esteem were apparent for both groups ($r = 0.58$, $p<0.01$ for the motor impaired group; $r = 0.45$, $p<0.05$ for the control group). However, physical self-perceptions did not significantly correlate with demonstrated motor competence for either sample. One explanation for this unpredictable finding related to the nature of the TOMI test. Whilst the test identified children with motor impairments, it failed to provide a valid measure of motor ability.

With respect to group differences, Maeland (1992) noted that the impaired motor performers recorded a significantly lower mean for perceived physical competence.

She suggests that one reason why the impaired performers were evidently more aware of their limitations is that athletic skills are central to popularity amongst children of this age. Indeed, Stein (1996) suggests that lower physical self-concepts amongst the physically handicapped may be due to negative social attitudes and discrimination, impaired ability, and lack of social contacts. Nevertheless, it is of note that Maeland (1992) reported no significant difference between groups for general self-esteem. This suggests that despite perceiving themselves as physically inferior, the motor impaired children clearly felt suitably worthy in other domains which influence global self-perceptions.

The association between children's physical self-perceptions and attitudes towards physical activity is another interesting dimension of Sonstroem's model. Significant relationships between the variables were evident for the samples in the validating studies (Neale et al,1969; Sonstroem,1974,1976). Correlation coefficients (r) were positive and moderate, and in the range $r = 0.53$ and $r = 0.66$. In addition, both Sonstroem (1978) and Fox and Biddle (1988) posit that youngsters with high physical self-perceptions have a more positive attitude to physical activity and are therefore likely to persist with exercise behaviour. Although Dishman (1978) reported lower correlations between physical self-perceptions and attitudes to activity ($r = 0.27$ to 0.37) he concluded that the findings generally supported the application of Sonstroem's model to young adult males and females.

The influence of physical self-perceptions on attitudes to physical education has received some attention. Two studies, Figley (1985) and Luke and Sinclair (1991),

used systematic content analysis to examine and categorise children's attitudes to school physical education. These studies revealed that pupils' physical self-perceptions were a lower-order determinant. Figley (1985) reported that positive attitudes towards physical education were most influenced by (1) teacher related qualities (2) curriculum issues (3) atmosphere, (4) self-perceptions, (5) unknown "other", and (6) peer behaviour. Children in the Luke and Sinclair study, however, ranked self-perceptions third most important, with 'curriculum' ranked first and 'atmosphere' ranked second. Categories four, five and six were 'teacher', 'facilities' and 'other' respectively.

Although important relationships between physical self-perceptions, motor performance and attitudes to physical activity/education are apparent, how these self-perceptions are formed and what criteria children use to assess their competence in the physical domain is unclear. The following section further explores these themes.

(iii) Development of Perceived Physical Competence.

Tomlinson (1981, p.135) suggests, "They [teachers] can elevate the academic self-concept of pupils through combinations of actions, gestures, comments and other cues, through which the pupil perceives the teacher's opinion of his ability to do homework and to realise educational aspirations." It appears likely, therefore, that physical educators have the potential to similarly influence children's physical

self-perceptions. Several studies (Horn,Glenn, & Wentzell,1993; Horn & Hasbrook,1987; Horn & Weiss,1991) provide some insight into the development of perceived physical competence, but address the issue only from a sporting achievement perspective. They do not, therefore, directly consider the factors associated with children's experiences in curriculum physical education that may contribute to positive physical self-perceptions. Nevertheless, Horn and Hasbrook (1987) highlight four sources of information which children in the competitive athletic setting may use to self-evaluate performance: (1) feedback from significant others (e.g., coaches, parents, etc.), (2) comparison with peers, (3) performance against internal criteria (e.g., personal goals or improvement), and (4) performance outcomes (e.g., points, goals, runs scored, win-lose record). Of note, it is recognised that children may prioritise these sources very differently, and some children may rely almost exclusively on feedback from the coach, whilst others may establish a significant internal criteria which withstands influence from external sources. Horn and Hasbrook (1987) argue, in general terms, that the sources children use to evaluate their competence are age related and therefore developmental. Younger children tend to rely on task success, peer comparisons and/or feedback from significant adults, whereas children during late childhood and early adolescence may be more able to integrate information (particularly if conflicting) due to cognitive maturation. Indeed, Horn and Weiss (1991) report that children's judgements of their physical and academic competence become more accurate as they get older. Horn and Hasbrook (1987) further suggest that during late childhood and early adolescence youngsters are more able and likely to develop an internal set of performance criteria. This echoes Connell's (1985)

sentiments. He suggested that with age children become more sure (less unsure) of the causes of their success or failure, and increasingly personal attributes are perceived as most influential. Horn and Hasbrook (1987) further theorised that children's ability to develop an internal performance criteria is dependent upon the extent to which they establish a positive or negative self-perception during childhood. Individuals who have early success and encouragement are likely to build positive self-perceptions and a notion that they can control future performance success. Alternatively, low self-perceptions which develop during childhood may leave the child dependent on external sources. This dependence is suggested to have negative implications for performance, motivation, task persistence, anxiety and affective responses to performance.

Weiss et al (1990) studied the causal attributions of children's physical competence and noted that children with low physical self-perceptions who achieve success often attribute this success to external or uncontrollable factors, such as luck. It was reported that successful experiences alone are unlikely to influence self-esteem, and for physical self-esteem enhancement, children need to perceive that they are responsible for the success. This has obvious implications for teachers and teaching. Weiss et al.(1990, p.33) suggest:

> ..... teachers and coaches can influence children's self-perceptions and goal orientations by providing appropriate attributional feedback, namely internal, stable and controllable causes for success and unstable or uncontrollable causes for unsuccessful outcomes.

Nevertheless, Biddle (1993) stresses that the findings for attributions in sport may be distorted due to 'self-serving bias' For example, people may tend to attribute

failure to external factors since admission of inadequacy due to internal factors (e.g., lack of ability, effort, or form) may vitiate self-perceptions. Similarly, there may be a greater tendency to accept personal responsibility for successes in order to maintain or enhance self-esteem. Indeed, it is hypothesised that people with differing self-perceptions will select different attributions for success and failure (Biddle,1993; Weiss et al.,1990).

Although there has been some investigation into the development of physical self-perceptions and the criteria children use to evaluate their physical competence, the relative importance of self-perceptions in physical education at different stages of childhood has yet to be established. The focus to date has been confined to child athletes' competence and achievement in sport. Further investigation is necessary to explore the specific contribution of curriculum physical education to the development of positive physical self-perceptions amongst pupils of all levels of performance.

(iv) Perceived Physical Competence & Secondary School Transfer

This review has highlighted the rapid biological, psychological and cognitive development that many children experience during the transition and adjustment to Secondary school. Thornton and Rickman (1991) suggest physical attributes may take on increased importance during this period as adolescents become increasingly concerned with themselves and opinions of their peers. This section serves to place

these physical self-perceptions within the social context of secondary school transfer.

Preceding sections have illustrated how children's global and specific self-perceptions are subject to influence from a number of sources. On arrival at secondary school, some of the sources previously used by the child to self-reference change (e.g., peergroups, teacher feedback, performance tasks). These changes, in combination with the physical, organisational and educational differences of secondary school, may not only be disorientating, but also compel the child to judge themselves according to a new framework. Marsh and Parker (1984) and Marsh (1987) discuss how children compare their achievements against their peers, and how different peer groupings may influence children's academic self-concepts. One frame of reference effect referred to by Marsh and Parker (1984) is 'the-big-fish-little-pond-effect' (BFLPE). In this scenario, it is speculated that a high academic achiever amongst lesser able classmates is likely to have a higher academic self-concept than if he/she were amongst similarly able students. "In other words, it is not only how good the individual is, but how good others around him are that affect his self-attitudes," (Rosenberg,1981, p.612). Broadening this issue, it may be speculated that new standards, values, and expectations set by teachers and classmates at secondary school may influence global, domain (academic, social, physical) and subject specific self-perceptions. Indeed, with respect to the latter, Evans and Davies (1993, p.3) contend, " ...PE and sport are social processes which can and do have a powerful and lasting impact on the identities of children, on their attitudes towards physical activity, themselves and

others." Moreover, MacClancy (1996) suggests that children's self-perceptions in physical education and sport may vary during the school year as the informal ranking system amongst peers takes account of skills in winter and summer activities. Nevertheless, the double-edge nature of these remarks cannot be ignored. Whilst it is recognised that physical education and sport may promote self-confidence, dignity, and pride, their potential to, ".. alienate, promote insensitivity, exaggerate difference, foster selfish individualism, separate and divide," is also undeniable (Evans & Davies,1993, p.3).

Spelman's (1979) comprehensive school transfer study of children (n = 3050) in Northern Ireland included analysis of first year secondary school experiences which were associated with improvements in pupils' self-concepts. Pertinent to this review, prowess at games was one of nine major dimensions identified by pupils in relation to enhanced self-concept. Prowess at games was also highlighted during analysis of peer popularity and friendships. Spelman used the modified version of the self concept scale by Sears and Sherman (1964) in order to establish the relationship between self-image and sociometric status among the first year secondary school pupils. Sociometric status was defined in terms of pupil popularity and unpopularity based upon selection or rejection by peers in work and play situations. It is interesting to note that responses of popular pupils in both situations indicated a common self-perception of being better at games. It was also reported, "proficiency at games is associated with popular status for both work and play whereas physical size is not," (Spelman,1979, p.226). Also, pupils who played for teams outside of school were well represented in the overchosen category for

work, whereas those who did not play for outside teams featured more in the underchosen category for play.

In brief, previous research suggests that physical ability and physical self-perceptions may significantly contribute to the psychological and sociological processes operating at the age of school transfer. Since social and cultural factors, such as socioeconomic status, race, and ethnicity, may also influence these processes the following sections consider their importance during childhood and early adolescence.

2.3 THE INFLUENCE OF SOCIOECONOMIC STATUS (SES), RACE & ETHNICITY

Kohr, Coldiron, Skiffington, Masters and Blust (1988) maintain that any analysis of pupil behaviour in school is oversimplified unless careful consideration is given to socioeconomic status (SES), race and gender. They suggest that ignoring these characteristics assumes pupils are members of just one group, and consequently disregards the respective and combined influence of the factors. Fleming (1995) also suggests there may be a temptation to stereotype particular groups and, as a result, simplify complicated interrelationships amongst lifestyle characteristics and patterns. Figueroa (1993) further elaborates, and identifies 'cross-cultural mis-communication' He suggests:

> ....cultures relate to each other not only in terms of actual cultural differences, but also in terms of their perceptions, of their definitions of the situation and of their relative positions in the society and its class system. (Figueroa,1993, p.91)

Implicit in this remark is the notion of cultural pluralism. In contrast, Craft (1984) draws attention to social conformity and the process of assimilation, whereby children of ethnic minorities are socialised into the dominant culture particularly by their teachers. Whilst this ideology was particularly prevalent during the 1950's and 1960's when many immigrants of the New Commonwealth were arriving in Britain, Craft (1984) posits that schools in the 1970's and 1980's were beginning to accept cultural differences and utilise the opportunities offered by a multicultural approach to education:

> With greater recognition and acceptance of cultural pluralism, a frankly assimilationist policy has moved more in the direction of biculturalism: equiping minority group children with the language and other skills essential for living in modern Britain, but nonetheless, recognizing, accepting, respecting, and encouraging the development of other cultural forms brought into school by them. (Craft,1984, p.20).

However, as will be discussed later, Tomlinson and Craft (1995) suggest political and educational policies in the 1990's have partly stifled this ethos. Nevertheless, the National Curriculum for schools must, by definition, cater for all children and, therefore, be appreciative of social and cultural diversities, and equal opportunities. In this regard, 'equal educational opportunities' implies more than equal access to education (Thomas,1991). A more accurate interpretation of the term, proposed by Swisher and Swisher (1986), is that individuals from different racial, ethnic, linguistic, gender and socioeconomic backgrounds have the right to benefit equally from educational programmes:

> However, equality does not mean that students should be treated as if they have the same educational needs. Educational equality cannot be achieved without educational equity. Equity at times requires different treatment according to differences in background experiences and potential. (Swisher & Swisher,1986, p.35).

Given these preliminary comments, the following sections are intended to highlight how SES, race and ethnicity may affect children during school transfer. Attention is given to their influence on developing self-perceptions, as well as their affect on attitudes and performance in physical education. The complexity of the issues, and the limited breadth and depth afforded them in this review, are recognised. Nonetheless, their consideration is warranted within the context of the present study. Four sections are presented: (1) Assessing SES, race, and ethnicity; (2) SES, race, ethnicity, and school transfer; (3) SES, race, ethnicity, and self-perceptions; and (4) SES, race, ethnicity and physical education.

2.3.1 ASSESSING SES, RACE & ETHNICITY

To determine the socioeconomic status of children, or define particular ethnic groups, is not straightforward. Indeed, Coopersmith (1967, p.82) suggests that identifying children's SES may be totally misleading since, " .. social status of children is ascribed rather than acquired." Nevertheless, of particular importance to the researcher is the method for establishing SES. Many such methods exist to determine both individual pupil and school SES. For example, Osborne and LeGette (1982) assessed pupil SES using a five-point scale which considered the education and occupation of the 'head of the household'. Dohrenwend (1973) and Dukes and Martinez (1994) used highest parental educational level. Several related studies concerning British adolescents (Craft & Craft,1983; Nisbet & Entwistle, 1969; Spelman,1979) have chosen to use a social class classification scale based on occupation (e.g., Registrar General,1970). Such scales classify socioeconomic status based on father's occupation: Scale I - Professional occupations; Scale II -

Semi-professional and managerial; Scale IIIa -Clerical and skilled non-manual; Scale IIIb- Highly skilled or Skilled manual; Grade IV- Semi-skilled manual; and V- Unskilled manual. One of the more elaborate methods was used by Bachman and O'Malley (1986), and Marsh (1987). They determined SES via six indicators: father's occupation, father's education, mother's education, a checklist of possessions in the home, number of books in the home, and the ratio of rooms per person in the home. However, it isn't clear from these studies how this information was obtained, or how it was collated. In Keys et al's (1995) survey, final year primary school children self-reported the number of books in their homes, and this information was used as an indicator of cultural background. This self-report method is not, however, without limitations. Firstly, it relies on children's knowledge and recall of the different locations in their homes where books are kept. Secondly, it requires them to judge the total quantity of books from these sources. The children in Keys et al's (1995) study were asked to distinguish between six categories (0-10, 11-25, 26-100, 101-250, 250-500, and more than 500 books) and the accuracy of such responses is questionable particularly with preadolescents.

In contrast to methods used to establish pupil SES, some studies have chosen to define school SES. In many cases, this amounts to a vague statement without any supporting criteria (e.g., predominantly high, middle, or low SES). However, Kohr et al. (1988) present details for classifying high and low SES schools. Their method relied on establishing the percentage of children from low-income families in the

school:

> For grades 5 and 8, a low SES school was defined as having 30 percent or more of its students classified as from low-income families. At grade 11, 20 percent was the cutoff used. If a school had ten percent or less of its students classified as from low-income families, it was defined as a high SES school. (Kohr et al.,1988, p.473).

What is not clear, however, is the definition of low-income family, or the justification of the thirty percent and twenty percent cutoffs.

Given the variety of methods available to determine SES, it is reasonable to question the accuracy and reliability of the different measures, the reliability between the different measures and, therefore, the extent to which findings may be dependent upon the selected method.

Similar variation and difficulty exists defining race and ethnic groups. Gillborn (1990) offers some assistance. He suggests 'biological race', as determined by distinctive physical characteristics (e.g., skin colour), has largely been surpassed by the notion of 'social race' This term, as implied, refers to groups of people which are, "...socially constructed; they are not a biological fact," (Gillborn,1990, p.4). In this way, "Ethnic groups may, or may not, also be visibly distinct (for instance, through dress customs or physical characteristics)," (Gillborn,1990, p.4). In a later publication, Gillborn and Gipps (1996) suggest that the general label 'Black', commonly used by researchers in the past, is now rejected by many communities, particularly of the Indian subcontinent. As a consequence, Black tends to refer specifically to Black Caribbean, Black African or Black Other (Gillborn & Gipps,1996). Fleming (1995) also notes that the label 'South Asian' may refer to

people of Indian, Bangladeshi, Pakistani, and East African ethnic origin, as well as other migrants from the Indian sub-continent. Clearly these distinctions are important since ethnic groups may have different social, cultural and economic profiles (Gillborn & Gipps, 1996) and, in these contexts, the term 'ethnicity' refers to the sense and expression of difference communicated between ethnic groups (Gillborn, 1990). Finally, Figueroa (1984, p.130) identifies a particular impropriety with regard to labelling and differentiating children according to background:

" First of all there is the odd definition of 'immigrant' pupils which the DES previously used. 'Immigrant' pupils included children born in the UK (!) to parents who had come to Britain more than ten years previously(!!)."

The need to examine diversity *within* as well as *across* ethnic groups is stressed by Fleming (1995). He notes that a number of religions (e.g., Hindus, Muslims, Sikhs, Christians, Buddists, and Jains) influence individuals of the Indian sub-continent; each defining social and cultural customs. From a research perspective, these distinctions appear critical. Studies which classify subjects according to generalised labels, and ignore particular ethnic influences and social divisions, could overlook important cultural factors, and consequently simplify interpretations and produce misleading findings.

In light of these preliminary discussions, the following sections highlight research which has considered SES, race, and ethnicity in relation to school transfer and secondary schooling, self-perceptions, and physical education.

2.3.2 SES, RACE, ETHNICITY & SECONDARY SCHOOL TRANSFER

Despite recognition of the potential influence of home background on children's schooling, relatively few school transfer studies have included details of socio-economic status (SES). Some researchers report difficulties accessing relevant information from schools (Hirsch & Rapkin,1987; Youngman & Lunzer,1977), whilst others purposefully do not include SES. Dowling (1980), for example, didn't incorporate SES, ".. because of the problems of reliably obtaining the information to determine this as part of an on-going, annual assessment carried out by teachers in the schools," (p.27). Loosemore (1978) also avoided assessing pupil SES using father's occupation since, "...job titles (when available) were often inexact or even misleading," (p.32). In her study, SES was based on the school's catchment area, and children were generally assumed to be in the lower social categories.

Of the evidence available from school transfer studies, all tend to conclude that children from lower social classes report lower self-ratings and poorer secondary school adjustment (Atherley,1990; Stoll,1987). Furthermore, Cox (1978, p.369) reports,

> It should be noted that the prevalence of rated poor adjustment was roughly three times higher among the children from disadvantaged home backgrounds (between 22 and 34% on the four occasions) than among the children from more advantaged backgrounds (between 0 and 11% on the four occasions).

Nisbet and Entwistle (1969) similarly reported that children in their study from higher social classes adjusted more quickly to secondary school. Of further

significance, they concluded that the relationship between socioeconomic rating and academic achievement increased across transfer throughout the eleven-to-fourteen age range, suggesting, " This is the first indication of the type of variable which increases in importance once the child reaches secondary school," (Nisbet & Entwistle,1969, p.58).

Given these findings, one may be tempted to assume that school adjustment and self-ratings are 'fixed' by social background (Atherley,1990). Indeed, further studies supply data to support this notion (Coopersmith,1967; Kohr et al.,1988; Osborne & LeGette,1982). However, other findings refute it (Simmons et al.,1973; Simmons et. al.,1987; Trowbridge,1972), and suggest schools and teachers are highly influential before and during school transfer.

Limited attention has been afforded to race and ethnicity during school transfer. Short (1992) finds this somewhat surprising, particularly given that children from ethnic minorities may have additional concerns about changing schools, e.g., fear of racist abuse, or conflict between new school demands/expectations and cultural/ religious values. One reason for the limited research is illustrated by Keys et al (1995). They sought details of the proportions of ethnic minority pupils as part of a national school transfer survey, but were hindered by high levels of non-response from schools. Many school transfer studies, therefore, tend to rely on relatively small samples of ethnic minority pupils. Short (1992), for example, studied sixty-seven pupils of Asian decent and thirty-seven of Black decent from three London primary schools, and collected data four to six weeks before the end of their

primary schooling. Positive features of transfer most often referred to by pupils included new/better lessons, making new friends, and sport. Negative aspects included bullying, not coping academically, and getting into trouble. It is noteworthy that in addition to the small sample size, these children attended schools in an almost entirely non-white neighbourhood. As such, their experiences and perceptions may not be wholly representative. Nevertheless, accepting the limitations, Short concluded, " ..black and Asian children appear to think and feel much the same way about transfer to secondary school as their white peers," (Short,1992, p.116).

Despite the paucity of research in this area, reports from Swann (1985), Eggleston, Dunn, and Anjali (1986) and Gillborn and Gipps (1996) provide further insight into the interrelationships between SES, ethnicity and secondary education. Swann (1985) notes that much West Indian and Asian settlement in Britain during the 1950's and 1960's was principally in the poorer and more deprived urban areas, and, due in part to rising unemployment, this has largely remained the case for many ethnic minority families. Given this, and the previously reported findings expounding the associations between low SES, low self-ratings and poor secondary school adjustment, parallel findings for ethnic minorities may be anticipated. However, evidence from some studies suggest that this is not the case (Crain & Bracken,1994; Hirsch & Rapkin,1987). Indeed, Stoll (1987) reported no significant relationship between ethnic origin, self-concept and school adjustment for first year tranferees to Inner London secondary schools. Of interest, Asian pupils in the study recorded significantly higher self-ratings before transfer

than Black Caribbean students and the group of English, Scottish, Welsh and Irish pupils. No significant differences were found between groups after transfer, but it was not established whether self-ratings deteriorated for Asian pupils or improved for these other groups.

Findings from the recent report on achievements of ethnic minority pupils (Gillborn & Gipps,1996) echo earlier contentions that social class is closely related to school achievement: "Results [GCSE] show that, regardless of ethnic origin, pupils from more economically advantaged backgrounds achieve the highest averages," (Gillborn & Gipps,1996, p.1). Both Eggleston et al.(1986) and Swann (1985) noted that children who are disadvantaged (i.e., living in poor housing or unhealthy conditions, or whose parents are low earners) do less well at school. A range of influential factors have been identified: genetics; parental views and family structures; economic factors; racism; and inappropriate approaches by schools (Swann,1985). The Swann Report further emphasised that children from ethnic minorities are, in general, more disadvantaged, with West Indians disproportionately represented in the lower social classes. Despite this, Eggleston et al.(1986) noted that attitudes towards school amongst Asian and Afro-Caribbean pupils tended to be more favourable than White students, perhaps because of greater recognition of the need for educational qualifications.

In brief, research indicates that socioeconomic and ethnic issues contribute to children's academic and affective development. Spelman (1979) states that children's adjustment to secondary school will be influenced by those aspects of

home background most relevant to progress at school (e.g., parental education, parental interest and encouragement in school matters, reading practices in the home, and control over television-viewing). Whilst this may be so, the influence of the school curriculum and of teachers cannot be underestimated. The need for appropriate teaching methods to cater for children of all cultures is illustrated by Bhatnagar (1970) who suggests:

> Some of them [immigrant children] come from rural, pre-industrial cultures and move straight into the classroom in the middle of the industrial Midlands. The point that they need different teaching methods, educational aids, and classroom organisation seems to have been completely lost on their teachers. (cited in Craft,1981, p.4).

Certainly with respect to curriculum content, there appears to be adequate potential to explore cultural diversities within the existing national curriculum framework for schools in England and Wales. Incorporation of cultural issues within certain school subjects appears straightforward, e.g., history, language, geography, and religious education. Indeed, most school subjects could address cultural issues if so desired, i.e., sport, health and recreational customs could be accommodated in physical education. Rex (1981) extends this viewpoint and suggests there should be opportunities in schools for all pupils to study the culture, history, and language of ethnic minorities at the highest academic level. Rex (1981) further suggests that such multicultural approaches may, (1) increase cultural respect, understanding, and status, (2) reduce racism, and (3) encourage curriculum continuity across school transfer. However, Tomlinson and Craft (1995) outline a decade of change, and chart the diminishing emphasis on multicultural education in Britain since the introduction of the National Curriculum (Education Reform Act,1988). They suggest that the positive strategies and

policies on equal opportunities and ethnic and cultural diversity so evident in the 1980s have been largely abandoned during the 1990s as emphasis has shifted to assessment, achievement and competition between schools. They report that references to multicultural education have been progressively withdrawn from national curriculum documentation, and they also note:

> .. the report of a multicultural task group, set up by the [National Curriculum] Council in 1989 to consider ways in which the national curriculum could broaden the horizons of all pupils and address the needs of minority - especially bilingual - pupils, was never published nor were its recommendations put into operation (Tomlinson & Craft,1995, p.5)

Paradoxically, the establishment of a national school curriculum and a national philosophy of education for all children has been accompanied by a shift to local school management control and diminishing LEA influence. As a result, Tomlinson and Craft (1995) suggest that neither central nor local government have commitment to schemes designed to develop multicultural education. Children, whether educated in multicultural and monocultural environments are, in this regard, dependent upon local school or individual teacher initiatives, and opportunities to learn about and benefit from cultural diversity are likely, therefore, to vary considerably between schools.

2.3.3 SES, RACE, ETHNICITY & CHILDREN'S SELF-PERCEPTIONS

Synthesising the findings from studies which have examined SES, race and ethnicity, and childrens' self-perceptions is problematic. Besides the variety of methods used to determine SES, the discrepancies between definitions of particular ethnic groups, and the cultural diversities within as well as across ethnic groups,

there is also the wealth of distinctive 'self' terms and allied measuring scales to consider. Whilst it is evident that most 'self' scales tend to assume definitions and content which are mindful to age (e.g., young children, adolescents, or adults), little consideration appears to have been given to the appropriateness of scales to different ethnic groups. Fox (1992) highlights how cultures vary in the emphases they place on different aspects of self: " For instance, some Western cultures appear to be heavily dominated by measures of achievement and appearance, whereas the values of other cultures may be more deeply rooted in the quality of social or spiritual relationships" (p.37). It is questionable, therefore, whether some 'self' instruments are sufficiently sensitive to detect inherent cultural differences. Whilst SES, ethnic or gender group data sometimes form part of the on-going psychometric analysis of a scale (i.e., to illustrate suitability to different populations), these procedures occur after scale construction. There is little evidence to indicate that existing self-esteem scales have been specifically designed to accommodate diverse social or ethnic groups. Moreover, Crain and Bracken (1994) suggest many 'self' scales have been validated using small, geographically restricted, and non-representative samples and, as a consequence, have questionable relevance to particular populations. Even the manual for the aptly named, ' Culture-Free Self-Esteem Inventory' (Battle,1992) offers no explanation of the methods used to initially select item statements, or evidence of the ethnic and cultural mix of the original sample (Keith & Bracken,1996). In addition, most relevant studies have, to date, considered self-concept from a global perspective, and there is further need for multidimensional analysis of self-concept amongst different groupings (Crain,1996).

The limitation of self-esteem instrumentation in a cross-cultural study is illustrated by Stigler et al.(1985). They studied self-esteem amongst fifth-grade Chinese school children (n = 714, mean age 11 years 4 months) using the Perceived Competence Scale for Children (PCSC) and compared data with Harter's (1982) findings for similar aged American children. Of interest, the Chinese pupils rated themselves lower on three of the four subscales (physical, academic and general) and only for the social scale were mean values higher than the American samples. Two explanations for these findings were postulated. Firstly, the lower mean values may reflect the inclination in Chinese culture towards modesty and self-effacement. It was suggested that Chinese children may particularly down play their academic competence. This is especially interesting given that findings indicate Chinese children academically outperform their American counterparts (Stigler et al.,1982). Secondly, it was suggested that unlike American society which is characterised by a highly individualistic orientation, Chinese culture fosters a collectivist orientation with family and community highly important social units. A factor analysis of items on the PCSC identified six factors for the Chinese children as oppose to Harter's four-factor solution (Stigler et al.,1985). Consequently, it was concluded that the specific self-evaluations responsible for enhancing global self-esteem amongst Chinese children may be different to those for American children. Unfortunately, Stigler et al. (1985) combined data for boys and girls and, therefore, overlooked potential gender differences and influences. However, the study did highlight three general weaknesses of questionnaires: (1) item-statements focus on particular domains/factors that may or may not be specifically relevant to the responding subjects, (2) important domains/factors to

some subjects may not be represented in the questionnaire and therefore remain untapped, and (3) subjects, particularly from different cultures, may choose different ways of interpreting item-statements.

Given these 'constraints', it is not surprising that findings for SES, ethnicity and self-esteem are inconclusive. Some studies report higher self-esteem with higher SES (Coopersmith,1967; Kohr et al.,1988; Osborne & LeGette,1982; Rosenberg, 1965), whilst others have found higher self-esteem associated with low SES (Soares & Soares,1969; Trowbridge,1972). It is, however, noteworthy that whilst these studies report statistically significant relationships or differences, these appear to be partly due to large sample sizes. Whether findings represent 'meaningful' associations or disparities is open to interpretation.

Similar conflict is evident amongst the findings for race and ethnicity. Some studies report significantly higher self-perceptions amongst Black children in comparison with White peers (Mboya,1994; Trowbridge,1972), whilst others report lower self-perceptions amongst Black pupils (Bagley, Mallick, & Verma,1979; Bagley, Verma, & Mallick,1982; Dukes & Martinez,1994; Osborne & LeGette,1982). Kohr et al. (1988) found developmental variations, with Black students recording lower self-concepts than White students at grade five (approximately eleven years old) and higher self-concepts at school grade eleven (approximately seventeen years old). With respect to other ethnic comparisons, Bagley et al. (1979) report no significant differences in self-esteem between Asian pupils and 'English' pupils, and, in this instance, it is assumed 'English' refers to 'White' Other investigations

show little or no evidence to suggest that SES, race or ethnicity significantly influence global or domain specific self-perceptions (Crain & Bracken,1994; Hirsch & Rapkin,1987). Rosenberg (1981) suggests research shows little association between SES, race and self-esteem amongst children because these statuses are ascribed rather than achieved. Indeed, even in situations where status is acquired (e.g., SES for the adult, or student academic performance) and relationships with self-esteem are positive, they are not necessarily significant (Rosenberg,1981).

Few investigations have integrated SES, race and ethnicity in the study of self-concept. Nevertheless, some pertinent findings are apparent. Low self-esteem, for example, has been found to be associated with low SES for both Blacks and Whites (Osborne & LeGette,1982). Indeed, Bracken (1996) draws attention to the variety and complexity of the social contexts from which self-concept develops, and notes that research suggests that little difference exists between the self-concepts of Blacks and Whites when SES is taken into account.

Giving further consideration to complex social contexts, Mboya (1994) studied Black and White South African adolescents (n = 1128) amidst the political, social, cultural, and economic transformations following the fall of apartheid. In these circumstances, it is inevitable that some subtle, as well as radical, societal changes will unfold both within and across cultures. New status, opportunities and experiences may be emerging, all of which influence frames of reference and self-perceptions. Of interest, Mboya (1994) reported higher global self-concepts amongst Black adolescents, although these were accompanied by significantly

lower physical self-perceptions. No explanations were forwarded for these differences and, of note, no account was taken of SES. If these findings are representative of a national trend, it may be speculated that with improved and increased access for Black South African children to exercise facilities, athletic clubs and sporting events, differences in physical self-concepts may reduce, or even be reversed. Indeed, Crain and Bracken (1994) report significantly higher global *and* physical self-concepts amongst Black American adolescents in comparison with White and Hispanic counterparts. Nevertheless, the extent to which ethnic minority children develop self-perceptions according to the values, standards and beliefs of their own cultural group, and how much these are influenced by the majority culture, remains unclear. Hattie and Marsh (1996) extend this further and note,

> It may be that there are critical information-processing competencies that bias, select, and retain information and affections about self, and these may be different depending on the level of self-concept and on the sources developing these biases (e.g., cultural and social sources). (Hattie & Marsh, 1996, p.423).

Despite the apparent discord amongst the findings and complexity of the interactions, the potential influence of SES, age, race, and ethnicity on global and domain-specific aspects of self-concept is widely recognised. Craine and Bracken (1994) suggest that to further understand self-concept, demographics should be at the heart of research design, rather than on the periphery as tends to be the case. In particular, they highlight a growing awareness in the United States of the

implications of cultural diversity:

> .....an increased appreciation of multiculturalism in this country has highlighted the necessity of studying whether children's self-concepts vary as a function of their racial/ethnic backgrounds. (Crain & Bracken, 1994, p.500).

Hattie and Marsh (1996) also stress the significance of cultural terms of reference. They, like Fox (1992) and Stigler et. al.(1985), contrast individualistic and collectivist cultures, and illustrate how different cultural emphasis ('private self 'or 'group self ') may influence interpretations and cognitions of self. As previously reported, differences exist in global and specific self-perceptions of American (individualistic) and Chinese (collectivist) adolescents which appear to be culturally related (Stigler et al.,1985). Indeed, Bagley et al. (1982) cite the interpretations of Triandis (1976) and suggest:

> ....it is unwise to conclude that one ethnic group has 'poorer' self-esteem that another ethnic group. Self-esteem, as part of a more complex identity structure, has different grounding and different meanings in different ethnic groups. In a pluralistic framework of society, different ethnic groups have different psychological orientations; these have to be mutually understood and tolerated for successful, plural multiculturalism. (Bagley et al.,1982, p.225)

This section has highlighted differences in children's self-esteem due partly to SES, race and ethnicity. Findings should, however, be interpreted with caution. It is conceivable, for example, that the social conditions, standards, and influences affecting ethnic groups in the UK vary considerably to those operating in the other countries such as the USA, Australia and South Africa. In addition, where differences between groups are reported, it is necessary to determine whether such disparities are merely statistical, or whether they have profound practical implications. Where large samples are investigated, statistical significance

is more easily demonstrated, and this leads Crain and Bracken (1994) to conclude that, "Self-concept appears to be a construct that is influenced very little by demographic characteristics of an individual," (p.496). Nonetheless, further consideration of such features is necessary if findings are to be more clearly interpreted and understood.

The following section extends the discussion to consider the influence of SES, race and ethnicity on children's attitudes, physical self-perceptions, and performance in physical education.

2.3.4 SES, RACE, ETHNICITY & PHYSICAL EDUCATION

The review so far has considered some of the implications of SES, race and ethnicity during childhood. This section focuses specifically on their association with physical education. To complement the discussion, sources pertaining to youth sport have also been included. Although Biddle (1993) suggests that aspects of culture, race and ethnicity are often overlooked in sport related research, the inclusion of these sources is intended to provide a broader context, and also enrich understanding of the importance of the issues at the age of secondary school transfer. Therefore, of particular interest in this section is whether SES, race or ethnicity account for differences in childrens' levels of participation, physical self-perceptions, and attitudes towards physical education.

(i) SES & Participation in Sport & Exercise

Shropshire and Carroll (1997) provide an overview of the evidence associating SES and sports participation in Britain. They cite several studies which suggest that adults and older adolescents from higher social classes participate more regularly in sports. However, findings from their own study for final year primary school pupils (n = 924) revealed that SES did not explain differences in children's participation in physical activity outside of school. However, to put this finding into context, several limitations of Shropshire and Carroll's analyses need to be considered. Firstly, SES was determined by free school meal eligibility, and consequently a relatively small number of eligible pupils (n = 78) formed the 'socially deprived' subgroup. This method of determining SES relies on criteria adopted for particular use in educational settings, and it's suitability and effectiveness as an indicator of social deprivation is unknown (Shuttleworth,1995). It is feasible that alternative methods (e.g., taking account of parents occupations, levels of education, etc.) may have produced different results. Secondly, data for boys and girls were combined for all analyses, possibly resulting in the concealment of important gender issues. Thirdly, children were asked to self-report how many times they participated in sport during the previous week, for how long, and in which activities, and this personal recall method may encourage data inaccuracies particularly with preadolescents. Fourthly, and highlighted by Shropshire and Carroll themselves, the lack of association between SES and participation levels may be explained by the tendency for children of this age to engage in more informal physical activity (e.g., playing at the park) than in sport settings (e.g.,clubs

and leisure centres) which require financial support (game fee, admission charge, etc.). As the tendency towards more formal sporting habits emerge, adolescents from low-income families may have more limited access to some out of school physical activities and, under such circumstances, a stronger association between SES and participation may be expected.

(ii) SES, Perceived Physical Competence & Attitudes To Physical Education.

Little consideration, to date, appears to have been given to SES and physical self-perceptions. Perhaps one reason for this is the relatively recent development of multidimensional self-concept scales which incorporate a physical dimension. Indeed, Keith and Bracken's (1996) evaluation of self-concept instrumentation (including several multidimensional scales) reveals that few manuals report the SES of subject samples. Similarly, related studies rarely stipulate SES (Craine & Bracken,1994), or where they do, there is a tendency to aggregate information about subjects' backgrounds (e.g., middle-class or upper-middle-class). This often results in no inclusion of SES in the analyses. Mboya's (1994) study is a case in point. He studied Black South African adolescents from, "... mostly poor and economically deprived working-class communities,"(p.164) and White adolescents from, ".. mostly middle-class communities,"(p.165). However, no formal measurement of SES was recorded, nor were implications of social background discussed. Therefore, whilst a higher mean for global self-concept and a lower mean for physical self-perception were reported amongst Blacks, the extent to which these

may be accounted for by SES, or by the interaction of SES and race, were not considered.

Similarly lacking is evidence of the association between SES and attitudes to physical education. Perhaps this aspect has been under researched since responses to physical education appear almost universally positive particularly amongst pre-adolescent and adolescent males (H.M.I,1991; Jones,1988; McIntosh,1988). Adolescent girls' attitudes to physical education appear more variable (Alston, 1985; Howarth & Head,1988; Scott & West,1990) and further research in this area may reveal differences influenced by SES.

Children of low SES and the role of physical education are the subject of Hellison's (1990) discussion. He notes that American youngsters who are particularly predisposed to delinquency, gang membership, teenage pregnancy and drug abuse, "... are disproportionately represented among the urban poor. In many city neighborhoods and housing projects, it is difficult to escape the influence of a variety of at-risk behaviors and values," (Hellison,1990, p.37). Given the wide-spread popularity of sport amongst this age group, Hellison provides a model of teaching physical education which illustrates how sport and exercise may help such at-risk youngsters. In brief, the basis of the rationale for the model is develop-ment of personal and social responsibility, and this is encouraged, "..through a process of awareness, experience, decision-making, and self-reflection," (p.38). Less emphasis is placed on 'winning' and motor development, and more is placed on participation, independence, and respect and caring for others. Whilst the

enormity and complexity of the problem of disadvantaged and at-risk youngsters was recognised, as was the doubtless influence of political, economic and social factors, Hellison (1990) suggests such an approach to teaching physical education may support other projects designed to particularly assist these children.

(iii) Race, Ethnicity, & Attitudes To Physical Education & Sport.

Figueroa (1993) highlights that attitudes towards physical education, sport and other leisure activities are likely to vary between cultures:

> One can expect to find differences among school children in Britain today in, for instance, cultural forms of physical expression, ideas about desirable behaviour for males and females, and orientation generally towards exercise, sport and leisure. (Figueroa,1993, p.94).

Indeed, Tannehill and Zakrajsek's (1993) survey of American middle school and high school students provides some insight into the attitudes to physical education of a multicultural sample of preadolescent and adolescent youngsters. Differences in likes/dislikes, perceptions of importance, values, and positive and negative experiences of physical education were reported amongst the Asian American (n = 30), African American (n = 35), Hispanic American (n = 179) and Anglo American (n = 113) students, although it was concluded that dissensions were not remarkable. Moreover, given the sampling imbalances favouring American Hispanics (49% of total sample) and female students (76% of total sample), it is unlikely that any conclusions can be generalised, even amongst the American population. Also of relevance, SES was not reported and, as a consequence, findings could have been compounded by cultural/SES interactions.

In the British context, Fleming (1995) examined attitudes towards sport and physical education of pupils (n = 1000) at one secondary school in South-East England, and particularly focused on the school's South Asian male population (n = 56). Although these pupils were at school in North London, it was emphasised that their perceptions were not only influenced by contemporary British culture but also traditional culture:

> ....sport in the Indian sub-continent is an elitist, male-dominated, urban institutionalised phenomenon that has been significantly influenced by the legacy of the Raj; and it is characterised by class, caste, ethnic, and gender inequality..... It is these influences that impact on the lives of South Asians living in Britain. Their attitudes and perceptions are fundamentally shaped by their experiences of sport in the traditional culture of their ethnic origin, and by those of their parents and grandparents. (Fleming,1995, p.19)

It is, nonetheless, difficult to determine the respective influence of modern or traditional culture on sporting interest or participation. It may be argued that over a period of time, as the British-born South Asian population rises, the relative influence of traditional culture may wane. This is not, however, an inevitable consequence since it will clearly depend on tolerances and changes both within and outside the ethnic community. Indeed, Bagley et al.(1979) and Thomas (1984) highlight the importance of the functioning social climate, and suggest that there can be a tendency for own-group rejection amongst racial groups, particularly Blacks, who experience derogatory stereotyping within a dominant White society.

In general, attitudes towards physical education and sport amongst boys of different cultures appear to be consistent and positive throughout childhood.

Nevertheless, the South Asian boys in Fleming's (1995) study appeared to attach greater importance to academic rather than physical achievement; a view previously endorsed by Parry and Parry (1991). Fleming concluded that for many South Asians sport and physical education, "...is no more than a very peripheral interest," (p.125). Indeed, is it desirable for interest and involvement in sport and physical education amongst children to be any more than peripheral? Harris (1991) and Carrington (1986) suggest there is evidence that Afro-Caribbeans may attach greater significance to sport,

> ..many young blacks will look upon sport as an alternative channel for the fulfilment of their achievement needs and a potential source of status, prestige and self-esteem. (Carrington,1986, p.16)

This statement is presented in the context of teacher expectations of Black children both academically and in sport. Certainly with respect to academic achievement, several British studies highlight the relative underachievement by West Indian children of all social classes (Craft & Craft,1983; Swann,1985), and African Caribbean young men in particular (Gillborn & Gipps,1996). There appears little doubt that teachers' expectations and perceptions of particular ethnic groups may considerably influence the school experiences and attitudes of such group members. Carrington and Wood (1983) suggest many West Indian children are 'encouraged' into sport by teachers who, (1) perceive they possess superior athletic potential, (2) perceive they are less capable academically, or (3) use physical education and sport as means of socially controlling non-conformist pupils. The consequences of such perceptions and actions are further explored in the following section.

(iv) Race, Ethnicity, & Participation in Physical Education & Sport.

Carrington and Wood's (1983) examination of the experiences of a small mixed-gender sample of Black and White pupils (n = 50) from a North Yorkshire secondary school revealed, "West Indian background pupils were 3.7% more likely to participate in extra-curricular sport than white pupils." Also, 92% of Black female participants were from the upper academic band, whilst more than two-thirds of Black male participants came from the lower academic band. These data indicate possible gender issues which could have been further explored through teacher interviews in order to ascertain the reasons for particular pupil selections. The data were also used to fuel a discussion about over-involvement in sport by West Indian children, and how this may potentially hinder academic progress. However, Carrington and Wood's (1983) study was small scale and, more specifically, didn't detail the level of involvement amongst the sample (i.e., how many practices/ matches per week) or consider out-of-school sporting commitments. Indeed, it begs the question: how much sporting involvement may be considered appropriate, and how much academically damaging?

In a later publication, Carrington (1986) speculates that orientation to sport among some Afro-Caribbeans is influenced by career opportunities. He cites the work of Harry Edwards who reports how Blacks have, "...unequal access to economic and cultural resources and power," (Carrington,1986, p.4), and restricted working and

educational opportunities. As a consequence,

> It may be the case that black males are more likely than their white or Asian working class counterparts to place a high value on sports participation, or to regard a career in sport as a stepping stone to social mobility (Carrington,1986, p.6).

Carrington (1986) further posits that this vision of upward social mobility through sport may derive due to perceptions amongst young Blacks that they are more vulnerable to unemployment than others of the working class. Clearly the lure of professional sport may arise for a variety of reasons, but Jarvie (1991) stresses that advancement in sport is harder for some than for others: " We might all be equal on the starting line, but the resources (political, economic and cultural) that people have and the hurdles that people have to leap to get there are inherently unequal," (Jarvie,1991, p.2). Indeed, Parry and Parry (1991) identify certain discriminatory practices which inhibit (or have inhibited) Black participation at the highest level. They suggest team selection is often influenced by 'centrality' where Black athletes hold positions or roles of peripheral importance, and 'stacking' where several players of ethnic origin compete for these marginal positions in the team. In addition, they note the continued absence of Black and Asian administrators/ managers in senior positions in sport. However, the extent to which this pattern reflects widespread and calculated exclusion, or personal choice amongst sports-men and sportswomen of different ethnic groups, is unclear.

According to Parry and Parry (1991): " There is a complex constellation of attitudes and beliefs towards sport in Western societies which are related to social class hierarchies and racial perceptions," (p.155). The contrasting perceptions of

different cultures to sport, physical activity, the body and concept of decency has received attention (Figuerao,1993). Indeed, Carroll and Hollinshead (1993) report that certain South Asian cultural beliefs profoundly influence sport participation, particularly amongst girls. They suggest that the 'revealing' nature of physical education clothing for girls conflicts with conventional practice amongst Muslims and Sikhs, where female modesty is at the heart of tradition. Benn (1996) notes that many Muslim females, educated in Britain, recall negative physical education experiences, and recollect feelings of, "public embarrassment and guilt at transgressing religious requirements," (p.11). Indeed, given that Islamic teaching denounces mixed gender education during adolescence (Fleming,1995), other physical education practices are also called into question. These include the need for same-sex teachers, discrete arrangements for showering, sensitivity in the teaching of swimming, and awareness of the exercise implications of fasting during the holy month of Ramadan. Carroll and Hollinshead (1993) also highlight extra-curricular activities as a potential source of conflict for Muslim children. They note that whilst many boys would like to remain after school, parental pressure to attend the Mosque, read the Koran, and study their religion often prohibits such opportunity. Additional 'restraints' appear to apply to Muslim girls:

> Their parents are particularly concerned about their daughters coming home from school and anywhere else by themselves, and about the development of social relationships with boys, both of which might damage the girls' reputation and their marriage prospects. (Carroll & Hollinshead,1993, p.69)

Siraj-Blatchford (1993) argues vehemently that such beliefs and traditions should not be interpreted as obstructive. Rather, schools seeking to address racial inequalities and operate equal opportunities should consult the community and

attempt to find solutions. Possibilities cited included rescheduling of events, arranging transport, and using chaperons. Clearly, how these and other culturally related issues are managed may seriously affect childrens' involvement, motivation, and self-perceptions in physical education, and school in general.

De Knop, Theeboom, Wittock and Martelaer (1996) provide further insight into the influence of Islamic culture on sporting attitudes and participation amongst Muslim girls. Although their interpretations are based upon research conducted in Belgium and the Netherlands, they suggest that situations and experiences are similar in other Western European countries. They reiterate previous findings that involvement in sport amongst Muslim girls in Western Europe is often restricted to physical education and school sport due to the influence of Islamic rules, but suggest that although this may appear limiting, "..the Koranic schools that exist in many Islamic countries do not include physical education as a subject," (De Knop, et al.,1996, p.153). Whilst participation in sport by Muslim girls in Islamic and Western societies may be considered low, De Knop et al. (1996) suggest many of these young women have positive attitudes towards sport and wish to enjoy greater opportunities of physical activity.

The influence of Islamic culture on sport participation is further illustrated by Fleming (1995). He notes that although evidence suggests that South Asian children are under-represented in organised sport (extra-curricular school teams and outside clubs), many partake in games and physical activities arranged by particular cultural or religious groups. Siraj-Blatchford (1993) suggests that

schools wishing to support Muslim childrens' involvement in sport may choose to collaborate with a Mosque's recreational programme rather than appear to compete with it.

According to Carrington (1986) responses of secondary school pupils to sport not only vary according to ethnicity, but also social class, age, gender and academic level. When ethnicity is ignored, participation levels in extra-curricular sport are reported as generally greater amongst pupils of higher academic standing, and amongst middle class pupils (Carrington,1986). In the broader context, Lamb et al. (1991) posit that sport in this country is dominated by young, middle class men. Nevertheless, Fleming (1995) suggests interpretations which consider particular characteristics in isolation (e.g., socioeconomic status) may be distorted and unrepresentative:

> The example of swimming illustrates the point. Participation amongst young people from unemployed families was disproportionately low, and an analysis based solely on class might lead to the conclusion that social disadvantage prevents participation in swimming as a leisure or sporting activity; and that links might exist between poverty and paying for admission to swimming pools. (Fleming,1995, p.116).

Whilst it was acknowledged that this may be part of the explanation, because a large proportion of respondents in Fleming's sample were from South Asian families is also significant. As previously outlined in this review, Muslim traditions and beliefs may particularly influence participation in activities where the body is exposed, and these may especially shape decisions about swimming amongst these youths. Indeed, in general, Fleming's findings indicated similar patterns of sport participation amongst South Asian pupils as other ethno-cultural groups.

(v) Race, Ethnicity, & Perceived Physical Competence.

At present, research regarding perceived physical competence, SES, race, and ethnicity is limited, particularly in Britain. As a consequence, the importance of physical self-perceptions for children of all backgrounds is not clearly understood. However, intercultural differences with respect to physical self-perceptions are likely. According to Crain (1996,p.408), "...values and standards placed on physical appearance and ability may vary from culture to culture, and may be much more salient in one group than in another." Indeed Crain further suggests:

> Physical self-concept is probably the most "external" domain typically measured with multidimensional instruments, in that people "are" their physical bodies and constantly receive direct and indirect feedback about their own and others' physical condition (Bracken,1992). Because it is so easily "seen" and responded to by the individual and by others, and because major racial groups in this country each have distinguishable physical characteristics, physical self-concept (at least in terms of appearance) may accrue differential weighting in terms of importance for children and adolescents as a function of race. (Crain,1996, p.408)

The extent to which differences in children's physical self-perceptions may be attributed to cultural influences, societal restrictions and/or effective/ineffective physical education experiences, is speculative. Nevertheless, advocates of physical education suggest that the physical education process may help establish self-esteem through increased self-confidence (DES,1991). This assumes appropriateness of experiences, and Fleming (1995, p.129) proposes, ".... if the curricula are not relevant, and have no meaning for the respective minority groups, then it is hard to imagine how enhancement of self image might occur." Much

hinges, it appears, on the implementation of the National Curriculum for physical education. In this regard, Evans and Davies (1993) appear sceptical:

> Whether the arrival of a National Curriculum for PE represents programme advance in the direction of equality of *opportunity* in the UK remains to be seen. Its continued stress on assessment, 'performance', and games may continue to disbenefit certain categories of child...(Evans & Davies,1993, p.18)

It is evident that a child's demographic profile may affect their physical education and sport experiences and, in combination with peer group standards and values, influence the development of physical self-perceptions during childhood and adolescence. Further analysis is necessary to establish associations between children's self-perceptions in physical education and (1) social and cultural influences, and (2) particular teaching practices and experiences determined by the national curriculum.

2.4 LITERATURE SUMMARY

Transfer studies indicate that most children appear to cope and benefit from the transition to secondary school. However, a sizeable proportion of children appear to experience difficulties of adjustment (Murdoch,1966; Youngman & Lunzer, 1977). These difficulties may be temporary and accompany short term distress and retarded progress (Galton & Willcocks,1983) or be the foundations for more permanent school disaffection and underachievement (Hargreaves,1984). The size of the problem is, however, unclear. Murdoch (1966) reports that approximately sixty percent of children (n = 552) appeared to experience early difficulties adjusting to secondary school. Other studies have indicated that around

ten percent of children have problems of adjustment which last at least two terms at secondary school (Keys et al.,1995; Runham,1986; Youngman & Lunzer,1977).

One reason for the variation in findings appears to be the range of instruments and methods used to identify pupils' adjustment after transfer. Whilst academic progress and behaviour have been used as indicators, monitoring pupils' levels of anxiety and self-esteem has provided important insight into the impact of transfer on children's psychological development. Findings generally indicate a short-term increase in anxiety levels across transfer which subsides during the first year of secondary school for most children (Alston,1985; Galton & Willcocks; Youngman & Lunzer,1977). With respect to self-ratings, some studies conclude that school transfer appears to disturb and reduce the self-esteem of many children (Simmons et al.,1973; Youngman & Lunzer,1977) whilst other research indicates a general increase or no change in self-esteem after transfer (Alban Metcalfe,1981; Stoll,1987).

Although findings for the relationships amongst self-esteem, stability of self-image and anxiety are limited, they appear consistent for children at the age of secondary school transfer. Youngman and Lunzer (1977) report negative correlations between self-concept and anxiety before and after transfer, whilst Simmons et al. (1973) associate low self-esteem with low stability of self-image for similar aged American pupils. Rosenberg (1965) also links the two self-ratings, and associates low measures on each with high anxiety among American adolescents. Further examination of these relationships is necessary for British subjects.

Despite some attention to curriculum related issues at transfer, e.g., curriculum continuity (Pyatt,1990; Stillman & Maychell,1984) the specific role that some school subjects may play in the adjustment process has not received attention. Indeed, physical education is one curriculum subject which appears to engender positive attitudes amongst most pupils across the primary-to-secondary school divide (McIntosh,1988; Scott & West, 1990). In addition, research indicates a positive association between children's motor ability and self-esteem (Biddulph, 1954; Chesson et al.,1991) and the significant contribution of physical self-perceptions to self-esteem for children at the age of secondary transfer (Fox & Biddle,1988; Harter,1982; Sonstroem, 1978). Moreover, Marsh (1990) identified physical education as one of four higher-order factors necessary to explain relations between self-concepts in fifteen school curriculum subjects.

The associations between socioeconomic status, race and ethnicity and school adjustment, psychological status, and sport related characteristics have received attention. However, the empirical evidence is far from conclusive. Some transfer studies, for example, suggest poor secondary school adjustment is more prevalent amongst pupils of lower social classes (Atherley,1990; Cox,1978; Nisbet & Entwistle,1969; Stoll, 1987), whilst others report SES is not a significant influence (Kohr et al.,1988; Osborne & LeGette, 1982; Simmons et al.,1973; Simmons et. al.,1987). With regard to ethnicity, Stoll (1987) reported no significant relationship between ethnic origin and secondary school adjustment. Indeed, Short (1992) contends that Black, Asian and White children tend to think and feel the same way about transfer to secondary school. Nevertheless, Gillborn and Gipps (1996) and

Nisbet and Entwistle (1969) conclude that SES, irrespective of ethnic origin, appears to become increasingly important at secondary school, with higher academic achievement more strongly associated with economic advantage.

With respect to levels of participation, attitudes, and self-perceptions in physical education and sport, all may be expected to vary according to the opportunities, values, standards, customs and beliefs of the social/cultural group. Whilst SES does not appear to account for differences in participation in sport outside of school during childhood (Shropshire & Carroll,1997), some research has indicated generally higher levels of involvement amongst particular ethnic groups, e.g., Afro-Caribbean pupils (Carrington & Wood,1983), and lower levels amongst Asian youngsters, particularly girls (Carroll & Hollinshead,1993; De Knop et al.,1996; Fleming,1995). However, attitudes towards physical education and sport amongst boys of different cultures appear to be generally consistent and positive throughout childhood (Carrington,1986). In sum, despite recognition of the potential influence of SES, race, and ethnicity on pupils' attitudes towards physical education, physical self-perceptions, global self-esteem, and secondary school adjustment, research into the variations amongst children from different social and ethnic groups is inconclusive, and no clear pattern emerges.

2.5 THE PRESENT STUDY

This literature review has highlighted the research designs, methods, and findings of previous studies which have considered secondary school transfer and pupil

adjustment. In addition, it has identified specific aspects of physical education (e.g., motor performance and attitudes towards physical education) of relevance to children at the age of transfer. In particular, section 2.1.3.(v) identified previous research which has considered the interface between children's global self-esteem and self-evaluations in a range of different domains, including self-perceptions in the school setting. Of note, Shavelson et al.(1976) examined the potential for children's self-perceptions in specific school subject areas to influence global self-concept. In addition, further conceptualisation of self-concept (Shavelson & Bolus,1982; Marsh & Shavelson,1985) and on-going self-concept research (e.g., Marsh,1990; Marsh,1992) continues to stress the importance of children's self-perceptions in school achievement situations particularly during childhood and early adolescence. Indeed, the individual or combined affect of these self-perceptions on cognitive, psychological and sociological processes are well documented (Evans & Roberts, 1987; Harter,1983; Marsh et al.,1988; Marsh & Parker,1984). Of interest, affect does not appear confined to children's academic attitudes, perceptions and performance. Sonstroem (1978), Fox & Biddle (1988), Maeland (1992), and Marsh & Peart (1988) all highlight the important contribution of attitudes towards physical activity, participation in physical activity, physical self-perceptions, and athletic performance to psychological and sociological development during childhood.

Given the academic, psychological and sociological challenges created by compulsory secondary school transfer, it is likely that particular attitudes, achievements, and self-perceptions of achievement held by children may be

especially important during adjustment to secondary school. This is a developmental period when the establishment of positive attitudes and self-esteem may have long term significance (Fox,1988a; Horn & Hasbrook,1987). More specifically, since the move to secondary school appears to detrimentally affect some pupils' attitudes to school (Jennings & Hargreaves,1981) and global self-esteem (Simmons et al.,1973; Youngman & Lunzer,1977), perhaps attitudes, self-perceptions, and performance in specific school subjects may be particularly meaningful. To date, the significance of children's attitudes to physical education, motor performance, and self-perceptions of performance in physical education have not been determined at the age of secondary school transfer. Further study is necessary, and through such study the specific role of physical education before and during secondary school transfer may be more clearly defined.

2.5.1 STATEMENT OF THE PROBLEM

To explore the significance of boys' attitudes to physical education, motor performance, and physical education self-esteem (PESE) at the age of secondary school transfer, and consider the role of physical education during pupils' preparation for school transfer and adjustment to secondary school.

2.5.2 AIMS OF THE STUDY

1. To measure selected physical education, psychological, and anthropometric characteristics of a sample of primary schoolboys in their final term before school transfer, and a sample of secondary schoolboys during their first year after transfer (Cross-sectional survey).

2. To measure the selected characteristics of a sample of schoolboys across school transfer, i.e., assess the boys during their final term at primary school before school transfer, and on two occasions during their first year after transfer (longitudinal survey).

3. To assess secondary school adjustment, and analyse particular groups of schoolboys (i.e., poor adjusters to secondary school, high and low motor performers, boys with high and low self-perceptions in physical education).

4. To develop an appropriate scale to measure physical education self-esteem (PESE) amongst British children at the age of secondary school transfer.

5. To test a series of hypotheses which predict the differences and relationships between the selected physical education, psychological, and anthropometric characteristics of schoolboys before and after the transfer from primary to secondary school.

6. In light of the findings, analyse and evaluate the National Curriculum for physical education.

2.5.3 FORMULATION OF HYPOTHESES

On the basis of the theoretical contentions and empirical evidence of previous research, Figure 2 presents an education-orientated model of secondary school adjustment. This hypothesizes interactions between subject specific attitudes, performances, and self-perceptions, and global self-esteem. The schematic illustrates how a range of influences (e.g., educational level, quality of teaching, school transfer, etc.) may affect a child's attitude towards, and performance in, particular school subjects, and how self-perceptions of competence will arise from these sources. There is potential, therefore, for the child's global self-esteem to be influenced by positive or negative self-perceptions of competence in each curriculum subject, as well as via other influences. Rosenberg (1965) and Harter (1983), amongst others, stress that self-esteem is not merely the balance between positive and negative self-perceptions; particular self-perceptions may be more or

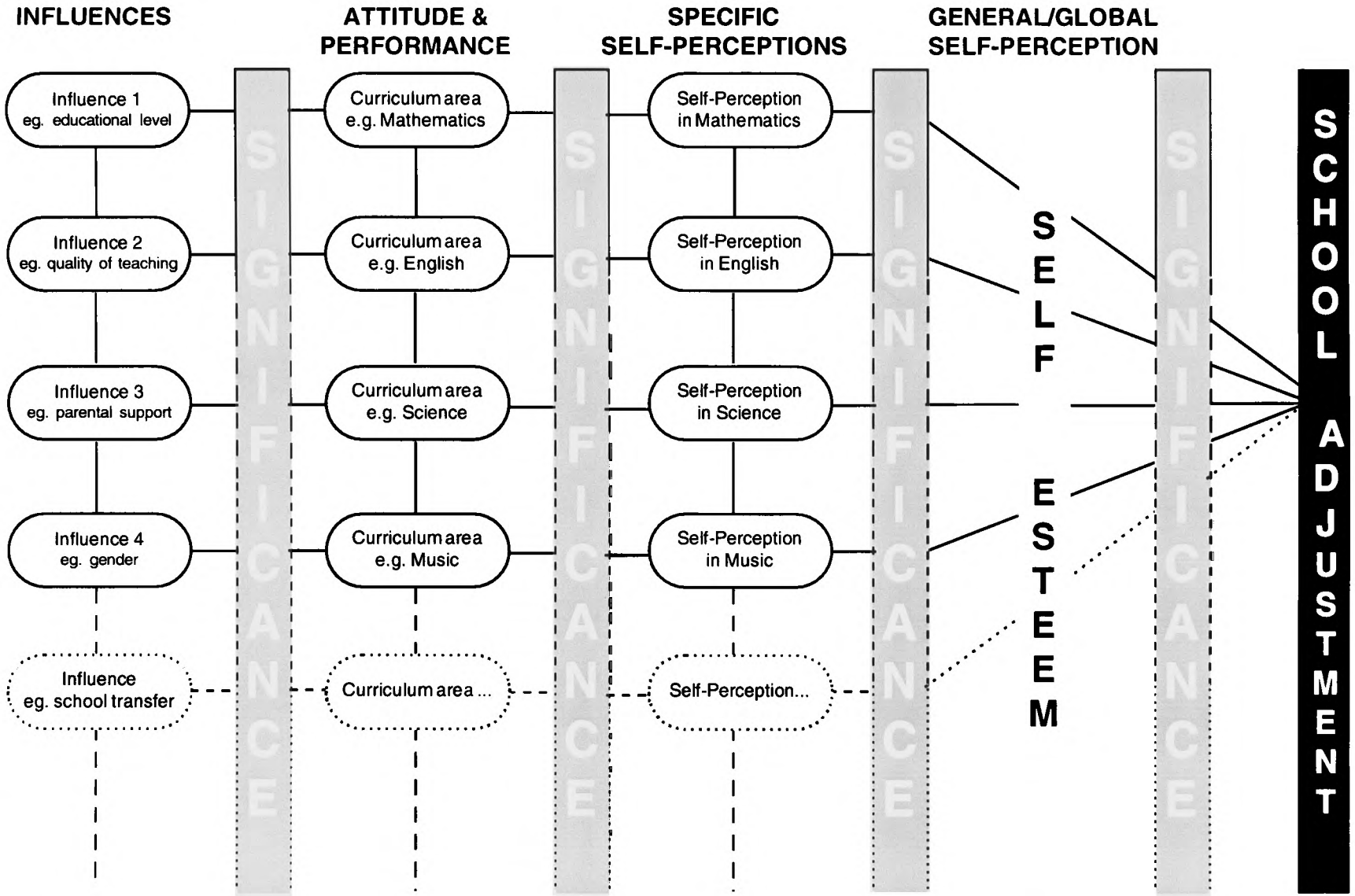

Figure 2 Schematic to Show Hypothesised Links Between School Curriculum Areas and School Adjustment.
NB. Links within and across domains are bi-directional.

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less important to the individual. To illustrate this point in relation to physical self-perceptions, Fox (1990) conceptualised 'importance' filters, and devised the Perceived Importance Profile (PIP). Drawing a conceptual parallel, Figure 2 includes 'significance' variables. It follows that a child's overall self-esteem and school adjustment may not be adversely affected by low competence and/or negative self-perceptions in a curriculum area which holds little significance for them. In contrast, low self-esteem and/or poor school adjustment may arise if a child highly values competence in a particular subject area but has low competence, or perceives themselves as inadequate, in that subject.

The literature review illustrated the importance of children's global self-esteem, physical self-perceptions, and motor performance during childhood and adolescence. As a consequence, Figure 3 presents a more detailed subject specific focus, and hypothesizes the contribution of physical education to school adjustment following transfer. Factors acknowledged as influences on attitude and performance in physical education are included, but the list is not exhaustive. Most are self-explanatory and have been discussed in the review of literature. Some, however, require further clarification. 'School Factors', as a generic term, may relate directly to the physical education provision (e.g., teacher qualities and characteristics, teaching methods, lesson content, and facilities and equipment), or to other less direct school influences (e.g., the child's educational level, progress in other subjects, peer groupings, general enjoyment of school, school ethos, etc).

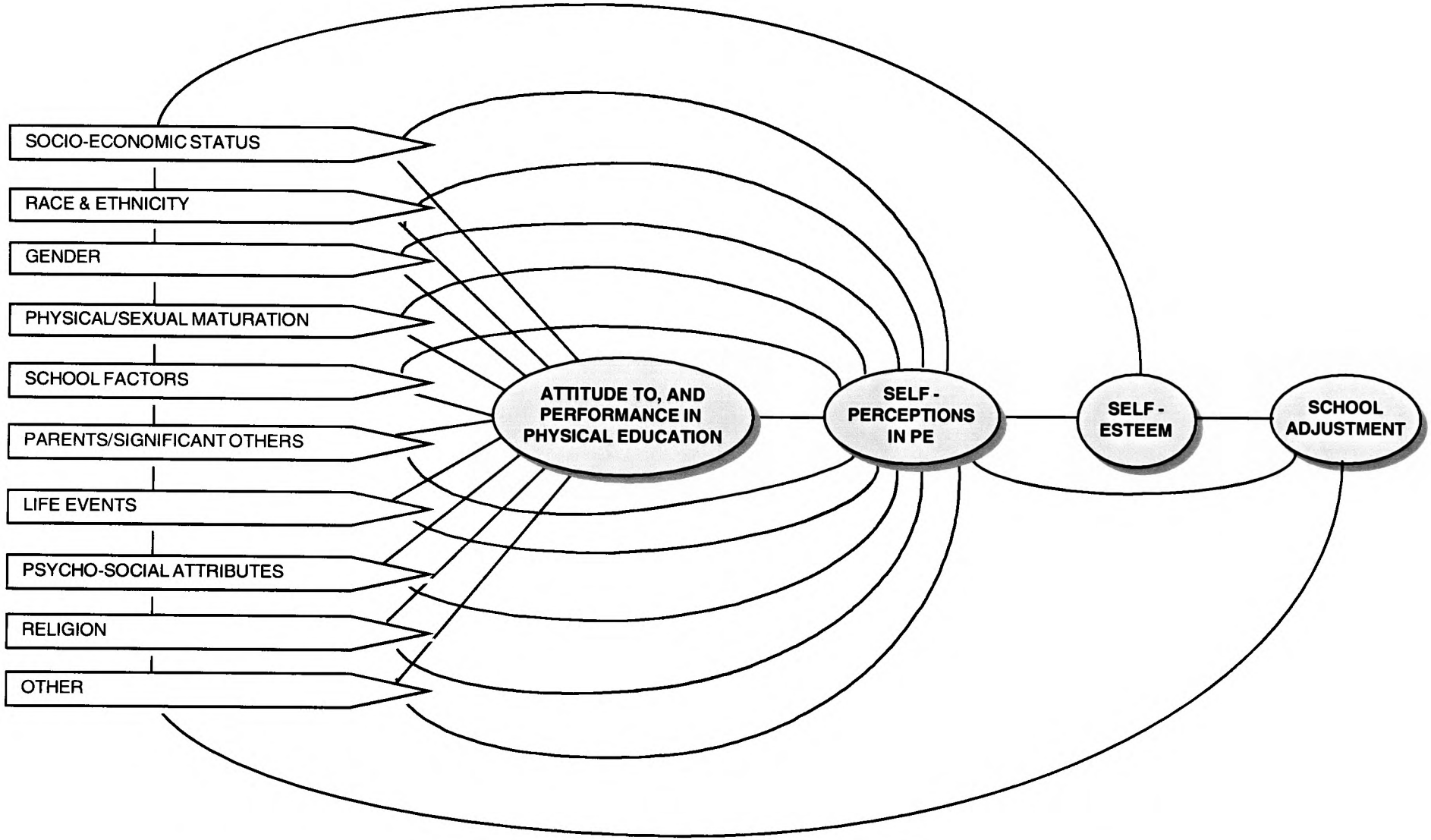

Figure 3 Schematic to Show Hypothesised Role of Physical Education Before and During School Transfer
NB. links within and across domains are bi-directional.

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'Life Events' may include related aspects (e.g., previous sport and exercise experiences) or broader issues of unknown influence, for example, school transfer, health (e.g., illness, injury, long term medical condition), family conflict, and bereavement. 'Psycho-Social Attributes' refers to the interaction of a range of psychological and sociological qualities which characterise an individual (e.g., nervous, aggressive, gregarious, leadership skills, etc), each of which may be influential. Figure 3 highlights a range of potential influences affecting children's attitude and performance in physical education. It is likely that these factors may also have some direct effect on physical education self-esteem, general self-esteem and school adjustment. It cannot be assumed that all influences identified in Figure 3 will affect each child, or affect them in the same way, or to the same degree. The assortment of factors, and their relevance, will differ between individuals. As a consequence, the 'significance' variables presented in Figure 2 should also be prominent in Figure 3 and have only been omitted for clarity.

On the basis of the literature review and these latter discussions, the following research hypotheses were formulated.[3]

I. Levels of global self-esteem and anxiety amongst boys are expected to differ across the primary-to-secondary school divide.

II During the first year at secondary school, mean levels of global self-esteem and stability of self-image are expected to rise and anxiety levels to fall as pupils familiarise themselves with secondary schooling.

[3] Note: These are not null hypotheses used to obtain the significance levels

III Global self-esteem is expected to correlate positively with stability of self-image, and negatively with anxiety. Also, boys who are more sure of themselves (i.e, report higher stability of self-image) are expected to report lower levels of anxiety.

IV Levels of motor performance are expected to increase across the age range.

V The new and extended peergroup at secondary school is likely to cause children to self-reference according to a different framework. As a consequence, lower self-perceptions of performance in physical education (Physical Education Self-Esteem) are expected after transfer.

VI Attitudes to physical education will be positive amongst most final year primary schoolboys and first year secondary schoolboys.

VII. Relationships amongst the physical education measures (attitudes to physical education, motor performance, and physical education self-esteem) will be positive and significant before and after school transfer.

VIII. Across transfer, attitudes to physical education, motor performance, and physical education self-esteem will be positively related to global self-esteem and stability of self-image, and negatively related to anxiety.

IX. Age and physical growth are significant factors during school transfer. Boys who are older, taller or have lower skinfold totals are expected to record significantly higher motor performance and physical education self-esteem than their peers. They are also predicted to demonstrate different psychological profiles (higher self-esteem and stability of self-image, and lower anxiety).

X. Relationships amongst the physical education and psychological characteristics will be influenced by age and growth at each transfer stage.

XI. Boys exhibiting poor adjustment to secondary school will have concomitant negative psychological and physical education characteristics, i.e., boys categorised as poorly adjusted are predicted to (1) be less sure of themselves, (2) have significantly lower global self-esteem, (3) have higher levels of anxiety, (4) have lower motor performance and physical education self-esteem, and (5) have less positive attitudes to physical education than their secondary school colleagues.

XII. Primary and secondary schoolboys who record lower levels of motor performance, or lower physical education self-esteem will have less positive attitudes to physical education, lower global self-esteem and stability of self-image, and higher levels of anxiety than the rest of the their peergroup.

2.6 SIGNIFICANCE OF THE STUDY

The need to identify pupils at risk before and during school transfer, and consider ways to help children adjust to secondary school, is clearly evident. To date, emphasis has been placed on variations in children's academic achievements across transfer. Marsh (1987,p.292) suggests:

> There is an important need for research on what actually happens when students move from one academic setting to a new academic setting where the average ability level is quite different, and on the individual characteristics that may determine how students will react to this stressful transition.

To date, children's achievements and perceptions of achievement in physical education have not been systematically examined during school transfer, and greater understanding of the relationships amongst these attributes and the psychological characteristics associated with secondary school adjustment is necessary.

Unlike other school transfer investigations, this study set out to explore the significance of schoolboys' attitudes towards physical education, self-perceptions in physical education, and levels of motor performance during the transition to secondary school. Analysing changes in these characteristics, and their inter-relations with self-esteem and anxiety, would enhance understanding of children at the age of secondary school transfer, and provide insight into the importance of physical education at this crucial educational watershed. Such knowledge could benefit educators, parents and future transferees, and may have implications for the school curriculum as well as professional training and development.

CHAPTER THREE

METHODS

Introduction

This chapter details the process of investigation in the study. It presents the methodology and includes information about the variables, instruments, subject sample, and procedures. The purpose of the chapter is principally threefold: (1) to present the research plan, (2) to present the investigative procedures (indicative of the collection of valid and reliable data), and (3) to provide sufficient details to enable replication of the study.

To open the chapter, the design of the transfer study is presented with details of the cross-sectional and longitudinal surveys. This is followed by information about the pilot study, the sampling methods and subjects, and the schedule of testing. Particular consideration is also given to the instruments and testing procedures, including a justification for each of the selected tests and scales. Finally, the data analysis procedures are presented.

3.1 DESIGN OF THE TRANSFER STUDY

Given the stated aims and purposes of this investigation (section 2.5.2), an 'experimental-type' design (DePoy & Gitlin,1994) was employed. In this way, the intention to measure, explain, and predict associations and differences between selected characteristics of children during school transfer could be fulfilled. The review of literature presented the related theoretical concepts and empirical evidence from previous research and enabled the formulation of a set of hypotheses

(section 2.5.3). This set established the framework for the current investigation, and influenced the procedures and data gathering methods. The following section specifically considers the operational aspects of the research design.

A review of related research revealed two distinct experimental-type designs employed to survey children during the transition to secondary school. Some studies have analysed pupils only after transfer, choosing to focus upon their personal characteristics upon arriving at secondary school (Youngman & Lunzer,1977), or their adjustment to the new school (Spelman,1979). Other studies have recorded longitudinal data before and after school transfer, and provide evidence of the impact of the transition to secondary school (Alston,1988; Dowling,1980; Galton & Willcocks,1983; Keys et al.,1995). The present investigation incorporated both a cross-sectional study of primary and secondary schoolboys, and a longitudinal study of schoolboys across the primary-to-secondary divide. The decision to use each survey method was made on two counts. Firstly, the dual survey approach would help substantiate findings for boys during school transfer. Secondly, each survey method has distinct advantages for the present investigation. For example, the longitudinal study enabled the characteristics of the same pupils to be analysed and compared before and after transfer. The boys in this sample were living the transition, and personal changes in performance or attitude during school transfer could be sequentially monitored. Indeed, this method would provide more information about maturational changes amongst the sample. However, these boys attended four different secondary schools and were, therefore, exposed to varying experiences. These experiences

could not be controlled, or their influence quantified, and the variations would need to be considered when interpreting the findings. In contrast, the secondary school sample, which formed part of the cross-sectional study, were all experiencing the same secondary school provision. Their attitudes and opinions were largely evaluations of similar school encounters. However, no pre-transfer data were available for these pupils. As a consequence, in order to consider possible differences across transfer, the post-transfer data for the secondary school pupils were compared with pre-transfer data from an independent primary school sample.

To summarise, the longitudinal study followed twenty-five boys from their primary schools through to their respective secondary schools; the cross-sectional study examined a pre-transfer sample of boys (n = 50) in their final term at primary school, and a post-transfer sample of boys (n = 107) during their first year at secondary school.

3.2 THE PILOT STUDY

During the preparatory stage of the study, a range of tests, techniques and methods were discussed with researchers and primary and secondary school teachers. Consultations resulted in the piloting of selected psychological scales, anthropometric measures, and motor performance and fitness tests on a sample of primary schoolboys (n = 25). These took place over a three week period during July,1990. To complement the fitness assessment, children's activity patterns were monitored during physical education classes via heart rate analysis (Sportstester

3000 Telemetry System). It was considered that examination of activity patterns alongside psychological characteristics and motor and fitness measures may reveal important relationships which could have implications for physical education. However, analysis during physical education lessons revealed that most pupils recorded relatively low exercise heart rates (<130 beats/min), indicative of low levels of activity. Since this was so, it appeared necessary to monitor daily or weekly heart rate responses in order to obtain a valid indication of the variations in children's activity levels and patterns. With respect to children's fitness levels, it was recognised that a range of tasks would need to be administered in order to evaluate the various components of physical fitness. Although a number of appropriate tests were piloted, it became apparent that the amount of practical testing required to measure both motor performance and physical fitness was excessive. After due consideration, it was decided that this study would focus on children's motor performance and their perceptions of performance in physical education during school transfer, and fitness and activity patterns would not form part of the project.

Once the scope of the study had been established, further attention was directed towards the questionnaires. Although the selected scales/inventories were appropriate for the age group under consideration, discussions with school staff and pupils identified some minor ambiguities with respect to format and language. As a result, some questions were modified, and the changes are reported in section 3.4 ('instruments') later in this chapter. The presentation procedures for the motor performance tests were also scrutinised, particularly since it was discovered that

one child had used their 'weak' arm during a pilot test in order to imitate the technique presented in the demonstration.

3.3 SUBJECT SAMPLE

Several studies report marked gender differences within this age group for the variables under consideration (Evans & Roberts,1987; Fox et al.,1994; Stoll,1987; Scott & West,1990; Zaichkowsky et al.,1980). Consequently, the subject sample for this study was delimited to boys. Although it is recognised that analysis of boys and girls during transfer is necessary and would be of interest, this preliminary study of physical education, school transfer and adjustment did not intend to focus on gender related issues or comparisons.

With respect to the selection of the subject sample, a number of administrative, practical and operational considerations were taken into account. From the outset, it was recognised that the primary and secondary school samples needed to be sufficiently large to support the intended cross-sectional and longitudinal surveys, as well as cater for the almost inevitable subject 'drop-out' given the three stages of planned pupil monitoring (June pre-transfer, and November and June post-transfer). This sequential testing of pupils would also create a prolonged imposition on the participating schools, with the completion of two self-report questionnaires and five practical assessments taking place on three separate occasions. These would, by necessity, be undertaken during school time and on school premises. This intrusion on the children and their schools was not underestimated. After

consideration of the aforementioned factors, it was decided that one all-boys secondary school would provide suitable and sufficient post-transfer data for the cross-sectional study. As a consequence, the largest single-sex secondary school in one London borough was approached to participate in the study. The school anticipated a first year intake circa 120 boys for the year under consideration (September, 1991) and, importantly, agreed to assist for the duration of the study.

To provide sufficient *pre-transfer* data for the cross-sectional study, two primary schools from the same London Borough as the secondary school were selected. Historically, these schools were the two main 'feeders' to the appointed secondary school and, consequently, had the potential to provide enough boys for the longitudinal study. The pre-transfer sample, therefore, comprised of four class-room clusters of boys, two from each primary school. Informed consent (via correspondence from the schools' Headteachers) was received from the parents/ guardians of fifty boys (mean age = 11.32 ± 0.28 years) in their final term at primary school. These pupils provided pre-transfer data, not only for discrete analysis, but also for later comparison with the sample of first year secondary schoolboys.

Since pupils from two different primary schools combined to form the pre-transfer sample, a statistical analysis of data for the two groups was undertaken to ascertain any group differences. The findings of this analysis revealed that the means for each school group were not significantly different ($p<0.05$). In addition, although academic ability was not a subject of this investigation, similar non-significant

differences across all variables were found between boys preparing for selective and non-selective secondary education.

The sample of boys forming the longitudinal study was determined once secondary school destinations were known. Uncharacteristically, only six of the primary school sample were destined to attend the appointed secondary school in the investigation, and the rest were transferring to any one of thirteen local secondary schools. Due to difficulties accessing all of these pupils, and the likely variation of experiences within each school, the four schools receiving most of the original sample were selected. These provided twenty-five boys who formed the longitudinal study.

The socioeconomic status of the boys has not been recorded. Pupil details, in this regard, were not available from the participating schools. Whilst this lack of data was disappointing and potentially limits interpretation of findings, the principle focus of this investigation was exploration of general patterns of change in boys' psychological and physical education characteristics across transfer, and not specific social or ethnic group comparisons. Indeed, the literature review indicated consistency amongst boys of all backgrounds with regard to feelings about school transfer (Short,1992) and attitudes to physical education (Carrington,1986). Nevertheless, it is recognised that overlooking this demographic information limits the discussion of findings.

Although specific details about SES and ethnicity were not available, the selected secondary school and neighbouring primary schools schools in the study were located in the same outlying district of London (Bexley), and were situated, ".. in a residential area comprising predominately owner occupied housing," (secondary school's Ofsted Report, 1997). Whilst this background information suggests these may be considered middle-SES schools, the Ofsted Report noted that some pupils attending the secondary school travelled from outside of the immediate neighbourhood. It is, therefore, recognised that individual pupil SES may vary from this general school classification. With respect to racial mix, the vast majority of boys in the study were Caucasian. Ninety-four percent (n = 47) of the primary school sample of boys were classified in this way. Of the remainder, one was Black-Carribean and two were of South Asian origin. Ninety-nine percent (n =106) of the secondary schoolboys in the study were Caucasian. Given this, and the lack of other appropriate data, neither socioeconomic nor ethnic status have been considered in the analyses of pupils in this study.

3.4 INSTRUMENTS

Upon completion of the pilot study, the variables, instruments and methods for use in the investigation were finalised. These are summarised in Table 1.

Table 1. SUMMARY LIST OF VARIABLES

(a) Physical Education (P.E.) Measures

MOTOR PERFORMANCE.	Four physical tasks to assess pupils motor skills (Yuhasz,1967).
PHYSICAL EDUCATION SELF-ESTEEM	Nine questions to evaluate children's self-perceptions of performance in P.E.
ATTITUDE TO P.E.	Four questions assessing pupils' general liking for physical education.

(b) Psychological Measures

GLOBAL SELF-ESTEEM	Six questions designed to measure children's general self-worth (Rosenberg, 1965)
STABILITY OF SELF-IMAGE	Five questions to determine the extent to which children's self-esteem fluctuates.
STATE ANXIETY	Eighteen questions used to record children's self-reported apprehension or tension at a particular moment in time (Speilberger,1973)
TRAIT ANXIETY	Twenty questions to determine children's perception of their emotional feelings towards specific situations (Speilberger,1973)

(c) Anthropometric Measures

AGE	Recorded in days.
HEIGHT	Recorded in metres.
WEIGHT	Recorded in kilograms.
FAT SKINFOLDS	The sum of three skinfolds.
BODY MASS INDEX	A measure of body physique (Kg/m^2).

(d) School Transfer Measures

SECONDARY SCHOOL ADJUSTMENT	Three questions used to indicate children's adjustment to their new school.

THE PHYSICAL EDUCATION MEASURES

3.4.1 MOTOR PERFORMANCE

Literature presents numerous motor performance tests, each purporting to evaluate the performer's motor status. Although variations in the specific tasks included in these tests are evident, each test contains a battery of tasks designed to assess a common range of motor characteristics. The characteristics normally include speed, agility, power, balance and coordination (Malina & Bouchard,1991). The Western Motor Ability Test (Yuhasz,1967) was administered to indicate the child's ability to perform a variety of motor tasks and to provide a measure of motor performance. The test was selected from a plethora of similar tests for several reasons: (1) it is an appropriate test for use with this age group, (2) all the tasks could be performed indoors, and (3) the four test items could be administered and performed with equipment familiar to schoolchildren.

The Western Motor Ability Test consists of four performance items: an agility run, a standing broad jump, an alternate hand-to-wall ball toss, and a sitting basketball throw for distance. Test-retest reliability coefficients are given as 0.94, 0.95, 0.89, and 0.90, respectively, with a validity coefficient of 0.90 with basketball playing ability (Campbell & Tucker,1967). The following provides a full description of the test items and is adapted from Campbell and Tucker (1967).

(i) The Western Motor Ability Test

Item 1. Agility Run

Performers complete this task running as fast as possible. As a consequence, this investigator recommends that a minimum area of 15.2m (50 feet) by 6.1m (20 feet) is used in the interest of safety. To administer this test-item, four cones were placed 3m (ten feet) apart with a start, finish and end line marked clearly on the floor (see Figure 4). Before commencing the test, the subject walked the course, and was also allowed to jog it until familiar with the pattern. To commence the test, the subject lay in a prone position, hands beside the chest, and head behind the start line. On the command, "Ready, set, GO", the subject jumped to their feet and completed the run as quickly as possible. Two trials were given with the best time recorded. A two minute break was allowed between trials.

Item 2. Standing Broad Jump.

This is a two footed jump test for horizontal distance. The subject started with toes behind a marked line on the floor. From this stationary position, the subject was allowed to flex their legs and swing their arms before jumping as far forward as possible to land on both feet. Two attempts were allowed after two practice trials, and the best test jump was recorded in centimetres. The jump distance was recorded from the far edge of the take off line to the nearest point of contact on completion of the jump. This is likely to be the heel of one foot in most cases

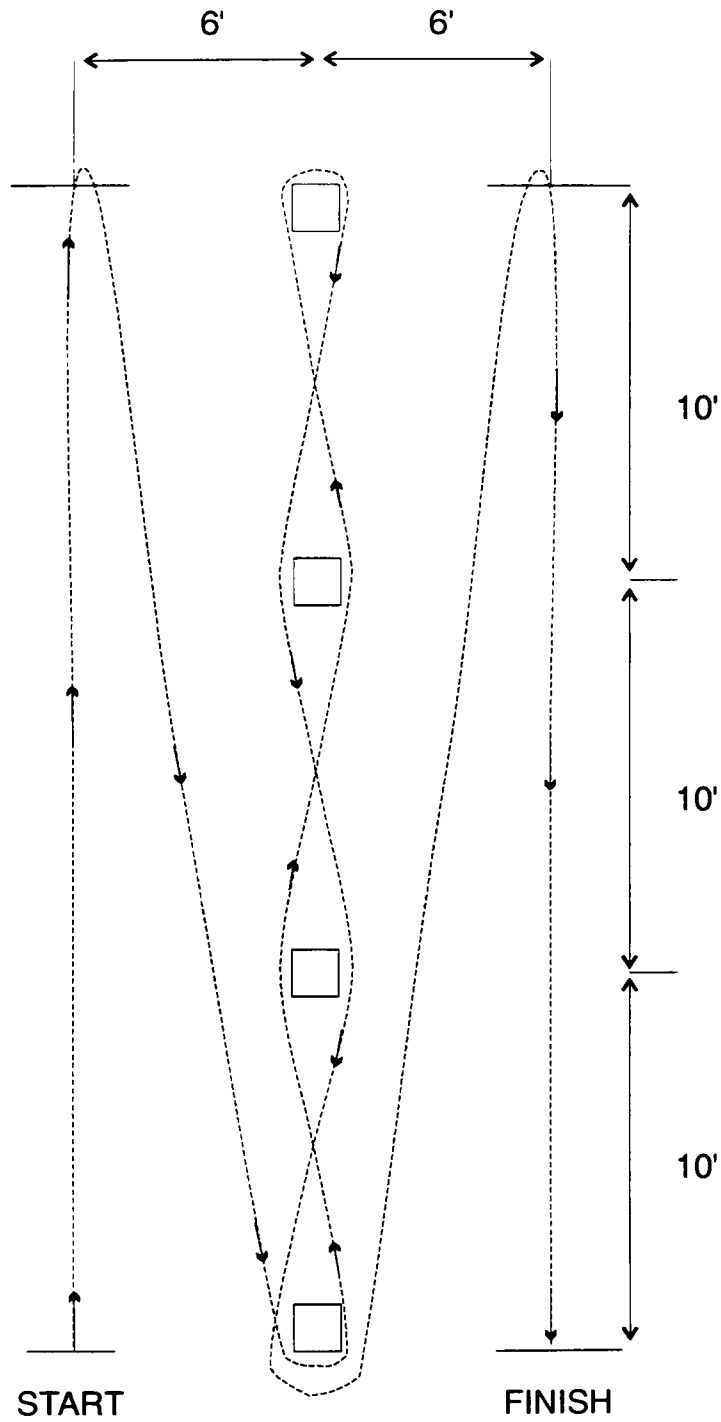

Figure 4. Course for Agility Run

Item 3. Alternate Hand-to-Wall Ball Toss

A restraining line was marked 1.8m (six feet) in front of a smooth-surfaced wall which was at least 1.8m (six feet) wide. The subject faced the wall holding a tennis ball in their right hand. Other tennis balls were available in a container by the subjects right foot. On the signal, "Ready, set,Go", the ball was thrown underarm against the wall and caught with the left hand. It was then thrown with the left hand against the wall and caught in the opposite hand. This pattern was repeated as quickly as possible for thirty seconds. The number of successful catches in the allotted time was recorded. On a dropped catch, a new ball was taken from the container. One minute practice was allowed to establish the movement pattern, and then the best of two trials was recorded. The ball had to be caught only with use of the hand, and the subject had to remain behind the restraining line.

Item 4. Sitting Basketball Throw

A throwing area 3m (ten feet) by 23m (seventy-five feet) is necessary for this test. At the start of the test, the subject sat with straight legs and with heels on the floor behind a restraining line. A basketball was held in the throwing arm, and an over-hand bent-arm throw was attempted for maximum distance. A lobbing/ bowling action with a straight arm was not permitted. Two practice throws were allowed followed by two test throws. The best test throw was recorded.

(ii) Calculating the Motor Performance Score

For each sample of subjects (primary school sample, secondary school sample, and longitudinal sample) and for each test item, percentile scales were calculated from the raw data. For each subject, the four percentile ranks were summed and the average calculated. This provided the overall motor performance score.

(iii) Other Physical Education Measures in the Study

In order to study pupils' self-perceptions in physical education and their attitudes towards physical education, a self-report questionnaire was administered to each subject (Appendix I). This was devised and adapted from a number of sources (Dickenson & Sparkes,1988; Jones,1988; Rosenberg,1965; Youldon,1988). It was designed: (1) to assess pupils' self-perceptions of performance in physical education, (2) to assess children's general attitude to physical education, (3) to record children's specific liking or disliking for certain aspects of physical education, and (4) to identify some of the reasons for children's positive or negative views about physical education. The following section provides details of the scale used to determine pupils' self-perceptions of performance in physical education.

3.4.2 PHYSICAL EDUCATION SELF-ESTEEM (PESE)

(i) Development of the Scale

Shavelson et. al.'s (1976) representation of self-concept as a multidimensional and hierarchical construct has provided the basis for much related research over the last twenty years (Marsh & Hattie,1996). Their model hypothesised that self-perceptions in specific school subjects (english, mathematics, history and science) contribute to a higher order academic self-concept, and broader evaluations (e.g., of peers, significant others, particular emotional states, physical appearance and physical ability) contribute to social, emotional and physical self-concepts. It was theorised, therefore, that these four higher order self-concepts support general self-concept at the apex of the hierarchy. Despite modification of Shavelson et al.'s (1976) model, children's self-perceptions in specific curriculum subject areas continue to be recognised as important contributors to academic and general self-concepts (Marsh,1990; Marsh,1992; Marsh et al.,1988; Marsh & Shavelson,1985; Shavelson & Bolus,1982). Marsh (1990) focused on school related domains of academic self-concept, and examined relationships amongst fifteen school subject self-concept scales. Each subject specific scale consisted of six item statements of self-concept adapted appropriately to focus on the school subject. Wording of items only varied to include the subject focus, e.g., 'Compared with others of my age I am good at [the specific school subject].' Marsh (1990) reported that physical education was one of four higher order factors needed to explain the relationships amongst the academic subjects. However, it was contended that

despite this, physical education may not significantly contribute to overall *academic* self-concept and may have greater influence on *physical* self-concept. Nonetheless, the potential contribution and importance of physical education self-concept to general self-esteem was established.

Although scales are available to assess children's physical self-perceptions (e.g., The Physical Self-Perception Profile: Fox,1990; The Perceived Competence Scale for Children (Physical subdomain): Harter,1982; The Physical Estimation Scale: Sonstroem,1978), the generic nature of these scales was deemed inappropriate for the present study. Sonstroem (1978) acknowledges that, "feelings about one-self tend to vary across situations and/or traits," and Horn and Claytor (1993) suggest that to further understand the physical domain it is necessary to report self-perceptions in specific sports settings. Indeed, Marsh (1990, p.635) states,

> Researchers specifically interested in self-concepts in particular academic subjects should measure self-concepts with scales specific to those subjects in addition to, perhaps, other academic self-concept scales. I recommend this even more strongly for researchers interested in self-concepts in other school subjects such as physical education, art, and music.

The six item self-concept scale which Marsh (1990) adapted for use with any school subject, provides rare physical education specific data. However, one item-statement appears ambiguous or less relevant to physical education: " I get good marks in [the specific school subject]." Indeed, another item appears to confuse past and present self-perceptions: " I have always done well in [the specific school subject]." A need for further physical education instrumentation clearly exists, and the Physical Education Self-Esteem (PESE) scale was devised especially for use

in this study. It was adapted from Rosenberg's self-esteem scale (1965) and, as such, measures the child's perceived self-worth in the specific physical education context. Support for this adaptation is provided by Marsh (1994) who suggests that variations of Rosenberg's global self-esteem scale have supported many contemporary multidimensional instruments. To gain further insight into children's self-perceptions in physical activity settings, it was deemed important, therefore, that pupils in this study presented their self-perceptions of performance specifically in curriculum physical education.

(ii) Structure of the PESE scale

The Physical Education Self-Esteem scale is based on a nine item questionnaire in which all items are physical education focused (Figure 5). In order to take into account the way in which the orientation of an item may affect the response, four items (one, three, six and eight) ask subjects to view their performance in physical education from a positive perspective, whilst five items (two, four, five, seven and nine) ask for responses to negatively phrased questions. The response format within the scale is varied with five of the items using a 4-point Likert response (strongly agree, agree, disagree, strongly disagree), three questions requiring bipolar responses (yes or no), and one item requiring subjects to classify their performance on a four-point scale (very good, good, average, below average). It should be noted that whilst the Likert configuration is a widely adopted format in questionnaire design, with question-items it is, perhaps, less appropriate.

Figure 5. PHYSICAL EDUCATION SELF-ESTEEM

Scoring: Score '1' for each positive item response (indicated by *); score '0.5' for response indicated by +, else record '0'

Item 1	How good do you think you are at PE and games?	( ) very good* ( ) good* ( ) average ( ) below average
IIem 2	At times in PE and games, do you think you are no good at all?	( ) strongly agree ( ) agree ( ) disagree* ( ) strongly disagree*
Item 3	In PE and games, are you able to do things as well as most of your friends?	( ) strongly agree* ( ) agree* ( ) disagree ( ) strongly disagree
Item 4	Are you disappointed with your performance in PE and games ?	( ) yes, often ( ) yes, sometimes + ( ) no, never*
Item 5	Do you sometimes feel useless in PE and games lessons?	( ) strongly agree ( ) agree ( ) disagree* ( ) strongly disagree*
Item 6	In PE and games, do you feel you are as good as most of your friends?	( ) yes* ( ) no
Item 7	Do you feel you are not much good at PE and games?	( ) strongly agree ( ) agree ( ) disagree* ( ) strongly disagree*
Item 8	Are you good at most activities in PE and games?	( ) yes* ( ) no
Item 9	In PE and games, do you do most things badly?	( ) strongly agree ( ) agree ( ) disagree* ( ) strongly disagree*

Nevertheless, at no time during the pilot or testing phases of the study did subjects indicate any confusion with the response format or difficulty completing the PESE scale.

(iii) Scoring the PESE scale

An overall measure of physical education self-esteem is determined through summation of 'positive' item responses (indicated by asterisks in Figure 5). These are responses which: (a) agree with positive items (items three, six and eight), or (b) indicate a positive disposition towards personal performance in physical education (item one), or (c) reject negatively expressed items (items two, four, five, seven and nine). These responses are awarded a value of '1' In contrast, 'negative' responses are awarded '0' A total scale score may, therefore, lie between zero and nine with a minimum of zero indicating low perceived competence in physical education and a maximum of nine representing high perceived competence in physical education.

(iv) Psychometrics of the PESE Scale

The psychometrics presented in this section have been compiled from data gathered from the boys in this study. As a consequence, data from two discrete samples (pre-transfer primary and post-transfer secondary) have contributed to the analyses. Since data for the secondary school sample were collected in December and June, item analysis and factor analysis for the PESE scale are presented for the single pre-transfer stage, and both post-transfer stages. The test-retest data

presented in this section were from boys attending the participating primary schools during the pilot testing period, and were gathered over a 3-day period.

a) Subject Details

Boys (n = 50) from two primary schools in Bexley, Kent, provided pre-transfer data for the PESE scale. In addition, PESE data was gathered for ninety-two boys on two occasions during their first year at the appointed secondary school. The mean age for the primary schoolboys was 11.32 years ± 0.28, whilst mean ages for the secondary school sample at the December and June data collections were 11.75± 0.30 years and 12.29± 0.30 years, respectively.

b) PESE Scale: Item Analysis

In order to study the item-questions comprising the PESE scale, several analyses have been conducted. Table 2 presents means and standard deviations for each item, and scale totals for each sample.

Table 2 identifies some variation for item means within samples although item and scale means across samples show limited disparity. Item means lie in the range .59 to .94 with many exceeding .80. Standard deviations range between .24 and .50 indicating adequate dispersal of scores. Scale means for the three samples range between 6.93 (77%) and 7.38 (82%). To further investigate the PESE scale, logistic regression analyses and a factor analysis have been undertaken. The following sections report the findings.

Table 2. PESE Item and Scale Means and Standard Deviations.

Item #	Primary Sample (n = 50) Mean	SD	Secondary Sample (Dec.) (n = 92) Mean	SD	Secondary Sample (June) (n = 92) Mean	SD
1	.78	42	.60	49	.71	.45
2	.62	49	.65	48	.74	44
3	.94	.24	.87	.34	.89	.32
4	.59	.28	.64	.28	.68	.29
5	.64	48	.66	48	.77	42
6	.86	.35	.87	.34	.85	.36
7	.90	.30	.86	.35	.90	.30
8	.94	.24	.91	.28	.91	.29
9	.92	.28	.89	.32	.91	.29
Scale Mean	7.21	1.84	6.93	2.35	7.38	2.35

(c) PESE Scale: Internal Consistency

To examine reliability of the item-questions, subject responses to each item were considered in relation to their total score on the scale. A logistic regression analysis was undertaken using scale total as the covariate. The p-value for each item-question was less than 0.05 for each sample, indicating that all items were significantly discriminating and, therefore, contributed towards the final scale score.

(d) PESE Scale: Item Validity

Logistic regression analysis was also used to examine the validity of the item-questions. This analysis sought to determine if responses to each item-question varied for subjects of differing motor ability. Since subjects with high physical ability are likely to perceive their performance more favourably than lesser able performers (Fox & Biddle,1988), motor performance was used as a covariate. This analysis revealed that responses to each item-question significantly discriminated between subjects of differing motor performance at the secondary school stages ($p<0.05$), but were less discriminating for the primary school sample ($p>0.05$). This may just be due to a smaller sample size in the primary school sample ($n = 50$) than in the secondary sample ($n = 92$), although other explanations related to children's age, reading ability, question format, etc, could also be considered. Nevertheless, the difference for physical education self-esteem between groups of high and low motor performers in the primary school sample is found to be significant ($t = 2.34$, $p<0.05$: Reeves & Cooper,1994). Comparison of known groups is a recommended

validation procedure (Thomas & Nelson,1990) and has been used in other related studies (e.g., Harter,1982; Harter & Pike,1984). The combination of findings for boys in this study suggest, therefore, that the PESE scale is sufficiently sensitive to discriminate between boys of different levels of motor performance.

(e) PESE Scale: Test-Retest Reliability

Scores for the PESE scale obtained on separate days for a sample of primary schoolboys (n = 30) revealed no significant test trial differences ($F = 0.125$, $p>0.05$) and an intraclass (alpha) reliability of 0.94.

(f) PESE Scale: Factor Structure

The Physical Education Self-Esteem scale was adapted from Rosenberg's self-esteem scale, an acknowledged unidimensional scale (Bracken,1996). Factor analysis was undertaken on the PESE scale to examine its dimensionality. Subject responses to item-questions with a Likert type format were coded '1' ('strong negative'), '2' ('negative'), '3' ('positive'), or '4' ('strong positive'). Item-questions with a bipolar (yes or no) response format were coded '1' for a 'positive' response, and '0' for a 'negative' response. Though these ordinal response variables cannot satisfy the distributional assumptions of significance tests of factor analysis, the results may reveal interesting relationships. Table 3 shows the findings of a factor analysis (initiated by principal components analysis), and includes oblique rotation (Kaiser normalization) for the pre-transfer primary school sample.

Table 3. Factor Loadings for PESE Items

		Primary		Secondary (Dec)	Secondary(June)
Item #		Factor		Factor	Factor
	Orientation	1	2	1	1
1	(+)	.78	-.02	.78	.86
2	(-)	.06	.81	.76	.77
3	(+)	.84	-.33	.68	.79
4	(-)	.51	.20	.73	.59
5	(-)	.07	.88	.71	.84
6	(+)	.65	.16	.67	.72
7	(-)	.59	.20	.83	.87
8	(+)	.89	-.06	.60	.72
9	(-)	.75	.23	.84	.77
Eigenvalue		4.30	1.34	4.93	5.42
% Variance		47.70	14.90	54.80	60.20
Cum. % Variance		47.70	62.60		

(Factors only included if eigenvalue >1)

Findings presented in Table 3 suggest the PESE scale is principally unidimensional. Although results for the pre-transfer primary school sample suggest the presence of two factors, analysis of data at both post-transfer stages identified a single factor (eigenvalue >1). These factor structures explain 62.6%, 54.8% and 60.2% of the total variance, respectively.

Factor loadings less than ± 0.30 are often considered "unimportant" (Child,1970) and are eliminated from the analysis (e.g., Fox,1990). Using this criterion, factor analysis with oblique rotation for the primary school data revealed seven "important" factor loadings for factor one, and three for factor two. Differentiating the factors is not easy since both are evidently concerned with self-perceptions of performance. However, closer inspection reveals that most highly loaded items for factor one relate to positive performance in physical education, whilst highly loaded items for factor two emphasise negative performance. In addition, the loadings (+ and –) on factor two suggest that this factor may be bipolar (Child, 1970), although -.33 is too close to the unimportant threshold to indicate much. Indeed, several similar studies (Horn, Glenn & Wentzell,1993; Horn & Weiss, 1991; Sonstroem, Speliotis & Fava,1992; Welk, Corbin & Lewis,1995; Whitehead, 1995) use ± 0.40 as the minimum threshold criterion, in which case item three (-.33) would not be considered further. Nevertheless, two possibilities may explain the presence of two factors for the primary school sample. Firstly, given that factor one appears positively linked and factor two negatively linked, the orientation of the question may elicit a qualitatively different form of response. Younger pupils may be more likely to be influenced by question orientation than more mature

secondary school pupils. Therefore, the PESE scale may be unidimensional, but varying question orientation can produce an 'apparent' two factor structure with younger children. A second explanation for the two factor finding may be that perceptions of self-success and self-failure are distinct traits and not part of a continuous unitary factor. Indeed, the sources children use to evaluate their competence appear to vary as a function of age, with younger children tending to rely on task success, peer comparisons and/or feedback from significant adults (Horn & Hasbrook,1987; Horn & Weiss,1991). Older children may be more able to develop an internal performance criteria due to cognitive development, and rely less on external cues (Connell,1985; Horn, Glenn & Wentzell,1993). Equally, it is possible that the criteria children use to assess their proficiency in physical education may be different to the criteria they use to determine their inadequacies, and these too may be developmental. In this regard, 'attribution theory' appears relevant, although Biddle (1993) suggests the study of attributions in sport has, to date, been narrow. With specific regard to physical education, it is possible that children may use different attributions, or place different value judgements on particular attributions than in competitive sport settings. Evidently, further study of the perceived causes or reasons used by children to explain their competency in physical education is necessary.

In contrast to the data for the pre-transfer primary school sample, factor analyses conducted with the post-transfer secondary school sample revealed that all items of the PESE scale significantly loaded on a single factor. Factor loadings for each

item were high, with most above 0.70. The single factor structure accounted for 54.8% and 60.2% of the variance at the December and June stages, respectively.

These preliminary findings suggest that the PESE scale provides a satisfactory measure of boys self-perceptions of performance in physical education. Differences between the primary and secondary school data are evident and highlight the need for further analyses to determine the appropriateness of the scale particularly with younger children. In addition, given the acknowledged multidimensional nature of self-esteem, and of physical self-perceptions (see Fox,1990; Marsh et al.,1994), further investigation is necessary to determine the significant factors which contribute to self-perceptions in physical education. A multidimensional physical education self-esteem scale may arise from such analysis, which ultimately may promote greater understanding of the contribution of specific aspects of physical education to child development.

3.4.3 ATTITUDE TO PHYSICAL EDUCATION

(i) Development of the General Attitude to Physical Education (GAPE) Scale

A review of 'attitude to physical education' scales revealed that such measures tend to rely upon pupils' responses to a range of non-related aspects of physical education. They assume, therefore, that the selected item-statements of the scale tap aspects of physical education pertinent to all pupils. However, what is not known, or taken into account, is the importance and weighting attached to each aspect by each child. Existing scales were, therefore, deemed inappropriate and the

General Attitude to Physical Education (GAPE) Scale was prepared for use with pupils in the current study.

(ii) Structure of the GAPE Scale

The General Attitude to Physical Education Scale consists of four non-content specific questions (Figure 6). One advantage of this type of questioning is that it does not identify particular aspects of physical education of unknown significance to individual children. Each child may, therefore, respond according to their own criteria. In this way, the score on the scale provides an indication of the child's overall attitude towards physical education taking into account those features of personal relevance.

(iii) Scoring the GAPE Scale

The response format for most items of the GAPE scale is dichotomous (yes or no). Item one, however, asks subjects to indicate their preference for physical education over other school curriculum subjects. Responses to this item are awarded a value of '3' if physical education is the child's favourite school subject, '2' if it is their second-favourite, '1' if third favourite, and '0' if physical education/games is not mentioned. Positive ("yes") responses to other questions are similarly weighted and awarded a value of '3', whilst negative ("no") responses receive a '0' value. In this way, total scores on the GAPE scale may range between zero and twelve, with high scores indicating more 'positive' attitudes towards physical education, and low scores reflecting levels of negative feelings towards the subject.

Figure 6. GENERAL ATTITUDE TO PHYSICAL EDUCATION

Item 1

List your THREE favourite school subjects

favourite .....

2nd favourite .....

3rd favourite .....

Scoring: If physical education is the favourite school subject, 3 points are awarded; 2nd favourite yield 2 points; 3rd favourite yield 1 point. No reference to physical education/games yields zero points.

Item 2

Do you like physical education ? yes ( )*
no ( )

Scoring: 3 points are awarded if the response is 'positive' (indicated by *).

Item 3

Do you look forward to physical education ? yes ( )*
no ( )

Scoring: 3 points are awarded if the response is 'positive' (indicated by *).

Item 4

If you had the choice, would you do physical education ? yes ( )*
no ( )

Scoring: 3 points are awarded if the response is 'positive' (indicated by *).

Note: Responses to questions are weighted as indicated. In this way, the various combinations of responses may be differentiated. The total score for the scale ranges between 0 and 12 points with a higher score (maximum 12) representing a more positive attitude towards physical education.

The following section presents the psychometrics of the GAPE Scale. For the purposes of the logistic regression analyses, all positive ("yes") responses (including any mention of physical education for item one) were coded '1', and negative ("no") responses coded '0'

(iv) Psychometrics of the GAPE Scale

The psychometrics presented in this section have been compiled from data gathered from the boys in this study. Item analysis and factor analysis for the GAPE Scale are presented for the single pre-transfer stage, and both post-transfer stages. Test-retest data were recorded for boys (n = 30) attending the participating primary schools during pilot testing, and were gathered over a 3-day period.

(a) GAPE Scale: Item Analysis

Table 4 presents means and standard deviations for item questions and scale totals for the primary school pre-transfer sample, and both secondary school post-transfer samples. Table 4 reveals mostly consistent findings for item and scale means and standard deviations across the data collection points. Scale means were high before and after school transfer. Even at the December stage, where the scale mean is at its lowest, the mean of 9.12 (76%) suggests that many boys reported positive attitudes towards physical education. It appears from Table 4 that pupil responses to item one (favourite school subjects) at the December stage were largely responsible for the lower scale mean. Perhaps the increased choice of

Table 4. GAPE Item and Scale Means and Standard Deviations.

Item #	Pre-transfer Mean (n =50)	SD	Post-transfer (Dec.) Mean (n =92)	SD	Post-transfer (June) Mean (n = 92)	SD
1	1.58	1.33	1.13	1.25	1.49	1.25
2	2.76	0.82	2.77	0.80	2.71	0.90
3	2.58	1.05	2.67	0.94	2.58	1.05
4	2.64	0.98	2.54	1.08	2.67	0.94
Mean Scale	9.56	3.30	9.12	3.10	9.45	3.36

curriculum subjects on offer at secondary school influenced some boys responses at this stage. In practical terms, however, these minor discrepancies are probably negligible.

(b) GAPE Scale: Item Validity

The validity of the item-questions was examined using logistic regression analysis. Since it is posited that subjects with either higher motor ability or higher physical self-perceptions are more likely to hold favourable attitudes towards physical activity (Fox & Biddle,1988; Neale et al.,1969; Sonstroem,1974,1976,1978), motor performance and physical education self-esteem were used as covariates. The logistic regression analyses sought to determine, therefore, if responses to each item-question varied for subjects with differing levels of motor competence, or for subjects with differing self-perceptions of motor competence.

The analyses revealed that responses to each item-question significantly discriminated between subjects at the secondary school stages ($p<0.05$), but were less discriminating for the primary school sample ($p>0.05$). As previously suggested, this may just be due to the smaller sample size in the primary school sample ($n = 50$), since statistical significance is more likely with larger samples (Borg & Gall,1989). Alternatively, other reasons could be child related (e.g., the primary schoolboys may have been more inclined to provide socially desirable responses), questionnaire related (e.g., due to response format, question style), or related to the psychometric procedures (e.g., influenced by the choice of covariates).

(c) GAPE Scale: Internal Consistency

To examine reliability of the item-questions, subject responses to each item were considered in relation to their total score on the scale. A logistic regression analysis was undertaken using GAPE scale-total as the covariate. The p-values for items one and four were less than 0.05 for each sample indicating that these items are significantly discriminating. Items two and three were less discriminating with p-values >0.05. Nevertheless, this is not considered a major concern since both items contribute to the validity of the scale, and further examination with larger samples may, indeed, reveal statistical significance.

(d) GAPE Scale: Test-Retest Reliability

Test-retest scores for the General Attitude to Physical Education Scale, obtained on separate days for primary schoolboys ($n = 30$), have revealed no significant test trial differences ($F = 0.19$, $p>0.05$) and an intraclass (alpha) reliability correlation (R) of 0.97.

(e) GAPE Scale: Factor Structure

Though the ordinal response variables cannot satisfy the distributional assumptions of significance tests of factor analysis, a factor analysis was undertaken on the GAPE Scale to examine its dimensionality. Table 5 shows the findings of this analysis.

Table 5 Factor Loadings for GAPE Items

	Primary	Secondary (Dec)	Secondary(June)
Item #	Factor 1	Factor 1	Factor 1
1	49	.52	.59
2	.89	.88	.94
3	.88	.90	.92
4	.88	.80	.85
Eigenvalue	2.59	2.50	2.80
% Variance	64.7	62.6	70.0

(Factors only included if eigenvalue >1)

Findings presented in Table 5 reveal the unidimensional nature of the GAPE Scale. Analysis of data at all stages of transfer identified a single factor (eigenvalue >1) with high factor loadings for each item. These factor structures explained 64.7%, 62.6% and 70.0% of the total variance at the pre-transfer, post-transfer (December) and post-transfer(June) stages, respectively.

These preliminary findings suggest that the GAPE Scale provides a satisfactory measure of boys' attitudes towards physical education. Nevertheless, further investigation is necessary to determine why positive and negative attitudes towards physical education arise and appear to be maintained beyond childhood.

THE PSYCHOLOGICAL MEASURES

3.4.4 GLOBAL SELF-ESTEEM & STABILITY OF SELF-IMAGE

A second questionnaire (Appendix II) was presented to pupils to assess selected psychological characteristics associated with school adjustment. Self-esteem and stability of self-image were determined using Rosenberg's scales (1965) and are presented in Figure 7 and Figure 8 respectively.

Figure 7. GLOBAL SELF-ESTEEM

Item 1	I feel that I am as good as most of my friends.	( )strongly agree* ( ) agree* ( ) disagree ( ) strongly disagree
	I feel I have a number of good points.	( ) strongly agree* ( ) agree* ( ) disagree ( ) strongly disagree
	I seem to do badly rather than do well.	( ) strongly agree ( ) agree ( ) disagree* ( ) strongly disagree*
Scoring:	If 2 out of 3, or 3 out of 3 responses are 'positive' (indicated by *), a positive score is recorded for item 1. Otherwise, a negative score is recorded.	
Item 2	I am able to do things as well as most of my friends.	( ) strongly agree* ( ) agree* ( ) disagree ( ) strongly disagree
	I feel I do not have much to be proud of.	( ) strongly agree ( ) agree ( ) disagree* ( ) strongly disagree*
Scoring:	If both responses are 'positive' (indicated by *), a positive score is recorded. Otherwise, a negative score is recorded for item 2.	
Item 3	I am pleased with myself.	( ) strongly agree* ( ) agree* ( ) disagree ( ) strongly disagree
Scoring:	A positive score is recorded if the response is 'positive' (indicated by *).	
Item 4	On the whole I like myself.	( ) strongly agree* ( ) agree* ( ) disagree ( ) strongly disagree
Scoring:	A positive score is recorded if the response is 'positive' (indicated by *).	

Global Self-Esteem scale cont.

Item 5

I wish I could feel better about myself.

( ) strongly agree
( ) agree
( ) disagree*
( ) strongly disagree*

Scoring: A positive score is recorded if the response is 'positive' (indicated by *).

Item 6

At times I think I am no good at all.

( ) strongly agree
( ) agree
( ) disagree*
( ) strongly disagree*

I sometimes feel useless.

( ) strongly agree
( ) agree
( ) disagree*
( ) strongly disagree*

Scoring: If both responses are 'positive' (indicated by *), a positive score is recorded. Otherwise a negative score is registered for item 6.

Figure 8. STABILITY OF SELF-IMAGE

Scoring: A positive score for each item is recorded if the response is 'positive' (indicated by *).

Item 1	Are you sure you know the kind of person you are ?	( ) very sure* ( ) sure* ( ) not very sure ( ) not sure at all
Item 2	Some days I like the way I am, some days I don't like the way I am. Do your feelings change like this?	( ) yes, sometimes ( ) yes,this rarely happens* ( ) no, this never happens*
Item 3	My feelings about myself seem to change very quickly. Do you feel like this?	( ) yes ( ) no*
Item 4	Some days I am happy with the kind of person I am, other days I am not happy with the kind of person I am. Do you feel like this?	( ) yes ( ) no*
Item 5	'I know what I am like, I am really sure about it.' Do you feel like this?	( ) yes* ( ) no

The Rosenberg Self-Esteem scale was selected for use in this study for several reasons. Firstly, its prevalence in related research, i.e., studies which have either focused on changes in self-esteem during school transfer (e.g., Hirsch & Rapkin, 1987; Simmons, Burgeson, Carlton-Ford, & Blythe,1987; Simmons, Rosenberg, & Rosenberg,1973), or have considered the relationships between global self-esteem and perceived or actual competence (e.g., Aine & Lester,1995; Bachman & O'Malley,1986; Byrne & Shavelson,1986; Fox & Corbin,1989; Marsh,1993; Marsh, Byrne, & Shavelson,1988; Palmer,1995; Sonstroem, 1978; Sonstroem & Potts,1996; Sonstroem, Speliotis, & Fava,1992; Welk, Corbin, & Lewis,1995). Secondly, the scale is succinct in comparison to other similar measures. Yet, despite the brief number of item-statements, reliability and validity are considered impressive (Wylie,1974). Rosenberg's initial sample was over 5000 adolescents attending High schools in New York State, USA, and reproducibility, item scalability and individual scalability for the ten item statements are reported as 93 percent, 73 percent, and 72 percent, respectively (Rosenberg,1965). In addition, Keith and Bracken (1996) report that item statements have face validity, and include vocabulary appropriate for children of around twelve years. Thirdly, and of particular importance, the Rosenberg Self-Esteem scale provides a measure of general self-worth which is *not* derived from subjects' responses to a hetero-geneous collection of content-specific item statements. This is unlike other unidimensional scales (e.g., Coopersmith Self-Esteem Inventory and the Piers-Harris Self-Concept Scale) which, by their nature, assume equal weighting amongst the item-statements and their content domains. The limitations of such scales are now widely recognised and have lead to the development of multi-

dimensional scales (e.g., Perceived Competence Scale for Children: Harter,1982) or domain-specific scales (e.g., the Physical Self-Perception Profile: Fox,1990). Nonetheless, the generic nature of Rosenberg's Self-esteem scale is viewed favourably (Harter,1982; Wylie,1974) and the scale continues to be used extensively in social-psychological and educational research (e.g., Aine & Lester,1995; Palmer,1995; Sonstroem & Potts,1996; Welk, Corbin & Lewis, 1995). With respect to Rosenberg's Stability of Self-image scale, reproducibility, item scalability, and individual scalability for the five item statements are reported as 94 percent, 77 percent, and 77 percent, respectively (Rosenberg,1965).

Since both Rosenberg scales were originally designed for use with American children, some minor amendments to the diction of certain statements were undertaken for use with the British children in this study. As previously indicated, these amendments were the result of consultations with primary and secondary school teachers and children during the pilot phase of the study.

3.4.5 STATE AND TRAIT ANXIETY

The negative relationship between anxiety and self-esteem is well documented (e.g., Burns,1979; Hart,1986; Rosenberg,1965; Youngman & Lunzer,1977). In addition, several techniques are available for assessing anxiety (see literature review). For this study, it was necessary to select an instrument appropriate for children aged eleven to twelve years which could be implemented in the school environment. Also, one ideally used in other related studies. For these reasons,

anxiety was measured using the State-Trait Anxiety Inventory for Children (STAIC: Speilberger,1973). This self-report inventory was constructed to measure anxiety in nine-to-twelve-year-old children, and the pencil-and-paper format seemed ideal for use in schools. In addition, the inventory has been used in related studies (e.g., Delignieres, Marcellini & Brisswalter,1994). Of importance, the inventory acknowledges the two-dimensional nature of anxiety and consists of a State Anxiety scale and a Trait Anxiety scale. Both scales contain twenty item-statements. The State scale asks children how they feel at the particular moment in time, whilst subjects respond to the Trait scale by indicating how they generally feel. Reliability coefficients for the State and Trait scales are reported to be 0.82 and 0.78 respectively with a concurrent validity of 0.75 (correlated with the Children's Manifest Anxiety Scale: Castenada et al.,1956).

Despite the appropriateness of the STAIC inventory for this age group, two item-statements on the State anxiety scale caused concern amongst primary school teachers and pupils during the pilot study. Firstly, staff expressed considerable concern over the statement refering to feelings of 'terror' amongst pupils and felt this inappropriate. Secondly, most children were confused by the statement which included the term 'bothered' Since it was considered that pupil responses to these item statements may be less reliable, both statements were excluded from the State scale. The eighteen remaining statements of the State scale were included in School Questionnaire Two (Appendix II) along with the twenty statements comprising the Trait scale.

With respect to scoring pupils' responses on the two anxiety scales, the following summarises the procedures (for further explanation, see Speilberger,1973). For the State scale, each statement stem (At the moment I feel.....) is followed by an adjective reflecting either an anxious or non-anxious state. Pupils respond in one of three ways and indicate: (1) the adjective describes their current state, (2) the adjective very much describes their current state, or (3) the adjective does not describe their current state. If the adjective is of a non-anxious nature (e.g., happy, cheerful, peaceful, etc.) one point is awarded for the superlative (e.g., very cheerful), two points for the normative (e.g., cheerful), and three points for the negative (e.g., not cheerful). For the adjectives describing anxious states, the reverse scoring system is applied, i.e., one point for the negative (e.g., not frightened), two points for the normative (e.g., frightened) and three points for the superlative (e.g., very frightened). Points for the individual items were summed to produce a total score in the range 18-54 points, with lower scores indicating low state anxiety and higher scores reflecting higher state anxiety.

On the Trait anxiety scale, subjects were presented with twenty anxiety related characteristics (e.g., I worry about school) and asked to indicate the extent to which these applied to them as individuals, i.e., hardly-ever, sometimes, or often. Three points were awarded for 'often' responses, two points for 'sometimes', and one point for 'hardly-ever' On the Trait scale, the total score was in the range 20-60 points with higher scores indicating higher trait anxiety.

3.4.6 ANTHROPOMETRIC MEASURES

In order to assess physical growth and development, age, height, weight and fat skinfolds were recorded. A portable stadiometer was used to measure height, and analogue weighing scales (Seca) used to assess body weight. Harpenden skinfold calipers (Cranlea Ltd, Birmingham), which exert a standardised pressure of 0.1 Nmm throughout the caliper range, were used to take skinfolds at three sites recommended by Fox (1979): (1) Triceps- a vertical fold at the midpoint between the acromion process and the olecranon on the posterior surface of the tricep; (2) Subscapular- the diagonal fold below the angle of the scapular; and (3) Suprailiac- a diagonal fold above the anterior, superior iliac crest.

3.4.7 SCHOOL ADJUSTMENT

In addition to low self-esteem and high anxiety, a third indicator of school adjustment was employed. At the June stage after transfer, all secondary schoolboys in the study (n = 132) were asked to complete the School Transfer Questionnaire (Appendix III). This self-report questionnaire consisted of seven questions adapted from the ILEA Secondary Transfer Project (Alston,1988). Questions focused on adjustment related issues and were devised to identify pupils who had not adjusted well to secondary school. For the purposes of this study, boys who suggested that they had not settled well at secondary school, or liked secondary school less than their primary school, or did not like secondary school much (or at all) were classified as 'poorly-adjusted' to secondary school.

3.5 SCHEDULE OF TESTING

Having established the design of the study, and finalised the samples, instruments and methods, a schedule of testing was drawn-up. This is presented in Figure 9.

Figure 9. Schedule of Testing

July 1990	Pilot study undertaken.	Questionnaires and practical tests conducted with primary schoolboys (n = 25). Discussion with staff and pupils about general instructions and methods adopted, as well as specific language and format of questionnaires.
June 1991	Primary School Stage.	Revised questionnaires and practicals undertaken with pre-transfer sample of boys (n = 50).
December 1991	Secondary School Stage.	Full assessment of post-transfer sample of secondary schoolboys (n = 107) and follow-up sample (n=25) from the primary school.
June 1992	Secondary School Stage.	Full assessment of post-transfer sample of secondary schoolboys (n = 107) and follow-up sample (n=25) from the primary school.

3.6 DATA ANALYSIS PROCEDURES

The purpose of this section is to provide information about how the data were processed and analysed. Firstly, an overview of the data gathering procedures is provided. This is followed by identification and justification of the particular statistical methods employed in the study.

3.6.1 DATA GATHERING AND PROCESSING

To investigate changes in the selected characteristics (and their interrelationships) during secondary school transfer, questionnaires and practical assessments were administered to boys in their final term at primary school and during their first year at secondary school. Pupils' attitudes to physical education, self-perceptions of performance in physical education, and psychological characteristics (self-esteem, stability of self-esteem, and anxiety) were determined through self-report questionnaires. School Questionnaire 1 (Appendix I) included the General Attitude to Physical Education scale, the Physical Education Self-Esteem scale, and some general questions designed to reveal pupils' experiences and opinions of physical education. School Questionnaire 2 (Appendix II) focused on the psychological characteristics, and included the Global Self-Esteem and Stability of Self-Image scales (Rosenberg,1965) and the State and Trait anxiety scales (Speilberger,1973). In addition to the aforementioned questionnaires, and at the June stage after transfer, the School Transfer Questionnaire (Appendix III) was administered to identify pupils who felt they had not adjusted well to secondary school.

To assess motor performance, pupils completed the four tasks of the Western Motor Ability test (Yuhasz,1967). To determine a single and overall measure of motor performance, scores for each task were converted to percentiles, and the mean value of the four percentiles was calculated (Campbell & Tucker,1967). The practical performance tests were accompanied by a physical assessment which included measurement of pupils' height (cm), weight (kg) and selected skinfold measures (mm). In addition, height and weight were used to determine each pupil's Body Mass Index (weight/(height)^2), an acknowledged indicator of obesity (Malina & Bouchard,1991).

3.6.2 SELECTION OF STATISTICAL METHODS

The tests, scales, and procedures used with the boys in this study provided different types of data (ordinal, interval and ratio) and different distributions. As a consequence, careful consideration has been given to the selection of appropriate statistical tests. Decisions were made on the basis of (1) types of data, (2) distribution of data, and (3) sampling issues.

With respect to types of data, the anthropometric measures and raw scores on each motor performance task provided ratio level data, therefore enabling the use of parametric tests. However, overall motor performance was determined according to percentile ranks on the four motor tasks. These are examples of ordinal level data requiring analysis using non-parametric tests. As for other variables in the study, it is questionable whether the General Attitude to Physical Education scale,

the Physical Education Self-Esteem scale, and the psychological scales (Global Self-esteem, Stability of Self-image, and State and Trait anxiety) provide interval level data, a minimum requirement for employing parametric procedures (Hicks, 1990). Hinkle et al. (1979, p.7) state that a defining property of interval data is that, "Equal difference in the characteristic are represented by equal differences in the numbers assigned to the categories." With attitude and self-perception, this is difficult to assume.

Regarding distribution of data, it appears that scores for most of the variables in this study approximate a normal distribution. However, data for some variables do not. It is widely acknowledged that measures of self-esteem present a skewed distribution of scores, i.e., there is a tendency for most individuals to look favourably upon their personal attributes (Marsh et al.,1994). Similarly, it is apparent that scales assessing general attitude to physical education and physical self-esteem appear to attract positive responses from most subjects and, as a consequence, also tend to produce negatively skewed distributions.

Finally, Hicks (1990) highlights several issues related to subject sampling which need to be considered prior to selecting a statistical method. The following conditions apply to this study and have been taken into account: (1) the non-random selection of subjects in the study (for reasons outlined earlier), (2) the small or different sample sizes used in some analyses, and (3) the variation of findings for certain selected groups of boys.

In view of the data gathering and processing procedures delineated, non-parametric statistical procedures were chosen to analyse the raw data. The selected non-parametric methods are appropriate for analysing ordinal, interval and ratio level data, although it is recognised that some useful information is lost when employing such methods with interval or ratio data (Hinkle et al.,1979). Nevertheless, "...non-parametric tests, as their name implies, may be regarded as 'distribution-free' procedures," (Cohen & Holliday,1979, p.123) and are, therefore, less restrictive. In light of this, these tests were deemed most appropriate with the raw data. However, to complement these procedures and to further explore certain lines of enquiry, raw scores were normalised (mean = 0, SD = 1) by assigning an individual with a given percentile raw score the score from a N (0,1) normal distribution, which has the same percentile. With normalised data, it is possible to have some measure of confidence in inferences drawn, for example, from partial correlations. Also, differences amongst discrete groups (i.e., high, average, and low motor performers) could be considered using discriminant function analyses (the validity of inference also depends on normality). For these, and all analyses, the Statistical Package for the Social Sciences (Release 6.0,1993) was used to process the data.

Missing data is a potential problem in all empirical studies, and can be a particular difficulty in longitudinal studies. Indeed, in this study, given that data for fourteen variables were collected for each pupil over three stages of school transfer, some omissions, errors, or absences were inevitable. Marsh (1996) identifies three common approaches adopted to cope with missing data: (1) listwise deletion of

missing data, i.e., any subject with missing data is not included in any analysis, (2) pairwise deletion of missing data, i.e., correlations are calculated for all subjects with non-missing data for the variables in question, or (3) missing data are estimated. In the present study, the pairwise approach was generally adopted. This was principally decided on the basis of the sample sizes. That is, since subject samples in the study were relatively small (primary school sample: n = 50; secondary school sample: n = 107) listwise deletion could have seriously biased findings, as well as neglected useful data. With respect to the discriminant function analyses, since SPSS DISCRIMINANT automatically adopts listwise deletion of cases, missing values were replaced by linear interpolation. In these ways, missing data were minimalised, and the findings may be considered more representative of primary and secondary school samples.

3.6.3 THE STATISTICAL METHODS EMPLOYED IN THE STUDY.

To determine differences among the physical education and psychological measures before and after secondary school transfer, mean values were compared across stages. Due to reasons previously outlined, means for the primary school sample and the secondary school (December) sample were compared using non-parametric tests (Mann-Whitney U-test). To compare the means at the two secondary school stages (December and June), the Wilcoxon test for correlated samples was preferred, since data at these stages were for the same boys.
It is acknowledged that multiple analyses of the sort described can increase the likelihood of incurring Type 1 error rate, i.e., increase the probability of rejecting a

null hypothesis which is true (Hinkle et al.,1979). In recognition of this problem, Borg and Gall (1989) and Marsh (1989) suggest lowering the significance level to, for example, $p = 0.01$. McKiddie and Maynard (1997) and Sonstroem and Potts (1996), amongst others, have taken this principle further and applied a technique known as the Bonferroni correction. This is a method which systematically reduces the critical significance level according to the number of tests undertaken. For example, eight separate computations were undertaken in McKiddie and Maynard's (1997) study, and the significance level was lowered from $p = 0.05$ to $p = 0.00625$ (i.e., .05 divided by 8). Sonstroem and Potts (1996) made twenty calculations and consequently used 0.0025 (0.05 divided by 20) as the new critical value. In the present study, Bonferroni adjustments to significance levels have been considered.

With respect to the analysis of data for the boys studied across the primary-to-secondary divide (longitudinal survey), mean differences across all three data collection points were determined using the Friedman Two-way ANOVA. Significant differences were followed up by Wilcoxon tests (recommended by Wagner,1992) to determine which of the means were statistically different.

To examine the relationships amongst the selected physical education and psychological measures at all data collection points, Spearman Correlation Coefficients (r) were calculated. In addition, and with the normalised data, partial correlations were calculated to assess bivariate relationships whilst removing the influence of age and growth factors. In this study, age, height, weight, body mass

index, and skinfold total were used as growth and development indicators. Also using the normalised data, coefficients of determination (r^2 X 100) were computed for statistically significant correlations. These are presented with the partial correlations (Appendices IV, V, & VI), and indicate the percentage of factors accounting for variability which are common to both variables (Cohen & Holliday, 1979). The higher the coefficient of determination, the greater the factors common to both variables.

To assess multivariate group differences, the psychological, physical education and anthropometric variables were considered concurrently in discriminant function analyses. These analyses were undertaken to reveal the dimensions on which the groups differed, the variables which contributed to the differences on the dimensions, and the extent to which group membership could be classified. These analyses were, therefore, undertaken to identify important predictor variables during school transfer. As recommended with a large set of variables (eleven predictor variables were included in each analysis), stepwise discriminant analysis was used to determine the importance of each variable as predictors of group membership (Marsh & Peart,1988). This selection procedure enters, at step one, the predictor variable which most discriminates between the groups. The effects of this variable are then removed from the remaining predictor variables through semi-partial correlation procedures (Thomas & Nelson,1993), and the next variable which most discriminates is then entered at step two. This stepwise process continues until none of the remaining variables significantly separate the groups (normally $p<0.05$). In the case of two groups (e.g., boys with low self-esteem and

the rest of the sample), the predictor variables identified in the stepwise selection procedure form a single dimension of discrimination, i.e., only one discriminant function is presented. Klecka (1975, p.435) states, " The maximum number of functions which can be derived is either one less than the number of groups or equal to the number of discriminating variables, if there are more groups than variables."

One indication of the importance of the identified predictor variables in predicting group membership is the absolute magnitude of their standardised discriminant function coefficients (Trabachnick & Fidell,1983). However, the stepwise selection procedure (SPSS, DISCRIMINANT) only reports standardised discriminant function coefficients for the identified significant predictor variables. If, therefore, two predictor variables correlate highly with each other, the stepwise procedure will not acknowledge the lesser predictor (Borg & Gall,1989). To further consider the contribution of each predictor variable and assist interpretation of the discriminant function, the correlations between predictor variables and each discriminant function must be examined (Trabachnick & Fidell,1983).[1] Indeed, Kinnear and Gray (1992) suggest that these correlations provide the best indication of which variables contribute most to the discriminant function, and several related studies (e.g., Fox,1990; Marsh & Peart,1988; Sonstroem et. al.,1992) report these to identify the best predictor variables. Consequently, the pooled within-groups

[1] Correlations above 0.30 are usually accepted in the interpretation of a discriminant function (Horn et al.,1993; Trabachnick & Fidell,1983).

correlations between discriminating variables and the canonical discriminant function are also presented in this study.[2]

Discriminant function analysis was also used as a classification technique. SPSS DISCRIMINANT presents prediction results which identify the percentage of cases correctly classified by the variables contributing to the discriminant functions (Klecka,1975). Sonstroem (1997) suggests that details of correct classification for particular groups may be compared with base rate percentages (i.e., the number of subjects in each designated group as a percentage of the entire sample), and this gives an indication of the adequacy of the discriminant functions to predict group membership. A discriminant function analysis would be deemed particularly successful, therefore, if predictions across all groups were above respective base rates (Sonstroem,1997). Classification tables have, therefore, been included to consider the predictive qualities of the discriminant analyses conducted for different groups of boys at different stages of school transfer.

In this way, data for pupils during secondary school transfer were gathered, processed and analysed. The following section presents the findings for these data.

[2] In Tables of findings, these are referred to as 'correlation with function'

CHAPTER FOUR

RESULTS

Introduction

This chapter presents the findings of the study. Firstly, data are analysed for the pre-and-post-transfer samples (cross-sectional study) and for the twenty-five primary-to-secondary school transferees who formed the longitudinal study. In these analyses, mean differences between the pre-and-post transfer data provide evidence of the impact of transfer on the boys' psychological and physical education characteristics. Also, relationships amongst the selected variables are examined to establish whether particular associations occur at specific stages of transition. The next section highlights the associated characteristics of poor adjustment. Data for groups of boys who recorded low self-esteem or high anxiety, or who self-reported adjustment difficulties are compared to the rest of the secondary school sample. The final section analyses the data for high and low motor performers, and boys with high or low self-perceptions in physical education. Through analyses of these subgroups, the relative importance of actual and perceived motor competence for boys during school transfer is illustrated. In summary, three sections are presented in this chapter: section one considers the changes amongst the characteristics for the primary and secondary school samples (cross-sectional survey) and for the primary-to-secondary school transferees (longitudinal survey); section two presents the findings for boys who poorly adjusted to secondary school; and Section three provides the findings for 'high', 'average', and 'low' motor performers (actual and perceived physical competence).

4.1 THE IMPACT OF SECONDARY SCHOOL TRANSFER: Comparison of Pre-and-Post Transfer Data.

This section presents the analyses of data for the independent samples of school-boys at the pre-and-post transfer stages, and the primary-to-secondary school transferees (n = 25) who formed the longitudinal study. Firstly, differences between data at each stage of transfer are considered to determine the impact of the transition to secondary school.

4.1.1 DIFFERENCES IN BOYS' PSYCHOLOGICAL CHARACTERISTICS ACROSS SCHOOL TRANSFER

(i) Pre-Transfer and Post-Transfer (*December*) Comparisons

With reference to hypothesis one[1], Table 6 presents the statistical significance of the differences for the pre-transfer and post-transfer (December) samples (cross-sectional survey). Differences were tested using Mann-Whitney U-tests taking $p<0.05$ as the mininum level of probability to determine statistical significance (Bonferroni adjustment: $p<0.003$). Since sample sizes were greater than twenty, z-values were calculated (Cohen & Holliday,1979; Hinkle et al.,1979) and, in accordance with research hypothesis one, two-tail probability levels are presented.

[1] Research hypothesis I : Levels of global self-esteem and anxiety amongst boys are expected to differ across the primary-to-secondary school divide (note: this is not the null hypothesis used to obtain the significance levels)

Table 6. Differences Between the Means of the Psychological Characteristics for the Primary School Sample and the Secondary School Sample at the December Stage (Mann-Whitney tests).

	Primary Pre-transfer		Secondary December			Two-tail probability
	Mean	SD	Mean	SD	z	(p)
Global self-esteem (%)	65.68	24.31	74.30	24.84	2.18	0.029
Stability self-image(%)	65.20	20.53	72.41	22.25	1.89	0.058
State anxiety (%)	54.10	9.95	52.48	9.13	1.00	0.315
Trait anxiety (%)	62.38	11.31	56.22	11.41	3.11	0.002

SD is Standard Deviation

Contrary to any expectation of widespread psychological disturbance amongst pupils across transfer, global self-esteem and stability of self-image were *higher*, and trait anxiety *lower* for the post-transfer sample. These trends were supported by findings for the longitudinal sample of transferees. Table 7 presents Wilcoxon tests for matched pairs of observations for these boys across the same transfer period. As noted for the independent samples, mean levels of global self-esteem and stability of self-image were higher after transfer, and anxiety levels lower.

Table 7. Differences Between the Means of the Psychological Variables at the Pre-transfer and December Post-Transfer Stages for the Longitudinal Sample of Transferees (Wilcoxon matched-pairs tests)

	Primary stage Mean	SD	Secondary (December) Mean	SD	z	Two-tail probability p
Global self-esteem (%)	62.71	26.16	71.76	23.59	1.76	0.079
Stability/self-image(%)	66.67	21.29	75.57	16.37	2.12	0.034
State anxiety (%)	55.86	12.13	52.14	7.39	0.88	0.376
Trait anxiety (%)	62.62	14.34	56.43	10.64	2.71	0.007

SD is Standard Deviation

(ii) Changes To Boys' Psychological Characteristics During their First Year at Secondary School

To determine changes to boys' psychological characteristics during the first year at secondary school (hypothesis two[2]), the significance level of the mean differences between the data at the *December* and *June* post-transfer stages were computed using the Wilcoxon test for matched samples. Table 8 reports the findings for the independent secondary school sample, and Table 9 presents data for the longitudinal sample of transferees.

[2] Research hypothesis II: During the first year at secondary school, mean levels of global self-esteem and stability of self-image are expected to rise, and anxiety levels to fall, as pupils familiarise themselves with secondary schooling.

Table 8 Differences Between the Means of the Secondary School Sample (Cross-sectional Survey) at the December and June Stages (Wilcoxon test).

	(n)	Secondary December Mean	SD	Secondary June Mean	SD	z	One-tail probability (p<)
Global self-esteem (%)	(87)	74.30	24.84	83.88	23.31	4.27	0.000
Stability Self-image(%)	(87)	72.41	22.25	77.76	24.32	1.98	0.023
State anxiety (%)	(90)	52.48	9.13	51.46	9.52	0.65	0.258
Trait anxiety (%)	(90)	56.22	11.41	53.90	11.78	2.23	0.013

(n) denotes number of subjects
SD is Standard Deviation

Table 9. Differences Between the Means of the Psychological Variables at the December and June Stages After Transfer for the Longitudinal Sample (Wilcoxon test).

	Secondary (December) Mean	SD	Secondary (June) Mean	SD	z	Two-tail probability p<
Global self-esteem (%)	71.76	23.59	87.28	21.60	2.19	0.029
Stability Self-image(%)	75.57	16.37	79.52	20.61	1.17	0.241
State anxiety (%)	52.14	7.39	53.86	8.55	0.73	0.465
Trait anxiety (%)	56.43	10.64	56.48	13.07	0.31	0.760

SD is Standard Deviation

Data for the independent secondary school sample (Table 8) and for the longitudinal sample of transferees (Table 9) provide evidence of changes in boys' psychological characteristics during their first year at secondary school. Consistent with trends across transfer, mean values for global self-esteem and stability of self-image continued to rise, whilst trait anxiety tended to decrease throughout the first year.

(iii) The Longer Term Effects of Transfer on Boys' Psychological Characteristics.

To consider the longer term effects of transfer, the means of the primary school sample were compared to those of the secondary school sample at the *June* stage after transfer. Differences in boys' psychological characteristics at these stages are presented in Table 10. Similar comparisons were also undertaken for the longitudinal sample of transferees, and Table 11 presents the findings for these pupils.

Table 10. Differences Between the Means of the Psychological Variables for the Primary School Sample and the Secondary School Sample at the *June* Stage (Mann-Whitney tests).

	Primary Pre-transfer		Secondary June			Two-tail Significance
	Mean	SD	Mean	SD	z	(p<)
Global self-esteem (%)	65.68	24.31	83.88	23.31	4.65	0.000
Stability self-image(%)	65.20	20.53	77.76	24.33	3.48	0.000
State anxiety (%)	54.10	9.95	51.45	9.52	1.41	0.157
Trait anxiety (%)	62.38	11.31	53.90	11.79	4.09	0.000

SD is Standard Deviation

Table 11. Differences Between the Means of the Psychological Variables at the Pre-transfer and *June* Post-Transfer Stages for the Longitudinal Sample of Transferees (Wilcoxon matched-pairs tests)

	Primary Pre-transfer		Secondary June			Two-tail Significance
	Mean	SD	Mean	SD	z	(p<)
Global Self-esteem	62.71	26.16	87.28	21.60	2.76	0.006
Stability self-image(%)	66.67	21.29	79.52	20.61	2.51	0.012
State anxiety (%)	55.86	12.13	53.86	8.55	0.04	0.965
Trait anxiety (%)	62.62	14.34	56.48	13.07	2.08	0.037

SD is Standard Deviation

It is evident from Table 10 and Table 11 that the noted significant differences across transfer (see Table 6 and Table 7) were further exaggerated by the end of the first year. Both the independent secondary school sample and the longitudinal sample reported significantly higher global self-esteem, higher stability of self-image, and lower trait anxiety at the *June* stage.

The analysis so far has considered the differences between boys' psychological characteristics before and immediately after transfer, as well as developments throughout the first year at secondary school. The former presents evidence of the impact of school transfer, whilst the latter provides insight into pupils changing psychological status as they familiarise themselves with new peers, teachers, procedures, and other aspects of secondary schooling. Also of interest to the

present study are the relationships amongst the variables at the different stages of transition.

(iv) Relationships Amongst the Psychological Variables Across Transfer

The relationships amongst the selected psychological variables for the independent primary and secondary school samples (cross-sectional survey) are presented in Table 12. These findings provide support for hypothesis III.[3]

Table 12. Relationships Among the Psychological Variables at Each stage of Transfer (Spearman Rank Order Correlation).

	Primary stage (n = 50)	December stage		June stage	
	ρ	(n)	ρ	(n)	ρ
Global SE/Stability of SE	.47***	(85)	.65***	(85)	.59***
Global SE/State anxiety	-.28*	(87)	-.44***	(87)	-.45***
Global SE/Trait anxiety	-.47***	(87)	-.66***	(87)	-.48***
Stability of SE/State anxiety	-.40**	(87)	-.37***	(87)	-.29**
Stability of SE/Trait anxiety	-.34**	(87)	-.67***	(87)	-.58***
State anxiety/Trait anxiety	.37**	(90)	.48***	(90)	.48***

n denotes number of subjects.
One-tailed probability: * p<.05. **p<.01. ***p<.001.

[3] Research hypothesis III: Global self-esteem is expected to correlate positively with stability of self-image and negatively with anxiety across school transfer. Also, boys who are more sure of themselves (i.e., report higher stability of self-image) are expected to report lower levels of anxiety.

The positive correlations not only associate high global self-esteem with high stability of self-image, but also suggest boys with low self-esteem were more unsure of themselves. In addition, the negative correlations between the 'self' ratings and the anxiety measures indicate inverse relationships, i.e., low global self-esteem and stability of self-image tended to be associated with high state and trait anxiety. Similarly, high global self-esteem and stability of self-image were related to low anxiety. Relationships amongst the psychological variables were, however, less reliable for the longitudinal sample of transferees (see Table 13). Although most relationships were statistically significant ($p<0.05$) at the pre-transfer stage, few correlated to the same degree at the December and June post-transfer stages.

Table 13. Relationships Among the Psychological Variables for the Longitudinal Sample of transferees at Each Stage of Transfer (Spearman Rank Order Correlations).

	Primary stage ρ	December stage ρ	June stage ρ
Global SE/Stability of SE	.49*	.54**	.30
Global SE/State anxiety	-.30	-.04	-.30
Global SE/Trait anxiety	-.48*	-.21	-.29
Stability of SE/State anxiety	-.45*	-.12	-.27
Stability of SE/Trait anxiety	-.57**	-.42*	-.38*
State anxiety/Trait anxiety	.60**	.17	.54**

One-tailed probability: * p<.05. **p<.01. ***p<.001.

Nevertheless, certain correlations are noteworthy, particularly the significant relationship between global self-esteem and stability of self-image across school transfer. This positive correlation suggests that boys with high global self-perceptions were more sure of themselves before transfer and after entering secondary school. In contrast, boys with low general self-perceptions were less sure of themselves at these critical stages. It is also evident that the relationship between stability of self-image and trait anxiety was consistent at each stage of transfer (Table 13). This negative correlation indicates that boys who were more sure of themselves during the transition to secondary school were less anxious, whilst those less sure of themselves were most anxious.

4.1.2 DIFFERENCES IN BOYS' PHYSICAL EDUCATION CHARACTERISTICS ACROSS TRANSFER

This section considers the changes in boys' motor performance, attitudes to physical education, and physical education self-esteem during the transition to secondary school.

(i) Pre-Transfer and Post-Transfer (*December*) Comparisons

Table 14 and Table 15 present the differences between the means of the physical education variables across transfer for the cross-sectional samples and the longitudinal sample, respectively.

Table 14. Differences Between the Means of the Physical Education Characteristics for the Primary School Sample and the Secondary School Sample at the *December* Stage (Mann-Whitney tests).

	Primary Pre-transfer		Secondary December			One-tail probability
	Mean	SD	Mean	SD	z	(p)
Agility time (seconds)	19.76	1.69	20.04	1.74	2.98	0.217
Basketball throw (m)	4.50	1.10	4.90	0.94	1.73	0.022
Broad jump(cm)	153.98	22.43	150.75	29.16	1.35	0.350
Toss & catch (#)	13.86	6.15	15.68	4.35	0.97	0.167
Attitude to PE(%)	79.88	27.60	76.23	25.94	1.46	0.356
PE self-esteem (%)	79.82	20.28	76.86	26.06	0.06	0.364

SD is Standard Deviation

With reference to hypothesis IV[4], motor task means for the secondary school independent sample were only significantly higher for the basketball throw (Table 14), and no significant differences ($p<0.05$) were evident for any of the other motor performance tasks. Indeed, mean performance levels on the agility and broad jump tasks were poorer for the secondary school sample, although not statistically significant.

[4] Research hypothesis IV: Levels of motor performance are expected to increase across the age range.

Table 15. Differences Between the Means of the Physical Education Variables at the Pre-transfer and *December* Post-transfer Stages for the Longitudinal Sample of Transferees (Wilcoxon matched-pairs tests).

	Primary stage Mean	SD	Secondary (December) Mean	SD	z	One-tail probability p<
Agility time (seconds)	19.97	1.75	21.48	2..56	2.98	0.014
Basketball throw (m)	4.49	1.38	4.84	1..28	1.73	0.042
Broad jump (cm)	150.53	27.76	142.47	40.00	1.35	0.089
Toss & catch (#)	13.63	7.33	16.37	5.36	2.20	0.014
Attitude to PE (%)	81.81	25.35	81.71	22.79	0.37	0.356
PE Self-esteem (%)	81.19	19.62	81.19	21.81	0.35	0.363

SD is Standard Deviation

For the longitudinal sample of transferees (Table 15), significant ($p<0.05$) improvements after transfer were also evident for the basketball throw, as well as for the toss and catch task. Of interest, the mean time for the agility task and the mean distance for the broad jump were inferior following transfer; a finding mirrored for boys in the cross-sectional survey.

Comparisons across transfer for physical education self-esteem (PESE) did not reveal a significant deterioration as might have been expected.[5] Although levels of PESE were lower for the secondary school sample (Table 14), these were not statistically significant ($p<0.05$), nor were they likely to be of practical significance. Similarly, with respect to attitudes towards physical education,[6] mean values were high and consistent across transfer (Table 14 & Table 15), indicative of positive attitudes to physical education amongst most boys.

(ii) Changes To Boys' Physical Education Characteristics During their First Year at Secondary School

To determine changes in boys' physical education characteristics during their first year at secondary school, mean differences between December and June were calculated. Table 16 and Table 17 provide the data for the secondary school sample (cross-sectional survey) and the longitudinal sample, respectively.
Table 16 reveals that significantly 'higher' mean values were apparent at the *June* stage for three of the four motor tasks, and for physical education self-esteem. The means for attitude to physical education and the basketball throw task were also higher at the *June* stage, although changes were not statistically significant ($p<0.05$).

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[5] Research hypothesis V: The new and extended peergroup at secondary school is likely to cause children to self-reference according to a different framework. As a consequence, lower self-perceptions of performance in physical education (physical education self-esteem) are expected after school transfer.

[6] Research hypothesis VI: Attitudes to physical education will be positive amongst most final year primary schoolboys and first year secondary schoolboys.

Table 16. Differences Between the Means of the Secondary School Sample at the *December* and *June* Stages (Wilcoxon test).

	(n)	Secondary December Mean	SD	Secondary June Mean	SD	z	One-tail Probability (p<)
Agility time (seconds)	(57)	20.04	1.74	19.24	1.26	4.28	0.000
Basketball throw (m)	(57)	4.90	0.94	4.99	0.92	0.93	0.813
Broad jump(cm)	(57)	150.75	29.16	161.28	19.07	3.74	0.000
Toss & catch (#)	(57)	15.68	4.35	19.02	4.34	5.04	0.000
Attitude to PE(%)	(92)	76.23	25.94	78.79	27.82	1.68	0.937
PE self-esteem (%)	(92)	76.86	26.06	81.93	25.82	2.80	0.005

(n) denotes number of subjects
SD is Standard Deviation

Table 17. Differences Between the Means of the Physical Education Variables at the *December* and *June* Stages After Transfer for the Longitudinal Sample (Wilcoxon tests).

	Secondary (December) Mean	SD	Secondary (June) Mean	SD	z	One-tail Probability p<
Agilty time (seconds)	21.48	2.56	19.88	1.89	3.34	0.000
Basketball throw (m)	4.84	1.28	5.02	1.27	1.44	0.075
Broad jump (cm)	142.47	40.00	153.74	23.62	2.13	0.016
Toss & catch (#)	16.37	5.36	17.21	6.06	1.65	0.049
Attitude to PE (%)	81.71	22.79	85.28	14.47	0.36	0.360
PE self-esteem (%)	81.19	21.81	84.28	20.16	0.80	0.210

SD is Standard Deviation

For the longitudinal sample (Table 17), mean improvements for all the physical education variables were evident at the *June* stage of transfer. Whilst mean differences for the agility, toss and catch, and broad jump tasks were statistically significant ($p<0.05$), differences for general attitude to physical education, physical education self-esteem, and distance for the basketball throw, were not.

(iii) The Longer Term Effects of Transfer on Boys' Physical Education Characteristics.

Comparisons between the physical education characteristics of boys at the primary school stage and at the *June* post-transfer stage provides an indication of the longer term effects of transfer, and possible effects of physical maturation. Table 18 presents the data from the cross-sectional survey, whilst Table 19 considers the findings for the longitudinal sample.

Table 18. Differences Between the Means of the Primary School Sample and the Secondary School Sample at the *June* Stage (Mann-Whitney tests).

	Primary Pre-transfer		Secondary June			One-tail Significance
	Mean	SD	Mean	SD	Z	(p<)
Agility time (seconds)	19.76	1.69	19.24	1.26	1.42	0.078
Basketball throw (m)	4.50	1.10	4.99	0.92	2.49	0.006
Broad jump(cm)	153.98	22.43	161.28	19.07	1.45	0.074
Toss & catch (#)	13.86	6.15	19.02	4.34	4.52	0.000
Attitude to PE(%)	79.88	27.60	78.79	27.82	0.35	0.365
PE Self-esteem (%)	79.82	20.28	81.93	25.83	2.30	0.011

SD is Standard Deviation

Relatively small differences in the boys' physical education characteristics are apparent across the year of transfer (Table 18 & Table 19). However, the data identifies significantly better mean performances ($p<0.05$) on the basketball throw and toss and catch tasks for boys at the *June* post-transfer stage. These may represent general improvements in strength and coordination amongst boys of this age. Mean values for attitudes to physical education and physical education self-esteem appear high and consistent throughout the transition period. In terms of statistical significance, the mean difference for physical education self-esteem in the cross-sectional survey (Table 18) contravenes theoretical expectations.[7] However, whether this finding has practical significance is questionable.

Table 19. Differences Between the Means of the Physical Education Variables at the Pre-transfer and *June* Post-Transfer Stages for the Longitudinal Sample of Transferees (Wilcoxon matched-pairs tests)

	Primary stage Mean	SD	Secondary (June) Mean	SD	z	One-tail probability p<
Agility time (seconds)	19.97	1.75	19.88	1.89	0.80	0.210
Basketball throw (m)	4.49	1.38	5.02	1.27	2.21	0.013
Broad jump (cm)	150.53	27.76	153.74	23.62	0.66	0.253
Toss & catch (#)	13.63	7.33	17.21	6.06	3.50	0.000
Attitude to PE (%)	81.81	25.35	85.28	14.47	0.22	0.413
PE Self-esteem (%)	81.19	19.62	84.29	20.16	1.06	0.150

SD is Standard Deviation

[7] Research hypothesis V: The new and extended peergroup at secondary school is likely to cause children to self-reference according to a different framework. As a consequence, lower self-perceptions of performance in physical education (Physical Education Self-Esteem) are expected after transfer.

(iv) Attitudes to Physical Education Across Transfer

To determine if boys' attitudes towards specific aspects of physical education varied before and after secondary school transfer, responses of the primary and secondary school samples to School Questionnaire One were compared. A summary of the responses from schoolboys at the different stages of transfer (Primary, Secondary *December* and Secondary *June*) is presented in Table 20.

Of note, physical education and games were liked by virtually all the boys at each stage of transfer (92%, 92%, and 93%, respectively) and more than one-in-three of the pre-transfer sample considered it their favourite school subject (38%). Of the secondary school sample, more than one-in-five (22%) recorded a similar preference after transfer at the *December* stage rising to approximately one-in-three (33%) by the June stage.

Features associated with physical education which were particularly popular amongst pupils included 'choosing a friend to work with' (96%, 97% and 96% at each stage, respectively), 'playing in a team' (86%, 95%, 91%) and 'being shown how to do something' (76%, 85%,77%). In addition, a variety of personal reasons for enjoying physical education were revealed and included 'healthy', 'fun', 'run around', 'exciting', 'freedom' and 'competitive'.

Table 20. Responses from Pre-and-Post Transfer Pupils to Aspects of Physical Education.

	Pre-transfer Primary stage	Post-transfer (December stage)	Post-transfer (June stage)
Like PE and games.	92%	92%	93%
PE as favourite school subject.	38%	22%	33%
Look forward to PE.	88%	90%	89%
Boys who would choose to do PE.	90%	84%	88%
Like choosing a friend to work with.	96%	97%	96%
Like playing in a team.	86%	95%	91%
Like organising games or teams.	62%	72%	64%
Like being shown how to do something.	76%	85%	77%
Like being told how to do something.	66%	84%	75%
Like to shower after PE lesson	82%	74%	51%
Like changing clothes for PE	64%	80%	76%
Like to wear own choice of PE clothes	92%	70%	79%
Like competing against friends in PE	58%	70%	78%
Dislike working on own	84%	79%	76%
Dislike showing work to rest of class	64%	52%	66%
Dislike making up own work	50%	20%	25%
Boys confused(at least sometimes)in PE	46%	41%	30%
Boys frightened by some PE activities	10%	19%	20%
Boys who would like PE less if it included homework	30%	38%	40%

N.B. Pre-and-post transfer responses were from independent samples of primary and secondary schoolboys. Responses at the December and June stages were from the same sample of secondary schoolboys.

Aspects of physical education which were particularly disliked by the samples included 'working on your own' (84%, 79%, 76%) and 'showing work to the rest of the class' (64%, 52%, 66%). Further negative expressions included 'working with people you don't like', ' people laughing if you do something wrong', 'no good at it' and 'dangerous'. A small proportion of the boys at each stage (10%, 19%, 20%) suggested there were activities in physical education which frighten them and these included 'high' activities on apparatus, rugby tackling, and a variety of athletic events (javelin, high jump and hurdles).

Table 20 also reveals aspects of physical education which received noticably different responses from the pre-and-post transfer samples. Of note, more of the secondary school sample enjoyed: (1) competing against their friends, (2) being told how to do something, and (3) making up their own work. However, increasingly more of them disliked showering after the lesson, and were frightened by some physical education activities.

Responses from boys who did not like physical education provided additional insight into popular and unpopular aspects of the subject. Findings for the small group of pre-transfer boys who showed the least positive attitude towards physical education (n = 6, Scale score = 0) revealed that none of this subgroup looked forward to physical education; none liked showing their work to the rest of the class or making up their own work; all were confused either sometimes or often in physical education lessons; five-out-of-six considered themselves average (or less) performers in physical education; and four-out-of-six thought they were no good at

all. Positive responses from this subgroup included choosing a friend to work with (five-out-of-six), and playing in a team (four-out-of-six).

Of the post-transfer sample, eight boys at the December and June stages indicated that they did not like physical education and games. Aspects of physical education which the majority of these boys disliked included: 'competing against friends' (six boys at the December stage; five boys at the June stage); 'showing work to the rest of the class' (seven and eight boys, respectively); and 'making up own work' (five boys at each stage). Positive responses were recorded for 'playing in a team' (six boys at each stage); wearing own choice of clothes for PE lessons (eight and seven boys, respectively); 'being shown how to do something (eight and six boys, respectively); and 'choosing a friend to work with' (seven and eight boys, respectively). Whilst the small sample sizes prevent generalisation of findings, opinions from these disaffected boys are similar at the pre-and-post transfer stages and merit further investigation.

(v) Relationships Amongst the Physical Education Variables Across Transfer.

To address hypothesis VII,[8] relationships amongst the physical education variables were calculated using Spearman Rank Order Correlations (ρ). Correlations for the

[8] Research hypothesis VII: Relationships amongst the physical education measures (attitudes to physical education, motor performance, and physical education self-esteem) will be positive and significant before and after school transfer.

cross-sectional and for the longitudinal data are presented in Table 21 and Table 22, respectively.

Table 21. Relationships Among the Physical Education Variables at Each Stage of Transfer For the Independent Primary School and Secondary School Samples (Spearman Rank Order Correlations).

	Primary stage ρ	December stage ρ	June stage ρ
Motor Performance/ PESE	.37**	43***	.34**
Motor Performance/Attitude PE	.52***	.19	.40**
PESE/Attitude PE	.36**	.39***	.46***

One-tailed probability: * p<.05. **p<.01. ***p<.001.

Table 22. Relationships Among the Physical Education Variables for the Longitudinal Sample at Each Stage of Transfer (Spearman Rank Order Correlations)

	Primary stage ρ	December stage ρ	June stage ρ
Motor Performance/PESE	.46*	.21	.29
Motor Performance/Attitude PE	.74***	-.24	.05
PESE/Attitude PE	46*	.11	.04

One-tailed probability: * p<.05. **p<.01. ***p<.001.

The significant relationships amongst all the physical education measures at the pre-transfer stage are particularly noteworthy. The positive correlations indicate high (better) scores on each variable tended to be associated. Similarly, however, low scores also tended to match. For the primary and secondary school independent samples, high motor performance correlated with high self-perceptions of performance in physical education and attitude to physical education. However, for the longitudinal sample of transferees, the significant correlations amongst the physical education variables at the primary school stage were conspicuous by their absence at the secondary school stages. A somewhat similar pattern was apparent for these boys with respect to the psychological variables (Table 13). Perhaps the relatively small sample of longitudinal transferees contributed to this outcome.

(vi) Relationships Amongst the Physical Education and Psychological Variables.

In order to address hypothesis VIII[9] and consider the associations between boys' physical education and psychological characteristics throughout the crucial school transfer period, Table 23 and Table 24 report pre-and-post transfer correlations between the selected variables.

[9] Research hypothesis VIII: Across transfer, attitudes to physical education, motor performance, and physical education self-esteem will be positively related to global self-esteem and stability of self-image, and negatively related to anxiety.

Table 23. Relationships Among the Psychological and Physical Education Variables for the Primary and Secondary School Independent Samples (Spearman Rank Order Correlation Coefficients).

	Primary stage	December stage		June stage	
	ρ	(n)	ρ	(n)	ρ
Motor Performance/Global SE	.20	(49)	47***	(49)	.21
Motor Performance/Stability SI	.12	(49)	.18	(49)	.14
Motor Performance/State anx.	- .07	(50)	- .15	(50)	- .01
Motor Performance/ Trait anxiety	- .18	(50)	- .18	(50)	- .09
Attitude PE/Global SE	48***	(81)	.21*	(81)	.27**
Attitude PE/Stability of SI	.12	(81)	.12	(81)	.23*
Attitude PE/State anxiety	- .24*	(84)	- .20*	(84)	- .05
Attitude PE/Trait anxiety	- .31*	(84)	- .15	(84)	- .22*
PE Self-esteem/Global SE	40**	(81)	.62***	(81)	.53***
PE Self-esteem/Stability of SE	.56***	(81)	.38***	(81)	.49***
PE Self-esteem/State anxiety	- .39**	(84)	- .33***	(84)	- .26**
PE Self-esteem/Trait anxiety	- .19	(84)	- 47***	(84)	-.55***

(n) denotes number of subjects.
One-tailed probability: * p<.05. **p<.01. ***p<.001.

Table 24. Relationships Amongst the Psychological and Physical Education Variables for the Longitudinal Sample at Each Stage of Transfer (Spearman Rank Order Correlations).

	Primary stage ρ	December stage ρ	June stage ρ
Motor Performance/Global SE	.44*	-.11	.04
Motor Performance/Stability of SI	.09	-.02	.02
Motor Performance/ State anxiety	-.15	.23	.06
Motor Performance/ Trait anxiety	-.36	-.35	-.36
Attitude to PE/Global SE	.52**	-.19	-.03
Attitude to PE/Stability of SI	.16	.02	-.25
Attitude to PE/ State anxiety	-.26	-.09	-.24
Attitude to PE/ Trait anxiety	-.24	.05	-.07
PE Self-esteem/Global SE	43*	.23	44*
PE Self-esteem/Stability of SI	.63***	.23	-.14
PE Self-esteem/ State anxiety	-.46*	.04	.09
PE Self-esteem/ Trait anxiety	-.35	-.12	-.06

One-tailed probability: * p<.05. **p<.01. ***p<.001.

Table 23 and Table 24 reveal very few significant correlations between boys' motor performance and the selected psychological characteristics across transfer. Motor performance did not significantly correlate ($p<0.05$) with stability of self-image, state anxiety, or trait anxiety at any stage of transfer. However, significant

correlations ($p<0.05$) with global self-esteem were evident at the pre-transfer stage for the longitudinal sample and at the post-transfer *December* stage for the independent secondary school sample.

With respect to pupils' attitude to physical education, significant positive correlations were apparent with global self-esteem for the independent primary and secondary school samples. Other significant correlations for these samples indicated that attitude to physical education was negatively associated with anxiety across transfer, as predicted.[10]

The significant correlations between physical education self-esteem (PESE) and the psychological measures for the independent primary and secondary school samples are particularly noteworthy. Virtually all correlations were significant ($p<0.05$) and, as hypothesised,[10] higher physical education self-esteem was associated with higher global self-esteem and stability of self-image, and lower state and trait anxiety. However, even for PESE, very few correlations of statistical significance ($p<0.05$) were reported for the longitudinal sample. Consequently, some interpretive caution is warranted. Perhaps, as previously noted, sample size is a critical factor, and further study of a larger longitudinal sample may provide additional support for the findings of the cross-sectional survey.

[10] Research hypothesis VIII: Across transfer, attitudes to physical education, motor performance, and physical education self-esteem will be positively related to global self-esteem and stability of self-image, and negatively related to anxiety.

4.1.3 THE INFLUENCE OF GROWTH AND DEVELOPMENT

Most predictably, perhaps, were differences in height, weight, body mass index and skinfold totals for the samples during school transfer. Table 25 and Table 26 show significant anthropometric differences for the independent samples, and Table 27 provides similar data for the longitudinal sample at each stage of transfer.

Table 25. Differences Between the Means of the Physical Education Characteristics for the Primary School Sample and the Secondary School Sample at the *December* Stage (Mann-Whitney tests).

	Primary Pre-transfer		Secondary December			One-tail probability
	Mean	SD	Mean	SD	z	(p)
Height (cm)	146.28	8.14	150.35	6.46	2.85	0.002
Weight (Kg)	37.95	6.54	43.96	7.70	3.95	0.000
B.M.I. (kg/m^2)	17.56	1.81	19.35	2.66	3.68	0.000
Skinfolds (mm)	34.15	13.51	31.37	15.38	1.60	0.055

Table 26. Differences Between the Means of the Secondary School Sample at the *December* and *June* Stages (Wilcoxon test).

	Secondary December		Secondary June			One-tail probability
	Mean	SD	Mean	SD	z	(p<)
Height (cm)	150.35	6.46	153.86	6.76	6.59	0.000
Weight (Kg)	43.96	7.70	46.14	8.10	6.14	0.000
B.M.I. (kg/m^2)	19.35	2.66	19.39	2.59	0.24	0.406
Skinfolds (mm)	31.37	15.38	31.61	15.16	0.43	0.333

Table 27. Differences Between the Means of the Anthropometric Measures at the Pre-Transfer and Post-Transfer Stages for the Longitudinal Sample (Friedman test).

	Pre-Transfer Mean	SD	December Mean	SD	June Mean	SD	χr^2	Two-tail probability ($p<$)
Height (cm)	145.26	7.64	148.16	8.23	151.76	8.47	35.24	0.000
Weight (Kg)	37.10	6.54	41.37	8.32	44.05	9.49	28.74	0.000
B.M.I. (kg/m^2)	17.41	1.83	18.65	2.06	18.89	2.25	24.10	0.000
Skinfolds (mm)	33.15	14.80	29.99	14.67	29.49	12.70	7.18	0.027

SD is Standard Deviation

The anthropometric data for the independent and longitudinal samples of school-boys provide consistent findings across the transfer period (Tables 25, 26 and 27). As expected, significant increases in mean height and weight were evident at each stage of transfer. Of interest, mean values for Body Mass Index (BMI) were significantly higher at the *December* stage for both the independent sample and the longitudinal sample of secondary schoolboys, whilst significantly *lower* mean skinfold totals were reported for these boys at this post-transfer stage. These data appear contradictory, i.e., mean BMI suggests increased obesity after transfer, whilst the mean skinfold totals suggests decreased obesity. One explanation which may be proffered centres on the nature of BMI during childhood and adolescence. Whilst BMI and skinfold totals may be indicators of obesity in adult populations (Malina & Bouchard,1991), with growing children, BMI represents a developmental indicator. In this way, the findings for BMI suggest greater

increases in weight in relation to height across the school transfer period, where weight increases were not apparently due to increases in skinfold fat. This suggests weight increases may have been due to development of bone or muscle tissue, or fat deposition in other areas of the body. Notably, no significant mean differences were evident for BMI or skinfold totals between the December and June stages at secondary school.

To study the possible influence of the developmental factors, and address hypothesis IX,[11] correlations between the physical education variables and the selected growth and development variables were calculated. Table 28 presents the findings. It is evident that motor performance was significantly related to age, with older boys at each stage of transfer tending to perform better on the motor tasks than their younger counterparts. The significant negative correlations between motor performance and skinfold totals, body mass index, and weight indicate that higher motor performance at secondary school tended to be associated with lower body weight, skinfold totals, and body mass indices. Lesser able motor performers, therefore, tended to be heavier and recorded higher fat skinfold totals and body mass indices.

Few significant correlations were reported between the growth indicators and physical education self-esteem. However, there was evidence to suggest that the way boys perceive themselves in physical education at secondary school may be

[11] Research hypothesis IX: Age and physical growth are significant factors during school transfer. Boys who are older, taller, or have lower skinfold totals are expected to record significantly higher motor performance and physical education self-esteem than their peers. They are also predicted to demonstrate different psychological profiles (higher self-esteem and stability of self-image, and lower anxiety).

related to their physique and body composition. Negative correlations suggest that boys with higher self-perceptions in physical education weighed less, had lower skinfold totals, and recorded lower body mass indices. Of particular interest, these relationships appear to be strongest during the early stage at secondary school when, perhaps, *specific* and *global* self-perceptions may be most vulnerable and turbulent.

Table 28. Relationships Between Physical Education and Growth and Development Variables at Each Stage of Transfer For the Independent Samples (Spearman Rank Order Coefficients).

	Primary stage ρ	December stage ρ	June stage ρ
Motor P/Age	0.29*	0.36**	0.30*
Motor P/Height	0.25*	0.00	- 0.07
Motor P/Weight	0.21	- 0.25*	- 0.25*
Motor P/BMI	0.08	- 0.40***	- 0.28*
Motor P/Skinfold	- 0.07	- 0.50***	- 0.43***
PE Self-Esteem/Age	0.08	0.99	0.03
PE Self-Esteem/Height	- 0.04	- 0.20	- 0.13
PE Self-Esteem/Weight	- 0.16	- 0.26*	- 0.17
PE Self-Esteem/BMI	- 0.16	- 0.31*	- 0.11
PE Self-Esteem/Skinfold	- 0.19	- 0.34**	- 0.25*
Attitude PE/Age	0.30*	0.02	0.05
Attitude PE /Height	0.25*	0.08	- 0.25*
Attitude PE /Weight	0.13	0.01	- 0.26*
Attitude PE /BMI	- 0.07	0.00	- 0.18
Attitude PE /Skinfold	0.19	- 0.01	- 0.22

One-tailed probability: * p<.05. **p<.01. ***p<.001.

Boys' attitudes towards physical education did not appear to be strongly related to the selected anthropometric measures. Consistent patterns across school transfer did not emerge, although older and taller boys at primary school reported the most positive attitudes to physical education. The negative correlations evident at the *June* post-transfer stage suggest that boys who were taller, or heavier, or who recorded higher skinfold totals were less disposed towards physical education. Of interest, these negative tendencies were not apparent before or soon after transfer, but appeared to develop and emerge by the end of the first year at secondary school.

A similar analysis of the relationships between the growth indicators and the selected psychological characteristics revealed few significant associations (only five of sixty correlations had one-tail probabilities <0.05). Indeed, no consistent findings across school transfer were apparent. Nevertheless, (1) older and heavier primary schoolboys reported higher state anxiety (age & state anxiety, $\rho = 0.35$, $p<0.05$; weight & state anxiety, $\rho = 0.26$, $p<0.05$); (2) older and heavier boys at the *December* post-transfer stage were more sure of themselves (age & stability of self-image, $\rho = 0.19$, $p<0.05$; weight & stability of self-image, $\rho = 0.25$, $p<0.05$); and (3) taller secondary schoolboys at the *June* post-transfer stage reported lower global self-esteem (height & global self-esteem, $\rho = -0.30$, $p<0.05$) and stability of self-image (height & stability of self-image, $\rho = -0.27$, $p<0.05$). Although these findings illustrate that boys' global self-esteem, stability of self-image, and state and trait anxiety were not consistently related to age, physique, or body composition during school transfer, it remains conceivable that growth and

developmental factors may have strongly influenced correlations amongst the physical education and psychological characteristics.[12] For example, older and more physically mature children generally possess higher levels of motor performance (Beunen et al.,1988; Rarick,1973), and it is possible that these characteristics may positively influence physical and/or global self-perceptions. Calculating partial correlations is one way to assess bivariate relationships whilst removing the influence of other factors, e.g., growth and development characteristics (for more details see Borg & Gall,1989; Hinkle et al.,1979; Thomas & Nelson,1990). However, given that interval level data are a normally accepted requirement for this statistical technique, it was considered necessary for the data in the present study to be normalised (mean = 0 & standard deviation = 1) in order to increase confidence in any statistical inferences. In subsequent analyses, age, height, weight, body mass index and skinfold totals were individually and collectively partialed out, and the findings are presented Appendices IV, V, & VI. Since the correlations amongst the physical education and psychological characteristics at each stage of transfer were essentially unchanged after the growth and development indicators had been partialed out, these indicators were not considered to be significant influences on the relationships.

[12] Research hypothesis X: Relationships amongst the physical education and psychological characteristics will be influenced by age and growth at each school transfer stage.

4.1.4 SUMMARY OF FINDINGS: Psychological & Physical Education Characteristics During Secondary School Transfer

1. Mean levels of global self-esteem and stability of self-image were significantly higher, and trait anxiety lower, for the post-transfer secondary schoolboys.

2. Increases in mean levels of global self-esteem and stability of self-image were apparent during the first year at secondary school. Reduced mean levels of anxiety were also evident during the same period.

3. Significant correlations amongst the psychological variables were reported at all stages of transfer. Of note, high global self-esteem correlated with high stability of self-image, low state anxiety, and low trait anxiety. In addition, correlations suggested that boys who were more sure of themselves (higher stability of self-image) recorded lower levels of anxiety.

4. Higher mean performances on each motor task was generally evident for the post-transfer secondary schoolboys. However, notably lower mean values for the agility and standing broad jump tasks were reported at the December stage.

5. No significant mean differences were apparent across school transfer for physical education self-esteem (PESE) and general attitude to physical education (GAPE). Mean values were high (>75%) for both variables at each transfer stage. These findings suggest that most boys before and after school transfer had high self-perceptions of performance in physical education and positive attitudes towards physical education. Evidence during the first year at secondary school revealed increases in mean GAPE as well as unpredicted increases in mean levels of PESE.

6. Comparisons between the primary and secondary schoolboys' responses to particular aspects of physical education revealed that more of the secondary school sample enjoyed competing against their friends, being told how to do something and making up their own work. However, more of them disliked showering after the lesson, and were frightened by some physical education activities.

7. Significant positive relationships were apparent amongst all the physical education measures at the pre-transfer stage. Similar findings were evident at the post-transfer stages for the independent sample of secondary schoolboys, but not for the longitudinal sample of transferees.

8. In general, motor performance did not correlate with the psychological characteristics at any stage of school transfer. Boys' demonstrated physical competence was not, therefore, related to their psychological disposition during the transfer period.

9. Physical education self-esteem correlated with all the psychological characteristics at each stage of transfer for the independent samples of primary and secondary schoolboys. Higher physical education self-esteem was associated with higher global self-esteem and stability of self-image, and lower state and trait anxiety.

10. Correlations between attitude to physical education and the psychological characteristics were inconsistent across school transfer. However, in general, more positive attitudes to physical education were associated with higher global self-esteem and stability of self-image, and lower levels of anxiety.

11. Age and physical growth were significantly related to boys' motor performance. Lower levels of motor performance were associated with boys who were younger, heavier, or who had higher skinfold totals.

12. During the first term at secondary school, boys' self-perceptions of performance in physical education (PESE) were significantly related to body weight, body mass index and skinfold totals. Boys who were heavier, or recorded higher body mass indices or higher skinfold totals reported lower PESE.

13. Boys' psychological characteristics were not consistently related to age or physical growth across school transfer. In addition, partial correlations suggested that the relationships amongst the physical education and psychological characteristics were not significantly influenced by age and physical growth.

4.2 POOR ADJUSTMENT AT SECONDARY SCHOOL

The analysis of data so far has considered the mean differences and relationships amongst the selected variables for samples of primary and secondary schoolboys, and for a longitudinal sample of transferees. Whilst the general findings have revealed higher mean levels of global self-esteem and lower mean levels of anxiety amongst boys at secondary school, some pupils did report low self-esteem and high anxiety after transfer and were, therefore, exhibiting signs of poor adjustment (Measor & Woods,1984; Stoll,1987; Youngman & Lunzer,1977). In this section, specific findings for boys identified as 'poorly adjusted' to secondary school are presented. Groups of boys were categorised as poorly adjusted according to three adjustment indicators: (1) 'low' scores for global self-esteem (the Low Self-esteem Group: LSEG), (2) 'high' trait anxiety scores (the High Anxiety Group: HAG), and (3) self-reported difficulties adjusting to secondary school (Poorly Adjusted Group: PAG). For clarity, the analyses of data for each group are presented separately, although common features are summarised and further considered in the discussion of findings (chapter Five). The purpose of this section is, therefore, to establish if boys exhibiting poor adjustment to secondary school report different

psychological, physical education, and anthropometric characteristics compared to the rest of the secondary school sample.[13]

4.2.1 BOYS RECORDING 'LOW' GLOBAL SELF-ESTEEM AT SECONDARY SCHOOL (LSEG)

The importance of the self dimension during childhood, and its association with school transfer and adjustment, prompted analysis of secondary school pupils with low levels of global self-esteem. At both post-transfer stages, boys who scored fifty percent or less on the Rosenberg Self-esteem scale (1965) formed the 'low self-esteem' group (LSEG), and this group was compared with the rest of the sample (i.e., the group of boys scoring over fifty percent on Rosenberg's scale). In addition, data for boys reporting low self-esteem at the *December* post-transfer stage were further analysed at the *June* post-transfer stage. This analysis was undertaken to assess the consistency of the characteristics associated with low self-esteem during the first year at secondary school, and provide further insight into the predictors of low self-esteem.

(i) Low Self-Esteem At the December & June Post-Transfer Stages.

At each post-transfer stage, a stepwise discriminant analysis was performed using eleven variables as predictors of membership in two groups. Predictor variables

[13] Research hypothesis XI: Boys exhibiting poor adjustment to secondary school have concomitant negative psychological and physical education characteristics, i.e., boys categorised as poorly adjusted are predicted to (1) be less sure of themselves, (2) have significantly lower global self-esteem, (3) have higher levels of anxiety, (4) have lower motor performance and physical education self-esteem, and (5) have less positive attitudes to physical education than their secondary school colleagues.

were attitude to physical education, motor performance, physical education self-esteem, stability of self-image, state anxiety, trait anxiety, age, height, weight, body mass index, and skinfold totals. The two groups were 'low self-esteem' and 'rest of the sample' (i.e., boys not recording low self-esteem). Table 29 and Table 30 show the results of analyses for the secondary school sample at the *December* and *June* post-transfer stages, respectively.

Table 29 Discriminant Analysis using the Psychological, Physical Education and Anthropometric Variables (normalised data) as Discriminators of Self-esteem at the *December* Post-Transfer Stage.

Variable	Low Self-esteem Mean	SD	Rest of Sample Self-esteem Mean	SD	Standard Discrim. func.coeff.	correlation with function
Attitude PE	- 0.25	1.16	- 0.04	0.93	-	- 0.18
Motor Perf.	- 0.41	0.73	0.17	0.70	- 0.52	- 0.45
PE Self-esteem	- 0.86	0.99	0.17	0.88	-	- 0.33
Stability of SI	- 0.84	0.91	0.24	0.89	-	- 0.47
State Anxiety	0.82	1.14	- 0.24	0.84	0.42	0.63
Trait Anxiety	0.93	0.89	- 0.28	0.88	0.68	0.74
Age	0.00	1.08	- 0.04	0.98	-	- 0.08
Height	0.19	0.72	0.02	0.75	-	- 0.22
Weight	0.13	0.86	0.02	0.74	-	0.01
BMI	0.03	0.76	0.02	0.80	-	0.13
Skinfold	- 0.01	0.74	0.03	0.78	-	0.18

Eigenvalue = 0.61; Canonical R = 0.62; χ^2 (3) = 39.86, p = 0.000

	Classification table	
	% base rate	Correctly Classified (%)
Low Self-esteem group	23.0	65.0
Rest of Sample	77.0	94.0
Total	100.0	87.4

Table 30 Discriminant Analysis using the Psychological, Physical Education and Anthropometric Variables (normalised data) as Discriminators of Self-esteem at the *June* Post-Transfer Stage.

Variable	Low Self-esteem Mean	SD	Rest of Sample Self-esteem Mean	SD	Standard Discrim. func.coeff.	correlation with function
Attitude PE	- 0.97	1.65	0.11	0.79	-	- 0.32
Motor Perf.	- 0.37	0.75	0.10	0.72	-	- 0.07
PE Self-esteem	1.25	1.12	0.17	0.81	- 0.68	- 0.73
Stability of SI	- 1.14	1.12	0.15	0.87	-	- 0.38
State Anxiety	1.29	1.33	- 0.20	0.81	0.68	0.74
Trait Anxiety	0.88	1.10	- 0.16	0.92	-	0.56
Age	- 0.31	1.10	0.01	0.98	-	0.09
Height	0.18	0.84	0.04	0.74	-	0.10
Weight	- 0.08	0.83	0.06	0.75	-	0.09
BMI	- 0.23	0.73	0.06	0.79	-	0.05
Skinfold	- 0.09	0.60	0.04	0.80	-	0.06

Eigenvalue = 0.58; Canonical R = 0.61; χ^2 (2) = 38.63, p = 0.000

	Classification table	
	% base rate	Correctly Classified (%)
Low self-esteem group	12.6	63.6
Rest of Sample	87.4	96.1
Total	100.0	91.9

With reference to Table 29 and Table 30, the analyses produced significant canonical-correlation coefficents of 0.62 ($p<0.001$) at the *December* stage and 0.61 ($p<0.001$) at the *June* stage, and correctly classified over 87% and 91% of boys at each stage, respectively. The stepwise selection procedure indicated that trait and state anxiety most contributed to group differences at both transfer stages, with significantly higher means for anxiety evident for the Low self-esteem group.

At the *December* stage, low motor performance also contributed to the prediction of low self-esteem, whilst low physical education self-esteem contributed at the *June* post-transfer stage. The correlations between discriminating variables and the canonical discriminant function revealed that the groups differed on five of the eleven variables at each stage (using 0.30 as the minimum criterion). At the *December* stage, and in addition to motor performance, state anxiety and trait anxiety, significantly lower means for stability of self-image and physical education self-esteem were reported for the low self-esteem group. At the *June* stage (Table 30), correlations between discriminating variables and the canonical discriminant function highlighted the association of low stability of self-image and physical education self-esteem (PESE) and less positive attitudes to physical education amongst the Low self-esteem group.

In short, Table 29 and Table 30 suggest, as hypothesised, high anxiety and low motor performance, PESE, attitude to physical education, and stability of self-image represent the best predictors of low self-esteem following transfer to secondary school. Of interest, these multivariate analyses did not highlight significant differences amongst groups regarding anthropometric characteristics.

(ii) Further Analysis of Boys Exhibiting Low Self-esteem.

To consider the consistency of the characteristics associated with low self-esteem, a discriminant analysis was performed between the boys in the Low self-esteem

group at the *December* stage and the rest of the sample at the end of the first year of secondary school. Table 31 reports the findings.

Table 31. Discriminant Analysis For the Low Self-Esteem Group (December) at the *June* Post-Transfer Stage.

Variable	Low Self-esteem Mean	SD	Rest of Sample Self-esteem Mean	SD	Standard Discrim. func.coeff.	correlation with function
Attitude PE	- 0.47	1.21	0.11	0.89	-	0.35
Motor Perf.	- 0.30	0.78	0.14	0.70	0.48	0.43
PE Self-esteem	- 0.60	1.26	0.16	0.79	-	0.54
Stability of SI	- 0.75	1.00	0.21	0.89	0.63	0.74
State Anxiety	0.62	1.29	- 0.20	0.83	- 0.53	- 0.61
Trait Anxiety	0.67	1.18	- 0.24	0.85	-	- 0.57
Age	0.00	1.08	- 0.04	0.98	-	0.04
Height	0.23	0.77	0.00	0.75	-	- 0.14
Weight	0.05	0.89	0.04	0.73	-	- 0.16
BMI	- 0.09	0.82	0.06	0.77	-	- 0.12
Skinfold	0.02	0.77	0.22	0.78	-	- 0.20

Eigenvalue = 0.37; Canonical R = 0.52; χ^2 (3) = 26.13, p = 0.000

Classification table

	% base rate	Correctly Classified (%)
Low self-esteem group	23.0	40.0
Rest of Sample	77.0	94.0
Total	100.0	81.6

The discriminant function analysis between the Low self-esteem group (*December* stage) and the rest of the sample at the end of their first year at secondary school revealed that psychological and physical education characteristics continued to distinguish these groups of boys. The analysis produced a significant canonical-

correlation coefficents of 0.52 ($p<0.001$), and correctly classified over 81% of boys. The most discriminating variables were stability of self-image, motor performance and state anxiety, with the Low self-esteem group less sure of themselves and reporting lower motor performance and higher anxiety. Correlations between the discriminating variables and the discriminant function suggested, once more, that attitude to physical education contributed to discrimination between these two groups, with the Low self-esteem group reporting less positive attitudes to physical education.

4.2.2 BOYS RECORDING 'HIGH' ANXIETY (HAG)

At the post-transfer stages, pupils exhibiting high anxiety were adjudged to be poorly adjusted to secondary school. Boys whose scores were in the upper quartile for *trait* anxiety formed the 'high' anxiety group. This subsection reports the findings for discriminant analyses performed using the psychological, physical education and anthropometric variables as predictors of membership in two groups ('High anxiety' and 'Rest of the sample').

(i) High Trait Anxiety At the December & June Post-Transfer Stages.

Stepwise discriminant function analyses were undertaken at the *December* and *June* stages to predict group membership ('High anxiety' and 'Rest of the sample') from a set of predictor variables (motor performance, physical education self-esteem, attitude to physical education, global self-esteem, stability of self-image,

age, height, weight, body mass index, and skinfold total). Table 32 and Table 33 present the findings of these analyses.

Table 32. Discriminant Analysis using the Psychological, Physical Education and Anthropometric Variables (normalised data) as Discriminators of Anxiety at the *December* Post-Transfer Stage

Variable	High Trait Anxiety Mean	SD	Rest of Sample Mean	SD	Standard Discrim. func.coeff.	correlation with function
Attitude PE	- 0.35	1.07	0.03	0.94	-	0.24
Motor Perf.	- 0.14	0.56	0.06	0.81	-	0.15
PE Self-esteem	- 0.76	0.98	0.19	0.88	0.43	0.53
Stability of SI	- 1.06	0.79	0.34	0.77	0.85	0.90
Global Self-esteem	- 0.98	0.93	0.32	0.77		0.59
Age	- 0.02	1.06	0.01	0.97		0.23
Height	0.05	0.66	0.05	0.77	-	0.09
Weight	0.00	0.84	0.05	0.73	-	0.09
BMI	- 0.04	0.77	0.04	0.79	-	0.07
Skinfold	- 0.04	0.75	0.04	0.76	-	0.03

Eigenvalue = 0.76; Canonical R = 0.66; χ^2 (2) = 49.23, p = 0.000

	Classification table	
	% base rate	Correctly Classified (%)
High Anxiety Group	24.4	63.6
Rest of Sample	75.6	91.2
Total	100.0	84.4

Table 33. Discriminant Analysis using the Psychological, Physical Education and Anthropometric Variables (normalised data) as Discriminators of Anxiety at the *June* Post-Transfer Stage

Variable	High Trait Anxiety Mean	SD	Rest of Sample Mean	SD	Standard Discrim. func.coeff.	correlation with function
Attitude PE	- 0.77	1.43	0.17	0.72	0.39	0.59
Motor Perf.	- 0.01	0.69	0.03	0.77	-	0.23
PE Self-esteem	- 0.89	1.20	0.20	0.78	-	0.60
Stability of SI	- 0.88	1.16	0.25	0.76	0.42	0.76
Global Self-esteem	- 0.91	1.20	0.26	0.73	0.56	0.80
Age	0.06	1.10	- 0.03	0.97	-	0.03
Height	0.07	0.67	0.03	0.77	-	- 0.25
Weight	- 0.13	0.54	0.08	0.80	-	- 0.17
BMI	- 0.22	0.43	0.08	0.84	-	- 0.05
Skinfold	- 0.13	0.68	0.06	0.78	-	- 0.05

Eigenvalue = 0.52; Canonical R = 0.59; χ^2 (3) = 36.52, p = 0.000

	Classification table	
	% base rate	Correctly Classified (%)
High Anxiety Group	22.2	50.0
Rest of Sample	77.8	92.9
Total	100.0	83.3

The discriminant analyses performed to predict membership in the two anxiety groups produced significant canonical-correlation coefficents of 0.66 and 0.59 ($p<0.001$) at the *December* and *June* stages, respectively (Table 32 and Table 33). Also, the equation correctly classified over 84% and 83% of boys at each stage. At the *December* stage (Table 32), stability of self-image and physical education self-esteem were the best predictors of high anxiety. The High Trait Anxiety group were less sure of themselves and reported lower self-perceptions in physical

education. Correlations between the variables and the discriminant function indicated global self-esteem was an additional contributor to group prediction. Mean differences suggest the high anxiety group recorded lower self-esteem.

The findings presented in Table 33 indicate that global self-esteem was the best predictor of high anxiety at the *June* stage of transfer. It is evident that the High anxiety group reported lower levels of global self-esteem and attitudes to physical education, and were less sure of themselves than the rest of the sample. Correlations between the discriminating variables and the discriminant function suggested that the groups also differed in physical education self-esteem. Mean differences indicate boys in the High Anxiety group had lower self-perceptions in physical education.

(ii) Further Analysis of Boys Exhibiting High Trait Anxiety.

To gain further insight into the distinguishing characteristics of anxious pupils, a discriminant function analysis was undertaken at the *June* stage of transfer for boys previously classified as highly anxious at the *December* stage. Table 34 presents the findings of this analysis. As before (see Table 32), stability of self-image was the most discriminating variable, with the High anxiety group less sure of themselves than the rest of the sample. Correlations between the discriminating variables and the discriminant function again indicated the significant contribution of physical education self-esteem, global self-esteem and attitude to physical education. These findings suggest that boys identified as highly anxious during the

first term at secondary school continue to exhibit negative psychological characteristics throughout the transfer year.

Table 34. Discriminant Analysis For the High Anxiety Group (December) at the *June* Post-Transfer Stage.

Variable	High Trait Anxiety Mean	SD	Rest of Sample Mean	SD	Standard Discrim. func.coeff.	correlation with function
Attitude PE	- 0.38	1.08	0.10	0.93	-	0.37
Motor Perf.	- 0.13	0.55	0.08	0.81	-	0.06
PE Self-esteem	- 0.49	0.98	0.13	0.99	-	0.48
Stability of SI	- 0.50	1.14	0.20	0.84	1.00	1.00
Global Self-esteem	- 0.41	1.21	0.16	0.83	-	0.52
Age	- 0.09	1.01	0.02	0.99	-	- 0.09
Height	0.01	0.63	0.05	0.79	-	- 0.25
Weight	- 0.01	0.75	0.05	0.76	-	- 0.09
BMI	- 0.03	0.72	0.03	0.80	-	0.03
Skinfold	0.02	0.71	0.02	0.78	-	- 0.01

Eigenvalue = 0.12; Canonical R = 0.32; χ^2 (1) = 9.68, p = 0.002

	Classification table	
	% base rate	Correctly Classified (%)
High Anxiety Group	24.4	15.4
Rest of Sample	75.6	90.6
Total	100.0	68.9

4.2.3 BOYS SELF-REPORTING ADJUSTMENT DIFFICULTIES (PAG)

At the *June* stage after transfer, all secondary schoolboys in the study were presented with the School Transfer Questionnaire (Appendix III). Responses were received from 119 boys. The School Transfer Questionnaire was self-report, and identified boys who, in their own opinion, had not adjusted well to secondary school. For the purposes of this study, boys who: (1) suggested that they had not settled at secondary school, or (2) liked secondary school less than their primary school, or (3) did not like secondary school much (or at all) were classified as 'poorly adjusted' Sixteen boys, representing thirteen per cent of the secondary school respondents, were identified according to the criteria. Table 35 presents the discriminant function analysis between the Poorly Adjusted group and the rest of the sample at the *June* stage after transfer.

This analysis produced a significant canonical-correlation coefficent of 0.28 ($p<0.01$), and the equation correctly classified over 85% of boys. The stepwise selection procedure identified stability of self-image as the variable which most discriminated between the self-reported Poorly Adjusted group and the rest of the sample. Of note, the Poorly Adjusted group were less sure of themselves (lower levels of stability of self-image). The correlations between the discriminating variables and the discriminant function also suggest global self-esteem, physical education self-esteem, and state and trait anxiety contributed to discrimination between the two groups. Lower mean levels of global self-esteem and physical education self-esteem, and higher anxiety levels were apparent amongst the poorly

adjusted boys. It is notable, however, that the discriminant function equation only correctly classified 6.3% of boys as 'poorly adjusted', which was less than the base rate for this group.

Table 35. Discriminant Analysis using the Psychological, Physical Education and Anthropometric Variables (normalised data) as Discriminators of School Adjustment at the *June* Post-Transfer Stage.

Variable	Poorly Adjusted Group Mean	SD	Rest of Sample Mean	SD	Standard Discrim. func.coeff.	correlation with function
Attitude PE	0.27	0.71	- 0.02	1.02	-	0.27
Motor Perf.	0.14	0.95	- 0.01	1.01	-	0.11
PE Self-esteem	- 0.37	1.24	0.04	0.92	-	0.32
Stability of SI	- 0.68	0.90	0.10	0.93	1.00	1.00
Global Self-esteem	- 0.59	1.45	0.06	0.89	-	0.49
State Anxiety	0.70	1.55	- 0.04	0.84		- 0.30
Trait Anxiety	0.73	1.26	- 0.07	0.91	-	- 0.54
Age	- 0.22	0.99	0.03	1.00	-	0.06
Height	0.18	1.16	0.02	0.97		- 0.15
Weight	0.07	1.14	0.00	0.97	-	- 0.12
BMI	- 0.05	1.02	0.01	1.00	-	- 0.06
Skinfold	0.04	1.08	0.00	0.99	-	- 0.10

Eigenvalue = 0.08; Canonical R = 0.28; χ^2 (1) = 9.35, p = 0.002

	Classification table	
	% base rate	Correctly Classified (%)
Poorly Adjusted Group	13.5	6.3
Rest of Sample	86.5	98.0
Total	100.0	85.6

To determine whether the discriminating characteristics identified at the *June* stage (see Table 35) were evident earlier during the transfer process, a discriminant function analysis was conducted between the identified group of poorly adjusted boys and the rest of the sample at the *December* stage. This analysis failed to identify a single discriminating variable. Indeed, univariate analyses (F ratios) conducted separately for each variable also failed to identify a significant difference ($p<0.05$) between the groups at the *December* stage. These findings indicate that the variables distinguishing the group of poorly adjusted boys from the rest of the sample at the *June* stage (notably stability of self-image, global self-esteem, physical education self-esteem, and state and trait anxiety) were not significantly discriminating at the end of the first term at secondary school. Although this suggests that the characteristics of poor adjustment appear to develop during the first year at secondary school, what is not known is whether group differences were due to the deterioration of certain characteristics amongst particular boys, or relative improvements in the characteristics amongst the rest of the sample. Univariate repeated measures t tests failed to reveal any statistically significant differences ($p<0.05$) between means at the *December* and *June* stages for either group (see Table 36).[14] However, it is evident that the means for the Poorly adjusted group reduced for stability of self-image, global self-esteem and physical education self-esteem, and increased for state and trait anxiety as the year progressed. These boys became less sure sure of themselves, more anxious, and lost global and specific (PE) self-esteem. In contrast, means for the rest of the

[14] The lack of statistical significance could have been due to the small sample size of the Poorly adjusted group (n = 16).

sample appeared fairly consistent at both stages of transfer.These findings suggest that negative psychological characteristics appeared to intensify during the transfer year amongst boys who were poorly adjusting to secondary school. What is not known from this analysis is whether these characteristics further deteriorate as pupils move through secondary school.

Table 36. Means Differences of the Predictor Variables at the *December* and *June* stages of Transfer (Repeated Measures t tests).

	December Stage		June Stage			
	Mean	SD	Mean	SD	t	two-tail sig.
Poorly Adjusted Group						
Stability of Self-image	- 0.18	0.75	- 0.68	0.90	1.86	.08
Global Self-esteem	- 0.32	1.14	- 0.59	1.45	0.85	41
Physical Education Self-Esteem	- 0.05	0.89	- 0.37	1.24	1.10	.29
State Anxiety	0.30	0.62	0.70	1.55	0.99	.34
Trait Anxiety	0.30	1.01	0.73	1.26	1.36	.19
Rest Of The Sample						
Stability of Self-image	0.04	1.03	0.10	0.93	0.60	.55
Global Self-esteem	0.08	0.94	0.06	0.89	0.13	.90
Physical Education Self-Esteem	0.04	0.95	0.04	0.92	0.06	.95
State Anxiety	- 0.04	0.96	- 0.04	0.84	0.02	.98
Trait Anxiety	- 0.06	0.96	- 0.07	0.91	0.15	.88

4.2.4 SUMMARY OF FINDINGS: Poor Adjustment At Secondary School

This section has presented the findings for boys judged to have poorly adjusted to secondary school following transfer. As hypothesised,[15] the disciminant function analyses consistently identified negative psychological characteristics associated with poor adjustment to secondary school. Global self-esteem, stability of self-image, anxiety and physical education self-esteem appear to represent predictor variables of adjustment to secondary school after transfer. Findings revealed that boys classified as 'poorly adjusted' had lower global and specific (PE) self-esteem, were less sure of themselves, and had higher levels of anxiety. Motor performance and attitude to physical education were also identified as discriminating variables, although findings were not consistent over time, or amongst the different classifications of poorly adjusted boys. The value of these variables to predict adjustment to secondary school is, therefore, uncertain. Finally, there was no evidence to suggest that age or physical characteristics directly contributed to school adjustment after transfer.

[15] Research hypothesis XI: Boys exhibiting poor adjustment to Secondary school have concomitant negative psychological and physical education characteristics, i.e., boys categorised as poorly adjusted are predicted to (1) be less sure of themselves, (2) have significantly lower global self-esteem, (3) have higher levels of anxiety, (4) have lower motor performance and physical education self-esteem, and (5) have less positive attitudes to physical education than their Secondary school colleagues.

4.3 ACTUAL AND PERCEIVED MOTOR COMPETENCE

This section presents findings for boys differing in levels of motor performance and physical education self-esteem. Discriminant function analyses were computed at each stage of transfer to assess differences in the selected variables amongst three groups of motor performers ('high', 'average', and 'low'). Similar analyses were conducted for boys reporting 'high', 'average', and 'low' self-perceptions of performance in physical education. These analyses were undertaken to reveal the dimensions on which the groups differ, the variables contributing to the differences on the dimensions, and the extent to which group members could be classified. In this way, further knowledge of the relevance of actual and perceived physical competence for boys during school transfer was acquired. The analyses address hypothesis XII.[16] Firstly, the findings for boys with differing levels of demonstrated motor performance are presented.

4.3.1 Demonstrated Motor Competence

At each stage of transfer, a stepwise discriminant function analysis was conducted to identify differences and predict membership in three groups of motor performers. The groups were 'high motor performers' (upper quartile), 'low motor performers' (lower quartile), and 'average motor performers'(mid-range quartiles).

[16] Research hypothesis XII. Primary and secondary schoolboys who record lower levels of motor performance, or lower physical education self-esteem, have less positive attitudes to physical education, lower global self-esteem and stability of self-image, and higher levels of anxiety than the rest of their peergroup.

The eleven predictor variables were attitude to physical education, physical education self-esteem, global self-esteem, stability of self-image, state anxiety, trait anxiety, age, height, weight, body mass index, and skinfold totals.

(i) Motor Performance at the Pre-transfer Primary school Stage

Table 37 presents findings of the discriminant analysis conducted at the pre-transfer stage.

Table 37. Discriminant Analysis using the Psychological, Physical Education and Anthropometric Variables as Discriminators of Motor Performance at the *Primary school* Stage.

Variable	Low Motor Performers Mean	SD	Average Motor Performers Mean	SD	High Motor Performers Mean	SD	correlation with function
Attitude PE	- 0.35	1.07	0.67	1.07	0.96	0.97	1.00
PE Self-esteem	- 0.32	0.84	0.27	1.05	0.49	0.86	0.16
Stability of SI	0.23	0.94	0.46	0.78	0.67	0.56	- 0.01
Global Self-esteem	- 0.20	0.76	0.45	0.94	0.43	0.82	0.29
State Anxiety	0.35	1.13	0.06	0.72	- 0.13	0.76	- 0.06
Trait Anxiety	0.23	0.80	- 0.01	0.93	- 0.11	0.90	- 0.08
Age	- 0.45	0.95	0.10	0.73	0.06	1.06	0.20
Height	- 0.46	0.67	0.19	0.98	0.22	0.64	0.25
Weight	- 0.49	0.85	0.12	0.95	0.25	0.56	0.13
BMI	- 0.17	1.03	0.02	0.93	0.11	0.68	0.07
Skinfold	- 0.07	0.91	0.06	0.97	- 0.21	0.74	0.13

Eigenvalue = 0.24; Canonical R = 0.44; χ^2 (2) = 10.23, p = 0.006.

	Classification table	
	% base rate	Correctly Classified (%)
Low Motor Performers	26.0	30.8
Average Motor Performers	50.0	96.0
High Motor Performers	24.0	0.0
Total	100.0	56.0

Table 37 reports one significant discriminant function derived from the eleven predictor variables (χ^2 (2) = 10.23, $p < 0.01$), and Table 38 shows the three group means (group centroids) on the discriminant function. These data show that the discriminant function maximally separated the low and high motor performance groups, with the average motor performance group between these groups.

Table 38. Canonical Discriminant Function Evaluated at Group Means (Group Centroids) - *Pre-transfer* Stage.

Group	Function 1
Low Motor Performers	- 0.785
Average Motor Performers	0.187
High Motor Performers	0.461

The correlations between the discriminating variables and the canonical function (last column of Table 37) reveal that attitude to physical education was the best predictor of motor performance at this stage.[17] Mean differences indicate that the low motor performers reported the least positive attitudes to physical education, while the high motor performance group held the most positive attitudes. Other correlations (using a minimum criterion of 0.30) indicate no other variables contributing to discrimination between the groups. Finally, whilst fifty-six percent of boys in the analysis were correctly classified, it is notable that the prediction for high motor performers (0%) was not above the base rate (24%). All high performers had predicted membership in the Average Motor Performance group. It

[17] Attitude to physical education was the only predictor variable entered in the stepwise discriminant procedure.

appears the discriminant function had limited sensitivity in predicting the most able motor performers, and also suggests the average and high motor performers did not differ significantly on the predictor variables at the primary school stage. The absence of a second discriminant function separating the Average motor performance group from the other two groups also supports this interpretation. Whilst these findings suggest few statistically significant differences between primary schoolboys of varying levels of motor performance, it is notable that mean values for the low motor performance group were lowest for global self-esteem, stability of self-image, physical education self-esteem and attitude to physical education, and highest for trait anxiety.

(ii) Motor Performance at the Post-transfer *December* Stage

A stepwise discriminant analysis was performed for the secondary schoolboys (n = 107) at the December post-transfer stage. The eleven variables previously identified were used as predictors of membership in three motor performance groups (high, average, and low). Table 39 presents findings of this analysis and reports two significant discriminant functions with a combined χ^2 (4) = 24.33, p< 0.001. However, discriminating power was not significant (χ^2 (1) = 0.89, p= 0.76) after the first function was removed. The two discriminant functions accounted for 99.7% and 0.3% of the between-group variability, respectively. Table 40 shows the three group means (group centroids) on the discriminant functions, and it is apparent that the first discriminant function maximally separated the high and low

motor performance groups. The second discriminant function separated the average motor performers from the other two groups.

Table 39. Discriminant Analysis using the Psychological, Physical Education and Anthropometric Variables as Discriminators of Motor Performance at the *December* post-transfer Stage.

Variable	Low Motor Performers Mean	SD	Average Motor Performers Mean	SD	High Motor Performers Mean	SD	Corr. with funct.1	Corr. with funct.2
Attitude PE	- 0.02	0.66	0.24	0.96	0.79	1.21	0.06	0.14
PE Self-esteem	- 0.08	1.11	0.51	1.09	1.25	0.89	- 0.35	0.13
Stability of SI	0.42	1.21	0.56	1.03	0.64	1.08	- 0.27	0.62
Global SE	- 0.11	1.38	0.37	1.00	1.17	0.97	- 0.54	0.84
State Anxiety	- 0.04	0.93	0.30	0.88	- 0.37	0.91	- 0.27	0.62
Trait Anxiety	0.03	0.92	0.18	0.87	- 0.15	0.71	0.36	- 0.52
Age	- 0.38	0.81	0.03	0.95	0.42	0.80	- 0.15	0.06
Height	- 0.15	0.90	0.03	0.89	- 0.04	0.97	0.30	0.18
Weight	0.24	0.92	0.07	0.93	- 0.46	0.84	0.37	0.57
BMI	0.37	0.89	0.01	0.94	- 0.50	0.69	0.49	0.62
Skinfold	0.48	0.67	- 0.07	0.88	- 0.67	0.72	0.67	0.74

Function 1:Eigenvalue = 0.58; pct of variance = 99.7; Canonical R = 0.61; p = .000
Function 2:Eigenvalue = 0.00; pct of variance = 0.3; Canonical R = 0.04; p = .766

	Classification table	
	% base rate	Correctly Classified (%)
Low Motor Performers	24.6	13.3
Average Motor Performers	52.6	53.8
High Motor Performers	22.8	16.3
Total	100.0	61.4

Table 40. Canonical Discriminant Function Evaluated at Group Means (Group Centroids) - *December* Stage.

Group	Function 1	Function 2
Low Motor Performers	0.982	0.045
Average Motor Performers	0.047	- 0.038
High Motor Performers	- 1.161	0.037

The correlations between the discriminating variables and the canonical function (last two columns of Table 39) suggest skinfold totals and global self-esteem were the most discriminating variables for the first function, with the low motor performers reporting the highest mean value for skinfold totals and the lowest mean value for global self-esteem. Other variables contributing to discrimination between the low and high motor performers (using a minimum criterion of 0.30) were height, weight, body mass index, trait anxiety and physical education self-esteem. The low motor performance group were shorter, heavier, and had lower levels of global and physical education self-esteem, and higher levels of trait anxiety. Their higher mean value for body mass index (kg/m^2) supports the differences reported for height and weight between the low and high motor performers.

With respect to the second discriminant function, the correlation with global self-esteem (last column of Table 39) suggests this was the primary variable distinguishing the average motor performers from the other two groups. However,

since this discriminant function accounted for only 0.3% of the between-groups variance, and was not statistically significant, it is unlikely that it greatly assists discrimination between the groups. In these circumstances, Klecka et al (1975) suggest such a function be ignored.

The classification table (included in Table 39) shows the functions correctly classified over sixty-one percent of all boys in the analysis, although predictions of membership were only higher than base rates for the Average motor performance group.

(iii) Motor Performance at the Post-transfer *June* Stage

A stepwise discriminant analysis was performed for the secondary schoolboys (n = 107) at the *June* post-transfer stage. Table 41 presents findings of this analysis and reports only one significant discriminant function χ^2 (2) = 8.55, $p < 0.05$. Table 42 shows the three group means (group centroids) on the discriminant functions and it is apparent that the discriminant function separated the High and Low Motor Performance groups, with the Average Motor Performance group in between. The correlations between the discriminating variables and the canonical function (last two columns of Table 41) suggest attitude to physical education was the most discriminating variable, with the low motor performers reporting the lowest mean value.

Table 41. Discriminant Analysis using the Psychological, Physical Education and Anthropometric Variables as Discriminators of Motor Performance at the *June* post-transfer Stage.

Variable	Low Motor Performers Mean	SD	Average Motor Performers Mean	SD	High Motor Performers Mean	SD	standard discrim funct. coe.	corr. with funct.
Attitude PE	0.08	0.68	0.65	1.20	1.24	0.91	1.00	1.00
PE Self-esteem	0.11	1.20	0.42	1.20	0.89	1.06	-	0.09
Stability of SI	0.46	1.10	0.67	1.25	0.80	1.15	-	-0.19
Global SE	0.52	1.28	0.84	1.37	1.00	1.21	-	-0.01
State Anxiety	0.03	0.60	0.35	0.84	- 0.09	0.90	-	0.22
Trait Anxiety	0.01	0.92	0.23	0.86	- 0.28	0.71	-	-0.01
Age	- 0.34	0.82	0.10	0.88	0.35	1.05	-	-0.06
Height	- 0.10	0.86	- 0.00	0.97	0.04	0.84	-	-0.22
Weight	0.17	0.95	0.00	0.79	- 0.19	0.91	-	-0.09
BMI	0.33	1.02	- 0.11	0.90	- 0.23	0.66	-	-0.09
Skinfold	0.29	1.03	- 0.04	0.82	- 0.44	0.75	-	-0.08

Function 1:Eigenvalue = 0.17; Canonical R = 0.38; χ^2 (2) = 8.55, p = .014

	Classification table	
	% base rate	Correctly Classified (%)
Low Motor Performers	26.3	00.0
Average Motor Performers	49.1	92.9
High Motor Performers	24.6	00.0
Total	100.0	45.6

Table 42. Canonical Discriminant Function Evaluated at Group Means (Group Centroids) - *June* Stage.

Group	Function 1
Low Motor Performers	- 0.550
Average Motor Performers	0.004
High Motor Performers	0.581

The classification table (included in Table 41) reveals that the discriminant function correctly classified over forty-five percent of the entire sample, although the prediction for low and high motor performers (both 0%) were lower than the respective base rates.

4.3.2 PERCEIVED COMPETENCE IN PHYSICAL EDUCATION

The previous section used multivariate procedures (discriminant function analysis) to analyse boys of differing levels of *actual* motor performance. This subsection uses similar techniques to analyse data for boys who *perceived* themselves as high, average, or low motor performers in physical education. Boys recording the highest score (100%) on the Physical Education Self-Esteem (PESE) scale represented the 'high' group at each stage of transfer, and those recording fifty percent or less on the scale formed the 'low' group. Since only six boys satisfied the criterion for the 'high'group at the pre-transfer stage, and only four pupils for the 'low' group, no analysis was undertaken for the primary schoolboys.

At the post-transfer stages, stepwise discriminant function analyses were computed to identify differences and predict membership in the three groups (high, average, or low perceived motor competence in physical education). The predictor variables were attitude to physical education, motor performance, global self-esteem, stability of self-image, state anxiety, trait anxiety, age, height, weight, body mass index, and skinfold totals.

(i) Perceived Competence in Physical Education at the Post-transfer December Stage

Table 43 presents findings of a stepwise discriminant analysis performed with the secondary schoolboys (n = 107) at the *December* post-transfer stage.

Table 43. Discriminant Analysis using the Psychological, Physical Education and Anthropometric Variables as Discriminators of Perceived Competence in Physical Education at the *December* Stage.

Variable	Low Perceived Competence Mean	SD	Average Perceived Competence Mean	SD	High Perceived Competence Mean	SD	Corr. with funct.1	Corr. with funct.2
Attitude PE	0.17	0.97	0.29	1.03	0.94	1.03	0.02	0.07
Motor Perform.	- 0.26	0.71	- 0.07	0.70	0.28	0.94	0.33	- 0.29
Stability of SI	0.01	0.66	0.51	1.03	0.89	0.97	0.42	0.33
Global SE	- 0.52	1.00	0.46	1.06	1.14	0.88	0.91	0.40
State Anxiety	0.46	0.93	0.20	0.85	- 0.27	0.88	- 0.22	- 0.07
Trait Anxiety	0.41	1.01	0.14	0.82	- 0.47	0.70	- 0.44	- 0.29
Age	- 0.39	1.00	- 0.01	0.92	0.11	0.82	0.13	- 0.04
Height	0.31	0.38	- 0.03	0.71	0.05	0.88	- 0.03	0.18
Weight	0.02	0.64	0.14	0.81	- 0.21	0.75	- 0.22	0.84
BMI	- 0.16	0.89	0.16	0.85	- 0.37	0.70	- 0.32	0.95
Skinfold	- 0.16	0.93	0.04	0.86	- 0.34	0.77	- 0.26	0.74

Function 1:Eigenvalue = 0.29; pct of variance = 82.1; Canonical R = 0.48; p = .000
Function 2:Eigenvalue = 0.06; pct of variance = 17.9; Canonical R = 0.24; p = .019

Classification table

	% base rate	Correctly Classified (%)
Low perceived motor competence	13.0	25.0
Average perceived motor competence	59.8	90.9
High perceived motor competence	27.2	36.0
Total	100.0	67.4

The eleven variables used as predictors of membership in the three groups produced two significant discriminant functions with a combined χ^2 (4) = 27.96, p = 0.000. After the first function was removed, the discriminating power was still significant, χ^2 (1) = 5.44, p = 0.02. The two discriminant functions accounted for 82.1% and 17.9% of the between-group variability, respectively. Table 44 shows the three group means (group centroids) on the discriminant functions, and it is apparent that the first discriminant function maximally separated the high and low perceived competence groups. The second discriminant function separated the average motor performers from the other two groups.

Table 44. Canonical Discriminant Function Evaluated at Group Means (Group Centroids) - *December* Stage.

Group	Function 1	Function 2
Low perceived motor competence	- 0.917	-0.474
Average perceived motor competence	- 0.149	0.194
High perceived motor competence	0.763	-0.191

The correlations between the discriminating variables and the canonical function (last two columns of Table 43) suggest global self-esteem was the most discriminating variable for function one, with the low perceived motor performance group reporting the lowest mean value. Other variables contributing to discrimination between the high and low perceived motor performance groups (using a minimum criterion of 0.30) were trait anxiety, stability of self-image, and motor performance.The low perceived motor performance group were more anxious, less sure of themselves, and had lower levels of motor performance.

With respect to the second discriminant function, body mass index (BMI) most discriminated between the average perceived motor performers and the other two groups. The Average perceived motor performance group had higher mean BMI than either of the other two groups. Table 43 also identifies six other predictor variables which correlated with the second discriminant function (above a minimum criterion of 0.30). The average perceived motor competence group had higher means than either of the other two groups for weight, skinfold totals, and trait anxiety. For motor performance, stability of self-image, and global self-esteem, the average perceived motor competence group split the other two groups. This particular finding for motor performance suggests that boys self-perceptions of their motor competence accurately reflected their actual level of performance at this stage.

The classification table (included in Table 43) shows that predictions were above base rates for all three groups, which provides support for their use in predicting perceived motor performance (Sonstroem,1997). The discriminant functions correctly classified almost sixty-seven percent of all boys in the analysis.

(ii) Perceived Competence in Physical Education at the Post-transfer June Stage

Table 45 presents findings of the stepwise discriminant analysis performed with the secondary schoolboys (n = 107) at the *June* post-transfer stage. The eleven variables used as predictors of membership in the three groups produced two discriminant functions with a combined χ^2 (6) = 40.43, p = 0.000. After the first

function was removed, however, the discriminating power was not significant, χ^2 (2) = 0.66, p = 0.72. The two discriminant functions accounted for 98.7% and 1.3% of the between-group variability, respectively.

Table 45. Discriminant Analysis using the Psychological, Physical Education and Anthropometric Variables as Discriminators of Perceived Competence in Physical Education at the *June* Stage.

Variable	Low Perceived Competence Mean	SD	Average Perceived Competence Mean	SD	High Perceived Competence Mean	SD	Corr. with funct.1	Corr. with funct.2
Attitude PE	- 0.31	1.20	0.49	1.14	0.80	1.13	0.41	0.14
Motor Perform.	- 0.35	0.74	- 0.04	0.62	0.11	0.73	0.10	0.18
Stability of SI	- 0.39	0.96	0.50	1.13	1.20	0.99	0.40	- 0.01
Global SE	- 0.58	1.15	0.80	1.23	1.25	1.00	0.68	0.53
State Anxiety	0.84	0.92	0.05	0.85	- 0.12	0.78	- 0.23	0.08
Trait Anxiety	0.93	0.87	0.07	0.77	- 0.42	0.73	- 0.75	0.58
Age	- 0.20	1.14	0.04	0.88	0.05	0.85	0.03	0.12
Height	0.34	0.47	- 0.04	0.78	0.01	0.54	- 0.07	- 0.17
Weight	0.07	0.59	0.11	0.69	- 0.05	0.55	0.04	- 0.17
BMI	- 0.01	0.63	0.06	0.72	- 0.10	0.66	0.08	- 0.07
Skinfold	- 0.03	0.51	0.12	0.69	- 0.24	0.68	0.03	- 0.05

Function 1:Eigenvalue = 0.57; pct of Variance = 98.7;Canonical R = 0.60; p = .000
Function 2:Eigenvalue = 0.01; pct of Variance = 1.3;Canonical R = 0.09; p = .718

	Classification table	
	% base rate	Correctly Classified (%)
Low perceived motor competence	14.1	76.9
Average perceived motor competence	51.1	70.2
High perceived motor competence	34.8	50.0
Total	100.0	64.1

Table 46 shows the three group means (group centroids) on the discriminant functions, and it is apparent that the first discriminant function maximally separated the high and low perceived competence groups. The second discriminant function separated the group of boys with average self-perceptions of motor performance from the other two groups.

Table 46. Canonical Discriminant Function Evaluated at Group Means (Group Centroids) - *June* Stage.

Group	Function 1	Function 2
Low perceived motor competence	- 1.647	-0.092
Average perceived motor competence	- 0.019	0.084
High perceived motor competence	0.697	-0.085

The correlations between the discriminating variables and the canonical function (last two columns of Table 45) suggest trait anxiety and global self-esteem were the most discriminating variables for function one. The low perceived motor competence group reported higher trait anxiety (mean value = 0.93) than the high perceived motor competence group (mean = -0.42), and lower global self-esteem (mean values of -0.58 and 1.25, respectively). Other variables contributing to discrimination between the low and high perceived motor performance groups (using a minimum criterion of 0.30) were attitude to physical education and stability of self-image. The low perceived motor competence group had less positive attitudes towards physical education, and were more unsure of themselves.

The second discriminant function was not statistically significant and does not, therefore, warrant further inspection (Klecka,1975). The classification table (included in Table 45) shows that prediction of membership was above base rates for all three groups.The discriminant functions correctly classified over sixty-four percent of all boys in the analysis, and appear to provide accurate predictions of self-perceptions of competence in physical education.

4.3.3 SUMMARY OF FINDINGS: Motor Competence & Perceived Motor Competence

The findings of discriminant analyses performed for groups of boys of differing motor performance and differing self-perceptions of motor performance provide some support for hypothesis XII.[18] Across school transfer, the Low motor performance group tended to have less positive attitudes towards physical education, and reported lower global and physical education self-esteem than high motor performers. At the pre-transfer stage, they were also more anxious. During school transfer, physical characteristics were not generally or consistently associated with particular levels of motor performance. Where anthropometric variables contributed to the discriminant functions, the Low motor performance group were shorter and heavier, and had higher skinfold totals.

[18] Research hypothesis XII. Primary and Secondary schoolboys who record lower levels of motor performance, or lower physical education self-esteem, have less positive attitudes to physical education, lower global self-esteem and stability of self-image, and higher levels of anxiety than the rest of their peergroup.

The findings for secondary schoolboys with differing levels of physical education self-esteem revealed that the Low perceived motor competence group were more anxious and unsure of themselves, and reported lower levels of global self-esteem than boys in the High perceived competence group. Attitude to physical education did not appear to discriminate between the low, average and high perceived competence groups. Mean levels of motor performance for the three groups reflected the perceived competence classifications, suggesting that the boys self-perceptions of their competence were fairly accurate at this age.

With respect to the anthropometric variables after school transfer, the *Average* perceived competence group were heavier and had higher skinfold totals than either of the other two groups. *Negative* physical characteristics did not, therefore, appear to be associated with low self-perceptions in physical education, as may have been expected. This finding was perhaps due to the PESE scale focusing upon self-perceptions of performance in physical education and not considering self-perceptions of physical appearance in physical education.

CHAPTER FIVE

DISCUSSION

Introduction

The discussion sections present the significance of the research. Firstly, the findings for the boys in this study are presented through addressing the research hypotheses. Evidence is assimilated from the cross-sectional and longitudinal studies to examine the effects of school transfer on the boys' psychological and physical education characteristics. The discussion concentrates on the differences between the means of the variables before and after transfer to establish if, for example, psychological development (Galton & Willcocks,1983; Stoll,1987) or disturbance (Jennings & Hargreaves,1981; Simmons et al.,1973) accompanied school transfer. To further understand the effects of transfer, consideration is given the concomitant characteristics of boys who poorly adjusted to secondary school.

To determine the role of physical education before school transfer and during adjustment to secondary school, consideration is given to: (1) the findings for the selected physical education variables across transfer, (2) the relationships between pupils' physical education and psychological characteristics, and (3) the associate characteristics of high and low motor performers (actual and perceived). The findings are interpreted in relation to Sonstroem's Psychological Model of Physical Activity Participation (Figure 1), and attention focuses upon the relative importance of demonstrated physical competence and perceived competence in physical education at the age of secondary school transfer.

On the basis of the empirical evidence in this study, a preliminary model of secondary school adjustment is presented (Figure 10). The rationale for the model discusses the links between the selected physical education variables and the psychological characteristics associated with school adjustment. Since children's physical education experiences form the foundation of this model, the National Curriculum for Physical Education (DES,1992; NCC,1992; DFE,1995) is discussed in terms of structure and delivery. Consideration is given, therefore, to the proposed learning experiences in physical education and how they may assist children before and after secondary school transfer. In this way, the discussion sections serve to explain the effects of transfer on the boys in this study, and consider the specific role of physical education before and during the transition to secondary school.

5.1 THE EFFECTS OF TRANSFER.

5.1.1 PRE-AND-POST TRANSFER COMPARISONS (PSYCHOLOGICAL CHARACTERISTICS)

This section examines Research Hypothesis One.[1] Comparisons between the pre-and-post transfer data for the selected psychological variables are presented in order to determine the effects of the transition to secondary school for the boys in this study. Previous studies acknowledge that children's levels of anxiety and self-esteem may serve as indicators of school adjustment (Stoll,1987; Thompson, 1974; Youngman & Lunzer,1977). However, the findings for these characteristics

[1] Research hypothesis I : Levels of global self-esteem and anxiety amongst boys are expected to differ across the Primary-to-Secondary school divide (note: this is not the null hypothesis used to obtain the significance levels)

during transfer are inconsistent. Some studies highlight the negative effects of transfer, and report pupils' early distress at secondary school (Alston,1985; Spelman,1979) or the longer term anxieties which may develop during the transfer year (Brown & Armstrong,1982). Also, Simmons et al. (1973) noted a disturbance to American pupils' self-esteem that appeared to be a consequence of school transfer. Indeed, some British studies similarly report significant decreases in pupils' self-ratings after transfer (Measor & Woods,1984; Alban Metcalfe,1981; Youngman & Lunzer,1977). In contrast, there is evidence of the positive effect of transfer. Galton and Willcocks (1983) report progressive decreases in anxiety levels across transfer and throughout the first year at secondary school, and other research indicates higher self-esteem amongst children at secondary school (Hart, 1986; Stoll,1987).

Analysis of the pre-and-post transfer data for the selected psychological variables provided evidence of the positive impact of school transfer for most boys in this study. Increases in anxiety and decreases in self-esteem were not generally evident by the December after transfer. Data from the cross-sectional samples revealed significantly ($p<0.05$) higher mean levels of global self-esteem and lower mean levels of trait anxiety amongst the secondary schoolboys. A similar pattern was evident for boys in the longitudinal study, with higher stability of self-image and lower state anxiety also reported at the December stage. This suggests that school transfer had been a generally positive experience such that, by the end of the first term, most boys had recorded improvements in the selected psychological characteristics. In addition, this personal development appeared to continue

throughout the transfer year.[2] Increases in mean self-esteem and stability of self-image, and decreases in mean anxiety levels were generally evident in the secondary school samples by the June stage. These findings concur with data from several other British transfer studies (Alston,1985; Galton & Willcocks,1983; Youngman & Lunzer,1977).

Although it is recognised that there are probably specific factors in the transfer process which influence each child's adjustment to secondary school (Stoll,1987), some tentative explanations for the improvements in anxiety and self-esteem may be speculated. For many children, pre-transfer apprehensions borne out of uncertainty are likely to quickly subside with increasing familiarity of the new school environment. The realisation of unsubstantiated scaremongering may also explain some reduction in post-transfer anxiety levels. However, Brown and Armstrong (1982) reported that a prime concern identified by children during their first term at secondary school was making/keeping friends. Elliot and Punch (1991) also acknowledge that adjustment to secondary school is characterised by this search for friendship, initially amongst pupils of the same gender. In the cross-sectional study, the secondary school sample comprised all first year boys at one single-sex secondary school and perhaps this initial search was easier with more friendship choices. As a consequence, suitable friendship groups may have been established quickly providing an early opportunity to develop status and self-esteem at the new school. In contrast, nineteen of the twenty-five boys in the

[2] Research hypothesis II: During the first year at secondary school, mean levels of global self-esteem and stability of self-image are expected to rise, and anxiety levels to fall, as pupils familiarise themselves with secondary schooling.

longitudinal study attended co-educational schools, and a significant ($p<0.05$) increase in mean global self-esteem was only evident for this group by the end of the first year at secondary school. Perhaps this relative delay in self-esteem enhancement is indicative of a longer settling-in phase, with status within friendship groups taking longer to establish. This aspect of transfer is clearly worthy of further study.

5.1.2 RELATIONSHIPS AMONGST THE PSYCHOLOGICAL VARIABLES

Evidence from the cross-sectional study revealed consistent significant correlations amongst all the psychological variables at all stages of transfer.[3] The inverse relationships between the self-ratings (global self-esteem and stability of self-image) and the anxiety variables support theory and findings from previous studies (Fallon,1965; Gallahue,1981; Hart,1986; Rosenberg,1965). The negative correlations suggested boys with high self-esteem and stability of self-image recorded lower state and trait anxiety. Of importance, these findings also associate low self-esteem with high anxiety; a widely acknowledged phenomenon (Burns, 1979; Rosenberg,1965). In context, Youngman and Lunzer (1977) reported similar negative correlations between self-concept and anxiety for pupils at both pre-and-post transfer stages.

[3] Research hypothesis III: Global self-esteem is expected to correlate positively with stability of self-image and negatively with anxiety across school transfer. Also, boys who are more sure of themselves (i.e., report higher stability of self-image) are expected to report lower levels of anxiety.

The positive correlations amongst the psychological variables for the cross-sectional samples suggest the association of high global self-esteem with high stability of self-image, and high trait anxiety with high state anxiety. They also indicate that low scores on each scale matched. Pupils with low self-esteem were, therefore, more unsure of themselves, and boys reporting low anxiety at the time of assessment were also generally less anxious. Again, these findings are consistent with those of other studies (Rosenberg,1981; Simon & Ward,1982; Speilberger, 1973).

Similar significant relationships amongst the psychological variables were evident for the longitudinal sample at the pre-transfer stage. However, only two significant correlations were apparent at the December stage (global self-esteem and stability of self-image, $\rho = 0.54$, $p<0.01$; trait anxiety and stability of self-image, $\rho = -0.42$, $p<0.05$). Other correlations were low and non-significant ($p<0.05$), suggesting no clear pattern of responses. Nevertheless, the significant correlations indicated that boys who were less sure of themselves before and after entering secondary school also reported lower self-esteem and higher anxiety. Several studies report children's early turbulent encounters at secondary school (e.g., Kaye & Hyson, 1979; Woods & Measor,1984) and perhaps at the December stage many of these boys still had conflicting views about their new school environment and themselves within it. The limited number of significant correlations for longitudinal sample at the June stage after transfer suggests the inconsistencies amongst the psychological variables continued throughout the first year at secondary school. Perhaps this may be partly due to the small sample size ($n = 25$), although the fact that these pupils

attended four different schools could also be significant. Each school may have been influencing pupils' early impressions of secondary education quite differently, thus reducing the likelihood of a uniform pattern of responses across transfer.

5.1.3 PHYSICAL EDUCATION ACROSS SCHOOL TRANSFER.

This section considers the differences between the physical education characteristics of the primary and secondary school samples. In this way, the effects of transfer on children's attitudes to physical education and motor performance (actual and perceived) are highlighted and discussed.

With respect to motor performance across the three data collections,[4] mean improvements on each task were generally evident. However, the inferior mean values for the agility run and the standing broad jump at the December stage after transfer, for both the cross-sectional and longitudinal samples, are particularly noteworthy. The accompanying increase in mean BMI (Kg/m^2) and mean body weight for the boys at this time may provide one explanation for this apparent general loss of performance. Table 25 and Table 27 reveal significantly higher mean values for BMI and body weight for the cross-sectional and longitudinal samples after transfer. Malina and Bouchard (1991) acknowledge that body weight will negatively influence performance in activities like the agility run and broad jump which require individuals to propel their own body mass. In contrast, heavier

[4] Research hypothesis IV: Levels of motor performance are expected to increase across the age range.

children tend to perform better on throwing activities (Malina & Bouchard, 1991), and the significant increase in mean performance on the sitting basketball throw during this period provides additional support for this interpretation. It is interesting to note that mean performances on the agility run and standing broad jump improved between the December and June stages at secondary school with no accompanying significant change in body mass index. Improvements at this stage may, therefore, have been due to a combination of motor development, learning, increased familiarity with the tests, or higher levels of motivation. Nevertheless, this discussion highlights how normal growth patterns during childhood *may* influence performance on specific motor tasks, and illustrates the need to assess children on a range of activities in order to establish a valid overall measure of motor performance. Section 5.1.6 further discusses the influence of growth and development on the variables in this study.

The mean differences across transfer for the other physical education variables suggest consistency and little change in boys' attitudes and self-perceptions in physical education.[5] Mean values for both attitude to physical education and physical education self-esteem were high before and after transfer. The specific findings for physical education self-esteem scale across school transfer reveal that mean scores were above seventy-six percent at each stage, and it appears that most boys had positive self-perceptions of their performance in physical education.

[5] Research hypothesis V: The new and extended peergroup at Secondary school is likely to cause children to self-reference according to a different framework. As a consequence, lower self-perceptions of performance in physical education (physical education self-esteem) are expected after school transfer.

Indeed, by the June stage after transfer, thirty-four percent of the secondary school sample reported maximum scores on the PESE scale. In contrast, a notable number of boys reported low self-perceptions of performance in physical eduction after school transfer. At the December stage, thirteen percent of secondary schoolboys reported PESE scores of 50% or less, whilst fourteen percent recorded a similar disposition at the June stage. These boys provide the specific focus for section 5.3.

It is important to note that the PESE scale deliberately focused on children's self-perceptions of performance in the physical education setting. It is possible that an alternative measure intended to assess 'general' physical self-worth may have revealed different findings. In this latter case, children's self-perceptions may be more influenced by their physical and sporting experiences beyond school physical education, e.g., recreational physical activities, weekend sports clubs, summer camps, etc. Indeed, pupils' self-perceptions in particular sporting activities are likely to vary (MacClancy,1996) and this may be most pronounced at secondary school where the physical education curriculum is especially sport orientated. Marsh (1996) suggests children's self-perceptions may be strongly influenced by their most recent experiences, and the focus in physical education at a given time may, therefore, have a profound influence on physical self-esteem. Undoubtedly, further research is necessary to consider activity specific self-perceptions, and the amount of variation in children's PESE as activities change during the school year and throughout secondary education.

Although there has been little previous study of physical education during secondary school transfer, attitudes towards physical education of children at this age are well documented (H.M.I.,1991; Jones,1988; McIntosh,1988; Scott & West,1990; Stoll,1987).[6] In the present study, physical education and games were liked by virtually all the boys at each stage of transfer (92%, 92% and 93% respectively). These findings are similar to those reported by Dickenson and Sparkes (1988) who indicated only six percent of secondary school pupils in their sample reported dislike for physical education. Indeed, these positive findings concur with much of the earlier empirical evidence. Alston et al. (1985) reported that thirty percent of primary schoolboys named physical education their favourite school subject, whilst Scott and West (1990) reported thirty-four percent of a primary school sample (boys & girls) expressed the same preference. In the present study, physical education was the favourite school subject for thirty-eight percent of the primary schoolboys. After transfer, studies reveal that physical education continues to be the most popular subject amongst boys (McIntosh,1988; Runham, 1985) although reported percentages are lower. Runham (1985) reports twenty-one percent of boys chose physical education as their favourite subject during their first term at secondary school, which compares with twenty-two percent in the current study. The lower percentage after transfer is possibly due to the conflict of interests caused by the increased range of subjects available in the secondary school curriculum. However, in a later report Runham (1986) noted a slight increase in the percentage of pupils who favoured physical education after two terms at secondary school (23 percent). A similar trend, but greater increase, was

[6] Research hypothesis VI: Attitudes to physical education will be positive amongst most final year primary schoolboys and first year secondary schoolboys.

apparent for the boys in the present study with thirty-three percent expressing the same opinion at the June stage after transfer. Nevertheless, findings in this study only indicate boys' 'general' attitudes to physical education. Williams and Woodhouse (1996) found attitudes towards specific activities varied considerably and, although they reported that 84 percent of secondary schoolboys (n = 1646) liked physical education, dance was liked by only 9% of the sample; gymnastics (28%); athletics (49%); winter games (74%); summer games (83%); and swimming (72%). Clearly discrepancies existed. The reasons for these differences were not pursued, and further analyses may have considered any gender or sociocultural bias.

Establishing why positive attitudes to physical education arise, how they may be fostered, and their association with other characteristics is not, however, straight-forward. Previous research has tended to either report general attitudes towards physical education as measured by a particular scale (e.g., Jones,1988; Simon & Smoll,1974), or review children's opinions towards particular physical education/ sport activities, i.e., games, gymnastics, swimming, etc (e.g., Coe,1984; Scott & West,1990; Van Wersch,Trew, & Turner,1992). Although few studies have considered the determinants of pupils' attitudes towards physical education, Luke and Sinclair (1991) present five categories (curriculum, atmosphere, self-perceptions, teacher, and facilities) which influenced adolescent attitudes to physical education. However, little is known about the categories which influence younger children's attitudes, or the specific aspects of physical education which contribute to each category. In the present study, the responses from schoolboys to

School Questionnaire I (Appendix I) provided some indication of particular aspects of physical education which may encourage positive attitudes. Both before and after transfer, the most popular and unpopular features appeared to be socially/ group related. At all three stages of transfer more than ninety-five percent of boys liked to choose a friend to work with; eighty-five percent enjoyed playing in a team; and sixty percent liked organising games or teams. In contrast, seventy-five percent did not enjoy working on their own, and fifty-two percent were averse to showing their work to the rest of the class. Given the importance of developing friendship groups and early status at secondary school (Elliot & Punch,1991) these findings provide some insight into the potential benefits and disadvantages of physical education before and during school transfer. They also emphasise the importance of organisational and delivery aspects of the subject; aspects directly under the control of the class teacher. If physical education is to provide children with valuable developmental experiences, its delivery should not be left to chance, and those aspects of physical education found to be most responsible for developing children's attitudes and self-perceptions need to be actively and knowingly presented. Section 5.5 further develops this discussion and specifically analyses the guidance given to non-specialist teachers of physical education in the national curriculum.

5.1.4 RELATIONSHIPS AMONG THE PHYSICAL EDUCATION CHARACTERISTICS ACROSS SCHOOL TRANSFER

With respect to relationships amongst the physical education variables, the significant correlations at all stages of transfer for the samples in the cross-

sectional study corroborate Sonstroem's Psychological Model of Physical Activity Participation (Figure 1), and support research hypothesis VII.[7] Positive correlations were evident between motor performance, physical education self-esteem and attitude to physical education supporting the theorised links between physical ability, perceived physical ability and attitudes to physical activity. These relationships suggest that the best performers perceived themselves highly in school physical education and also had the most positive attitudes towards the subject. Studies which have also considered physical self-concepts and physical performance tend to similarly acknowledge substantially higher self-perceptions amongst better performers or athletes than lesser able or non-athletes (Marsh et al.,1995). Brustad (1993), Sonstroem (1978), and Fox and Biddle (1988) all propose that physical self-perceptions strongly influence children's attitudes and attraction to physical activity. They suggest that youngsters with high self-perceptions in physical activities tend to have more positive attitudes to activity and are, therefore, more likely to voluntarily engage in exercise behaviour and develop their motor abilities. The relationships amongst the physical education variables in the present study provide some support for these assertions.

[7] Research hypothesis VII: Relationships amongst the physical education measures (attitudes to physical education, motor performance, and physical education self-esteem) will be positive and significant before and after school transfer.

5.1.5 RELATIONSHIPS AMONGST THE PHYSICAL EDUCATION AND PSYCHOLOGICAL CHARACTERISTICS ACROSS SCHOOL TRANSFER

The relationships amongst the physical education and psychological variables provide some evidence of the importance of boys' motor performance (actual and perceived) and attitudes to physical education at the time of secondary school transfer. Indeed, there is general consensus amongst researchers that some psychological characteristics may be enhanced as a result of physical activity, physical achievements, and the development of positive physical self-perceptions (Fox,1992; Mutrie,1997).[8] However, studies which report the specific relationship between motor performance and self-esteem are not conclusive, particularly where older children and adult samples have been used. Some studies report a low positive or non-significant correlation between the variables (Biddulph,1954; Keogh, 1959; Maeland,1992; Martinek et al,1977; Schempp,1983; Sonstroem, 1978). Nevertheless, whilst it is acknowledged that poor motor performance may not be significantly associated with adult or even adolescent self-esteem, physical ability is considered to be a major influence on the developing self-esteem of most younger children (Drowatzky,1981). Cratty (1979) and Drowatzky (1981) suggest high motor ability earns peergroup recognition which may positively enhance children's self-esteem. Evans and Roberts (1987) provide empirical evidence to support this view. They suggest that physically able children gain status amongst peers and as a result enjoy greater social success. Boivin and Begin (1989, p.594)

[8] Research hypothesis VIII: Across transfer, attitudes to physical education, motor performance, and physical education self-esteem will be positively related to global self-esteem and stability of self-image, and negatively related to anxiety.

reached a similar conclusion for a sample of French-Canadian nine-to-eleven year olds, '.....athletic skills may be more central to popularity than social competence.' Nonetheless, the assumption that *most* children place a high value on physical ability may be misplaced. Indeed, the non-significant relationships between motor performance and global self-esteem for the primary and secondary schoolboys in this study tend to support this view. As such, the findings may reflect the multidimensional nature of self-esteem (see Fox,1988b; Harter,1983). Harter (1982) identified three domains (academic, social and physical) which may influence children's global self-perceptions and, as previously suggested, children's self-ratings in each domain may have a greater or lesser influence on their global self-esteem depending on the importance they attach to it. Therefore, the low positive or non-significant correlations between motor performance and self-esteem may reflect the range of domains, and the factors within the domains, which contribute to global self-perceptions even amongst boys during childhood.

An alternative explanation for the inconclusive empirical evidence relating motor performance and self-esteem may lay within the research methodologies. It is apparent that studies have used: (1) different subject samples (e.g., males, females, preadolescents, adolescents, athletes, non-athletes, participants and non-participants), (2) age group comparisons rather than maturational groupings (this reliance may mask subtle physical variations which are common during this important developmental phase), (3) a variety of tests and instruments with differing levels of validity and reliability, and (4) self-esteem instruments which may be insufficiently sensitive to detect the relative importance of the physical

domain. These four aspects, either individually or in combination, will influence findings, and provide some clue to the inconsistency amongst the empirical evidence.

It is reported that children's self-perception in the physical domain may be a more important predictor of overall self-esteem than actual physical performance (Fox, 1988b). The correlational evidence and findings for boys with low global self-esteem in this study tend to support this claim. The significant positive correlations between physical education self-esteem and global self-esteem at all stages of transfer for the cross-sectional samples contrast sharply with the non-significant correlations between actual performance and global self-esteem. These findings suggest, therefore, that self-perception of physical performance may be more influential than actual performance for boys at the age of secondary school transfer. Fox and Biddle (1988) refer to the 'upward spiral' between increased self-perception of physical ability and improved general self-esteem, and the positive relationships between the two variables in this study at least indicate that high self-perception in physical education was related to high global self-esteem. Perhaps more pertinent, the findings also signify that boys with low self-perceptions of performance in physical education tended to record low global self-esteem.

Further evidence of the relative importance of physical self-perceptions is provided through analysis of the relationships between physical education self-esteem and the other psychological characteristics. Whilst motor performance was not significantly associated with stability of self-image, state anxiety or trait anxiety at

any stage of transfer (see Table 23), physical education self-esteem significantly correlated with these psychological characteristics throughout the transfer period. Although the preliminary nature of the 9-item Physical Education Self-Esteem Scale needs to be considered when interpreting the results, the significant correlations between the scale and the other variables in this study are consistent with findings from similar studies which have used physical self-perception scales (e.g., Delignieres et al.,1994; Dishman,1978; Sonstroem,1978; Ulrich,1987). The particular associations between high physical education self-esteem and high global self-esteem and stability of self-image provide encouragement for further investigation into the development of positive self-perceptions through curriculum physical education. Despite similar recommendations from Fox (1988b), Wersch et al. (1990), and Horn and Hasbrook (1987), this theme has yet to be fully explored.

What cannot be established from this analysis is whether increasing a child's self-perception in physical education would have a significant effect on their global self-esteem. Indeed, Harter (1982) suggests children, eight years or older, make important self-judgements in at least three domains (cognitive, social and physical), and Simmons et al.(1973) state that self-esteem will only be influenced by those aspects of significance to the individual. As a consequence, whilst it appears feasible that a physical education programme aimed at enhancing physical self-esteem may have positive implications for global self-esteem, such benefits are only likely amongst children who place some emphasis on physical ability. It is evident that further research of British children is necessary in this area and, in time, this may help to establish: (1) the relative importance of actual physical ability amongst

children of different ages, (2) the ways positive self-perceptions in physical education may be developed (particularly amongst primary school children), and (3) the particular contribution of physical education self-esteem to global self-esteem enhancement during childhood.

5.1.6 THE INFLUENCE OF GROWTH AND DEVELOPMENT

Although this study provides convincing evidence associating boys' physical education and psychological characteristics at the age of secondary school transfer, this section examines the extent to which these characteristics, and their associations, may be dependent upon growth and development factors.[9]

Improvement in motor performance is acknowledged as a natural phenomenon for most children during childhood. Age related biological and neurological developments combine with accumulating motor experiences to enable most children to perform more complex physical tasks (Gallahue,1982; Malina & Bouchard,1991; Rarick,1989). However, due to differing rates of physical development, and a diversity of motor experiences even amongst children of the same age, relationships between growth indicators and motor performance are usually low to moderate (Thomas,1984). The results for the boys in this study (see Table 28) concur with these general findings. However, the significant correlations

[9] Research hypothesis IX: Age and physical growth are significant factors during school transfer. Boys who are older, taller, or have lower skinfold totals are expected to record significantly higher motor performance and physical education self-esteem than their peers. They are also predicted to demonstrate different psychological profiles (higher self-esteem and stability of self-image, and lower anxiety).

do indicate that older children performed better at each stage of transfer, and secondary schoolboys with higher body mass indices or skinfold measures performed the poorest. As previously discussed, a high body mass index implies greater weight to height ratio, and heavier individuals are likely to perform worse on motor tests requiring gross body movements (e.g., running or jumping activities). Higher body fat is also likely to be detrimental to performance in these activities (Malina & Bouchard,1991). Thomas (1984) reports low to moderate correlations between body fatness and tests of agility, speed, and jumping, and correlations between motor performance and skinfold totals for the boys in this study were in this range at both post-transfer stages (-0.50 & - 0.43, $p< 0.001$, respectively).

With respect to physical education self-esteem, lower self-perception in physical education was recorded from boys who were heavier, or who reported higher skinfold totals and body mass indices after school transfer. Since similar associations were reported for boys with these physical characteristics and *actual* motor performance, it may be inferred that fatter or heavier boys expressed accurate perceptions of their low competence in physical education. Fox et al. (1994, p.94) suggests, " Low self-perceptions might be expected of fatter boys who may be less athletic, less likely to be accepted socially, and less satisfied with their appearance." Given the evidence from the correlational and known groups analyses (section 4.3), these physical characteristics appear to be important factors influencing both motor performance and perception of performance amongst boys of this age, and may have implications for global self-esteem. However, the

non-significant associations between the psychological characteristics and the growth indicators suggest that neither level of global self-esteem nor anxiety appeared to be *directly* related to body size or composition during secondary school transfer. Mendelson et al. (1995) similarly concluded that global self-esteem did not appear to be influenced by body weight in their study of children and adolescents aged seven to sixteen years. It would seem, therefore, that the global self-esteem of heavier or fatter boys may be *indirectly* affected by the influence of these growth factors on motor performance and self-perceptions of performance.

As for the influence of growth and development on the relationships between the physical education and psychological characteristics,[10] partial correlations indicated that these relationships were not significantly influenced by age or growth factors (see Appendices IV, V, & VI). However, since heavier or fatter primary and secondary schoolboys tended to record lower actual and perceived motor competence, it is suggested that these boys may particularly benefit from intervention strategies designed to enhance self-perceptions in physical education.

5.1.7 SUMMARY: Effects of School Transfer

It is evident from the findings of this study that secondary school transfer neither created long term increases in anxiety, nor detrimentally affected the self-esteem of most boys in the sample. By the end of the first term after transfer, improvements

[10] Research hypothesis X: Relationships amongst the physical education and psychological characteristics will be influenced by age and growth at each school transfer stage

in the means of the selected psychological characteristics were apparent for the secondary school samples, and these general developments appeared to continue throughout the transfer year.

With respect to the findings for physical education during transfer, research indicates generally positive attitudes towards physical education amongst boys of this age (Jones,1988; McIntosh,1988; Scott & West,1990). These were again in evidence in the present study. Similarly, most pupils' self-perceptions of performance in physical education were generally high before and after transfer to secondary school.

The specific findings for motor performance revealed general improvements across transfer. However, rapid and disproportionate increases in weight at this time appeared to negatively affect performance on tasks involving gross body movements (running and jumping activities). In addition, the generally non-significant relationship between motor performance and global self-esteem for the boys in this study was consistent with previous findings (Martinek et al.,1977; Schempp,1983; Sonstroem,1978), and the relationships amongst the physical education variables were in accordance with Sonstroem's Psychological Model of Physical Activity Participation (1978). Correlational analysis indicated that positive attitudes towards physical education and higher levels of performance were related to higher self-perceptions of performance, and these were also associated with higher global self-esteem. In this way, the findings provide some support for the hierarchical arrangement of self-esteem, and the importance of achievement in

school curriculum subject areas. Previous research suggests pupils achievements in particular curriculum subject areas will correlate most strongly with their self-esteem in that specific subject, and correlate less highly with their global self-esteem (Marsh & Shavelson,1985; Marsh et al.,1988; Marsh,1992). The correlations in this study between physical education self-esteem (PESE) and motor performance, and PESE and global self-esteem, were indeed greater than correlations between motor performance and global self-esteem. Whilst this emphasises the relative importance of PESE, what cannot be established from this analysis is whether increasing PESE prior to or during transfer would significantly influence pupils' self-esteem or school adjustment. Further research is necessary, perhaps using intervention strategies intended to enhance PESE, in order to gain further insight into this contention.

With respect to the influence of growth and development, the partial correlations revealed that the significant relationships between the physical education and psychological characteristics were not significantly influenced by anthropometric factors. Nevertheless, it was evident that age, weight and skinfold totals were factors related to both actual and perceived motor performance. Younger, heavier and fatter boys tended to record lower actual and perceived motor competence. Whilst no direct link was found between boys' anthropometric measures and their psychological characteristics, it is speculated that the global self-esteem of heavier or fatter boys may be *indirectly* affected by the influence of these growth factors on their motor performance and self-perceptions of performance in physical education.

In short, evidence in this study supports the significance of children's physical education characterstics at the age of school transfer. Of particular importance is self-perception of performance in physical education (PESE), which appears to serve as a mediating variable between motor performance and global self-esteem. In addition, PESE negatively correlated with state and trait anxiety. As a consequence, the way boys perceive their ability in physical education appears to significantly impact upon the psychological characteristics associated with school adjustment.

5.2 POOR ADJUSTMENT AT SECONDARY SCHOOL

It is evident from the findings for the psychological variables in this study that secondary school transfer did not appear to be a stressful experience for most boys, and personal development continued throughout the year after transfer for the majority of pupils. However, whilst correlational analysis indicated that boys recording high global self-esteem during transfer were more sure of themselves and had lower levels of anxiety, coefficients also suggested that boys low on self-esteem were more unsure of themselves and anxious. For these latter boys, school transfer did not mark an upturn in their psychological development. To further understand the associate characteristics of these boys, the following discussion considers the evidence for boys classified as poorly adjusted to secondary school.

Through addressing research hypothesis XI,[11] this section provides further indication of the importance of physical education during the transition to secondary school. Initially, the findings for the low self-esteem group, the high anxiety group, and the self-reported group are independently discussed. However, on the basis of the combined findings, the summary section presents a consensus of poor secondary school adjustment.

5.2.1 POOR SCHOOL ADJUSTMENT: Low Self-Esteem Group (LSEG)

Fox (1991) charts some of the experiences and influences affecting the development of self-esteem during childhood. Particular consideration is given to children's physical, cognitive and social development: " It is the task of the early adolescent to begin to integrate abilities and social roles into a single identity, a feature that often results in confusion and frustration" (Fox,1992, p.48). At the December and June stages after transfer, discriminant function analyses revealed several important distinctions between the Low Self-Esteem Group (LSEG) and the rest of the sample which may be indicative of the complex processes outlined by Fox (1992). At both stages, the LSEG recorded significantly lower self-esteem and stability of self-image, and higher anxiety. These associations, combined with the previously discussed correlational evidence in this study, corroborate earlier

[11] Research hypothesis XI: Boys exhibiting poor adjustment to secondary school have concomitant negative psychological and physical education characteristics, i.e., boys categorised as poorly adjusted are predicted to (1) be less sure of themselves, (2) have significantly lower global self-esteem, (3) have higher levels of anxiety, (4) have lower motor performance and physical education self-esteem, and (5) have less positive attitudes to physical education than their secondary school colleagues.

research findings (see Burns,1979; Fallon,1965; Hart, 1986; Rosenberg,1965; Simmons et al.,1973; Youngman & Lunzer,1977).

With respect to the physical education characteristics, the LSEG recorded significantly lower motor performance and physical education self-esteem at the December stage after transfer. Indeed, motor performance contributed to the prediction of low self-esteem at this stage. Given the reported importance of physical skills amongst boys of this age (Evans & Roberts,1987; Gallahue,1982; Zaichkowsky et al,1980) poor motor performance may have contributed to the low self-perceptions in physical education and low global self-esteem evident amongst these boys at this stage of transfer. Data analysis for these boys at the June stage after transfer revealed a similar pattern amongst the predictor variables, with 'negative' psychological and physical education characteristics highlighted.

Of interest, for the boys exhibiting low self-esteem scores at the June post-transfer stage (12.6% of the sample) motor performance did not contribute to the prediction of low self-esteem. Drowatzky (1981) suggested that the importance of physical ability may subside during late childhood and early adolescence as alternative ways of gaining recognition and enhancing self-esteem are established. It may be speculated that by the June stage other factors were negatively influencing these boys' global self-esteem, i.e., low motor performance was not a major contributor. However, and of particular note, mean differences revealed that the LSEG recorded significantly lower self-perceptions in physical education at ***both*** post-transfer stages. Therefore, whilst motor performance was not significant at the June stage, self-perception of performance in physical education (PESE) was

an identified contributor to low self-esteem. These findings suggest that low *perception* of performance, rather than low *actual* performance, may be more influential and a better predictor of low global self-esteem.

In short, as hypothesised, high anxiety and low stability of self-image, motor performance, PESE, and attitude to physical education represent the best predictors of low self-esteem following transfer to secondary school. The LSEG were more anxious and less sure of themselves than the rest of the sample of secondary schoolboys. Although low actual motor performance contributed to low global self-esteem for the LSEG during the first term after transfer, other factors appeared to become increasingly influential for boys exhibiting low self-esteem by the end of the year at secondary school. Low motor performance was not as significant, whereas low self-perception of performance in physical education (PESE) remained closely associated with low global self-esteem throughout the transition period. Of interest, multivariate analyses did not highlight significant differences amongst the groups regarding anthropometric characteristics.

5.2.2 POOR SCHOOL ADJUSTMENT: High Anxiety Group (HAG)

At both post-transfer stages, discriminant function analyses identified that low stability of self-image is the best predictor of high trait anxiety. In addition, the contribution of low levels of global self-esteem, physical education self-esteem, and attitude to physical education were also highlighted. These findings are consistent with Adjustment Indicator One (low global self-esteem). In contrast, however, motor performance did not make a significant contribution to high anxiety at either

post-transfer stage. With respect to growth and development, discriminant analyses did not reveal significant differences between the HAG and the rest of the sample with regard to any anthropometric characteristic.

5.2.3 POOR SCHOOL ADJUSTMENT: Pupil Self-Reported Poor Adjustment

Of the Secondary school sample who completed the School Transfer Questionnaire (Appendix III) at the June stage after transfer (n = 119), sixteen boys self-reported poor adjustment to secondary school. These boys formed the 'Poorly-Adjusted Group' (PAG), and represent thirteen percent of the secondary school sample. This finding is in accordance with other transfer studies (Alston,1988; Keys et. al.,1995; Youngman & Lunzer,1977).

The discriminant analysis conducted at the June stage after transfer revealed stability of self-image as the variable which most discriminated between the Poorly Adjusted Group (PAG) and the rest of the sample. The boys in the PAG were less sure of themselves (i.e., they reported lower stability of self-image). In addition, the correlations between the discriminating variables and the discriminant function highlighted that global self-esteem, physical education self-esteem, and state and trait anxiety also contributed to the discrimination between groups. The PAG reported significantly lower global self-esteem and physical education self-esteem, and higher state and trait anxiety. These findings are consistent with the other indicators of school adjustment and findings from other studies (Stoll,1987; Youngman & Lunzer,1977). Of note, a discriminant analysis between the PAG and the rest of the sample conducted retrospectively at the December stage after

transfer revealed no significant discriminating variables. Indeed, univariate analyses (F ratios) revealed no significant mean differences for any of the variables under consideration. The absence of significant mean differences in the first term of secondary school perhaps suggests that this phase may have been a 'honeymoon period' for these boys (Stoll,1987). At this time, attitudes and feelings about secondary school for some pupils are likely to be transitory and uncertain, and adjustment to the new environment still in its infancy. By the end of the first year, however, school attitudes tend to stabilise and harden (Woods & Measor,1984) and for the PAG there was accompanying lower self-esteem, greater instability of self-image, and higher anxiety. Whether these characteristics are forerunners of poor adjustment, or the consequence of it, cannot be determined from this analysis. Nonetheless, the consistent identification of negative psychological traits amongst poorly adjusted boys provides evidence of the importance of these characteristics during school transfer, as well as support and justification for the instruments and scales used in the study.

5.2.4 SUMMARY: Poor Adjustment to Secondary School

The analyses of pupils exhibiting poor adjustment to secondary school have revealed consistent findings which support research hypothesis XI.[12] Groups of boys categorised according to low self-esteem, high anxiety, and self-reported

[12] Research hypothesis XI: Boys exhibiting poor adjustment to secondary school have concomitant negative psychological and physical education characteristics, i.e., boys categorised as poorly adjusted are predicted to (1) be less sure of themselves, (2) have significantly lower global self-esteem, (3) have higher levels of anxiety, (4) have lower motor performance and physical education self-esteem, and (5) have less positive attitudes to physical education than their secondary school colleagues.

poor adjustment recorded 'negative' psychological and physical education characteristics compared to the rest of the secondary school sample. In particular, boys exhibiting poor adjustment were less sure of themselves, more anxious, and held lower global and physical education self-esteem. Indeed, low global self-esteem, low stability of self-image, low physical education self-esteem, and high trait anxiety appear to represent the best predictors of poor secondary school adjustment following transfer from primary school. Moreover, the findings strongly indicate that self-perceptions of performance in physical education may have important implications for school adjustment for many boys.

Although the findings in this study provide further insight into the characteristics associated with poor secondary school adjustment, the multidimensional nature of the process cannot be understimated. In addition, it is important to recognise that there will be degrees of poor adjustment to secondary school, i.e., children who are poorly adjusting may experience different levels of disturbance. Therefore, whilst the consistent findings in this study suggest that the selected adjustment indicators (and the chosen *thresholds*) were appropriate to identify particular groups of boys, further understanding of the adjustment process may arise via instruments specifically designed to detect different stages or intensities of (poor) adjustment.

This study has illustrated the importance of the individual's performance, self-perception, and attitude in physical education. However, it has not considered the importance of *group* standards, beliefs, and attitudes. These issues are not only

likely to influence global and specific self-perceptions (Crain,1996), but also affect the process of school adjustment. Indeed, the importance of group characteristics on self-perceptions of sporting performance is a developing area of study. Ebbeck and Stuart (1993) suggest that an individual's perception of the importance attached to being good at sport within their peergroup will influence physical self-perceptions. In the context of school transfer and newfound peergroups, it is unknown how quickly perceptions of group values, attitudes, and beliefs develop. And, although the precise importance young adolescents place upon these group related characteristics is also unknown, much of the related research does suggest that children increasingly rely on the standards and judgements of their peers, over and above parents and teachers (Horn & Weiss,1991). It is recommended, therefore, that further study of school adjustment, and global and physical education self-esteem incorporates these particular lines of enquiry.

5.3 THE ASSOCIATE CHARACTERISTICS OF HIGH AND LOW MOTOR PERFORMANCE (ACTUAL AND PERCEIVED)

Thomas & Nelson (1990) suggest cause and effect between any two variables cannot be determined or inferred from correlational analysis. Consequently, further understanding may be gained through analyses of known groups. The following section discusses the findings for groups of high, average and low motor performers (actual and perceived) and provides further indication of the importance of physical education at the age of secondary school transfer.

Previous studies which have focused upon, or compared, high and low motor performers report that high performers tend to record high(er) self-esteem (Biddulph,1954; Salokun,1994) whilst low performers record low(er) self-esteem (Chesson et al.,1991). Betts and Underwood (1992) describe how pupils of low motor ability experience high failure rates in physical education classes which ultimately contribute to the development of low confidence and self-concept. In light of these observations, research hypothesis XII[12] was tested. Indeed, the data for the boys in this study generally supported this hypothesis. While mean differences were not statistically significant across all stages of transfer, low motor performers always reported (1) less positive attitudes to physical education, (2) higher levels of anxiety, (3) lower self-perceptions in physical education, and (4) lower global self-esteem. The Psychological Model of Physical Activity Participation (Figure 1) suggests low motor performance tends to lead to, or accompanies, low physical self-perceptions which may negatively influence global self-esteem. Of interest, global self-esteem only discriminated between the low and high motor performers at the December stage of transfer. Analysis at the June stage after transfer revealed that differences in mean levels of global self-esteem were not significant. Drowatzky (1981) suggests that the importance of physical ability may subside during late childhood and early adolescence as alternative ways of gaining recognition and enhancing self-esteem are established. It may be

[12] Research hypothesis XII. Primary and Secondary schoolboys who record lower levels of motor performance, or lower physical education self-esteem, have less positive attitudes to physical education, lower global self-esteem and stability of self-image, and higher levels of anxiety than the rest of their peergroup.

speculated that by the end of the transfer year the new and diverse curriculum and opportunities available at secondary school (or outside of school) had provided the low motor performers with alternative avenues for maintaining self-esteem.

With respect to the anthropometric characteristics of low and high motor performers, these were only significant at the December stage after transfer. The discriminant analysis indicated that height, weight, body mass index, and skinfold totals were discriminating variables (using a minimum criterion of 0.30) separating the low and high motor performers. The low motor performance group were shorter, heavier, and had higher BMI's and skinfold totals. Indeed, correlational analyses (Table 28) revealed similar significant findings after school transfer, i.e., secondary schoolboys who exhibited the lowest levels of motor performance recorded higher body mass indices and skinfold measures. Given these findings, it appears that anthropometric characteristics partly influence level of motor performance during school transfer, and may also have some bearing on global self-esteem. Indeed, discriminant analyses of groups of boys with high, average, or low *self-perceptions in physical education* revealed that the anthropometric variables were similarly discriminating at the December post-transfer stage. At this time, higher body mass indices were reported for the boys with low physical education self-esteem. Other findings suggested that higher weight, BMI, and skinfold totals tended to separate the boys with average physical education self-esteem from the low and high groups. These data, combined with the correlational analysis (Table 28), suggest that boys' anthropometric characteristics may influence their physical education self-esteem during school transfer. Moreover,

discriminant analyses indicated that boys with high or low physical education self-esteem recorded equivalent psychological characteristics. These findings support and strengthen the correlational analyses which associated low physical education self-esteem with low global self-esteem and stability of self-image, and high anxiety (see Table 23).

The combined findings in this study suggest that the global self-esteem of the majority of boys in the study was not *directly* or *consistently* related to motor performance, but was associated with self-perception of performance in physical education. Since correlational and known groups analyses indicated that boys' self-perceptions in physical education were significantly associated with both motor performance and global self-esteem, it appears that physical education self-esteem may serve as a mediating variable between motor performance and global self-esteem. Sonstroem (1978) forwarded a similar view with respect to the Physical Ability Estimation Scale; a more general physical self-perception variable which is not physical education specific. However, in contrast with Sonstroem's investigations which used physical fitness test scores as the performance indicator and analysed data for adolescent males (aged 13 to 18 years), the findings of the present study suggest that self-perceptions in physical education may operate in a similar way with respect to motor performance, and for boys during childhood. This is clearly an area worthy of further investigation.

In conclusion, the findings for the physical education variables in this study endorse previous research findings that link actual and perceived motor competence (e.g.,

Boling & Kirk,1982; Harter,1982) and also confirm the relative importance of self-perception of performance with respect to global self-esteem. As a consequence, it appears likely that curriculum physical education experiences do shape and develop motor performance and physical self-perceptions, and subsequently affect self-concept (Fisher,1979).

5.3.1 SUMMARY: High & Low Motor Performance (Actual & Perceived)

Analyses of high and low motor performers (actual & perceived) at each stage of transfer generally revealed corresponding levels of global self-esteem. These findings are consistent with conclusions in other related studies (Biddulph,1954; Chesson et al.,1991; Salokun,1994). In a broader context, 'negative' psychological and anthropometric characteristics were consistently associated with boys exhibiting low motor performance and low perceptions of performance. Assuming the desire for positive global and physical education specific self-esteem, the following recommendations are warranted: (1) the early detection of poor motor performers (Chesson et al.,1991), (2) the development of positive physical self-perceptions during childhood and adolescence, and (3) increased consideration for heavier and fatter boys who appear more likely to experience low actual and perceived motor competence.

On the basis of the combined findings for the variables in this study, the following section presents a model of secondary school adjustment.

5.4 A MODEL OF SECONDARY SCHOOL ADJUSTMENT (INCORPORATING PHYSICAL EDUCATION)

Although some transfer studies have considered pupils' adjustment to secondary school, few have attempted to devise specific models or theories. Elliott and Punch (1991) constructed a three-stage map of the process of adjustment, and Youngman and Lunzer (1977) and Nisbet and Entwistle (1969), amongst others, have identified pupil traits associated with school adjustment. However, the links between particular pupil characteristics and experiences before and during transfer have not been formalised. This section presents and discusses a preliminary model of secondary school adjustment. In this model, school adjustment after transfer is considered in terms of the associations amongst the selected psychological and physical education characteristics in the present study. The model is based, therefore, upon this study's findings, current theories, and previous empirical evidence.

The Model of Secondary School Adjustment (Figure 10) illustrates how physical education experiences may contribute to the development of the psychological characteristics related to school adjustment. Since the model only considers the associations amongst the physical education and psychological characteristics investigated in the present study, its limitations are recognised. It is also acknowledged that the interrelationships are complex and other factors not included in the model may also be influential, e.g., SES, ethnic and cultural values, and gender. Nevertheless, the model is presented for empirical test. The following

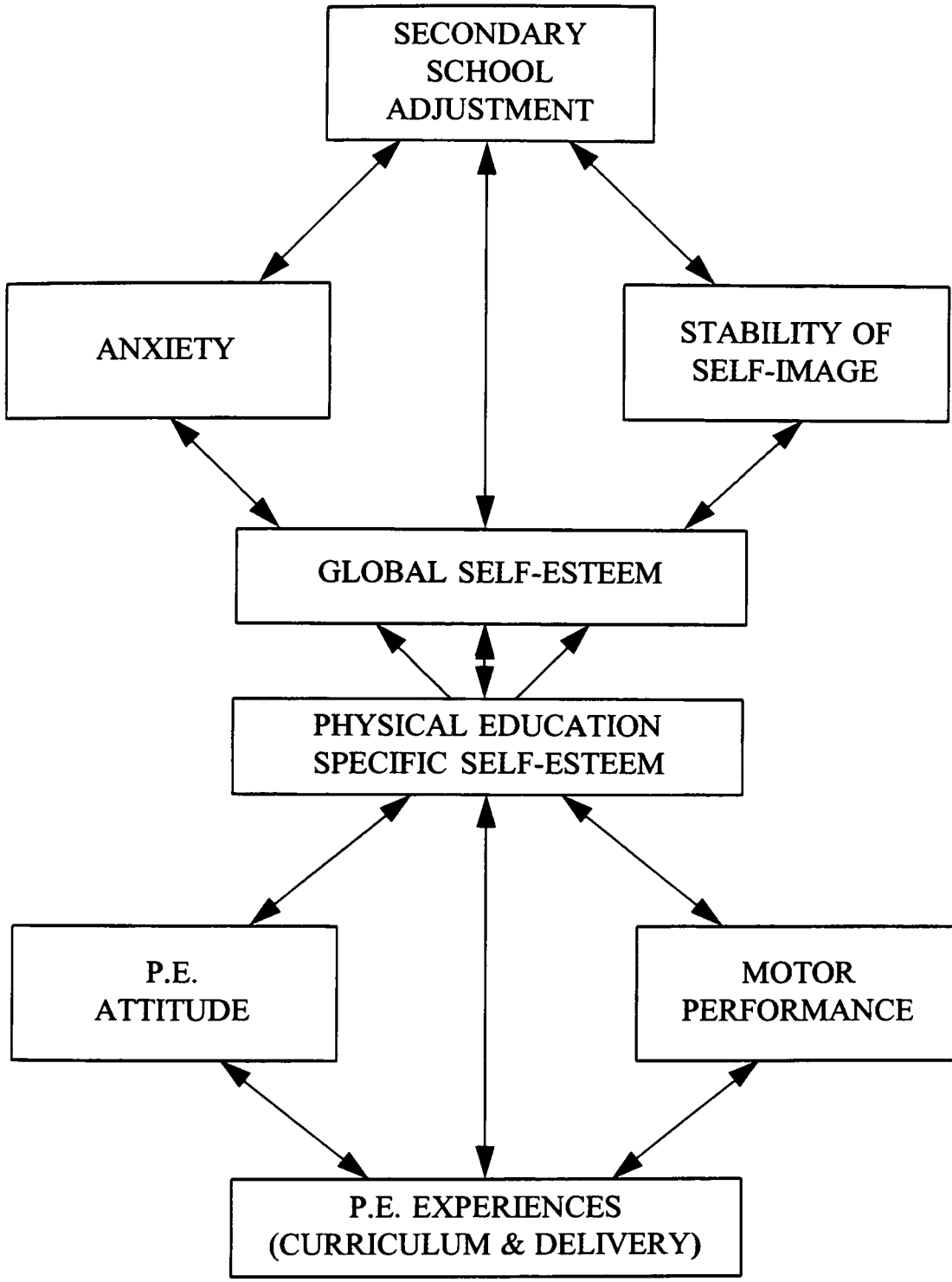

Figure 10 A Model of Secondary School Adjustment (incorporating Physical Education)

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discussion considers the associations between the variables and examines the assumptions underlying the model.

5.4.1 RATIONALE

The lower half of the model illustrates the potential relationships amongst the selected physical education variables and, in this way, supports and extends Sonstroem's model of physical activity participation (figure 1). Two common aims of most physical education programmes are to improve motor competence and attitudes towards the subject. Physical education experiences which are developmentally appropriate and progressively challenging will provide most children with the opportunity to develop motor competence. It is contended that through success and achievement in physical activities, children's physical self-perceptions and attitudes towards activity will similarly improve (Fox,1988b; Sonstroem,1978). However, since some children place less value on physical skills, or learn and achieve in physical education at a slower rate, it is acknowledged that physical ability may not influence every child's physical or global self-esteem (Drowatzky,1981). Nevertheless, the potential to improve actual motor competence and, importantly, self-perceptions of competence are available to all pupils. Fox (1992) stresses that it is the quality and nature of the regular interactions between teacher and child in physical education which, " ...will ultimately determine whether self-perception outcomes are positive or negative," (p.50).

The arrowed links between the physical education variables in the model suggest that physical education self-esteem may be influenced either *indirectly* via attitude to physical education or level of motor performance, or *directly* from the physical education experience. Boys with positive attitudes to physical education or high levels of actual motor performance are, therefore, more likely to possess high self-perception in physical education than pupils with negative attitudes or low levels of performance. Similarly, negative responses are likely to match. Williams and Woodhouse (1996) report low perceptions of ability amongst pupils with the least positive attitudes to physical education. The reciprocal nature of these relationships (indicated by the bi-directional arrows) is also conceivable. Indeed, Horn and Weiss (1991, p.310) emphasise the importance of children's self-perceptions,

" ...children's judgments or beliefs concerning their academic or physical competence do affect their motivation, level of performance, and behavior in those achievement situations."

The *direct* link from physical education experiences to physical education self-esteem in Figure 10 suggests that the development of self-perceptions of performance in physical education are not necessarily dependent on performance or attitude enhancement, but may arise from experiential interactions with, for example, the subject content, its delivery, the teacher, or peers. Indeed, Torbert and Schnieder (1986) and Weiss (1990) stress that self-perceptions derive from our experiences and how we process them. Fox (1992) highlights that physical education can have a *negative* effect on the self-esteem of some children, and urges better understanding of the relationship between changes in self-esteem and

particular teaching styles, methods and curriculum content. It follows, therefore, that the development of positive self-perceptions in physical education may be strongly influenced by the selection of activities, the lesson content, and the presentation and delivery of these experiences.

Although the National Curriculum provides the structural framework for physical education, as well as guidance on content, it is physical educators who have a pivotal role in the delivery of children's experiences. Horn and Hasbrook (1987) highlight that development of physical self-perception amongst many young athletes is largely dependent upon the feedback from the Coach. It is also suggested that attributional feedback which emphasises that successful performances are due to internal, stable and controllable causes, and unsuccessful performances are due to unstable and uncontrollable causes, is likely to enhance the athlete's self-perceptions (Weiss et al.,1990). However, further study is necessary into the sources children use to develop their self-perceptions in physical education. Research of this kind would broaden understanding of the development of physical self-perceptions amongst all levels of performer, to include not only voluntary participants (child athletes) but also involuntary performers whose only exercise involvement is via compulsory school physical education. In addition, since teaching and learning methods are likely to either encourage or discourage pupils' feelings of self-worth, further research exploring and examining the effects of different methods of delivery is necessary (see Goudas, Biddle, Fox & Underwood,1995).

The top half of the Model presents the psychological associates of school adjustment. The psychological components included in the model have widely reported interrelationships, as well as established links with school adjustment (Alston,1988; Rosenberg,1965; Stoll,1987; Youngman & Lunzer,1977). Findings from other studies support the links between physical self-perceptions and global self-esteem (Fox,1988b; Granleese et al.,1989; Harter,1982; Sonstroem,1978). Indeed, the findings from the present study endorse these associations and also provide some evidence to support the direct link between physical self-perceptions (physical education self-esteem) and secondary school adjustment. It may be inferred from the model that boys during transfer with high self-perceptions in physical education are more likely to: (1) have accompanying high global self-esteem, (2) be more sure of themselves, and (3) have lower anxiety. As a result, these boys may be better able to make the adjustment to secondary school.

The evidence from the present study supports the tenet that physical self-perception (physical education self-esteem) may serve as a mediating variable between actual motor performance and global self-esteem. The findings also indicate that physical education self-esteem may be a mediating variable between physical education experiences and adjustment to secondary school. It may be speculated, therefore, that appropriate physical education experiences at primary and secondary school may enhance pupils' physical education self-esteem and, as a consequence, either directly assist their adjustment at secondary school, or at least contribute to the development of the psychological characteristics associated with school adjustment. Indeed, Calfas and Taylor (1994, p.417) suggest, "Mastery

experiences and successes with physical activity can be meaningful in improving self-esteem, particularly during the developmental stage of adolescence." Further research is necessary to examine this assertion.

5.5 PHYSICAL EDUCATION IN THE NATIONAL CURRICULUM FOR ENGLAND & WALES

The purpose of this section is to examine how primary school physical education may foster personal development in preparation for school transfer, and how secondary school physical education may assist the process of adjustment. Consideration is given to the statutory instruments and the non-statutory guidance offered to teachers in the National Curriculum for Physical Education (DES,1991; DES,1992; NCC,1992; SCAA,1994; DFE,1995). The discussion focuses on the curriculum content and its delivery, and evaluates the extent to which physical education is likely to develop children's attitudes, motor performance, and physical and global self-perceptions before transfer and during adjustment to secondary school.

5.5.1 CURRICULUM CONTENT IN PHYSICAL EDUCATION

As a result of the 1988 Education Reform Act (National School Curriculum) and the subsequent appointment of a working group to provide a national perspective for physical education, statutory attainment targets and programmes of study are now in operation. The National Curriculum (DES,1991; NCC,1992; DFE,1995)

provides primary and secondary schools with the structure, content and guidance for the teaching of physical education.

Analysis of the National Curriculum reveals that at key stage one (starting school to approximately seven years) children experience three areas of activity: games, gymnastics, and dance (SCAA,1994). At this stage, emphasis is upon experimentation, exploration and success at the child's personal level of performance. Individual work, incorporating the natural actions of running, jumping, stepping, etc, is encouraged so that personal movement confidence and competence may result (DES,1991). At key stage two (approximately ages eight to eleven years) pupils experience six areas of activity: athletic activities, dance, games, gymnastics, outdoor and adventurous activities, and swimming. The guidance to teachers at this stage reflects the need to challenge the rapid physical and motor advances common in this phase of child development:

> During this key stage children's motor skills, control and co-ordination develop greatly and the programme of work in physical education should help extend and refine these (DES,1991, p.30).

Increasing importance at key stage two is also attached to partner, small group and team experiences. With respect to dance, for example, consideration is given to understanding the movement relationships between partners and other members of a group (NCC,1992). Similarly, in games, 'As pupils proceed through KS2 their level of skill should increase and they will want to measure their own skills against opponents in small-sided games'(NCC,1992, p.C5). The value of these activities

for developing social and interpersonal skills is also emphasised:

> Teachers should take advantage of competitive activities to introduce issues concerned with good sporting behaviour, to reinforce good behaviour and to condemn bad and anti-social behaviour, including cheating (DES,1991, p.30).

Therefore, whilst key stage two continues to encourage experimentation within a broad range of activity areas, simple and exploratory individual work is progressively replaced by more complex movement patterns, partner, and team activities which may have a competitive element.

At key stage three (secondary school, approximately ages eleven to fourteen years) the areas of activity are largely governed by the school's Physical Education Department. Apart from games, which is a compulsory activity, schools must select one other full area of activity (either athletic activities, dance, gymnastics, outdoor and adventurous activities, or swimming) and at least two additional half areas of activity (DFE,1995). Programmes of study are stipulated for full and half units of work and at this key stage there is greater emphasis on extending and refining actions, techniques, skills and strategies. In addition, it is evident that the fundamental movement patterns and modified activities performed at primary school are now firmly embedded within recognised sports. Williams and Woodhouse (1996) note that the 'Raising the Game' initiative (Department of National Heritage,1995) further illustrates that in the eyes of central government physical education is a synonym for sport. Williams and Woodhouse (1996) also provide some insight into 'the early years'of the National Curriculum.Their analysis of adolescents perceptions of physical education leads them to conclude that,

despite the National Curriculum, children's experiences are predominantly localised, and frequently influenced by school and teacher preferences, and facilities.

Although Williams and Woodhouse (1996) don't consider the impact of the curriculum on particular socioeconomic or ethnic groups, they highlight that issues of accessibility, entitlement to learning, and achievement for all still remain central concerns:

> If organisational factors lead to some pupil groups enjoying a learning experience more relevant to their needs than to those of others, questions of entitlement may be raised legitimately. ..... If curriculum content is selected which accords with the interests and predispositions of some groups rather than others, then the relevance of the programme to all pupils may be questioned (Williams & Woodhouse,1996, p.204).

To date, the educational outcomes of the physical education National Curriculum have not been the subject of detailed research, and further analysis is necessary.

Given the evidence in this study associating children's physical education characteristics with the psychological characteristics of school adjustment, the following sections consider the extent to which the National Curriculum is likely to develop positive attitudes to physical education, and actual and perceived physical competence (physical education self-esteem) before and during the transition to secondary school.

5.5.2 DEVELOPING POSITIVE ATTITUDES TOWARDS PHYSICAL EDUCATION

Establishing positive attitudes towards any subject is widely regarded as an important prerequisite for successful learning and achievement in that subject area

(Figley,1985). How positive attitudes arise is not, however, straightforward. Both Figley (1985) and Luke and Sinclair (1991) highlight the importance of the curriculum, teacher qualities, and the lesson 'atmosphere' in the determination of positive attitudes towards physical education. With respect to the first of these, the curriculum, the narrow focus on three activity areas at key stage one is likely to encourage familiarity and pupil confidence in fundamental movement patterns. The early emphasis on experimentation, exploration and success at the child's level of performance is also likely to appeal and encourage most children. Similarly, the expansion to six areas of activity at key stage two will serve as a stimulus to most children, providing both increased challenge and opportunity. However, the increasing emphasis and justification for competition at key stage two may signal a crucial watershed for some children. Whilst it is acknowledged that competition may establish positive attitudes through teaching fair play, honest competition, good sporting behaviour, how to cope with success and failure, to try hard, and to be mindful of others and the environment (SCAA,1994), the emphasis may encourage an over-indulgence in contests, performances, races and team activities at the expense of experimentation and development of recommended techniques. For those pupils whose physical competencies are not sufficiently developed, competitive activities may highlight inadequacies, not only to themselves but also to others. The negative impact of these experiences on self-esteem and attitude towards physical education may be considerable. Indeed, the findings for the pupils in this study provide limited support for this competitive element. Although responses from the primary schoolboys at the end of key stage two indicated that the majority liked playing in a team (86%), only 58% liked competing against

friends in physical education. Nevertheless, more disliked working on their own (84%) and only 50% enjoyed making up their own work. Although this sample of pupils is relatively small and only representative of boys at the *end* of primary schooling, the emphasis in key stage two on group activities appears generally popular, although competition appears to meet with only partial approval.

A physical education curriculum which caters for most boys' wishes has the potential to encourage positive attitudes. Nevertheless, the curriculum requires implementation, and the development of these attitudes is likely to be largely dependent upon the presentation and delivery of the movement experiences. The teacher's influence cannot, therefore, be underestimated. This important theme is developed in the following section.

5.5.3 DEVELOPING MOTOR COMPETENCE AND PERCEIVED MOTOR COMPETENCE

The development of physical (motor) competence is one of the aims of the National Curriculum (NCC,1992, p.B1). Indeed, the greatest emphasis of the curriculum appears to be performance outcomes (Williams & Woodhouse,1996). Whilst the programmes of study detail the intention and content of the work at each key stage, the delivery of the material naturally lies with the teacher. With respect to methods of delivery in physical education, two distinct teaching/learning approaches are worthy of explanation. The 'traditional' (command-style: Mosston & Ashworth,1986) skills-based teaching approach, where the emphasis is almost entirely on development in the physical (motor) domain, is contrasted by 'child-

centred' teaching such as 'guided-discovery' (Mosston & Ashworth, 1986), 'educational gymnastics' (Williams,1987) and 'teaching for understanding' (Thorpe, Bunker & Almond,1983). These latter methods encourage children to learn more for themselves, and Mosston and Ashworth (1986) suggest they promote learning in the cognitive, social and emotional channels as well as the physical (motor) domain. Perhaps more important than the *general* teaching approach are the particular methods used by the teacher to differentiate tasks and outcomes to encourage individual pupil success. Catering for individual differences may be achieved in a variety of ways. Capel (1997) suggests tasks should be set to challenge each child at their present level of performance, and this may require selection of different equipment or conditions in order to accommodate a class of mixed ability children. For example, children experiencing coordination difficulties may benefit from using a larger brighter softer ball, or a racquet or bat with a larger head. Lowering the ring in basketball/netball, and allowing pupils to shoot from close distances may also encourage greater success. Selecting different outcomes provides individual pupils with opportunities to use their personal knowledge and experience to find solutions to movement tasks, and may enable children to participate and progress at their level of performance. Thus, in contrast to selecting one technique or movement pattern which each child is expected to perform, differentiating by outcome enables each child the opportunity to learn and achieve according to their own level of experience, confidence, and competence. The extent to which any teaching method can significantly influence and develop children's enjoyment, understanding, motor performance, physical self-perception, and global self-esteem is, however, speculative. Nevertheless, whichever teaching

and learning process is adopted, the desire to promote success and achievement at each child's level of ability is unequivocal.

The National Curriculum indicates that motor skill development during key stages one and two will be acquired through exploration, self-expression, practice and making up activities (SCAA,1994). Given this dependence upon child-centred approaches, it appears likely that improvements in motor performance will occur as a result of two processes: (1) through natural biological and neurological developments which accompany physical maturity (SCAA,1994, p.3), and (2) through children acquiring the skills to analyse, evaluate and refine their own performance. If teachers are to contribute to children's motor improvements via this latter process, they would need to: (a) provide children with some analytical tools (however simple) for examining and understanding performance, (b) give children time to apply these analytical tools to their own performance, and (c) be able to assist the children in the processes of self-evaluation and refinement of performance. The review of Physical Education in the National Curriculum (SCAA,1994, p.3) does suggest that,

> Using given criteria they *[pupils]* will make judgements about their own and others' performance and some pupils will begin to suggest how to improve performance using simple, technical language.

However, it is unclear from the documentation what form the 'given criteria' and 'simple technical language' might take. If these reside with the physical educator, children's interpretation and analysis of performance will rely on their teacher's ability to identify particular technical aspects of performance. Since few physical education specialists currently work in British primary schools, children's

experiences and learning before secondary school transfer are likely to be variable. Indeed, the future in this regard looks bleak. Morgan (1997) suggests most *student* teachers following Primary B.Ed./ B.A.(Ed.) curriculum study/foundation courses, or the Primary PGCE course receive inadequate preparation in physical education and, as a consequence, few have the understanding to competently teach the subject.

Clearly to *influence* the development of childrens motor competence requires considerable teaching skills. To develop children's *self-perceptions* of physical competence is similarly challenging, and the importance of these perceptions in children's early years is stressed by Fox (1992, p.35) who suggests:

> ..curricular experiences may be engineered that, through encounters with movement and exposure to the expertise of physical educators, will develop a sound physical self-concept and contribute to a global sense of worth.

The contribution of teacher expertise in this process is further emphasised by Horn and Hasbrook (1987, p.209) who suggest that only during late childhood and adolescence do some children, "...develop an internal set of performance criteria or standards they can use in subsequent performance situations to make independent judgments of their skill competencies." Most primary school children during physical education lessons will, therefore, rely on verbal feedback and guidance from the teacher. If most physical education lessons in primary schools are conducted by non-specialists, it is likely that the type and quality of teacher feedback will be limited. In this regard, and referring to initial teacher training in Wales, Morgan (1997, p.20) suggests, " In the case of all courses, by far the greatest shortcoming is students' ability to use their observational skills to provide

feedback for pupils in order to improve pupils' performance and achievement." The National Curriculum (DES,1992b; NCC,1992) does provide some guidance with respect to formal (written) feedback, but it is evident that this may lead to inconsistencies and inaccuracies in child assessment, and not help develop positive physical self-perceptions:

> It is intended that assessment should be as simple and straightforward as possible and should be based on teachers' own judgements of pupils' performance. It is not expected that there be nationally determined standard assessment tasks. (DES,1992b, p.5)

Since formal (written) and informal (verbal) feedback will undoubtedly influence children's self-perceptions in physical education, there appears a need for more specific guidance to non-specialist teachers. Perhaps the introduction of objective methods for monitoring children's social, psychological and motor progress may provide an indication of children's actual and perceived physical competence, and also enable teachers to better evaluate their lessons and plan appropriate future experiences. Evans and Davies (1993) present a different, related viewpoint. They question whether an assessment process which relies on a lone teacher's perceptions can, "..be free of cultural, class and gender bias."

Although there is recognition of the need for appropriate in-service training and time devoted to physical education in Initial Teacher Training (DES,1991,p.53) no national initiative has been forthcoming. It is likely, therefore, that classroom teachers with limited training will continue to supervise most children's primary school physical education experiences. Indeed, Carney and Armstrong (1996) portray a particularly gloomy picture, and provide details of the limited time

currently devoted to physical education on undergraduate primary teacher training courses. Responses from forty-nine of the seventy four institutions providing primary school initial teacher training in England and Wales revealed that over fifty percent of undergraduate programmes offered thirty hours or less for the study of physical education. The minimum offered was twelve hours. PGCE courses faired no better, with most offering between sixteen and twenty-five hours. However, one PGCE course reportedly provided only fours physical education! These data appear to suggest that competence to teach primary school physical education is not a necessary requirement for all initial teacher trainers. Perhaps those most interested are expected to learn from teaching colleagues or attend in-service courses once in employment. Given that the National Curriculum stipulates that primary schools provide children with experiences in each of the six practical areas (athletics, dance, games, gymnastics, outdoor and adventurous activities, and swimming), much is being left to chance, and children deserve better.

With respect to the physical education curriculum at key stages three and four, the more extensive facilities/resources (physical and human) at secondary school are likely to make the subject attractive to many boys. However, the revised national curriculum for physical education (DFE,1995) places an even stronger emphasis on sports and increased competition during these key stages. Games, for example, is a compulsory activity for all pupils in each year of secondary schooling, and children are expected to experience a range of competitive team and individual games of the invasion (e.g., hockey, football), striking/fielding (e.g., cricket) and net/wall (e.g., badminton, volleyball) varieties. Similarly, within athletic and dance activities,

pupils are expected to perform or take part in contests. For those pupils whose actual or perceived motor competence is low upon arrival at secondary school, this competitive approach may stifle future development. Robinson (1990) suggests over emphasis on performance results in children overvaluing accomplishments, and harbouring feelings of worthlessness when they 'fail' Such failing children, he continues, are likely to employ failure avoidance strategies, i.e., setting simple or unobtainable goals, absenteeism, etc, which do little to develop feelings of self-worth. Physical education needs to cater for all pupil needs and abilities. For some, the element of competition may be healthy; for others, development of motor competence and positive physical self-perception may be acquired through non-competitive activities.

Although the emphasis in this section has been the curriculum content of the physical education national curriculum, the contribution of teacher knowledge and understanding of the development of children's self-perceptions has not been understated. Indeed, Fox (1992, p.51) suggests, "... although the identification of the most appropriate curricular content is important, ultimately teaching style and method of delivery hold the key to success." This emphasis appears most important during children's primary school experiences when many children rely on the teacher as a significant source of information for developing physical self-perceptions. Although the teacher, and teaching style and delivery remain important considerations at secondary school, peer-group comparisons and a developing internal value system appear to replace the teacher as the most influential sources influencing physical self-perceptions of the adolescent (Horn &

Weiss,1991). In light of these discussions, further assistance for primary school teachers, particularly during initial teacher training, appears both justified and worthy.

5.5.4 SUMMARY: PHYSICAL EDUCATION IN THE NATIONAL CURRICULUM

The National Curriculum (DES,1991; DES,1992; DFE, 1995; SCAA,1994) provides primary and secondary schools with the structure, content and guidance for teaching physical education. Whilst the documentation clearly identifies the areas of activity and their programmes of study, it is assumed that teachers will interpret these to provide safe, purposeful and developmental learning experiences for pupils of all abilities. Given the unique nature of physical education and the largely non-specialist tuition currently available in primary schools, children's early experiences, and the benefits of these experiences, are likely to be variable.

At key stages one and two (primary school) the emphasis is upon learning through experimentation and exploration. Whilst this approach enables children to operate initially at their own level of confidence and competence, to influence motor skill development, teachers need to provide appropriate feedback and guidance, and children need to analyse and self-evaluate performance. Knowledgeable instruction is therefore necessary. Whilst there is recognition of the need for increased in-service training and time devoted to physical education in Initial Teacher Training for primary school teachers (DES,1991), no national initiatives have followed. Indeed, Carney and Armstrong (1996) and Morgan (1997) highlight the continued

inadequacy of time to prepare students to teach curriculum physical education on most Primary ITT courses.

There is little doubt that the presentation of physical education experiences will be a major influence on pupils' actual and perceived competence and their attitudes towards the subject. Using methods which enable pupils to succeed and which cater for their 'likes' will probably make the subject appealing to most children. However, if primary school physical education is to provide a developmental experience which may enhance children's physical and global self-perceptions, its delivery should not be left to chance. Physical education can only purposefully contribute to children's psychological development if appropriate teaching strategies and learning experiences are systematically presented. Whilst there appears potential for physical education to assist children preparing for school transfer and during secondary adjustment, this potential has, to date, been largely unrealised.

CHAPTER SIX

CONCLUSIONS,

IMPLEMENTATIONS,

RECOMMENDATIONS.

CONCLUSIONS

Introduction

This study has extended existing knowledge of children during the transition to secondary school, and highlighted the need to further examine the role of physical education. However, it is recognised that this small-scale study has only considered *some* of the contributory factors associated with secondary school transfer and adjustment. Nevertheless, some notable and significant findings have been unveiled which provide foundation for future research. The first section of this chapter reviews the main findings, and presents a summary of the conclusions. To place these in perspective, the second section considers the assumptions and limitations of the present study, and this leads appropriately into the implementations and recommendations for further study.

6.1 SUMMARY OF CONCLUSIONS

Under the conditions of this study, the following conclusions are warranted:

1. Secondary school transfer appears to be a positive experience for most boys with psychological development continuing throughout the transfer year.

2. Negative psychological characteristics are associated with poor secondary school adjustment.

3. Boys' motor performance and attitudes to physical education at the age of transfer do not appear directly related to secondary school adjustment or the psychological characteristics associated with school adjustment.

4. Boys with high self-perceptions of performance in physical education (i.e., high physical education self-esteem) have concomitant positive psychological characteristics. In contrast, boys with low physical education self-esteem have lower global self-esteem, are more anxious, and are less sure of themselves.

5. Boys who self-reported poor adjustment to secondary school reported significantly lower physical education self-esteem. The way boys perceive themselves in physical education may, therefore, have implications for secondary school adjustment, and low physical education self-esteem may serve as a indicator/predictor of poor secondary school adjustment.

6. The National Curriculum for Physical Education (DFE,1995; NCC,1992; SCAA,1994) provides an appropriate framework to encourage positive attitudes to physical education amongst the majority of boys. However, to *influence* children's motor performance and physical self-perceptions, teachers need to be trained to be proficient in the use of appropriate methods of delivery, assessment and feedback, and be aware of the importance and implications of children's early movement experiences. To date, the provision of physical education during ITT for primary school teachers appears insufficient (Carney & Armstrong,1996; DES,1991; Morgan,1997)

6.2 ASSUMPTIONS & LIMITATIONS OF THE STUDY

The previous section presented the conclusions of the investigation. It is important to consider these within the context of the limitations of the study, even if the implications of any limitations are unknown. This section, therefore, highlights the major assumptions and limitations associated with the study.

6.2.1 DESIGN OF THE STUDY

The study has used almost exclusively quantitative methods of analysis. Whilst these enabled the aims of the study to be fulfilled, further insight into the impact of transfer and the importance of physical education for some children may have been acquired through observational analysis of selected pupils. In addition, interviews with particular samples of children (e.g., the poorly adjusted pupils, and boys with low self-perceptions in physical education) may have provided further opportunity to explore particular pupils' feelings and opinions, and a more complete data base from which to examine the interactions between school, home, psychological, and physical education factors. Nevertheless, the selected survey methods did provide valid and reliable data to test the set of hypotheses, and investigate the variables included in the study.

In the context of this study, it is recognised that children's academic/educational status may be an influential factor (see figure 2), and the selective intake of pupils to the secondary school in the cross-sectional study could have had a bearing on

the findings. This is not seen as a major limitation, however, since the discussion of findings and conclusions reflect patterns and outcomes evident in both the cross-sectional and longitudinal studies. Nonetheless, frame-of-reference cannot be ignored, and the 'Big-Fish-Little-Pond' phenomenon (Marsh,1987) may have influenced some boys' self-perceptions and performance. In contrast, Cairns (1990) suggests there is little evidence to indicate that global self-esteem, for example, is affected by the type of school attended, whether it is single-sex, coeducational, selective or non-selective. This particular aspect, in relation to the focus of this study, requires further investigation.

6.2.2 SUBJECT SAMPLE

One of the major limitations of this study is that it has only provided data for a sample of boys. Further analysis of both boys and girls as they experience secondary school transfer is necessary. Nonetheless, it is assumed that the samples of boys in the study are representative of a broader population of primary and secondary schoolboys. It is recognised, however, that the relatively small subject sample size and limited geographical scale of the study are restrictive. In addition, since the analysis was conducted with mostly Caucasian boys who appeared representive of middle socioeconomic status, it has not been possible to consider whether responses would vary according to gender, ethnicity, or socioeconomic background. These are issues for further investigation.

It is recognised that some other features of the study may have influenced the results and need to be considered during the interpretation of findings. For example, the pre-transfer data was gathered at a time when the primary schoolboys knew their secondary school destinations. This may have influenced the attitudes and responses of some individuals. A survey of pupils early in their final year at primary school, before secondary transfer schools were known, may have provided useful additional information, and revealed trends during the lead up to school transfer. Indeed, a follow up of pupils beyond the first year at secondary school is also likely to broaden understanding and reveal emergent patterns and trends.

Finally, due to the exploratory nature of the research, it is recognised that the conclusions have been drawn from preliminary findings. Further study is necessary, perhaps with a national perspective, to draw broad conclusions. Nevertheless, evidence from cross-sectional and longitudinal surveys of boys indicate the apparent importance of the selected physical education characteristics (particularly physical education self-esteem) before transfer and during adjustment to secondary school.

6.2.3 INSTRUMENTATION

The chosen instruments and methods used in this study were selected according to their validity, reliability, and applicability for the current investigation. Indeed, the decision to use two established psychological scales for children (Rosenberg's self-esteem scale: Rosenberg,1965; STAIC: Speilberger, 1973) appears sound.

However, whilst these scales have been used extensively in related research, both were originally standardised with American children. As a consequence, their ability to tap current trends, and societal pressures and influences with contemporary British children may be questioned. Indeed, it could be argued that the findings of this study were instrument specific? However, this assertion may be rebutted given (1) the generic nature of the questions in both scales, (2) the support the findings provide for existing theories, and (3) the consistency of findings in the present study.

(i) Physical Education Self-esteem

This study has reinforced the importance of boys' perceived physical competence during childhood and, in particular, at a critical educational and developmental stage. Whilst other studies acknowledge the value of positive physical self-perceptions during childhood (e.g., Harter,1982), adolescence (e.g.,Whitehead, 1995) and early adulthood (e.g., Fox & Corbin,1989), conclusions have been drawn from instruments with scale-items which are sport focused. The present study used a scale with a physical education focus (the Physical Education Self-Esteem scale) which revealed the importance of boys' self-perceptions in a specific environment, i.e., school physical education.

The PESE scale was specifically devised for use with children embarking upon adolescence, and continued construct validation is necessary to further analyse its internal structure, stability, and relationship with other 'physical self' measures.

Indeed, it is evident that many additional lines of enquiry are necessary to gain more understanding of children's self-perceptions of performance in physical education. For example, responses to the questions of the PESE scale may vary for children of different ages, different cognitive abilities, or who use different sources of information to judge their performance. According to Horn and Weiss (1991), children during the later stages of childhood increasingly use peer comparisons to evaluate their own performance. In this respect, only two questions of the PESE scale specifically ask respondents to consider their performance in relation to their peers. The other seven questions of the scale allow pupils to use any criteria of personal relevance. With these questions, respondents who are predominantly 'ego' orientated may continue to use peer comparisons or objective performance outcomes (goals, points, win-loss record, etc) as the major sources of information to judge personal performance.Alternatively, individuals who are 'task' orientated will tend to refer to personal goals or task mastery to judge their competence. Horn et al. (1993) further suggest that particular psychological characteristics (e.g., trait anxiety) may influence the sources of information some children use to evaluate their competence. In time, a multidimensional physical education self-esteem scale will provide deeper insight into the importance of self-perceptions in this school subject. Such a scale may reveal the relevance of particular subdomains, e.g., skill and physical fitness, as well as knowledge and understanding of the principles of planning, performing and evaluating in physical education.

With regard to the findings of the Physical Education Self-esteem scale used in this study, mean scores across school transfer were high (76% to 82%), and the

significant relationships with global self-esteem, anxiety, and most other variables in the study highlighted the apparent importance of this characteristic for boys of this age. Indeed, the strength of the correlation between physical education self-esteem and global self-esteem was particularly revealing. If physical education self-esteem (PESE) is considered to be a lower-order construct contributing to a higher order domain (e.g., physical self-worth), one might have expected the correlations between PESE and global self-esteem to be quite modest. However, correlations between these variables ranged between .40 ($p<0.01$) and .53 ($p<0.001$) and were significant at each stage of school transfer. Indeed, the PESE scale may be especially relevant for primary and secondary school children who are less sport orientated, or who rely on physical education as their main (or only) outlet for physical activity. Evidently, further research into teaching and learning strategies designed to enhance self-perceptions is necessary.

Whilst the findings in this study have highlighted significant negative characteristics associated with low PESE, it cannot be assumed that adopting teaching and learning strategies to enhance self-perceptions of performance in physical education will necessarily, and automatically, be beneficial. Indeed, Horn and Weiss (1991) raise the issue of under- and over-estimation of physical competence amongst children, and suggest further research is necessary to consider the associated behavioural and psychological implications of inaccurate physical self-perceptions. With specific reference to the boys undertaking school transfer in the current study, it may be that many of these boys adopted a new and broader frame of reference once at secondary school, and this may have encouraged under-

estimation of physical education self-esteem amongst some boys. It is also likely that during the early stages at secondary school many boys will attend extra-curricula clubs and 'try out' for their new school sports teams. These experiences could well influence their 'general' physical self-perceptions, and illustrates the need to use subject specific scales like PESE to ascertain perceptions of competence in particular physical settings.

The practical implications of this particular area of study is stressed by Stein (1996, p.389):

> Research on physical self-concept may enable practitioners to intervene before a child's poor physical self-image may negatively affect his or her developing global self-concept.

Since this statement refers to self-image, it begs questions about the importance of physical performance in relation to weight control and physical appearance, and also encourages further investigation and development of different intervention strategies for children during childhood and adolescence. With regard to self-esteem enhancement, Bracken (1996) provides the following guidance for intervention programmes which may be applied to physical education: (1) direct instruction to improve competencies (i.e., teaching movement skills), (2) modeling and selective reinforcement of appropriate behaviours (i.e., working through progressions to lead to skill building), (3) cognitive and behavioural re-framing (i.e., reducing negative self-perceptions through accentuating positive self-qualities or setting new, more realistic goals), and (4) modification of the environment (i.e., reducing peer competition or adapting equipment to improve success). In this way, and combined with constructive and appropriate feedback, physical education may

provide those children most at risk during school transfer with a very valuable developmental experience.

6.2.4 INTERPRETATION OF FINDINGS

Although this study has identified many significant relationships and differences amongst the variables across school transfer, some interpretative caution is necessary. Whilst differences between groups have been identified with respect to levels of self-esteem, Crain (1996) reminds us that the lower mean value cannot necessarily be interpreted as indicating 'poor' self-concept. In addition, differences in the psychological and physical education characteristics of primary and secondary schoolboys across transfer cannot be totally attributed to the transfer process. It is recognised that demographic characteristics (e.g., SES, culture & race), growth and development factors (e.g., maturation of children's cognitive responses), and other home and personal factors may also be influential. Even with respect to physical education, some explanation may be due to particular aspects not addressed in this study, e.g., pupils' previous experiences in physical education, pupils'competitive instincts, and the importance of pupils'personal interpretations of improvements in performance in physical education.

Despite the statistical significance of many correlations amongst the school adjustment indicators and the physical education variables, it is notable that coefficients of determination were not high. This suggests that only a small percentage of the factors accounting for variability were common to both variables.

Given the multidimensional nature of school adjustment, this is perhaps not too surprising, and it is inevitable that boys' physical education characteristics form only one strand of school factors which contribute at the age of school transfer. Although the particular importance of self-perceptions in physical education has been emphasised throughout, it is recognised that perceptions in other school subjects may also be influential. Moreover, it is probable that low self-perceptions across several subject areas exacerbate poor adjustment to secondary school. Nevertheless, the potential importance of children's physical dimension at the age of secondary school transfer, and the role of physical education before and during this transition, have been highlighted. Further research is now necessary to examine the many associated issues considered in this study, and to further understanding of the implications of particular pupil characteristics at primary school and during the early stages of secondary school.

6.2.5 UNEXPECTED FINDINGS

Although this study has reported many significant and consistent findings for boys during school transfer, some results were more unexpected. For example, the relationships amongst the psychological and physical education variables were consistently significant for the samples in the cross-sectional survey, but were nonsignificant for the longitudinal sample. This was probably due more to instrument insensitivity and small sample size than theoretical problems. The fact that these pupils attended four different schools is another possible influence, with each school presenting unique experiences. In addition, some variation in the

findings may be the consequence of particular pupil characteristics not included in this study, e.g., academic ability, SES, induction/pastoral arrangements, etc. These variations combine to reduce the likelihood of a uniform pattern of correlations particularly amongst the longitudinal sample across transfer. Since this is so, replication of the study to include a wider brief may substantiate particular findings and provide further understanding of the range of factors associated with children's adjustment to secondary school.

The significant correlations between physical education self-esteem and global self-esteem at each stage of transfer appear to highlight the importance of boys' self-perceptions in this subject area before and after school transfer. Given the increased mean value for global self-esteem at the December and June stages after transfer, one might expect similar significant increases in mean physical education self-esteem across the same period. This was not reported. Whilst mean PESE remained high across transfer, significant increases were not evident. This appears to suggest that factors other than PESE were responsible for the general enhancement of self-esteem amongst the secondary schoolboys.

Calfas and Taylor (1994) acknowledge that physical activity as well as psychological states may have different purposes and values amongst cultures. The potential affects of social class and culture on the findings in the present study have not been analysed. Whilst the schools were located in a neighbourhood representative of middle-SES (Secondary school OFSTED report,1995), and the boys were almost exclusively White, it is recognised that individual children may

have fallen outside these broad categories. Since significant associations between physical education, psychological, and school related characteristics have been highlighted, further study which accommodates social and ethnic variations is strongly recommended.

6.3 IMPLEMENTATIONS

This section considers how the major findings of the study may be applied in the practical setting.

1. Schools should consider the systematic monitoring of children's motor performance (actual and perceived) and psychological characteristics as part of a pupil profile. This information may help to identify deficiences early during childhood, and children 'at risk' before secondary school transfer. A progressive record of actual motor performance would also: (1) provide the pupil with evidence of progress which may enhance self-perception; and (2) provide teachers with an indication of the success of the teaching/ learning experiences, and assist future planning.

2. Given the importance of boys' self-perceptions in physical education before and after transfer, consideration should be given to how programmes of study and methods of delivery may enhance physical self-perceptions.

3. Since there is recognition of the need for appropriate in-service training of teachers (Carney & Armstrong,1996; DES,1992; Morgan,1997) developing a mechanism which facilitates links between primary schools and secondary school physical education specialists could provide necessary professional development. This sharing of expertise would provide primary school teachers and children with access to specialist tuition during a crucial developmental stage, and also encourage curriculum continuity throughout the 5-16 age range.

6.4 RECOMMENDATIONS

The following recommendations are suggested for further study into the role of physical education before school transfer and during pupil adjustment to secondary school:

1. A similar study should be conducted incorporating gender, SES, race and ethnic considerations. Developmental studies are also required to examine the significance of the physical education characteristics at different ages of transfer, e.g., during transfer into and out of middle school.

2. On-going psychometric analysis of the PESE and GAPE scales, including social, cultural, gender, and developmental effects. In addition, further consideration should be given to developing a multidimensional scale for physical education self-esteem.

3. Further research is necessary into the relationships between:

   a) PESE, physical self-perceptions, and sport specific self-perceptions;

   b) Global self-esteem, PESE and achievement in school sport;

   c) Perceptions of sports achievement outside of school (i.e., junior sports clubs).

4. Further studies to examine the Model of Secondary School Adjustment (figure 10).

5. The factors which influence the development of pupils' self-perceptions in physical education require investigation. In this regard, (1) peer group values and standards of performance in physical education may be important. For instance, a BFLPE may apply in physical education, i.e., less able performers in PE may have higher physical education self-esteem when placed amongst less able peers; (2) competence in some physical education activities may be more important than in others, i.e., to be a good games player may be more influential on physical education self-esteem, physical self-perceptions, and global self-esteem than to be a good swimmer.

6. Experimental studies should be conducted to examine the effects of particular teaching styles or types of feedback on pupil's self-perceptions in physical education.

7. Studies are required to examine the implementation of the National Curriculum for physical education particularly at primary school.

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APPENDIX 1

School Questionnaire I

Name ..... Form .....

Date .....

Instructions

This is NOT A TEST and there are no right or wrong answers to the questions.

In order to complete the questionnaire, just tick or write in your answer as appropriate.

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1. How do you normally travel to school?

car	( )
bus	( )
walk	( )
cycle	( )

state any other .....

---

2. Aproximately how long does it take you to travel to school ?

..... minutes

---

3. List your THREE favourite school subjects

favourite .....

2nd favourite .....

3rd favourite .....

---

4. Do you belong to any **school** clubs or sports teams ?

yes ( )
no ( )

If yes, which ones ? .....

.....

---

5. Do you belong to any clubs or sports teams **outside of school** ?

yes ( )
no ( )

If yes, which ones ? .....

.....

.....

6. In general, what do you do during lunchtime ? (choose ONE answer)

run around ( )
go to a sports practice ( )
sit or stand around ( )

7. Do you like P.E. and games ?

yes ( )
no ( )

8. After PE and games lessons would you like to have a shower ?

like ( )
dislike ( )

9. How good do you think you are at Physical Education?

very good ( )
good ( )
average ( )
below average ( )

10. Do you think you work hard during PE and games ?

always ( )
mostly ( )
sometimes ( )
rarely ( )

11. In PE and games lessons, do you like having to change your clothes ?

like ( )
dislike ( )

12. At times in PE and games, do you think you are no good at all ?

strongly agree ( )
agree ( )
disagree ( )
strongly disagree ( )

13. In PE and games lessons, what are your favourite activities ? .....

.....

.....

14. In PE and games, are you able to do things as well as most of your friends ?

strongly agree ( )
agree ( )
disagree ( )
strongly disagree ( )

15. In general, how do you feel at the end of a PE and games lesson ?

very tired ( )
tired ( )
fairly tired ( )
not tired ( )

16. Do other children choose you to be a leader/captain ?

yes, often ( )
no, not often ( )
never ( )

17. In PE and games, do you like working on your own ?

like ( ) dislike ( )

18. In PE and games, do you like playing in a team ?

like ( ) dislike ( )

Why ? .....

.....

.....

19. In PE and games, would you like to wear whatever you wanted ?

yes ( )
no ( )

20. Do you look forward to PE and games lessons ?

yes ( )
no ( )

21.	In PE and games, do you like competing against your friends ?	like ( )	dislike ( )
22.	Are you confused in PE and games lesson ?	yes, often yes, sometimes no, never	( ) ( ) ( )
23.	In PE and games lessons, do you like showing your work to the rest of the class ?	like ( )	dislike ( )
24.	Which activity in PE and games are you best at ?	.....	
25.	Are you disappointed with your performance in PE and games ?	yes, often yes, sometimes no, never	( ) ( ) ( )
26.	Do you like organising games or teams during the PE and games lesson ?	yes ( ) no ( )	
27.	In general, what do you do during breaktime ?	sit or stand around run around	( ) ( )
28.	If there was PE homework, would you like PE and games more or less ?	like PE more like PE the same like PE less	( ) ( ) ( )
29.	Do you feel a sense of 'freedom' in PE and games lessons ?	yes ( ) no ( )	
30.	In PE and games lessons, do you like showing your skills to other people ?	like ( )	dislike ( )

31.	If you had the choice, would you do PE and games ?	yes, I would do PE no, I would not do PE	( ) ( )
32.	Do you sometimes feel useless in PE and games lessons ?	strongly agree agree disagree strongly disagree	( ) ( ) ( ) ( )
33.	In PE and games lessons, do you like being shown how to do something ?	like ( )	dislike ( )
34.	In PE and games, do you feel as good as most of your friends ?	yes no	( ) ( )
35.	In PE and games, do you like being asked to make up your own work ?	like ( )	dislike ( )
36.	Do you feel you are not much good at PE and games ?	strongly agree agree disagree strongly disagree	( ) ( ) ( ) ( )
37.	Do you feel PE and games are.....	too difficult at the right level too easy	( ) ( ) ( )
38.	Are there any activities in PE and games which frighten you ? If so, which ones ?	yes no	( ) ( )
39.	In PE and games lessons, do you like being told how to do something ?	like ( )	dislike ( )

40.	Are you good at most activities in PE and games ?	yes no	( ) ( )
41.	In PE and games lessons, do you like choosing a friend to work with ?	like ( )	dislike ( )
42.	In PE and games, do you do most things badly ?	strongly agree agree disagree strongly disagree	( ) ( ) ( ) ( )
43.	In PE and games, do you work well on your own ?	always mostly sometimes never	( ) ( ) ( ) ( )

44. Is there anything else about PE and games which you particularly like or dislike ?

I like PE because	I dislike PE because
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....

Thank you

APPENDIX II

School Questionnaire 2

Name/Code _____ Form : _____

Date : _____

Instructions

This is NOT A TEST and there are no right or wrong answers to the questions.

In order to complete the questionnaire, tick the answer which best describes how you feel at the moment.

for example,

1.	At this moment I feel	( ) very happy ( ) happy ( ) not happy
2.	I use a telephone	( ) hardly ever ( ) sometimes ( ) often
3.	Football is a better game than cricket	( ) strongly agree ( ) agree ( ) disagree ( ) strongly disagree

Your Teachers and friends WILL NOT see your comments since these are personal to you.

Answer ALL the questions and if you have any problems ask the teacher.

1.	At this moment I feel	( ) very cheerful ( ) cheerful ( ) not cheerful
2.	I am shy	( ) hardly-ever ( ) sometimes ( ) often
3.	I feel that I have a number of good points	( ) strongly agree ( ) agree ( ) disagree ( ) strongly disagree
4.	I notice my heart beats fast	( ) hardly-ever ( ) sometimes ( ) often
5.	At this moment I feel	( ) very jumpy ( ) jumpy ( ) not jumpy
6.	I worry about making mistakes	( ) hardly-ever ( ) sometimes ( ) often
7.	I seem to do badly rather than do well	( ) strongly agree ( ) agree ( ) disagree ( ) strongly disagree
8.	At this moment I feel	( ) very nervous ( ) nervous ( ) not nervous
9.	I am pleased with myself	( ) strongly agree ( ) agree ( ) disagree ( ) strongly disagree

10.	At this moment I feel	( ) very worried ( ) worried ( ) not worried
11.	I have trouble making up my mind	( ) hardly-ever ( ) sometimes ( ) often
12.	At this moment I feel	( ) very jolly ( ) jolly ( ) not jolly
13.	It is difficult for me to face my problems	( ) hardly-ever ( ) sometimes ( ) often
14.	At this moment I feel	( ) very happy ( ) happy ( ) not happy
15.	I am able to do things as well as most of my friends.	( ) strongly agree ( ) agree ( ) disagree ( ) strongly disagree
16.	I worry about things that may happen	( ) hardly-ever ( ) sometimes ( ) often
17.	On the whole I like myself	( ) strongly agree ( ) agree ( ) disagree ( ) strongly disagree
18.	I am secretly afraid	( ) hardly-ever ( ) sometimes ( ) often

19.	I wish I could feel better about myself	( ) strongly agree ( ) agree ( ) disagree ( ) strongly disagree
20.	At this moment I feel	( ) very peaceful ( ) peaceful ( ) not peaceful
21.	I feel like crying	( ) hardly-ever ( ) sometimes ( ) often
22.	Some days I like the way I am, some days I dont like the way I am. Do your feelings change like this ?	( ) yes, this happens often ( ) yes, sometimes ( ) yes, this rarely happens ( ) no, this never happens
23.	At this moment I feel	( ) very frightened ( ) frightened ( ) not frightened
24.	I get upset at home	( ) hardly-ever ( ) sometimes ( ) often
25.	At this moment I feel	( ) very confident ( ) confident ( ) not confident
26.	I worry about silly things	( ) hardly-ever ( ) sometimes ( ) often
27.	At this moment I feel	( ) very troubled ( ) troubled ( ) not troubled

28.	" I know what I am like, I am really sure about it." Do you feel like this ?	( ) Yes ( ) No
29.	I worry about school	( ) hardly-ever ( ) sometimes ( ) often
30.	At times I think I am no good at all.	( ) strongly agree ( ) agree ( ) disagree ( ) strongly disagree
31.	Some days I am happy with the kind of person I am, other days I am not happy with the kind of person I am. Do you feel like this ?	( ) Yes ( ) No
32.	At this moment I feel	( ) very relaxed ( ) relaxed ( ) not relaxed
33.	I feel I do not have much to be proud of.	( ) strongly agree ( ) agree ( ) disagree ( ) strongly disagree
34.	I worry about my parents	( ) hardly-ever ( ) sometimes ( ) often
35.	At this moment I feel	( ) very good about myself ( ) good about myself ( ) not good about myself
36.	My hands get sweaty	( ) hardly-ever ( ) sometimes ( ) often

37.	At this moment I feel	( ) very scared ( ) scared ( ) not scared
38.	My feelings about myself seem to change very quickly. Do you feel like this ?	( ) Yes ( ) No
39.	I have trouble deciding what to do	( ) hardly-ever ( ) sometimes ( ) often
40.	At this moment I feel	( ) very pleased with myself ( ) pleased with myself ( ) not pleased with myself
41.	I sometimes feel useless	( ) strongly agree ( ) agree ( ) disagree ( ) strongly disagree
42.	I feel unhappy	( ) hardly-ever ( ) sometimes ( ) often
43.	I feel I am at least as good as most of my friends	( ) strongly agree ( ) agree ( ) disagree ( ) strongly disagree
44.	I feel troubled	( ) hardly-ever ( ) sometimes ( ) often
45.	At this moment I feel	( ) very upset ( ) upset ( ) not upset

46.	How well do you think you have settled at your secondary school ?	( ) very well ( ) quite well ( ) not well ( ) not sure
47.	I worry too much	( ) hardly-ever ( ) sometimes ( ) often
48.	At this moment I feel	( ) very nice ( ) nice ( ) not nice
49.	It is hard for me to fall asleep at night	( ) hardly ever ( ) sometimes ( ) often
50.	At this moment I feel	( ) very mixed-up ( ) mixed-up ( ) not mixed-up
51.	I get a funny feeling in my stomach	( ) hardly-ever ( ) sometimes ( ) often
52.	At this moment I feel	( ) very calm ( ) calm ( ) not calm
53.	I worry about what others think of me	( ) hardly-ever ( ) sometimes ( ) often
54.	Are you sure you know the kind of person you are ?	( ) Very sure ( ) Pretty sure ( ) Not very sure ( ) Not sure at all

Thank you

APPENDIX III

School Transfer Questionnaire

Name..... Date.....

1.	Do you like school ?	like it a lot like it sometimes don't like it much don't like it at all	( ) ( ) ( ) ( )
2.	Do you like this school more than your primary school?	yes ,like it more like it the same no,like it less not sure	( ) ( ) ( ) ( )
3.	What do you like and dislike about this school? like..... .... dislike.....		
4.	How well do you think you have settled at this school?	very well quite well not very well not sure	( ) ( ) ( ) ( )
5.	How do you find your schoolwork?	very difficult difficult easy very easy about right balance	( ) ( ) ( ) ( ) ( )

6.	Do you have more friends at this school than at your primary school?	more friends less friends about same number	( ) ( ) ( )
7.	Do you miss anything about your primary school?	yes No	( ) ( )

If yes, what do you miss ?.....

.....

.....

Thank you.

APPENDIX IV

Partial Correlations (using normalised data) Controlling the Influence of Age and Physical Growth Factors for the **Pre-Transfer Primary School Sample**.

	(r)	(r^2x100)	Partial Correlations age	height	weight	BMI	skinfold	ALL
Motor P/Att. PE	.48*	23%	45	43	43	47	.50	.44
Motor P/PESE	.39*	15%	.39	42	42	41	.38	.36
PESE/Att. PE	.26		.26	.30	.28	.29	.31	.35
Global SE/Stability of SI	.54*	29%	.53	.55	.54	.55	.55	.60
State anxiety/Trait anx.	.36*	13%	.36	.38	.38	.35	.32	.36
Global SE/State anx.	- .21		- .30	-.21	-.22	-.18	- .23	- .35
Global SE/Trait anx.	- .32*	10%	- .34	-.31	-.32	-.31	- .35	- .55
Stability of SI/State anx.	-.04		- .10	-.04	-.05	-.05	- .02	- .11
Stability of SI/Trait anx.	-.29*	8%	- .30	-.31	-.29	-.29	- .28	- .32
Motor P/Global SE	.20		.16	.19	.19	.21	.21	.23
Motor P/Stability of SI	.20		.18	.22	.20	.20	.19	.11
Motor P/State anxiety	.16		-.26	- .19	-.24	- .20	-.14	- .30
Motor P/Trait anxiety	- .19		-.21	- .15	-.18	- .20	-.18	- .04
PESE/Global SE	.29*	8%	.29	.29	.29	.27	.32	.24
PESE/Stability of SI	46*	21%	.46	.46	.46	.47	.45	43
PESE/State anxiety	- .31*	10%	-.35	- .31	-.31	- .28	-.27	- .37
PESE/Trait anxiety	- .20		-.20	- .21	-.20	-.19	-.15	- .23
Att. PE/Global SE	40*		.37	40	40	.42	.40	46
Att. PE/Stability of SI	.07		.03	.09	.06	.06	.09	.06
Att. PE/State anxiety	.13		- .24	- .16	-.20	- .16	- .16	- .26
Att. PE/Trait anxiety	- .14		- .16	- .07	-.13	- .15	- .18	- .05

(r) denotes Pearson Correlation Coefficient (* Two-tail significance at P<05).

(r^2x100) is the coefficient of determination

APPENDIX V

Partial Correlations (using normalised data) Controlling the Influence of Age and Physical Growth Factors for the **Secondary School Sample (December)**

	(r)	(r^2x100)	Partial Correlations age	height	weight	BMI	skinfold	ALL
Motor P/Att. PE	.21		.21	.21	.22	.22	.24	.24
Motor P/PESE	.32*	10%	.31	.33	.28	.24	.22	.25
PESE/Att. PE	.37*	14%	.37	.38	.38	.38	.39	.39
Global SE/Stability of SI	.59*	35%	.58	.61	.60	.59	.60	.60
State anxiety/Trait anx.	.41*	17%	41	.41	40	.41	41	.38
Global SE/State anx.	-.39*	15%	-.41	-.40	-.38	-.39	-.39	-.40
Global SE/Trait anx.	-.64*	41%	-.65	-.65	-.65	-.64	-.65	-.64
Stability of SI/State anx.	-.37*	14%	-.40	.36	-.35	-.37	-.37	-.36
Stability of SI/Trait anx.	-.59*	35%	-.60	-.60	-.57	-.59	-.58	-.59
Motor P/Global SE	.40*	16%	.38	.41	42	.44	46	.51
Motor P/Stability of SI	.09		.03	.07	.16	.16	.21	.16
Motor P/State anxiety	-.13		-.17	-.12	-.17	-.16	-.19	-.23
Motor P/Trait anxiety	-.09		-.10	-.09	-.14	-.16	-.16	-.21
PESE/Global SE	.54*	29%	.54	.54	.57	.58	.57	.58
PESE/Stability of SI	.31*	10%	.30	.33	.39	.37	.38	.38
PESE/State anxiety	.30*	9%	.31	.31	- .35	-.33	-.33	-.33
PESE/Trait anxiety	- 42*	18%	- .42	-.42	.48	-.49	-.47	-.49
Att. PE/Global SE	.19		.18	.19	.19	.19	.19	.20
Att. PE/Stability of SI	.07		.06	.06	.07	.07	.07	.07
Att. PE/State anxiety	-.22		-.22	-.21	-.22	- .22	- .22	- .24
Att. PE/Trait anxiety	-.17		-.17	-.17	-.17	- .17	- .17	- .19

(r) denotes Pearson Correlation Coefficient (* Two-tail significance at P<05).

(r^2x100) is the coefficient of determination

APPENDIX VI

Partial Correlations (using normalised data) Controlling the Influence of Age and Physical Growth Factors for the **Secondary School Sample (June)**

			Partial Correlations					
	(r)	(r^2x100)	age	height	weight	BMI	skinfold	ALL
Motor P/Att.PE	.33*	11%	.33	.33	.30	.30	.28	.29
Motor P/PESE	.30*	9%	.32	.30	.30	.27	.21	.23
PESE/Att. PE	.36*	13%	.37	.36	.34	.34	.32	.33
Global SE/Stability of SI	.54*	29%	.54	.51	.53	.55	.55	.65
State anxiety/Trait anx.	46*	21%	46	46	.46	46	.46	.43
Global SE/State anx.	-.40*	16%	-.40	-.40	-.40	-.40	-.40	- 44
Global SE/Trait anx.	-.49*	24%	-.50	-.51	-.52	-.49	-.49	- .58
Stability of SI/State anx.	-.26*	7%	-.26	-.25	-.26	-.26	-.25	- .20
Stability of SI/Trait anx.	-.57*	32%	-.57	-.58	-.59	-.59	-.59	- .54
Motor P/Global SE	.22		.23	.22	.21	.26	.25	.29
Motor P/Stability of SI	.16		.15	.15	.14	.14	.09	.10
Motor P/State anxiety	-.06		-.08	-.06	-.07	-.07	-.05	- .06
Motor P/Trait anxiety	-.07		-.10	-.07	-.12	-.12	-.09	.12
PESE/Global SE	.46*	21%	.46	.45	.45	.48	49	.53
PESE/Stability of SI	.45*	20%	.45	.45	.45	.45	42	.43
PESE/State anxiety	- .26*	7%	-.26	-.25	-.26	-.26	-.25	- .23
PESE/Trait anxiety	- .50*	25%	-.51	-.51	-.55	-.54	-.55	- .54
Att. PE/Global SE	.07		.07	.02	.05	.08	.07	.07
Att. PE/Stability of SI	.07		.06	.02	.05	.05	.03	-.10
Att. PE/State anxiety	.11		.12	.13	.12	.12	.13	.17
Att. PE/Trait anxiety	- .11		- .11	-.11	-.14	-.14	-.12	- .07

(r) denotes Pearson Correlation Coefficient (* Two-tail significance at P<05).

(r^2x100) is the coefficient of determination