EXPLORING NORMAL SOUTH AFRICAN AND BRITISH CHILDREN: A COMPARATIVE STUDY UTILIZING THE GRIFFITHS MENTAL DEVELOPMENT SCALES – EXTENDED REVISED

RIVCA VAN HEERDEN

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Supervisor: Dr Annemarie Barnard
Co-Supervisor: Dr Louise Stroud
Co-Supervisor: Dr Jenny M Jansen

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ABSTRACT

The health status of a substantial number of South African children can be classified as “children at risk” (Luiz, 1999) as the majority of children are influenced by factors such as poverty, poor living conditions and the HIV/AIDS epidemic. These are only some of the influences that contribute significantly to the health status of South African children and consequently their development. It can thus be argued that developmental assessment is imperative in the South African context. One of the most important reasons are that children with special needs in South Africa can be identified and given the opportunity to catch up developmentally and cope successfully as opposed to those who are identified much later (Foxcroft & Roodt, 2006). Furthermore, children in South Africa must begin Grade one in the year in which they turn seven. They may only enter grade one if the school has an opening and if the necessary evidence is provided to the Department of Education that the child will be able to cope with the demands of formal schooling (Department of Education, 2002). Developmental assessment measures therefore needs to be appropriate, accurate and informative in the modern South African context. The need for a measuring instrument to assess children's overall development and thus their developmental readiness to cope with the demands of formal schooling could be satisfied by the Griffiths Mental Development Scales – Extended Revised (GMDS-ER). This recently revised measure has not been normed on a representative, contemporary South African sample.

The purpose of the study was therefore to generate information on the applicability of British norms for the contemporary South African population. This study compared and explored the performance of South African and British children aged 5-years and 6-years on the Griffiths Mental Development Scales - Extended Revised (GMDS-ER).

A contemporary South African sample was obtained by testing children between the ages of 5-years and 6-years on the GMDS-ER, whilst the British sample was drawn
from the United Kingdom and Eire standardization sample. The British sample was screened for normality and a similar process was followed to establish normality for the South African sample.

A matched simple frequency distribution technique (taking into account age, socio-economic status and gender as variables) was employed to approximate the equivalence between the samples. The profiles were compared by conducting an independent sample \( t \)-test with subsequent post hoc analyses to explore potential differences in the performance of the two samples.

The major findings of the present study were as follows:

1. There is a significant difference between the South African and British children’s overall developmental profiles (as measured by the GMDS-ER).
2. Generally, South African children performed better on the Locomotor subscale and the Personal Social Subscale (although not statistically significant), whilst British children performed statistically better on the Language, Eye and Hand Co-ordination, and Practical Reasoning Subscales.
3. No significant differences were found for the Performance Subscale which could indicate that South African and British children’s performances on this scale are similar.

Further investigations into the applicability of the GMDS-ER for the contemporary South African context are recommended and the establishment of South African norms for clinical utilization is essential. Caution with regard to the utilization of the British–based norms in the South African context is final recommendations.

**Key words:** Griffiths Mental Development Scales, Extended Revised (GMDS-ER), Child Development, Developmental Assessment, South African, British, Standardization norms.
CHAPTER 1
INTRODUCTION

1.1 General Introduction

The present study is a replication of Van Rooyen’s 2005 investigation into the applicability of the Griffiths Mental Development Scales – Extended Revised (GMDS-ER) for the South African population. The present study focused on a more contemporary South African population and this introductory chapter aims to provide the reader with a contextualization to the current research study, highlighting the need for a developmental measure that is appropriate, accurate and informative in the contemporary South African context.

Studies in various parts of the world have demonstrated that the Griffiths Scales are applicable to diverse populations and that they tap experiences that are common to different cultures (Luiz, Collier, Stewart, Barnard & Kotras, 2000). However, Van Rooyen (2005) has stressed the fact that caution should be taken with regard to the use of the British-based norms in the South African context as a normal South African profile may differ extensively from that of a normal British profile. It is well-known that South African children come from very diverse backgrounds and researchers have recognized the need for reliable and valid measures to assess the South African child’s developmental status (Knoesen, 2003). It can thus not merely be assumed that the Griffiths Scales will be applicable to the contemporary South African context.

1.2 Assessment Needs in the Contemporary South African Context

Universally prominent measures that have been developed for infants and young children thus far include the Stanford-Binet Scales, the Bayley Scales of Infant Development, the Gesell Developmental Schedules, Catell’s Infant Intelligence Scale, the Griffiths Scales of Mental Development, the Wechsler Intelligence Scale for children, the Junior South African Scales, and McCarthy
Scales of children’s abilities. These measures have contributed significantly to the understanding of children, depending on the level of analysis, the age range of interest, the scientific discipline undertaking the study, and the context in which children are studied (Brookes-Gunn, 1990). The Gesell and Griffiths Scales are among the best known tests currently available in South Africa which seems to cover areas of development such as locomotor and personal-social skills (Bhamjee, 1991). Despite the commendable efforts of these measures, there still remain shortcomings, such as a lack of comprehensiveness, lack of generalisability of research findings, and the fact that certain tests cannot be used diagnostically with children who are not white (Allan, 1992).

In the second decade of its democracy, South Africa is considered a model of progressive societal change, and the political gains won eleven years ago, are now being translated into growth for the majority of its previously disadvantaged people (UNICEF, 2006). However, transformation with regards to intervention programmes, while momentous, is slow, particularly as it is taking place within an infrastructure that for years catered only for the privileged majority. That infrastructure must now respond to the needs of the vast under-privileged majority and this process in itself has revealed a darker picture of large scale social inequalities.

Pelto, Dicken, and Engle (1999), indicates that assessment of outcomes for such programmes is problematic as they are always affected by cultural context and most standardized tests of development have been developed in industrialized societies. Previous studies have also highlighted the poor predictive validity of many measures and their inaccurate categorizations of children “at risk” who were not “at risk” or vice versa (Cadman, Chamber, Feldman, & Sackett, 1984; Gredler, 1992; Sparrow, Blackman, & Chauncey, 1993).

Van Rooyen (2005) stated that when psychologists need to assess the development of young children who come from a previously disadvantaged background, or children younger than 3 years, they are forced to use tests which are
not standardized for these groups. According to Van Rooyen, it is clear that this can lead to an incorrect diagnosis or a correct diagnosis not being made and to a large percent of the society remaining disadvantaged and not having the opportunity to catch up developmentally. Considering the influence that test results can have on children it is imperative to have information about the test performance of children from all ethnic and age groups. According to Allan (1992) it is quite clear that we need a measure that covers all the important aspects of child development and not merely a narrow spectrum.

Foxcroft and Roodt (2006) have stressed the importance of using measures that are standardized for groups they are being used with in such a way that the results may be interpreted in a culturally fair manner. According to Van Rooyen (2005) to use a test in a culture-fair way, information would be needed on the performance of children of all relevant ethnic groups in South Africa for a specific test. Much remains to be done to bring about full realization of the rights of children in this rights-based democracy, if we contrast the above needs for developmental assessment in South Africa with currently available instruments.

1.3 The GMDS-ER as an Assessment Instrument

The Griffiths Mental Development Scales – Extended Revised (GMDS-ER) is a measure that can potentially satisfy the developmental assessment needs in South Africa if it can be adapted for use within the South African context (Kotras, 2003; Luiz, Barnard, Knoesen & Kotras, 2000; Van Rooyen, 2005). According to May (1998), South Africa needs fair, continuous, authentic assessment for all children if early childhood schools and centres are to help children become educated regardless of their social, economic, or cultural background. Fair authentic assessment is much more than just the collection of information; it is collection with a purpose (Salvia & Ysseldyke, 2004). Using the Griffiths Scales as an assessment tool has a fourfold purpose: to determine a child’s developmental status at a point in time and how it changes over time; to provide information useful for programme
planning and curriculum development; to identify children who might benefit from specialized help and services; and to report on the effectiveness of the programme and stress the importance for more resources (Foxcroft, 1997).

In South Africa this purpose is overshadowed by an awareness of political and societal changes and the influence these have had on child assessment. There is also a caution associated with the interpretation of the results of the GMDS-ER since standards for the GMDS-ER for South African children are not in place yet. Furthermore, we cannot discount the fact that South African children are culturally diverse, they vary in cultural heritage and degree of acculturation, language, rural/urban location, socio-economic background, educational level of parents, health, preparation for schooling, and many other influences that shape human development (Foxcroft, 1997). South African children born after 1994 (i.e., the year in which South Africa became a “democratically free” country) are known as “born frees” (UNICEF, 2006). It is therefore necessary to take cognizance of the fact that as South Africa is in the eleventh year of “freedom”, the developmental status and demographical traits of these South African children could be considerably different.

South African researchers have recognized the need for accurate and comprehensive measures to assess the modern-day child’s developmental status (Van Rooyen, 2005). In considering the developmental assessment needs in the current South African context, the GMDS-ER could meet these needs if the results of research studies done on the GMDS-ER, are found to be applicable to a South African context. More specifically it is important for research studies to focus on a contemporary South African population not only to ensure that developmental assessment is up to date in the current South African political and societal ethos, but also to ensure a comparative fit to a current standardization sample. Most of the data for the British standardization sample was collected within the two years prior to the initial launch of the GMDS-ER in May 2004 (Luiz, et al., 2004), making it possible to describe the British Isles and Eire standardization sample as being contemporaneous. By exploring the applicability of the British norms of the GMDS-
ER on a current South African sample a comparative fit could possibly be identified and this would strengthen the use of the GMDS-ER in the assessment of South African children.

1.4. Aims

The primary aim of the study was to compare and explore the performance of South African and British children aged 5-years to 6-years old on the Griffiths Mental Development Scales – Extended Revised. The specific aims, derived from the primary aim of the study, are as follows:

1) To explore and describe the general development of 5-year to 6-year old children of the British and South African samples’ overall performance separately on the GMDS-ER and across the six developmental areas assessed by the Subscales of the GMDS-ER.

2) To explore and describe the comparative developmental profiles of the two year groups (year group VI and VII) of the sample of British and South African children.

The results of the proposed study will consequently provide exploratory information on the applicability of the GMDS-ER for use in the contemporary South African context. The present study directs the reader’s attention to the fact that the GMDS-ER has not been standardized on the South African population and to date has not been classified by the Psychometrics Committee of the Health Professions Council of South Africa (HPCSA).

1.5 Chapters of the Study

This chapter emphasizes the developmental assessment necessities in the modern South African context and emphasizes the GMDS-ER potential of answering
South African developmental assessment needs. The global aim of the study as well as the more specific aims derived from the global aim, are introduced.

In order to contextualize and place the GMDS-ER within the field of child development, Chapter 2 first introduces the reader to this field of inquiry by focusing on child development. Special emphasis is placed on current contextual factors forming an integral part of the nature of development. The assessment of child development is further explored and reference is made to the variety of instruments that are used in the South African context and their potential to satisfy the developmental assessment needs in South Africa. Chapter 3 describes the construction of the Griffiths Scales as well as ethical practices involved. Chapter 4 delineates the specific problem being investigated and the general aims of the study are stated. The methods employed in conducting the study are also offered. The results are presented and discussed in Chapter 5. The limitations and implications of the study and suggestions for further research are addressed in Chapter 6.
CHAPTER 2
CHILD DEVELOPMENT AND ASSESSMENT

2.1 Introduction

The need for a developmental measure that is applicable in the modern South African context has been highlighted in Chapter 1 and therefore this chapter will aim to provide a context for child development across different cultures and a brief overview of psychological assessment measures still in use worldwide with infants and young children. The chapter will commence by introducing the reader to a short summary of child development emphasizing the specific development of the pre-school child. Secondly, the early education of young children will be explored as well as rural-urban location and its influence on development. This will be followed by an exploration of the factors influencing development, and thereafter, the developmental assessment paradigm will be explored. An attempt is made to highlight some of the problems encountered when some of these developmental assessment measures are administered within multicultural societies. The chapter will conclude by focusing on the prevalent measures in the field at present and their potential for use in a contemporary South Africa.

2.2 Child Development

2.2.1 Child development introduced

UNICEF (2006) reports that intersectoral collaboration values the contribution and role that different service providers play in facilitating the development of South African children by ensuring that their developmental needs are met. Meeting these needs of children is not a recent concern and at present there is a great deal of evidence to support this statement (Holt, 1979; Foxcroft & Roodt, 2001; 2006). According to Foxcroft and Roodt (2006) identifying difficulties in children as soon as
possible, is a principle that has been internationally recognized since the early 1970s, as the early identification in children gives them the opportunity to catch up developmentally.

The science of developmental psychology has matured since this period. Development has been broadly defined as patterns of change over time which begin at conception and continue throughout the lifespan (Keenan, 2002). However the concept of child development has been broadened, for example, by incorporating the transactions between the child and his/her environment (Hook, 2002). Hook stated that development occurs in various domains, such as the biological (changes in our physical being), socio-emotional (changes in our social relationships, emotions and personality) and cognitive (changes in our thoughts, intelligence and language).

Other developmentalists in the field of developmental psychological research seem to be divided. One focuses primarily on the biological and genetic antecedents of maturational development, and the other focuses on the role of the context of such development. Most developmentalists recognize that it is unwise to take an extreme position on any of the abovementioned issues (Santrock, 2001). According to Craig (1996), most development cannot be neatly categorized as either biological or environmental because it involves an interaction of both elements. The different areas of development thus intersect and combine in such a way that they cannot be separated from one another (Hook & Cockcroft, 2002). Hook and Cockcroft further assert that the nature/nurture interactions are complex and their effect on the individual differs from person to person and therefore no fixed formula for predicting the effect of heredity or environment on a specific person exists. Schröder (2005) further supports this statement by stating that it is important to keep in mind, that one is studying the development of an integrated child who has only an interdependent mind and body. According to Hook and Cockcroft the critical question is therefore not which factor, hereditary or environment, is responsible for behaviour, but how these two factors interact so as to propel us along our developmental paths.
These factors are particularly pertinent to the current study as South African children live in an exceedingly different context to their British counterparts. This will be discussed in more detail in this chapter. According to Luiz (1999), Anna Freud laid emphasis on the fact that developmental data need to be interpreted within a context. Yet, although the importance of context was highlighted at an early stage in the history of the study of child development, it received little attention during the periods preceding the last five decades.

No two children’s development is alike because of differences in temperament, culture, gender, socio-economic status and an infinite host of other factors which include the style of parenting and the degree of stimulation received in the home environment (Trawick-Smith 2002). Most developmental theorists concur that whether viewed as extraneous or not context seems to be an important factor to consider when attempting understanding child development, especially in light of studies conducted in the South African context. These studies revealed vast disparities, population groups, different age cohorts and household’s perceived quality of life (Statistics SA, 2004). The differences found are an indication that a multitude of contextual factors could possibly influence the development of children in South Africa.

It is therefore imperative that developmental data in the contemporary South Africa be interpreted within their context and be separated from research methods that previously excluded context or viewed it as extrinsic. For the abovementioned reasons the researcher decided to use the following definition of development by Keenan (2002) for the purposes of this study, namely that the child, by his own nature, effects his environment, at the same time that the social and cultural environment affects him. The researcher therefore concludes that contextual factors are intrinsically important and influence the development of the child and should not be viewed as being just an external factor.
2.2.2 Context: an integral part of the nature of development

Contextual factors modulate the emergence of development. According to Gallahue and Ozmun (2006) heredity sets the limits of development whilst contextual factors are an internal part of the nature of development. Child development is thus influenced by the interchange between numerous factors within the individual, the environment and the tasks that affect the process of development (Gallahue & Ozmun, 2006). Consequently, although context cannot be viewed as just another variable in understanding child development it is highlighted that it is important to consider the possible contextual factors that contribute to the South African child’s level of functioning at any given point in time.

This is of particular importance as the British and South African contexts are well known to have distinct differences. For example, South Africa has backlogs in housing, and a shortage in the growing demand of social grants that could influence development (South African Government, 2006). British citizens on the other hand are exposed to a high level of social support resulting in better stimulation in early childhood development and easier access to therapeutic interaction. A different scenario is noticeably depicted in South Africa. Context is thus a significant aspect when child development is considered in the present study. For this reason, the following section will focus on rural-urban location as well as early childhood education. These factors play a role in the transaction of context with the developing individual in South Africa.

2.2.2.1 Rural-urban location

Saturday Star, estimated that in the period immediately after the 1994 elections some 200 000 people moved into Gauteng Province and that 20 000 were moving in every month” (Lynch, 2005, p. 115). Lynch further asserts that the change brought about by the transition from urban to rural will not necessarily bring about change in social structure or growth in economic activity. Yet according to De Haan (2002), rural-urban migration has implications for both areas and can result in inequality. This is evident in the studies done by Statistics SA in 2004. Migration in South Africa presents challenges to the government’s early successes in tackling the massive housing shortages among the majority black urban population.

A South African child from a rural population living in sparsely populated urban areas or newly acquired public land is exposed to appalling conditions far worse than the conditions British children from rural and lower economic status are exposed to (May, 1998; Lloyd & Payne, 2002). Poor housing and sanitation, lack in access to clean water, safety hazards are just a few. One could imply that while Britain is a first world country with amenities that go with such a country (ISER, 2006), South Africa on the other hand is a developing country that is still establishing its basic infrastructure and is therefore focusing on the lowest needs in Maslow’s hierarchy (Craig, 1996). The classification of socio-economic status in South Africa may thus differ considerably from that of Britain.

Where a British child may benefit developmentally from support structures such as schools, hospitals and therapists, the urban or rural location of a child in South Africa may have important implications for their development. According to Roland (1996), environmental factors can alter the timing and shape of general developmental curves. The biological (our physical being), socio-emotional (our social relationships, emotions and personality) and cognitive (changes in our thoughts, intelligence and language) are some of the obvious areas that could be influenced (Hook, 2002). The child’s immediate environment thus does not only have implications for their health and hygiene but also for their overall development.
Play is a physical activity and it is what a child does most of his waking hours (Gallahue & Ozmun, 2006). “Encouraging activities like play stimulates not only physical development but also the development of different senses and social development as well as language and cognitive development” (Jareg & Jareg, 1994, p. 143). Children living in a war zone often have reduced outside play, which results in them coping in imaginative ways. It is well known that South Africa has amongst the highest rates of violent crime in the world (African Economic Outlook, 2005; 2006). According to May (1998) people living in urban areas tend to be victims of property crime, whilst people living in rural and informal urban settlements (typically Africans) are at risk from personal crime. Rural and informal urban settlements inhabited by the poor are less likely to have infrastructure such as street lighting and telephones, public transport and decent roads that facilitate crime prevention (Jareg & Jareg, 1994). In addition, police resources in South Africa are also inequitably distributed (May, 1998). These factors elicit questions surrounding the safety of South African children, resulting in them being aloud to spend less time playing outside for fear of their safety.

Furthermore, the child’s urban or rural location is also influenced by the absence of clean water and sanitation. These services make children vulnerable to poor health, and this influences development. Access to water has been improving since 2000 yet the proportion of households that still lack access to clean water is 14,5 per cent and many argue that the current allocation of 6 000 liters of water per household per month is inadequate, as it falls short of the World Health Organization’s (WHO) recommendations (SARPN, 2006). Furthermore, in the rural areas, the infrastructure allows multiple safety hazards to exist (May, 1998). Crime and infrastructure in South Africa have changed considerably and the infrastructure of the poor areas proves to be not only unhygienic but also dangerous. Children's play time outside may well be drastically less and could in return influence more than just their physical development.
2.2.2.2 Early childhood education in the South African context

Corresponding data on childhood development in most of the world’s cultures are now being amassed (Spodeck & Saracho, 2006). However, the early childhood field is rife with disagreements on curricula for different cultural groups in both the developed and developing world (Roopnarine & Johnson, 2005). According to Spodeck and Sarcho (2006), within cultures there are basic factors that impinge on early childhood curricula and care, namely the following factors: “Locus of policy making agency, parental involvement, administrative oversight, age groups served, criteria for enrolment funding sources, location of education or care, teachers, caregivers and program philosophy and quality” (p 561).

The plurality of educational programmes for pre-school children may not exist in most developing countries (Spodeck & Sarcho, 2006). As mentioned, South African children can enter the formal school system from 5 years 6 months if the school has an opening and if the necessary evidence is provided that the child will be able to cope with the demands of formal schooling. Yet entry is compulsory in the year in which children turn seven (Knoesen, 2003). However the lack of pre-schools and difficulty accessing the formal school system at 5 years 6 months is nearly impossible as the public schools are full and principles reluctant to place children who are 5 years 6 months with children that are up to 5 months older than their counterparts. Thus pre-schoolers are often only exposed to formalized stimulation at an age of between 6-years and 7-years of age, leaving a vast majority of pre-school children in the hands of untrained caregivers. Many children in the rural areas are looked after by another family member. British children, on the other hand, are monitored by the public sector (Waterhouse, 1993).

Spodeck and Sarcho (2006) assert that definitions of early childhood education have multiple definitions in developing countries. Increases in the training of teachers and childcare workers (including parents) in community efforts to develop early childhood programmes to meet the needs of children in the last five
decades will no doubt stretch the limits to which attempts are made to modify local belief systems and customs about the care and education of children. At the moment early childhood programmes are diverse in nature and not geared to meet the individual needs of children in South Africa. The lack of pre-schools and the success of educating pre-school children in South Africa are not monitored by the government. Furthermore, daycare facilities are not always equipped with trained teachers. If poverty indicators, as well as the high unemployment rate in South Africa of 41 per cent (African Economic Outlook, 2005; 2006) are considered it is evident that day care facilities and pre-primary schools are not accessible to many children in South Africa but limited to very few institutions. However, formal schooling is deemed to be a priority of the government.

Research has indicated that child characteristics, family characteristics and child care quality (e.g., child care ratio, well-educated and trained caregivers, healthy and safe environment and positive care giving that involves sensitivity and responsivity) has an effect on children's intellectual and social development (Spodeck & Sarcho, 2006). The British government has committed itself to building a high skills future for Britain (Lloyd & Payne, 2002). Furthermore, British children benefit from well-educated and trained caregivers as well as standard educational programmes for pre-school children as they usually start their formal schooling during the year in which they turn five (Waterhouse, 1993). South African children, on the other hand, attend day care facilities where caregiver child ratios exceed the efficacy levels. Caregivers often do not have training. This results in poor and sometimes no educational programmes running. This is again indicative of the difference in context between these two countries and should be taken into account when the results of the present study are explored.

2.2.2.3 Other contextual factors

Urban-rural location and early childhood education are only two of the possible contextual factors that can influence the developing South African child.
The section below highlights other possible contextual factors influencing child development.

(a) The civil status of the mother.

Attitudes to the mother’s civil status affect the level of social support available to her. A lack of social support brings a greater likelihood of depression, and severely depressed mothers are known for their inability to cope with their children's developmental needs (Jareg & Jareg, 1994). Childhood neglect is of great concern in South Africa. Studies have shown brains up to 30% smaller in children who have been severely neglected (Van der Kolk, 1987). Although South Africa has undergone societal changes, the civil status of women is still impacted on by the ramifications of emasculation during colonialism; the legacy of an oppressive system; apartheid; resistance to change; and the legitimization of violence against women that is supported in various ways (May, 1998).

May (1998), further emphasized that the poor civil status of women is a consequence of South Africa’s high rate of unemployment and the absence of any social security for the unemployed. According to the African Economic Outlook (2005, 2006) when a broad definition is used the official unemployment rate in South Africa is estimated to be at about 41%. In South Africa there is also an elevated rate of single mothers, most of these mothers work extended hours in order to support their families and most of them are obligated to leave their children in the care of other caregivers from a very young age. This appears to be in contrast to the current situation in Britain (HM Revenue & customs Analysis Team, 2006).

(b) Family size

Furthermore, family size can have a great influence on a child’s health and development (Jareg & Jareg, 1994). In South Africa family size is of particular concern. From the data obtained from Statistics SA (2004), Figures 1 and 2
(depicted below) were constructed. However, it should be noted that according to the South African Government no comprehensive source of information exists at present and the statistics reflected in Figures 1 and 2 should be viewed as estimates. Figure 1 below shows the distribution of households, in terms of the number of people living in the household and the total number of rooms the household occupies.

Figure 1
Distribution of households by size of household and number of rooms

![Distribution of households by size of household and number of rooms](image)

Figure 1 above shows that 10.8% of households with more than five people share one room (Statistics SA, 2004). The total number of rooms a household occupies together with the number of household members can be expected to have a bearing on the health of children and their development in South Africa (Statistics SA, 2004). Furthermore, Figure 2 reflects the perceived health status of individuals in overcrowded and not overcrowded households.
Figure 2 shows that a higher percentage of people living in overcrowded households were perceived as having poorer health than those living in households that were not overcrowded (Statistics SA, 2004).

The growth in housing needs represents an enormous demand on the current housing policy. According to the South African Government the scale of the problem is influenced by geographic disparities and low incomes of large proportions of South African’s population. These concerns (illustrated above in Figures 1 and 2), emphasize concern regarding the effect of family size on the health and development of children in South Africa.

(c) Diversity of roles of mothers in South Africa

Another factor that can have an effect on child development is the mother’s work burden, depending on the amount of time and energy the mother is able to devote to the care of her children. Private, community and domestic services comprise the largest employment sector in South Africa, particularly for African
women. Much of the employment in this sector is informal and this kind of work is done mainly by women. Furthermore, the level of income generated by these activities tends to be low, obligating women to work longer hours or to take on extra informal employment (May, 1998).

Economic crises are cited as one of the most common general cause and risk factors for child abuse. According to UNICEF (2006) 20% of South African children do not live with their mothers. Many children in South Africa are thus dependent on others for stimulation and upbringing, and possibly for feeding. This tends to increase the child’s chances for neglect and abuse.

UNICEF further estimated that 500,000 female children are sexually victimized annually. These figures have indicated a steady increase. Given low levels of reporting these estimates can be viewed as conservative. These figures are disturbing if we consider that abused children are twice as likely to have abnormal activity in the frontal and temporal regions of the brain and are likely to show disturbances in the left frontal region (Van der Kolk, 1987). These studies further showed that victims of childhood abuse experienced changes to the hippocampus. According to Van der Kolk, these impairments can lead to problems with learning and academic achievement, and thus the overall development of children. This is alarming if we reflect on South Africa’s increasing child abuse statistics. Furthermore, family health and AIDS can also influence the overall development of children and will be discussed below.

(d) Family health and AIDS can affect child development.

AIDS is a chronic illness and when present in children, it can seriously affect development as all learning processes might be slowed down. The development of younger children will be affected if the parents are dying as this may result in little affection, increased sickness, a higher childhood death rate and a higher degree of malnutrition. In 2004, UNICEF predicted that by 2005 there would be almost 1
million children under 15 who would have lost their mothers to AIDS, and an expected 3 million AIDS orphans. Currently, about 5 million South Africans are infected with HIV, the largest number in the world in one country (African Economic Outlook, 2006). Current estimates indicate that more than 25% of children in South African hospitals are HIV positive (UNICEF, 2006). The World Health Organization (2000) asserts that the common symptoms of HIV infection in children are noticeable when opportunistic infections occur, as the immune system becomes more affected and most of these children have some type of neurological involvement such as a developmental delay.

It can thus be expected that childhood illness has a profound effect on normal rates of growth and maturation. It is not only HIV/AIDS and childhood illnesses that influence children’s vulnerability to poor health in South Africa, but numerous other factors such as poor sanitation, malnutrition and poverty, as well as the family’s health status. The family’s health status in South Africa may well affect child development in numerous ways. For example if the parents cannot earn money due to illness the family’s economy will suffer and children might be without their basic needs, such as food. Malnutrition and the effects on child development will be discussed later in this section. Furthermore, if the mother is affected psychologically she might be less able to stimulate the child and will lack energy. This in turn might lead to decreased physical and emotional contact (Jareg & Jareg, 1994).

In South Africa there are differences in the perceived health status of women and men. According to a survey done in 2004 by Statistics South Africa individuals residing in urban areas, younger people, white people and those who have matric or a higher level of education were found to have a better perceived health status than others. Furthermore, people in South Africa with the poorest health were found amongst those with no formal education. In addition, only 18% of the South African population aged 20 and above were reported to have access to medical benefits in 2004 (Statistic SA, 2004). These statistics have not changed greatly and can be viewed as a good estimate of the current health situation in South Africa.
Interestingly, South Africa’s health care service differs significantly from the British national health care service (HM Revenue & Customs Analysis Team, 2006). This factor further substantiates the fact that there are differences between the South African and British contexts.

In addition, a poor public health service directly influences family health in South Africa and can have a considerable and indirect influence on different domains of child development. For example, it could influence a child’s physical and emotional development, which in turn is influenced by other factors. Some of these factors are discussed below.

(e) Stimulation, child rearing and family education

Physical and emotional contact is essential in stimulating a child's development. According to Gallahue and Ozmun (2006) physical wellbeing depends on factors such as shelter and protection, personal care and hygiene, appropriate clothing, nutrition, exercise and rest. A child will thrive emotionally when parents are loving and dependable. Interestingly all cultures have inherited different patterns of child rearing and there are also differences in the patterns of the rearing of boys and girls. For example it is known that talking frequently to a child stimulates the development of language, and encouraging questions from young children stimulates curiosity and develops intelligence (Santrock, 2001). Furthermore preferential treatment, for example boys over girls, may also favour development among certain members of the community, while neglecting others. Some cultures in South Africa do not favour positive child development and perceive it as harmful (Jareg & Jareg, 1994).

Hamachek (1971), further states that the process of identification grows within a social framework. He also concludes that social interaction is the medium of exchange, through which one hones perceptions of the outside world, develops interpersonal skills, extends intelligence and acquires attitudes. The relationships
with parents and peers are thus the focus of social wellbeing in children (Cushner, McClelland & Safford, 1992). With respect to the characteristics of the people in the poorest group, 93% of the unemployed poor are Africans, 56% are females, 70% are below the age of 35, 58% are from rural areas (SARPN, 2006).

According to Jareg and Jareg (1994) the chance of children surviving is more dependent on the mother's level of education than the economy of the household. Encouragement from adults who understand what the child is facing and encourage him or her in these activities, provides for the facilitation of initiative and a sense of enterprise and exploration (Barber, Stolz & Olsen, 2005). Government documents obtainable in 2006 regarding poverty and inequality are dated 1998, and are the only statistics available at present. These statistics showed that in South Africa only 50% of the people in the poorest group have completed primary education or less (May, 1998). This is a concern, if we consider Vygotsky's (1978) statement that a child's interaction with competent people, who can provide guidance and encouragement, allows children to master new challenges, hence enhancing the child's development.

Furthermore, approximately 10 million social grants are paid out each month, amounting to about 3% of the Gross Domestic Product, and pressure on the welfare system continues to grow (SARPN, 2006). This pressure on the welfare system is indirectly an indication of the vast number of children who are growing up with restricted cultural and social opportunities in South Africa. Research indicated that children who grow up with restricted cultural and social opportunities suffer both intellectually and emotionally (Jareg & Jareg, 1994). The importance of the cultural context when comparing and interpreting the development data of children as highlighted by the above factors is thus evident again. This is specifically of importance if we look at the British context and how it differs substantially from South Africa. In Britain the Educational system places great emphasis on the stimulation of children. If any child is found to have some kind of developmental delay the child is ascribed to a specific educational plan. This child will receive a subsidy from the state in order to allow for extra support at the school, for example,
a Classroom Assistant, Speech Therapist or Educational Psychologist (Lloyd & Payne, 2002). This is clearly not a reality for the majority of South African children. The South African government is compelled to focus on meeting the basic needs of many people in South Africa, such as providing social grants in order for people to buy food. A lack in these basic needs (i.e., food), can lead to poor nutrition and will be discussed in the following section.

(f) Nutritional factors

Nutritional factors will affect both the growth of the child and his/her overall developmental potential. It is known that low birth–weight babies are at risk of experiencing a delay in development (Read, Gardner & Mahler, 1993). Poor nutrition further has the ability to weaken the body’s resistance to infection (Jareg & Jareg, 1994). Malnutrition is probably the most critical environmental factor influencing normal biological development in South Africa. According to Statistics SA (2004), a household survey done in 1999, revealed that 2,4 million households in South Africa reported children less than 7 years going hungry every day. May (1998) asserts that malnutrition is not to be equated simply with a lack of food or regarded as a medical problem but also with complex interrelated social, economic, political and other processes.

Poverty is thus a basic cause of malnutrition. In South Africa the lives of children are directly affected by grinding poverty and about 61% of children in South Africa live in poverty (UNICEF, 2006). Furthermore, it is estimated, according to UNICEF that 3 million children in South Africa are in need of a child support grant, due to dire financial circumstances, but only about 1% of this total – an estimated 37 000 – currently receive grants.

May (1998), concludes that malnutrition is a public problem of considerable significance in South Africa. This is confirmed by recent statistics (UNICEF, 2006). For example one in three children displayed marginal vitamin A status, 20% are
anaemic and 10% are iron-deficient. Another public concern is the local economy as it can influence the development of children.

(g) Local economy

The community’s economy is important in the creation and maintenance of infrastructure (i.e., health facilities, recreational facilities and housing). This has a bearing on the wellbeing of children and in facilitating optimal development. A range of policies and bills have been developed to improve the lives of children in South Africa. However thousands of children have ill health. According to UNICEF (2006) this can be attributed to the fact that the social security net of South Africa is small and social spending is constrained by the fact that more than 22% of the annual budget is spent on servicing a debt – which is twice the amount of the health budget.

New estimates of poverty according to SARPN (2006), show that the proportion of poor people living in South Africa did not change significantly between 1996 and 2001. However, those households living in poverty have found themselves having to bear an even greater poverty burden, and the gap between rich and poor has widened. According to SARPN, approximately 57% of individuals in South Africa were living below the poverty income line in 2001. Furthermore, Limpopo and the Eastern Cape had the highest proportion of poor with 77% and 72% of their populations living below the poverty income line. Children in South Africa represent a large fraction of the abovementioned percentage. Three of these four provinces in South Africa – Kwazulu Natal, Gauteng, Eastern Cape and Limpopo are among those with the highest number of children (UNICEF, 2006). According to UNICEF the lives of children in these provinces, especially in the rural areas, are directly affected by HIV and AIDS, and backlogs in the provision of basic social services such as health, housing, access to clean water and sanitation.

It should be noted that the abovementioned factors only highlighted some of the common conditions influencing the dialectical interchange of the development of
a young child. It needs to be emphasized that a multitude of factors could contribute to child development at a given point in time. This is especially true in the light of the South African context.

South Africa may present a picture of a middle-income developing country, but the lifting of the veil of apartheid revealed a darker picture of endemic poverty. Moreover, South African children differ in cultural heritage and degree of acculturation, language, rural/urban location, socio-economic background, educational level of parents, health, preparation for schooling and many other influences that shape human development (HM Revenue & Customs Analysis Team, 2006; Lloyd & Payne, 2002; Statistics SA, 2004; SARPN, 2006).

As mentioned these factors are not exhaustive. Many other contextual influences can pose daunting challenges to the development of children in the modern South African context and it is thus apparent that the understanding of child development and the development of effective learning in South Africa need to be multifaceted. If South African children with their diverse contextual influences are found to perform developmentally in a similar way to their British counterparts, it could have an effect on the way in which developmental assessment is viewed in the contemporary South African context.

The aim of this synopsis of context as an integral part of child development is to emphasise the need to have an accurate, comprehensive tool for South African pre-school children. Therefore the developmental assessment of children will be explored in the following section.

2.3 The Developmental Assessment of Children

A well-known fact discussed earlier in this chapter is that South African children come from very diverse backgrounds. High levels of unemployment, ignorance of basic human rights, social displacement and upheaval as a result of the fractured families and backlogs in the provision of basic social services including
health, housing, education and access to clean water and sanitation, still need to be addressed and pose challenges to the development of children in South Africa (UNICEF, 2006).

Furthermore, UNICEF states that the lives of children in South Africa, especially in the deep rural areas, are directly affected by HIV and AIDS, unemployment and grinding poverty. According to the National Census (2001), children under 18 comprise approximately 51% of the population and constitute a vital and large sector of the population, requiring optimal conditions to facilitate learning. The situation of children in South Africa remains one of concern especially because it is well known that young children are in a crucial period of development – physically, socially, emotionally and intellectually (Foxcroft & Roodt, 2001; 2006).

According to Luiz (1988) interest has risen in the awareness that problems and difficulties of children can be recognized and evaluated in the initial stages. Children with special needs that have been identified early can catch up developmentally and cope successfully as opposed to those who are identified much later (Foxcroft & Roodt, 2001; 2006). Gottlieb and Zinkus (1979) add that the early identification of developmental weaknesses will promote the development toward a successful learner, thus eliminating the possibility of secondary emotional problems caused as a result of early failure at school. Other studies have also corroborated this finding (Safford, 1978; Whittle & Kruger, 1982). Thus, assessing a child’s general development at an early age is crucial – the sooner the weakness can be identified, the sooner a child can be assisted.

Knoesen (2003) asserts that the early identification of the child’s areas of developmental weakness will enable the practitioner or educator to provide remedial intervention to maximally develop those areas of developmental delay. As a substantial number of South Africa’s children are at risk, there is a great need for remedial intervention in the form of intervention programmes that focus on the improvement of the development of vulnerable children (Van Rooyen, 2005).
UNICEF (2006) is currently involved in supporting integrated programmes for very young children and their caregivers in order to promote the development of children in South Africa. Developmental assessment can play a pivotal role in assisting these organizations in the development of intervention programmes. The need for intervention programmes for children in South Africa has been recognized, yet much needs to be done to enhance the incorporation of developmental assessment in the process and successfully provide this service to the considerable number of vulnerable children in South Africa. In the light of the above, “it is thus imperative that developmental assessment be accurate and informative in the South African context” (Van Rooyen, 2005, p. 30).

If developmental assessment is accurate and informative it can assist our understanding of a child by providing a guideline of a child’s developmental strengths and weaknesses (Foxcroft, 1985). It can also describe, predict and explain human and mental processes for the purpose of enhancing the effectiveness of behaviour and for providing information to people to understand and make appropriate decisions about their functioning (Foxcroft & Roodt, 2006). According to Squires, Nickel and Eisert (1998), the use of formal measures in the process of developmental assessment compensates for the shortcomings of pure observation. It also provides a structure for observation and increases the identification of mild problems which would otherwise go unidentified.

According to Van Rooyen (2005), developmental assessment in clinical practice in South Africa with children is important for a number of reasons. Van Rooyen emphasized that referrals to community-based psychological resources for assessments related to chronic disorders and disabilities such as mental retardation and cerebral palsy and similar kinds of suspected difficulties abound in the South African context. The Ministry for Social Development’s White Paper on Social Welfare (Department of Education, 2002) is in line with the above observation and has placed emphasis on the importance of enhancing early development of children in South Africa.
There are also many other reasons why developmental assessment is important in the South African context. For example the factors influencing development discussed earlier in this chapter evidently motivate why it is important. Taking these factors into consideration it is clear that for the optimum benefit of the South African child, such interventions should be implemented as early as possible. However, identifying scholastic abilities in young children is a difficult task, often leading to inaccurate and misleading assumptions about how pre-schoolers will perform later in school (Nuttall, Romero, & Kalesnik, 1992).

In addition, the importance of early identification of developmental weaknesses is further overshadowed by an awareness of diversity that has thus far outpaced our understanding. We cannot discount the fact that South African children come from very diverse backgrounds. They vary in cultural heritage, language, rural/urban location, socio-economic status, educational level of parents, health, preparation for schooling, and many other influences that shape human development. It cannot be assumed that children fit the expectation of what children at that age are like.

Knoesen (2003), states that developmental assessment measures need to be able to assess the child’s development in each of the factors related to scholastic performance, and Luiz (1994) has highlighted the importance to not have a ‘mutually exclusive’ viewpoint, but rather a holistic perspective on the developmental assessment of South African children. This is vital in view of the poor social conditions the majority of South African children have experienced. Social conditions including socio-economic status, family sizes, and social environment can influence the progression of maturation. Differences in race, culture, climate and geographical location can also affect these changes (Roland, 1996). Holt (1974) states that developmental delays may reflect the influence of social conditions. As Kotras (2001) stated “South African researchers have stressed that the need for assessment of pre-school children having a lower socio-economic and health status, is directly related to the finding that there is a high rate of developmental problems
among this group” (p.15). Thus, fair, appropriate and psychometrically sound assessment tools need to be utilized, as well as information from many other sources. After information is gathered it needs to be evaluated, integrated and a contextual interpretation needs to be obtained in order to reach a conclusion or make decisions regardless of a child’s developmental status.

Two types of developmental measures can be distinguished, namely: screening and diagnostic measures (Foxcroft & Roodt, 2006). “Screening allows for many children to be screened, identifying those who may require a more comprehensive assessment” (Kotras, 2001, p. 18). A diagnostic measure is more in-depth, comprehensive, individual focused and holistic than screening measures. According to Foxcroft and Roodt (2001), “comprehensive diagnostic measures, on the other hand, provide numerical scores and/or age equivalents for overall performance as well as for each specific area assessed” (p. 156).

A diagnostic measure that has been adapted for use in South Africa is the Griffiths Scales of Mental Development. The Extended Revised version was launched in May 2006 in the United Kingdom, London. However, norms for South African children are not yet available for the Extended Revised version of the Griffiths Mental Development Scales and studies have not yet confirmed that the revised British norms can be suitably used in the contemporary South African context.

In spite of this, previous research studies, (e.g., Allan, 1988, 1992; Bhamjee, 1991; Luiz, Barnard, Knoesen & Kotras 2004, Knoesen, 2005, Van Rooyen, 2005) have found the Griffiths Scales to be both a relevant and appropriate measure of choice in the assessment of the development of South African children.

Furthermore, South African researchers have recognized the need for accurate and comprehensive measures to assess a child’s developmental status in order to obtain a clear picture of developmental strengths and weaknesses
(Knoesen, 2003). Van Rooyen’s 2005 study as well as the present study are only two of the numerous efforts made by previous South African researchers to justify a suitable assessment measure that can satisfy the developmental assessment of needs in South Africa. The section below gives a brief overview of the psychological assessment measures utilized with infants and children.

2.4 Psychological Assessment Measures Utilized with Infants and Young Children - a Brief Overview

Some of the assessment measures utilized in infants and children will be discussed in this section and will provide a brief overview of psychological assessment measures still widely used with infants and young children worldwide. An attempt is also made to highlight some of the shortcomings of these measures.

2.4.1 Developmental measures utilized in South Africa

2.4.1.1 The Junior South African Individual Scales (JSAIS)

In 1979, The Junior South African Individual Scales (JSAIS) were developed. They were initially designed for White South African children between the ages of 3 and 7 years 11 months, in 1979 (Madge, 1981). The JSAIS was adapted and standardized for Asian children (Swart, 1987) and norms were published specifically for Coloured children between the ages of 6 years old to 8 years and 11 months (Robinson, 1989).

According to Van den Berg (1987), black children can only be included in the norm population once parallel forms of the test have been developed for South African Black languages. The measure is further standardized for English or Afrikaans speaking children who have received a number of years of pre-school or school instruction in these languages (Van Rooyen, 2005).
The main aim of the battery is twofold, namely to establish the general intellectual level of children and to evaluate a child’s relatively strong and weak areas of functioning (Madge, 1981). According to Van Rooyen (2005), the JSAIS is a comprehensive test that provides a profile of the child’s abilities, but it does not assess gross motor and personal-social development. Van den Berg (1987) further asserts that children from a deprived socio-economic background are explicitly excluded, and specifically referred to the South African Black languages. The major limitation of the JSAIS is thus its lack of norms for the diverse contemporary South African population.

The JSAIS is a very verbally based measure and some of its major criticisms are that it does not consider context and is not comprehensive enough as it does not focus on all the domains of development.

2.4.1.2 School-Readiness assessment tools

The School Readiness Evaluation by Trained Testers (SETT) is an instrument that was developed in order to test school readiness. This specific test can be used by trained teachers (Joubert, 1984) and is thus not a comprehensive developmental assessment measure but acts more as a screening measure. The SETT standardization sample included White, Coloured and Asian children but excluded Black children.

The School Group Screening Measure (SGSM) is a standardized screening measure that was developed by Foxcroft, Shillington, Turk, Corby and Collier in 1997 in order to assess school readiness. It provides cut-off points for Asian, Black, Coloured and White pre-school children. Unfortunately the SGSM is another South African developed measure that is not utilized in mainstream testing (Van Rooyen, 2005) as it is currently not classified as a developmental measure in South Africa.
The abovementioned school-readiness assessment instruments are all designed as screening measures and focus on specific domains and age groups and can thus not be used as diagnostic evaluation tools. They do, however, provide good global indications of whether a child is “at risk” for handling the development of mainstream education. Although the school-readiness instruments are valuable screening tools it should be noted that they are not applicable for testing general development.

2.4.1.3 The Herbst measure

The Herbst assessment measure was constructed in 1994 by Herbst and designed to specifically suit the developmental assessment of Black children in South Africa (Schröder, 2004). The Herbst measure assesses many aspects of development, namely Cognitive Aspects, Fine Motor Development and Gross Motor Development in 3-year to 6-year old Black children (Schröder, 2004). It provides a quantitative depiction of the child’s ability as well as possible neurological indicators and is useful in its own right (Van Rooyen, 2005). Yet, it gives limited information regarding procedures and psychometric properties. It is only applicable to Black children; no additional studies are available and it also has not found its way into mainstream testing (Schröder, 2004), and therefore does not meet the general developmental assessment needs of the South African context.

2.4.2 International developmental measures.

Efforts to address the need for more reliable and valid assessment measures for pre-school South African children in a more cost-efficient way have been explored. Instead of developing a totally new measure to fulfil the needs for pre-school South African children a less expensive and time-consuming procedure can be followed, namely exploring the applicability of a measure developed in a different country from the South African context (Van Rooyen, 2005). South Africa has followed this procedure in an effort to provide reliable and valid assessment
measures for the South African context, for example through, The Stanford-Binet Intelligence Scale, (5th Edition); The Wechsler Scales; Gesell Developmental Schedules; McCarthy Scales of Children's Abilities; The Bayley Scales of Infant Development-II; Kaufman Assessment Battery for children; The Cattell Infant Intelligence Scales and The Griffiths Mental Development Scales – Extended Revised.

These measures are the current leaders in the developmental assessment field and are well established in the international context. This section will provide a brief summary of each measure mentioned.

2.4.2.1 The Stanford-Binet Intelligence Scale, 5th edition (SB5)

The Stanford-Binet Scales are widely used in several countries for the assessment of the intelligence of children and young adults. As with the original Binet Scales, many revisions have appeared since Lewis M. Terman (1916) completed his revision of the 1908 Binet Simon Scale (Stanford-Binet Intelligence Scales, 2004). It appears that each revision has merely attempted to improve the efficacy of measuring the same set of constructs as was measured by earlier versions of this test (Bhamjee, 1991). The most recent of these was the fourth edition of the Stanford-Binet, which was published in 1986. The SB5 retains the wide age range of 2 years to beyond 90 which has been one of the major strengths of the Stanford-Binet Intelligence Scales (Simeonsson, 1986).

According to Bhamjee (1991), the major criticism levelled at earlier versions was that their use was limited with respect to handicapped persons with typical verbal deficits. A further limitation was that they only provided a general intelligence quotient (IQ), and consequently a profile of strengths and weaknesses could not be constructed (Allan, 1988; 1992). Although some of these weaknesses have been addressed in the SB5, Van Rooyen (2005) stressed that it is still mainly focused on cognitive development rather than overall development.
2.4.2.2 The Wechsler Scales

The Wechsler Intelligence Scale for Children (WISC) was developed in 1949 to assess the intelligence of children between the ages of 5 and 15 years (Anastasi, 1982; Groth-Marnat, 1984). According to Bhamjee (1991) the scale was developed as a downward extension of the Adult Wechsler Scale (WAIS). The WISC was standardized and revised in 1974 as became known as the Wechsler Intelligence Scale for Children – Revised (WISC-R). It measures the intelligence of children between the ages of 6 years and 16 years 11 months (Wechsler, 1974). Anastasi (1982) reports that the most significant criticism levelled at the Wechsler Scales, in general, has been the lack of sufficient empirical data on their reliability and validity.

David Wechsler designed the Wechsler Pre-school and Primary Scale of Intelligence (WPPSI) in 1989 as an extension of the WISC. According to Bhamjee (1991) the test is considered to be advanced in terms of the technical quality of the test construction procedures, but fails to provide adequate empirical data on validity. Van Rooyen (2005) reported that the Wechsler Pre-School and Primary Scale of Intelligence – III (WPPSI-III), a basic update of the WPPSI-R, was released in 2002 and extends the age range of the test to 2 years 6 months at the lower end.

In 2003, The Wechsler Intelligence Scale for Children – Fourth Edition (WISC-IV) was released and is an update of the WISC-III (Van Rooyen, 2005). Van Rooyen further noted that there is a lack of independent research available on the WISC-IV.

2.4.2.3 Gesell Developmental Schedules (Gesell Schedules)

The Gesell Developmental Schedules were constructed during the 1940’s at the Yale Clinic of Childhood Development under the direction of Gesell and his associates. According to Bhamjee, 1991, the Gesell Scales were used more by paediatricians than by psychologists from the 1920s through the 1940s and the
Gesell Scales were criticized as failing to present a careful statistical analysis with respect to the reliability and validity of the Schedules (Brooks & Weinraub, 1976). Furthermore, psychologists criticized the Gesell Scales as being too subjective (Aiken, 2000). The most recent revision was published in 1980 to allow for comparative assessments of infant abilities within the age range 1 week to 36 months (Aylward, 1994). The Schedules were developed to measure adaptive, gross motor, fine motor, language and personal-social domains.

2.4.2.4 McCarthy Scales of Children’s Abilities (McCarthy Scales)

In 1972, a measure comprising 18 tests grouped into six subscales was published, namely The McCarthy Scales of Children’s Abilities. The McCarthy Scales measure the following areas of development, namely: verbal, perceptual-performance, quantitative, motor, and memory (Bhamjee, 1991). The McCarthy scales are constructed for children between the ages of 2 years 6 months to 8 years 6 months but, are most useful in the age range 3-years to 5-years due to floor and ceiling levels (Van Rooyen, 2005).

The general cognitive score is expressed as a General Cognitive Index (GCI) and indicates the child’s functioning at the time of the testing, with no implications of immutability or etiology (Bhamjee, 1991). According to Bhamjee (1991) the GCI is reported to come closest to the traditional global measure of intellectual development, namely the Intelligence Quotient (IQ).

Van Rooyen (2005), states that the GCI is statistically comparable to IQ scores, but not interchangeable. Anastasi (1982) asserts that the McCarthy Scales show high split-half and test-retest reliabilities, but reported data demonstrated poor validity. Furthermore, Aylward (1994), states that the test is well constructed and psychometrically sound, but the normative data are old and possibly outdated.
2.4.2.5 The Bayley Scales of Infant Development-II (BSID-II)

Bayley published the California First Year Mental Scale (widely known as the Bayley Scales) in 1933. The scale was developed to study infant mental and motor development in the Berkeley Growth Study. Recent studies suggest that more concurrent and construct validity studies should be conducted on the BSID-II as well as further studies investigating the BSID-II’s suitability with special populations (Barnard, 2000; Schröder, 2004).

2.4.2.6 Kaufman Assessment Battery for Children (K-ABC)

The Kaufman Assessment Battery for Children (K-ABC) was published in 1983 and was designed to assess children from the ages of 2 years 5 months to 12 years 5 months (Murphy & Davidshofer, 1988, 1994). The test consists mainly of non-verbal items and requires that the child perform a variety of information processing tasks. The K-ABC is based on a well-developed theory of intelligence (Bhamjee, 1991), and according to Murphy and Davidshofer (1988, 1994), the K-ABC is technically excellent in several respects. Aylward (1994) notes however that the floor and ceiling prove problematic with very young children or retarded children and children above the age of 10. Bhamjee (1991) also states that evidence regarding construct and predictive validity is sparse.

In 2004, The Kaufman Assessment Battery for Children, Second Edition (KABC-II) was released and provides updated norms as well as a dual theoretical approach (Van Rooyen, 2005). According to Fletcher-Jansen (2004) the test is culturally unbiased and one prepublication validity study indicated that the test is relevant to scores that rely on processing abilities rather than those based on integrated knowledge.
2.4.2.7 The Catell Infant Intelligence Scales (The Cattell Scales)

Cattel (1966) developed her own infant scale and relied heavily on the Gesell Schedule when developing it. The test covers the age range 2 months to 2 years 5 months (Bhamjee, 1991) and evaluates motor control and verbalizations. Thomas (1970) and Brooks and Weinraub (1976) indicated that the Cattel Scales lacked adequate reliability and validity studies. Recent studies reveal conflicting findings regarding the reliability and validity of the Catell Scales (Schröder, 2004). According to Aylward (1994) the test is not the most appropriate developmental test as there are no personal-social or gross motor items included.

2.5 Problems Encountered with Existing Developmental Measures in a Multicultural Society.

If existing developmental measures are utilized with clinical sensitivity and greater understanding, they can play a meaningful role in illustrating specific learning styles, skills, strengths and deficits in a child competing in a western-influenced multicultural South Africa (Bhamjee, 1991).

However, many shortcomings are found in existing developmental measures that are relevant today. Allan (1992) has summarized some of the most prominent shortcomings namely:

1. The existing developmental assessment measures are not comprehensive with most measures focusing on specific aspects of development or merely being screening in nature;
2. specific tests are standardized for specific ethnic groups to the exclusion of others and there are only a limited number of standardized tests available to assess the development of Black preschool children;
3. specific tests are standardized for specific age groups to the exclusion of others (p. 7).

These shortcomings lead to the following major question that needs to be addressed. That is whether available tests, such as those mentioned above, developed for a specific culture group, can be legitimately administered and applied to the culturally diverse groups in South Africa.

2.6 The Griffiths Mental Development Scales – Extended Revised (GMDS-ER).

In the light of the above, when compared to other developmental assessment measures, the GMDS-ER has been found to have the potential to be rightfully administered and applied to the diverse population groups in South Africa (Van Rooyen, 2005). Numerous studies have found Griffiths Scales to be highly suitable for South African children as they have been utilized successfully and widely across all cultural groups in South Africa (Allan, 1992; Bhamjee, 1991; Luiz, 1994a; Stewart, 1997; Tukulu, 1996). Furthermore, in terms of developmental assessment, the Griffiths Mental Development Scales can be described as a comprehensive psychological investigation of a child’s abilities, including motor, social and cognitive abilities, using direct observation, testing, medical reports and biographical information (Kotras, 2001).

According to Foxcroft and Roodt (2001; 2006) developmental assessment is a process-orientated activity that is multidimensional in nature and entails the systematic gathering of a wide array of information. After information is gathered it needs to be evaluated, integrated and a contextual interpretation needs to be obtained in order to reach a conclusion or make decisions regarding a child’s developmental status. Psychological assessment is useful to describe, predict and explain human and mental processes for the purpose of enhancing the effectiveness of behaviour and for providing information for people to understand and make
appropriate decisions about their functioning (Foxcroft & Roodt, 2006). According to Bondurant-Utz and Luciano (1994), a comprehensive assessment should be a continuous process and should include at least the following four aspects of functioning: motor, social, cognitive and emotional functioning. Brooks-Gunn (1990) noted that Ruth Griffiths did not have a mutually exclusive outlook when she developed the original Griffiths Scales. She utilized the 'basic avenues' of learning, namely physiological/locomotor, eye and hand, voice and hearing, in developing six scales to assess the six aspects of functioning.

This assessment measure has undergone extensive national and international research being pioneered and led by Ruth Griffiths (1954; 1967; 1970; 1984; 1986). She developed and revised the original Griffiths scales. The original Griffiths Scales were found to be a highly suitable assessment measure for infant and child development as they met the necessary requirements for the comprehensive assessment of infants and pre-school children in South Africa. The Griffiths Scales are one of the most widely researched tests for the assessment of infants and young children in the world today (Allan, 1992).

2.7 Chapter Overview

An overview was provided of the nature of child development in context. This was viewed as an integral part of the nature of development and was discussed in greater detail, with particular emphasis on factors that could play a role in the transaction with the developing individual in a multicultural South Africa. This chapter further introduced the concept of developmental assessment and acknowledged its multidimensionality. It was concluded by looking at the different measures currently available in the developmental assessment context. The GMDS-ER has the potential to answer the greatest number of needs of the South African developmental assessment landscape, should norms for the South African context be available.
Having discussed the important role that developmental assessment and more specifically the GMDS-ER can play in the life of the South African child, the Griffiths Scales will be discussed in more detail in Chapter 3. This chapter will also investigate the historical origins of the Scales, the extensive research studies conducted both locally and internationally and the recent revision and restandardization.
CHAPTER 3
THE GRIFFITHS MENTAL DEVELOPMENT SCALES
– EXTENDED REVISED (GMDS-ER)

3.1 Introduction

This chapter will provide an overview of the background and content of the original Griffiths Scales of Mental Development (Griffiths Scales) and will also focus on research completed on the Scales as well as the reasoning behind the need to revise the Scales. The chapter will subsequently focus on the revision process of the Scales leading to The Griffiths Mental Development Scales – Extended Revised (GMDS-ER) version. The initial psychometric properties will also be discussed. The chapter will conclude by concentrating on the potential of the GMDS-ER to satisfy the developmental assessment needs in the contemporary South African context. Emphasis is placed on the GMDS-ER as this is the subject matter of the present study.

The information presented in this chapter will clarify whether the GMDS-ER can be used as a cross-cultural adaptation measure and will thus provide information on whether or not the GMDS-ER meets the demands of South African developmental assessment needs. The early revision process for the GMDS-ER presented revised items for the South African context and Van Rooyen (2005) investigated how South African children compare with the British standardization sample. This investigation formed part of the adaptation process theoretically. The current study is a continued attempt at building on this investigation by focusing on a more contemporary sample, thereby further enhancing this adaptation process and also adding to the growing body of theoretical knowledge regarding the GMDS-ER.
3.2 Background – the Original Griffiths Scales

The developmental testing of school-age children was firmly established by 1910 according to Brooks and Weinraub (1976). It was, however, only after the 1920s and the publication of three infant tests that many other tests were developed for infants and pre-school children. However, most of these tests experienced problems such as low reliability and poor predictive validity (Luiz, 1994b). This encouraged the construction of the Griffiths Mental Development Scales (Griffiths Scales).

The Griffiths Scales were originally developed in 1954 by Dr Ruth Griffiths to assess the mental development of babies from birth to two years of age (Griffiths, 1984). The major impetus for its development was an urgent need for the early diagnosis of mental conditions in special cases (Griffiths, 1954; 1984). Ruth Griffiths is seen as one of the pioneers in the psychology of early child development in the United Kingdom (Luiz, 1994a). By constructing the Griffiths Scales, she linked the traditional normative and clinical approaches to child assessment, by combining them into a set of comprehensive scales (Van Rooyen, 2005). The Griffiths Scales were compiled after a detailed study of mental development, extending over several years, with 571 British babies. Detailed observations were made of children in their natural environments – at home, at play, in the streets, on buses, and in the school playground before the Scales were constructed (Sweeney, 1994).

The Griffiths Scales were initially described by Ruth Griffiths (1954; 1984; 1986) as a diagnostic tool for studying the mental development of babies. She indicated that by means of developmental profiles, illustrated in the form of graphs or histograms, the differential diagnosis of the mental status of babies could be demonstrated (Griffiths, 1954; 1986). According to Thomas (1970), the Griffiths Infant Scales were regarded as being one of the most carefully constructed infant scales and one of the best-known tests developed in England. It is still the case today.
Initially the Scales were devised by drawing substantially upon previously published scales, in particular the Gesell Developmental Schedules. Since previously published infant scales, such as the Stanford Binet Intelligence Test and Wechsler Intelligence Scale for Children lacked speech items, Griffiths emphasized the importance of speech and viewed it as a significant intellectual task and therefore included twice as many speech items in her Hearing and Speech Scale (Brooks & Weinraub, 1976). Griffiths further added items of a social nature, especially for the first year of development.

The Griffiths Infant Scales consisted of five subscales, namely, the Locomotor (Subscale A), Personal-Social (Subscale B), Hearing and Speech (Subscale C), Eye and Hand Co-ordination (Subscale D), and Performance (Subscale E). The value of the Griffiths Infant Scales in the clinical diagnosis of both normal and handicapped children was widely reported by professional workers from various disciplines (Griffiths, 1970; 1984). Due to the popularity of the Griffiths Scales, Griffiths received many requests for an extension to the Infant Scales for use in clinical practice with older children. To meet this need, the Scales were revised and extended in 1970 to cover ages from birth to 8 years 4 months (Griffiths, 1970). Griffiths later realized that for certain skills and items learning could not be logically built into any of the five subscales. As a result, a sixth subscale, namely the Practical Reasoning Subscale (Subscale F) was added to the test for children aged 2 years and older. This provided a more comprehensive coverage of the young child’s emerging problem-solving and logical reasoning skills (Griffiths, 1970). Consequently, the extra subscale resulted in the development of the Griffiths Extended Scales.

Griffiths (1970, 1984) adhered to the following five stringent criteria when developing the Griffiths Scales:

1. The development of the Scales was based on detailed systematic observation of children in the United Kingdom. Children were observed in their natural environments – at home, at play, in the
streets, on trains and buses and in school playgrounds – and their behaviour was recorded. From these formal and incidental observations, material for the test items emerged.

2. Previous and existing test methods and tests such as the Gesell Developmental Scales were taken into account and items from relevant tests were included in the Griffiths Scales (Buhler, 1935; Gesell, 1925; Shirley, 1933).

3. The Scales had to fulfil stringent statistical requirements in terms of their reliability and validity.

4. The Scales took into account the special needs of both disabled and normal children.

5. The Scales were based on a study of: (i) trends that appeared significant for mental growth, and (ii) the origins and interrelations among the “basic avenues of learning”, namely, physiological or locomotor, eye and hand, voice and hearing, whose development takes place with rhythm, in time and space and is influenced by environmental factors and social factors (Griffiths, 1984, p. 5).

Ruth Griffiths thus not only extended the Infant Scales, in the 1960s, to include children up to and including the 8th year of life, but she also revised and completely restandardized the original Infant Scales. The Griffiths Scales provided a comprehensive development profile and differed from the majority of development tests as they not only focused on cognitive development. The Extended Scales further provide continuity when assessing older children with specific difficulties and they can assist in giving an accurate assessment in older children who, at the time of evaluation are found to be functioning at a lower level. The items on the Scales are diverse and tap the main aspects of a child's development namely the physical, cognitive, social and emotional. In addition, they are norm-referenced, and the items of each subscale are arranged in order of gradually increasing difficulty (Griffiths, 1984). Many of the items are based on natural activities such as running, talking and playing.
Playing is a universal activity that has been found to emerge at about the same age in children from different cultures (Kagan, 1981). The Griffiths Scales therefore have been described as a potentially ‘culture-fair’ measure as they were constructed according to the careful and detailed observation of children, “at play, at home, on the streets, in the trains or buses, and in their own homes and gardens” (Griffiths, 1984, p. 7). In addition, the Scales have been researched worldwide since the 1970s and have been adapted for use in several countries. This further suggests that they are relatively culture fair (e.g., Brandt, 1983; 1984; Cobos, Rodriques & De Venegas, 1971; Collins, Jupp, Maberly, Morris & Eastman, 1987; Laroche, Brabant & Brabant, 1976; Laroche, Gutz & Desboiles, 1974; Luiz, Foxcroft & Knoesen, 2003; Luiz, Foxcroft & Stewart, 1999; Luiz, Foxcroft & Worsfold, Kotras, 2001; Ramsay & Fitzharding, 1977; Sletten, 1970; 1977). Culture is relevant to the current study, as the sample contains children of various cultural groups within the diverse contemporary South African context.

Furthermore, each of the six subscales of the Griffiths Scales was devised to be a separate and complete scale in itself (Griffiths, 1970). Thus, any one process of development can be measured independently and as completely as possible. The six subscales are equal in difficulty at each age level and performance on the different subscales can be compared to the norm of each developmental area (Van Rooyen, 2005). A developmental profile is thus accessible and demonstrates a range of abilities and relative strengths and weaknesses. The developmental profile is of particular use in clinical practice and programmatic intervention as it allows for the planning of interventions based on strengths which are much needed in South Africa, as was highlighted in Chapter 2.

In the standardizing and equalizing of the original Scales (1960), the number and percentage of children passing each item were calculated for each two-month age group, commencing with the first two months of the first year, and continuing to the 96th month (Schröder, 2004). In the final version of the Griffiths Scales, each
item was placed as close as possible to the point where it was passed by 50% of the children in a two-month age group (Stewart, 1997). The progressive deterioration in the percentage of children passing the successive items in every scale, demonstrated that items in every subscale are arranged in order of increasing difficulty (Griffiths, 1968). Each of the six subscales of the Griffiths Scales will be discussed in the section that follows.

3.3 Background and Description of the Six Subscales of the Griffiths Scales

The Griffiths Scales of Mental Development were initially developed to assess the developmental level of children from birth to two years of age in five separate areas on five subscales, namely Locomotor, Personal-Social, Hearing and Speech, Eye and Hand Co-ordination and Performance subscales. During the 1960s the Scales were expanded to cover the ages from birth to 8 years 6 months. A sixth subscale named Practical Reasoning was added to the Extended Griffiths Scales for children aged two years and older. Brief descriptions of the subscales are presented below.

(a) The Locomotor Scale (QA) provides the examiner with an opportunity to observe certain physical weaknesses or disabilities (Foxcroft & Roodt, 2006). “The scale was placed first in sequence in order to provide a basis for objective assessment, setting the child at ease as well as providing an opportunity to gain an initial impression of the overall maturity of the child” (Sweeney, 1994, p. 94). A few examples of items include: walking up and down stairs, hopping, throwing and kicking a ball and jumping over a rope (Kotras, 2001). “The items challenge the child’s regular physical strength, skill in speed and movement, rhythm and poise to a degree which corresponds with their age” (Kotras, 2001, p. 23). According to Sweeney (1994), the child’s ability to focus and concentrate on the task at hand and the emotional determination of the child also influence performance on this scale.
(b) The Personal-Social Scale (QB) gives the opportunity to assess personal and social development (Foxcroft & Roodt, 2006) at a level which corresponds with the child’s age. Some degree of social interaction is necessary from the child as is co-operation in play with other children. Some of the activities include personal cleanliness, efficiency at the table, the ability to wash his/her hands and face, to dress and undress and to fasten buttons. “Emotional factors affect performance on all scales; however they usually have a more explicit influence on this scale” (Kotras, 2001, p. 23). According to Griffiths (1984), neglected children and overly protected children usually do badly on this scale, as overly protected children are usually slower in learning self-help and personal care.

(c) The Hearing and Speech Scale (QC) is the most intellectual of all the scales and provides the opportunity to study the growth and development of language (Kotras, 2001). According to Luiz (1994b) this scale requires the comprehension of language and also specific verbal expressive skills in terms of vocabulary, the use of different parts of speech and the use of sentences and paragraphs. Items include the naming of colours, the naming of similarities and opposites, the repetition of sentences with a varying number of syllables, the identification of stimuli picture cards and so on. Children who perform poorly on this subscale, relative to their own performance on the other subscales, may have speech and/or language deficits or may possibly be suffering from a hearing loss (Schröder, 2004).

(d) The Eye and Hand Co-ordination Scale (QD) consists of items relating to handwork and visual ability (Foxcroft & Roodt, 2006). Manual dexterity, co-ordination between the eyes and hands, careful work and persistence in a task are required from the child (Kotras, 1998). Items of this Scale according to Huntley (1996) include the threading of beads, drawings (formal and informal), the cutting of paper, and so forth. The formal drawings of geometric shapes provide information on the child's conception of space and form relations. The other drawings provide
information on the personality of the child, as is the case with projective techniques like the Draw a Person (Harris, 1963).

(e) **The Performance Scale (QE)** enables observation of skill in manipulation, speed and precision of work (Kotras, 2001) and the items thus relate to the manual dexterity and visual ability of the child. Co-ordination between the eyes and hands, persistence in a task, conception of space and form relations, and information on the child's personality can also be obtained from this scale (Luiz, 1994a). The performance scale includes items such as building stairs, bridges, formboard, pattern making etc. It thus requires that the child handle the material and perform the practical tasks on the Scale. According to Tukulu (1996), the items of the Performance Scale correspond with those in the Hand and Eye Co-ordination Scale (QD) because some manual performance is required from the child.

(f) **The Practical Reasoning Scale (QF)** according to Luiz (1988) the Practical Reasoning Scale concentrates mainly on recording the earliest indications of arithmetical comprehension and the realization of the simplest practical problems. Items in this scale begin at the third year of life and include the repetition of digits (short-term auditory memory) and the differentiation of objects in terms of weight, height, length and size (Kotras, 2001). This Scale can provide an opportunity to assess whether a child would benefit from formal schooling (Luiz, 1994b). Attention and concentration span also plays a major role on this Scale as with the other Scales.

Griffiths (1984) named the developmental quotients for every subscale. These are illustrated in Table 1 below.
Table 1

An illustration of the developmental quotients of the Griffiths Scales

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>QA</td>
<td>Locomotor Quotient</td>
</tr>
<tr>
<td>QB</td>
<td>Personal-Social Quotient</td>
</tr>
<tr>
<td>QC</td>
<td>Verbal Quotient (Hearing and Speech Scale)</td>
</tr>
<tr>
<td>QD</td>
<td>Hand and Eye (Co-ordination) Quotient</td>
</tr>
<tr>
<td>QE</td>
<td>Performance Quotient</td>
</tr>
<tr>
<td>QF</td>
<td>Practical Quotient for Scale F, known as Practical Reasoning.</td>
</tr>
</tbody>
</table>

While in the birth to two years scales of the Griffiths Scales, Subscale C is known as the Hearing and Language Subscale. In the GMDS-ER it is simply known as the Language Subscale, as no hearing items are included (Luiz, Barnard, Knoesen, Kotras, McAlinden, Challis, O’Connell, 2004). Each one of the six subscales has an age equivalent and by combining the subscales, a comprehensive score called the General Quotient (GQ) is obtained. The GQ represents General Intelligence as the child’s general level of development and is derived by taking the average of the quotients of the six sub-scales of the child’s total performance (Sweeney, 1994). The scales do not only assess the general or overall development of the child but also specific areas of development integrated by the basic avenues of learning (Kotras, 2001). These are known as developmental quotients.

According to Foxcroft and Roodt (2001; 2006) if histograms are used based on the developmental score or quotient of each scale, a child’s performance on the different scales can therefore be compared. By obtaining a developmental score for each Subscale the Scales can be compared. These different scores obtained on the scales are the child’s developmental profile and this developmental profile demonstrates the child’s abilities and relative disabilities and allows for a comparison of these at different times (Foxcroft & Roodt, 2001; 2006).
3.4 The Scoring and Administration of the Original Griffiths Scales

The scales are intended to be equally difficult at each level of development (Foxcroft & Roodt, 2006) and in order to achieve this, at each age level, an equal number of items on all six subscales were included. The Griffiths Extended Scales consist of 468 items (Van Rooyen, 2005). There are two items per month in each of the five relevant subscales from 0 to 24 months, thus allowing a half-month credit for each item. From the third to the eighth year there are six items for each year in each subscale, plus two extra items for the ninth year in each subscale, thus allowing two months credit for each item in each subscale (Schröder, 2004).

Each subscale has a number of items, corresponding to an age range. Administration of the Scales starts a few (usually 4) months below the child’s age level (Bhamjee, 1991). According to Sweeney (1994) a basal of six consecutive successes are required in each scale. If a child fails any of the first six items administered in a Scale, earlier items are administered until a basal is achieved. The sum of credits is obtained by adding up all the items below the basal of six consecutive passes and for the items passed, and provides a separate mental age (MA) for every scale. Developmental quotients or scores are then calculated for every Scale by means of the following formula:

\[ Q_X = \frac{MA \times 100}{CA} \]

CA represents the chronological age, in months, for the child and X represents the Scale for which the development quotient is being evaluated (Sweeney, 1994). Each separate Scale has an age equivalent and in combining the Scales, a comprehensive score called the General Quotient (GQ) is obtained. The GQ represents General Intelligence and is derived by taking the average of the quotients or scores of the six subscales of the child’s total performance (Huntley, 1996).
3.5 Exploring the Performance on the Original Griffiths Scales

Griffiths (1984) studied the profiles of a large number of children and identified certain patterns of performance on the subscales that aid in the interpretation of an individual child’s performance. Griffiths (1984) has cited case studies to illustrate these differences. According to Bhamjee (1991) some of those cited by her are:

1. A child who shows consistently a low result on Speech and Hearing Scale (Scale C) but does much better on the rest of the scales. She stated that this child may be a deaf child or a child who may be suffering from some degree of hearing loss.

2. A child who fails consistently on the Locomotor Scales (Scale A) and the Eye-Hand Co-ordination Scales (Scale D), but does better on the rest of the scales, is almost certainly a physically handicapped child or a child suffering form some degree of physical weakness. Such a diagnosis is further supported, if the child performs very well on the rest of the scales.

3. The child who fails specifically on the Personal-Social Scales (Scale B), but does better on the other scales, may most likely be an unhappy or maladjusted child. Emotional factors tend to have a greater influence on this scale than on the rest of the scales.

4. Consistently low performances on all the Scales are indicative of mental retardation. Furthermore, the level of overall performance quantitatively indicates the degree of mental retardation sustained by the child (p. 50 – 51).

Although diagnostic interpretations are possible when utilizing the Griffiths Scales, recent studies have shown that low scores on the Griffiths can indicate subtle deficits and provide clinical impressions that needs to be investigated further (Schröder, 2004; Van Rooyen, 2005). The gross assumption made by Bhamjee in 1991 may not be the case and children that obtained low scores on some of the
scales could be as a result of contextual, cultural or cognitive factors, for example, lack of exposure to what the test is meaning to measure. Results are thus not always indicative of cortical immaturity as mentioned by Bhamjee but could be indicative of deficits which with therapy can be assisted. According to Schröder (2004) the resulting developmental profile of the child on the Griffiths Scales provides useful information that can be used for the identification of abilities and difficulties; decisions for further investigations such as occupational therapy or specialized education; the construction of treatment programmes to address skills deficits; evaluating the effect of treatment; and decisions about placement that will allow the child to develop to his/her potential.

Information regarding possible deficits could be of great value for South African children if their rights in South Africa (which are enshrined in the Constitution; the convention of the rights of the child; the World Summit on Children; the South African Children’s Rights Charter and the African Charter on the Rights and Welfare of the African Child) are translated into action and are not only written as visionary documents. The GMDS-ER could play a pivotal role in the guidance of intervention programs as it has been viewed as a culturally fair measure and has also been described as a measure that covers the important areas of development in one assessment (Kotras, 1998). Griffiths herself made the point that: “It is far better to have available several parallel scales of tests, each measuring a ‘different avenue of learning’, and yet all of them equal in difficulty and standardised on the same representative populations… than to have what most psychologists have to use namely, a battery of tests for different purposes, designed by different people from different points of view, with varying reliability” (Griffiths, 1970, p. 171).

This is one of the factors contributing to the ever-growing popularity of the Griffiths Scales. Extensive and ongoing national and international research into the usefulness of the Griffiths Scales has been conducted over the years. This will be discussed in the following section.
3.6 Research Studies on the Original Griffiths Scales

Research on the Scales has been generated from a wide array of fields; such as Canada (Ramsay & Fitzharding, 1977), Columbia (Cobos, Rodrigues & De Venegas, 1971), France (Laroche, Brabant & Brabant, 1976; Laroche, Gutz & Desbiolles, 1974), Germany (Brandt, 1983, 1984), China (Collins, Jupp, Maberly, Morris & Eastman, 1987), Norway (Sletten, 1970, 1977), Australia, Greece Lebanon and the United States of America. Research on the Griffiths Scales has also been conducted in South Africa on a wide range of the population (e.g., Allan, 1988, 1992; Bhamjee, 1991; Heimes, 1983; Mothuloe, 1990).

The Griffiths Scales have been researched using both clinical and technical studies (Schröder, 2004). Research relating to the clinical use of the Scales has provided evidence that the Griffiths Scales are useful in the clinical assessment and diagnosis of children from normal, as well as diverse special population groups (Luiz, 1988a; Luiz, 1988b; Houston-McMillan, 1988; Krige, 1988;). Research related to the psychometric properties of the Griffiths Scales has been found to be reliable and valid (e.g. Alridge-Smith, Bidder, Gardner & Gray, 1980; Beail, 1985; Caldwell & Drachman, 1964; Conn, 1993; Griffiths, 1970, 1984; Heimes, 1983; Honzik, McFarlane & Allen, 1996; Luiz, Foxcroft & Stewart, 1999; Luiz & Heimes, 1994; Mothuloe, 1990; Povey, 2002; Ramsay & Fitzharding, 1977; Ramsay & Piper, 1980; Stewart, 1997; Worsfold, 1993).

The Griffiths Scales as a clinical tool that is useful for diagnosis, and treatment planning and monitoring, in a variety of cultures has been indicated through case studies and profile research on the original Griffiths Scales (Griffiths, 1984; Krige, 1988; Lister, 1981; Luiz, 1988b; Luiz, 1988d; Magongoa & Venter, 2003; Sweeney, 1994). Research has also been carried out on the performance on the Griffiths Scales of normal children of different ages on the different population groups (Allan, 1988, 1992; Bhamjee, 1991; Mothuloe, 1990).
These pilot normative studies established that the original Griffiths Scales were applicable to South African children and provided guidelines for accountable interpretation in the South African context. Yet, based on the results of Allan’s (1988, 1992), Bhamjee’s (1991) and Mothuloe’s (1990) studies, the usefulness and appropriateness of using the 1960 norms for South African children seems to be doubtful. Recent studies have suggested that the population on which the Infant and Extended Scales were standardized may not necessarily represent a contemporary population (Allan, 1988, 1992; Hanson, Alridge-Smith & Hume, 1985; Hanson & Alridge-Smith, 1987; Huntley, 1996).

However, according to Van Rooyen (2005) there seems to be a general consensus that South African children perform similarly to their contemporary British counterparts. Van Rooyen (2005) accentuated that there are contradictory findings on the influence of culture/ethnicity due to sampling and classification difficulties but asserts that Socio-economic Status (SES) is a significant influence agreed upon generally.

The studies mentioned above played a pivotal role in providing information that facilitated the accountable interpretation of the original Griffiths Scales in the South African context. Van Rooyen (2005) stressed the fact that these kinds of studies will once again need to be undertaken to inform Griffith’s users on the performance of normal South African children on the GMDS-ER. The current study is a follow up of Van Rooyen’s (2005) initial South African exploration into the applicability of the GMDS-ER. The following section will therefore focus on the Extended Revised version of the Griffiths Scales.

3.7 The Griffiths Mental Development Scales – Extended Revised

The Extended Scales received an extensive amount of support but several comprehensive reviews in the 1980’s and 1990’s identified areas in which the Griffiths Scales could be improved (Allan, 1988; 1992; Bhamjee, 1991; Hanson,
1983; Hanson & Aldridge Smith, 1982; 1987; Luiz, Oelofson, Stewart & Mitchell, 1995).

Thus the original Griffiths Scales that were extended in the 1960's by Ruth Griffiths were no longer regarded as reliable and valid for modern use (Bhamjee, 1991; Povey, 2002). Although the Griffiths Scales are relatively uninfluenced by the test takers' cultural backgrounds (Allan, 1992) the need to expand and co-ordinate efforts to revise the Griffiths Scales became evident. The Griffiths Scales were revised and extended in 1970 to assess children aged 3-years to 8-years old (Luiz, 1988b). “Griffiths not only extended the Infant Scales to include older children up to and including the 8th year of life, but she also revised and restandardized the original Infant Scales” (Sweeney, 1994, p. 92).

According to Sweeney (1994), the Extended Scales furthermore provide continuity when assessing older children with specific difficulties. The Extended Scales consist of the following 6 scales: the Locomotor (QA), Personal-Social (QB), Language (QC), Eye and Hand Co-ordination (QD), and Performance (QE) Scales. The sixth scale is named Practical Reasoning (QF) and was added to the Extended Griffiths Scales for children aged 2 years and older to provide a more comprehensive coverage of the young child's emerging problem-solving and logical reasoning skills (Griffiths, 1970). The Griffiths Scales were introduced into South Africa in 1977 as a means of assessing the pre-school child (Luiz, 1988d). This proved to be a much needed addition to the Junior South African Individual Scale (JSAIS) which was in use at this time.

By 1994 a considerable number of research studies supported the emerging need to revise the Griffiths Scales (Allan, 1988, 1992; Hanson, Aldridge Smith & Hume, 1985; Barnard, 2000; Hanson, 1982, 1983; Hanson & Aldridge Smith, 1987; Luiz, Collier, Stewart, Barnard & Kotras, 2000a; Luiz, Oelofson, Stewart & Mitchell, 1995). Kotras (2003) indicated that the items of the scale were found to be outdated and several of the items are culturally biased and ambiguous.
Consequently in March 1994 the Association for Research in Infant and Child Development (ARICD) held a conference and introduced a draft version of the Revised Baby Scales from Birth to 2 years, which were published in 1996 (Huntley, 1996). In addition, at the 1994 ARICD conference the need to revise and restandardize the Extended Scales (2 - 8 years) was emphasized and this resulted in the project coordinated by the late Prof. D.M. Luiz of the University of Port Elizabeth (UPE) to revise and renorm the Extended Scales in the British Isles and Eire. A research proposal was submitted to the Executive Committee of the ARICD (Luiz, 1994b), resulting in the following aims being established for the revision of the Extended Scales:

1. The basic qualities of the Griffiths Scales should be preserved. Throughout the revision process, the child-friendly nature of the Scales should be preserved.

2. The age range of the Griffiths Scales should remain. The revision of the Infant Scales should be brought to finality. The revision of the Extended Scales should concentrate on the age range 2-years to 5-years, and then on the age range 5-years to 8-years.

3. The revision should involve international consultation with all tutors and interested members of the ARICD. A survey should be conducted of all ARICD members, inviting them to identify the strengths and weaknesses of the Scales.

4. The revision should improve the content coverage of the Scales. The Scales should represent current theoretical and empirical work, and the items should be relevant and contemporaneous. Statistical procedures such as cluster and factor analysis should be employed in the attainment of this objective.

5. The normative data on the Scales should be updated. They should be standardized on a contemporary sample that reflects the UK population in terms of the ethnicity, gender and socio-economic status of parents.
6. The psychometric quality of the Scales should be updated. Reliability and validity studies should be conducted, employing statistical procedures such as cluster and factor analysis.

7. Finally, the clinical utility of the Scales should be enhanced by collecting data on children with a clinical diagnosis.

According to Van Rooyen (2005) all but the 7th objective has been achieved to date. Since the revision of the Extended Scales, much national and international research, with regards to the Griffiths Scales, has taken place - with most recent research being concerned with the revision of the Extended Griffiths Scales (Luiz, Barnard, Knoesen, & Kotras, 2004). Many studies have been conducted to date in order to improve the content coverage of the Scales (Luiz, Collier, Stewart, Barnard & Kotras, 2000). The revision of the Extended Scales took place over various phases and studies concentrated on the detection of problematic items, the development of new experimental items, the modification of some existing items, the pilot testing of the new items, and finally the testing of the experimental version of the Extended Scales.

One of the studies that initially aimed to explore the objectives set out by Luiz (1994b) was an international survey relating to the strengths and weaknesses of the Griffiths Scales. A survey was conducted among a large sample of registered Griffith’s users who frequently use the test (approximately 30 times per year) with an average of 5 years experience with the Griffiths Scales (Schröder, 2004). Items were asked to be evaluated by respondents, where appropriate as good or poor on nine categories, namely: cultural bias, contemporaneity, order of difficulty, scale appropriateness, age appropriateness, instructions, administration, scoring and kit. According to Schröder (2004) a number of problematic items were identified. Subscale A (Locomotor) contained 23 problematic items, Subscale B (Personal-Social) had 21 problematic items, Subscale C (Hearing and Speech) had 24, Subscale D (Eye and Hand Co-ordination) had 2, while Subscale E (Performance) had only 1, and Subscale F (Practical Reasoning) had 7 (Schröder, 2004). Table 2
below presents the ten most problematic items distinguished by the Griffith’s registered users.

Table 2

The ten most problematic items according to Griffiths’ administrators

<table>
<thead>
<tr>
<th>Item</th>
<th>Item description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BVI.3</td>
<td>Can go alone on errand to nearby shop</td>
</tr>
<tr>
<td>AV.5</td>
<td>Can climb on and off a bus unaided</td>
</tr>
<tr>
<td>CIV.1</td>
<td>Names 6+ objects in the big picture</td>
</tr>
<tr>
<td>CIII.2</td>
<td>Picture vocabulary (12)</td>
</tr>
<tr>
<td>BIII.2</td>
<td>At table uses spoon and fork</td>
</tr>
<tr>
<td>BV.5</td>
<td>Can fasten show buckle</td>
</tr>
<tr>
<td>BIV.5</td>
<td>Helps lay table: places a few items</td>
</tr>
<tr>
<td>AIV.3</td>
<td>Marches in time to music</td>
</tr>
<tr>
<td>CVI.4</td>
<td>Knows 10+ capital letters</td>
</tr>
<tr>
<td>CV.6</td>
<td>Names 12 objects in big picture</td>
</tr>
</tbody>
</table>

As the test is used in diverse settings in both first and third world contexts (Allan, Luiz & Foxcroft, 1988; 1992; Hanson & Alridge-Smith, 1982; Victora, Victora & Barros, 1990), it is essential that elements of the test require separate, context-specific revision of certain test items. According to Luiz, et al. (1995), clinicians have become sensitized to the items that measure culture-bound social practices. It is apparent that users of the Scales found certain items culturally biased and outdated and some of these items were in need of complete modification in order to make them more acceptable and contemporaneous.

In order for this modification to take place, a plan was utilized to developed new items and to modify existing items. The following procedure was abided by:

1. Creation of new items: For each item selected as problematic, a number of possible new items were written. Various experts in the
field of child development were requested to submit items for consideration as new items.

2. Revision of new items: Once a sufficient number of new items had been suggested, they were submitted to a panel to check for culture and gender fairness.

3. Piloting the new items – phase one: New items that were established to be culture and gender fair were administered to a small sample of children in South Africa and analyzed. Only White children were represented in the sample as research has suggested that they match the performance of UK children on the Griffiths Scales (Allan, 1988), thereby allowing international comparisons to be made tentatively.

4. Piloting the new items - phase two: Items with superior item characteristics identified in phase one were included, along with additional experimental items, for retesting on a new sample of South Africa children. The results were once again statistically analyzed. As in phase one, only children from the white cultural group were presented in the sample.

5. Piloting the new items - phase three: Finally, the most superior items derived from the two pilot tests, along with old experimental items of the Extended Griffiths Scales, were administered to a large sample of South African children. A biographical questionnaire was included to collect information on the children’s developmental history, socio-economic status, personal and social development. In addition, a neurological checklist was also completed to aid in the screening of children whose development was classified as not within the normal range.

6. Lastly, the new experimental version of the Extended Scales was submitted to the ARICD for their comments and approval (Schröder, 2004, p. 103 -104).
The new and modified items have been included in a new protocol, and Ruth Griffiths’ original manual has been updated to include the instructions for the new items, as well as the additional scoring guidelines for the modified items. The revised version was accepted by the ARICD and the standardization of the Extended Revised Scales has recently been concluded in the British Isles and Eire. The clinical merit of the GMDS-ER is thus continuously increasing (Luiz, et al., 2004).

Studies have been done on the performance of normal South African children on the original Griffiths Scales (Allan, 1988; 1992; Bhamjee, 1991) and current GMDS-ER research promises to add a great deal of knowledge to the performance of clinical populations on the Scales, such as: children diagnosed with ADHD (Baker, 2005), children suffering from hearing impairment (Schröder, 2004), children suffering from Autism (Gowar, 2003), children suffering from HIV/AIDS (Sandison, 2005) and the performance of twins on the GMDS-ER (Davidson, in press). But, only one study, by Van Rooyen (2005), has been conducted on the performance of normal South African children on the GMDS-ER.

Van Rooyen’s (2005) study was not concerned with clinical populations but the focus was on normal development profiles with an absence of central nervous system pathology and deviations in development. The study found South African children aged 4-years to 7-years of age to perform similarly to British children on the GMDS-ER (as represented by the GQ). Furthermore the profiles of South African and British children were found to be dissimilar if scores on the individual subscales or between the different year groups are compared. Van Rooyen (2005) has stressed the fact that clinicians should be cautious when interpreting a child’s profile, as a normal South African profile may differ extensively from that of a normal British profile. This study has highlighted two important aspects which are pertinent to the current proposed study.

Firstly, the study made the recommendation for the development of South African norms for the GMDS-ER. As a result the proposed study will focus on
exploring the applicability of the British norms of the GMDS-ER on a contemporary South African sample.

Secondly, Van Rooyen (2005) listed one of the limitations to his study as being the period in which data were collected on the South African sample. The data of the sample he used in his study were collected in 1999 as part of the revision process of the Extended Griffiths Scales, and as such limit the description of the sample as being contemporary. During this time span, 1997 to 2005, South Africa was undergoing major political and societal changes which means that the results obtained from a more contemporary sample may be different. For example, a black 6 year old child in 1999 was born in 1993 into the apartheid era to parents whose education, SES and opportunities reflected the inequalities of this time. Whereas a black 6 year old child in 2005 was born in 1999 (5 years into the democracy) with the opportunity to attend Grade R (reception year) and could thus be better prepared for the challenges of formal schooling. In addition, his/her socio-economic situation probably compares favourably to that of a 6 year old child in 1999 since his/her parents most likely had a greater opportunity for full-time employment (through initiatives such as skills development, affirmative action and equity act) and housing.

Furthermore, there is a strong possibility that the comparison between the British standardization sample and the 1999 sample used in Van Rooyen’s study (2005) could have been influenced, by the fact that the bulk of the British standardization sample was only collected within the 2 years prior to the initial launch of the Extended Revised Scales in May 2004 (Luiz, et. al., 2004). The 1999 sample was therefore different from the British standardization sample in that it does not constitute a contemporary sample. Thus not only the changing context in South Africa but also the different time periods of the collection of sample in relation to the British sample may mean that the results obtained from a more South African contemporary sample may be different.

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1 Black refers to children who would previously have been classified as Coloured, Asian, and Black
3.8 The Standardization of the Extended Revised Scales

A multifaceted team of international researchers headed the standardization of the Extended Revised Scales and included an international director of research, assisted by two researchers in South Africa (SAGRT), regional coordinators and examiners (Schröder, 2004). Researchers were appointed for England, Wales, Scotland, Northern Ireland and Southern Ireland. The standardization of the Extended Revised Griffiths Scales was conducted in the UK on a stratified random sample of 1100 children between the ages of 2-years and 8-years old and from various socio-economic groups. In order to understand how the British sample (against which the performance of South African children was compared) was recruited the normative information for the GMDS-ER will be discussed in the following section.

3.8.1 Sampling and data collection procedures for standardization

The standardization sample was representative of children from the ages of 2 to 8 years of age in the United Kingdom. According to Schröder (2004) proportionate representations of children have been gathered from England, Scotland, Wales, Northern and Southern Ireland. The recruitment of children to participate in the standardization of the Extended Revised Scales occurred in two phases (Van Rooyen, 2005). The first phase entailed the random selection of children across the United Kingdom and Eire. Preceding the selection of children, approval was sought and granted by the each of the five regions’ and subregions’ Local Ethics Committees (LEC's) (Luiz et al., 2004).

The examiners then selected a random sample from their region by means of data collected from the Child Health System or equivalent system. According to Luiz et al. (2004), four times the required number of children in each region were selected in an attempt to account for attrition rates (i.e., unavailability of children at time of testing, children with developmental delays, etc.). All children were screened for normality and only children with a normal developmental profile were included in the
standardization sample. Near the end of the deadline for data collection, the unavailability of children resulted in a second phase of the recruitment of participants.

During the second phase, the remainder of the standardization sample was collected from kindergartens and pre-schools willing to participate around the United Kingdom and Eire (Luiz, et al., 2004). All children included in the sample were also screened for normality and only children with a normal developmental profile (i.e., absence of any sensory, physical or mental handicap) were included. These children were sampled using a convenience sampling technique, thus making it impossible to adhere strictly to proportions that had initially been planned. Local permission was obtained from the relevant authorities as well as the parents of those children involved (Van Rooyen, 2005). Luiz et al. (2004) stressed that the necessary ethical procedures were adhered to at all stages of recruiting the children.

Finally, the standardization sample consisted of 1026 children between the ages of 2 years and 8 years of age, representing children from Wales (n = 107), Scotland (n = 61), Northern Ireland (n = 102), Southern Ireland (n = 103) and England (n = 653). Although even proportions of children were selected for each of these sampling variables, the final cell sizes were not exactly equal owing to attrition rates and availability of the children at time of testing. In an attempt to achieve an evenly spread sample in terms of age, gender, urban/rural, and SES (calculated from parental occupation and highest level of education), a quota-sampling technique was utilized to select the children (from the random and convenience samples described earlier) to participate (Van Rooyen, 2005). Figure 3 shows the proportion of children assessed in each year group.
Figure 3
Percentage of children per year group (adapted from Luiz et al., 2004)

![Percentage of children per year group](image)

Figure 3 demonstrates a relatively even proportion of children for each year group with slightly more children falling into Year VII and comparatively fewer children into Year III. Figure 3 presents the sample breakdown in terms of Gender (from Luiz et al., 2004)

Figure 4
Number and percentages of boys and girls in the standardization sample

![Number and percentages of boys and girls in the standardization sample](image)
As can be seen from Figure 4, the numbers of boys and girls were comparable, with slightly more girls than boys in the standardization sample (Van Rooyen, 2005). Regarding the socio-economic status of the standardization sample, Figure 5 illustrates the percentage of children from each SES group. The socio-economic status of the sample was inferred from the parent’s level of education and occupation (Flanagan, Genshof & Harrison, 1997; Luiz et al., 2004).

Figure 5

Sample breakdown according to socio-economic status

<table>
<thead>
<tr>
<th>Socio-economic Status</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper SES</td>
<td>32%</td>
</tr>
<tr>
<td>Middle SES</td>
<td>44%</td>
</tr>
<tr>
<td>Lower SES</td>
<td>24%</td>
</tr>
</tbody>
</table>

Less than half of the sample belonged to the middle socio-economic status group (n = 457) with the remainder of the sample being distributed between the lower (n = 245) and upper (n = 32) socio-economic status groups (Luiz et al., 2004). Furthermore, the bulk of the sample (86%; n = 862) consisted of children residing in the urban areas of the United Kingdom and Eire, while 14% (n = 139) resided in the rural areas (Van Rooyen, 2005).

3.9 Main Features of the Re-analyzed GMDS-ER

In May 2006, the re-analyzed Extended Revised Version of the Griffiths 2-8 year Scales, the GMDS-ER, was launched. Following the 2004 statistical analysis, there were concerns about the reliability of the scoring results in clinical practice. For this reason, a complete re-analysis was undertaken from the raw clinical data in the
hope that greater accuracy in describing the developmental progression of the children being tested using the GMDS-ER would be provided.

In terms of the practical use of the test, only the scoring and interpretation of the test results was updated, and some adjustments were made from the 2004 version. Although minor improvements were made to the Administration Manual, both the test equipment (i.e., the Griffiths kit) and administration of the test remained the same. Furthermore, both the number and difficulty order of the items in the 2004 presentation were found to be correct and have therefore remained the same.

A new Analysis Manual was produced, which replaces the 2004 Technical Manual, containing the previous description of the clinical fieldwork but with a totally new statistical analysis and scoring tables. By incorporating the most advanced statistical practices, a presentation that demonstrates a child’s profile of achievements from the six different subscales directly as percentiles and z-scores (standard scores) was created. A range of confidence intervals and explanations of their meaning and use are given in the Analysis Manual. The examiner uses the standard scores to interpret the child’s performance on individual subscales according to the qualitative descriptive categories prevalent in the child’s societal context. For example, a z-score of 0 would place the child’s performance on any subscale within the average range, whereas a z-score of below -2 would indicate a significant degree of developmental delay or learning disability on that subscale. Consequently, low performance on all subscales is indicative of a general developmental delay or significant learning difficulties. Similarly, relative discrepancies in the percentile score from a mean of the 50th percentile by more than two standard deviations, or by comparison between subscales or over several assessment occasions, should be noted. These give valuable indications of the child’s strengths, weaknesses and rate of progress (ARICD, 2006b).

In addition, an age equivalent score, also known as the “mental age” or “developmental age”, in a subscale can be obtained by finding the score most closely corresponding to that of the child in the 50th percentile column of a table
given in the Analysis Manual (ARICD, 2006b, p. 21). A general development score can also be obtained by taking the average of the raw scores for the six subscales, and by using the appropriate table in the Analysis Manual, a percentile, z-score and age equivalent can be established for this score. Furthermore, a general intelligence quotient and sub-quotients for each of the six subscales can still be calculated and used in describing a child’s performance on the GMDS-ER (ARICD, October 2006).

These amendments to the Technical Manual necessitated changes being made to the GMDS-ER Record Book. The GMDS-ER record booklet changes the labelling of what was previously reflected as Years 3 to 8 in the original Griffiths Scales record book to Section III for Years 3 to 5, and to Section IV for Years 6 to 8. Consequently, the numbering of the items in Sections III and IV are now continuous per section and not per year group as was previously reflected in the original scales. This also necessitated changes being made to the 2006 Administration Manual in order to accurately reflect the relabelling of Years 3 to 8 into Sections, and the renumbering of the respective test items (ARICD, 2006a). It was only in the final stage of the revision process that the items numbers were revised. The reader should note that the research study focuses on the earlier 2004 version of the GMDS-ER and not the 2006 version per se. The following section will briefly focus on the psychometric properties of the GMDS-ER as well as the developmental needs in the South African context.

3.10 Reliability and Validity of the GMDS-ER

“The reliability of a measure refers to the consistency with which it measures whatever it measures” (Foxcroft & Roodt, 2001, p. 41). However, consistency always implies a certain error in measurement. Reliability can thus further be defined as the ratio of true score variance to observed score variance (Foxcroft & Roodt, 2006). Cronbach’s Alphas were calculated for each subscale independently as well as for the GQ as an indication of the reliability of the subscales as a measure of mental development (Van Rooyen, 2005). The overall reliability of the GMDS-ER is 0.993
which is highly satisfactory. On the whole the reliability of the individual subscales ranges between 0.90 and 0.99 which is indicative of a high level of internal consistency (Luiz et al., 2006).

Griffiths (1970) affirmed that each subscale was devised to be a separate and complete scale in itself. It can thus be expected that there are low intercorrelations between some, seemingly unrelated subscales of the GMDS-ER. Therefore, as Van Rooyen (2005) highlighted, for an indication of the common factor of “general intelligence”, the quotients obtained on each subscale were correlated with the GQ instead. The results obtained from the correlations of the Subscales of the GMDS-ER with the General Quotient indicate moderate to high correlations between the subscales and the GQ, thus confirming the presence of a broad-spectrum underlying factor of general intelligence as was gathered by Griffiths (1970). Furthermore, the two most intellectual subscales (Subscales C and F) have similar correlations to the GQ, namely, 0.76 and 0.78 respectively (Van Rooyen, 2005). The two more manual subscales (Subscale D and E) have correlations of 0.55 and 0.53.

The other requirement of any measure is validity. A basic definition of validity is that it concerns what the test measures and how well it does so (Foxcroft & Roodt, 2001; 2006) and is thus not a specific property of a measure. According to Foxcroft and Roodt, there are three types of validity, namely content-based, criterion-prediction and construct-identification. As the Griffiths Scales are a diagnostic measure, content-based evidence indicated that the items in each of the six subscales are representative of their respective content domains and that each item has a satisfactory degree of relevance to the construct being measured (Luiz et al., 2004).

Furthermore, the six subscales of the Griffiths were developed to be used independently, therefore construct-related evidence which measures the theoretical construct it is suppose to measure (Foxcroft & Roodt, 2006) was explored. Luiz et al. (2004), found that applying factor analytic techniques to the GMDS-ER generated important information regarding the underlying constructs assessed by the six
subscales. Factor loadings of the items on the particular construct(s), together with the amount of variance and its Cronbach’s Alpha, are provided in the technical manuals of the GMDS-ER (Luiz et al., 2004; 2006). Variance is found to range between 64.5% and 99.9% as explained by different factors (Van Rooyen, 2005).

3.11 Developmental Assessment Needs in the Contemporary South Africa

As mentioned, the need for a measuring instrument that meets all the important aspects of child development in a contemporary South Africa could be satisfied by The Griffiths Mental Development Scales – Extended Revised (GMDS-ER) should the norms of the standardization sample be comparable with those of a South African population.

From the table below (Van Rooyen, 2005), it is clear that when compared with other developmental measures on certain key criteria the GMDS-ER has the potential to answer the greatest number of needs of the South African developmental assessment landscape. A black cell indicates that the criterion has been met and if a particular criterion is partially met, the relevant cell is greyed out (Van Rooyen, 2005).
Table 3

Comparison of developmental measures on certain key criteria

**South African Measurement Needs**

<table>
<thead>
<tr>
<th>TESTS</th>
<th>Comprehensive</th>
<th>Functional Assessment rather than abstract concepts</th>
<th>Standardized for all South African groups</th>
<th>Cultur-fair potential</th>
<th>Covers age range birth to 7 years</th>
<th>Sufficient knowledge base within South African context</th>
<th>Easy administration in field conditions</th>
<th>Yields results that are comparable over time</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSAIS-R</td>
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<td>JSAIS</td>
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<td>SETT</td>
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<tr>
<td>LAP-P/B</td>
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<td>GMDS-ER</td>
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(from Van Rooyen, 2005)

It is important to note that not all the criteria related to good psychometric instruments are included in Table 3 (Van Rooyen, 2005).

In considering developmental assessment needs in the South African context, it is clear that it is necessary to explore the applicability of the British norms of the GMDS-ER on contemporary South African samples. This step is an important
precursor to standardize the GMDS-ER for South African children. This standardization will facilitate and strengthen the interpretation of results of the GMDS-ER in clinical settings and the development of appropriate and suitable programmatic intervention. Furthermore, information can be generated regarding the general developmental quotients and profiles of normal South African children on the GMDS-ER (as compared with the norms of a standardization group).

According to the Health Professions Council of South Africa (HPCSA, 2002), past apartheid policies impacted negatively on test development and use in South Africa in that separate tests were designed for different racial categories. It is apparent that there are certain limits to our ability to assess development in South Africa. The HPCSA applies strict guidelines to the classification of tests as Psychological Tests and Prescribed Tests used by other professionals. This has particular meaning to the proposed study, as the GMDS-ER, which has recently been launched, will need to be classified by the Psychometrics Committee of the HPCSA.

According to Kotras (2001) in order for a child’s performance to be meaningfully interpreted it must be compared with a representative sample. This entitles the test user to make a comparison between a child’s performance in one area of assessment and another, and hence generate a pattern of strengths and weakness. Added to this, Barnard (2000) stresses the fact that, to ensure that a measure is reliable and valid, the norms which are used must be valid for a contemporary society. So far, as mentioned, norms for South African children are not available for the GMDS-ER, and hence results are by suggestion interpreted with caution.

Therefore, further investigation into the potential that the current British norms could have in aiding the interpretation of the GMDS-ER results within the contemporary South African context is both appropriate and necessary. Furthermore, it is necessary to stress the fact that South Africa has undergone major political and societal changes since 1994, implying that the current
demographical traits are considerably different from that of 11 years ago when South Africa was still faced with Apartheid. It is thus important to focus on a contemporary South African population not only to ensure that development assessment is relevant to our current political and societal status, but also to establish whether a comparative fit with the modern-day British standardization sample exists. Until sufficient knowledge has been accumulated about the performance of normal South African children on the GMDS-ER, the clinical utility of the GMDS-ER as a diagnostic or programmatic intervention tool is limited and may hamper the process of classifying the GMDS-ER in South Africa as a Psychological Test.

3.12 Chapter Overview

This chapter considered the original Griffiths Scales as well as the relevant research pertaining to it. A large section of the chapter focused on the revision and restandardization of the GMDS-ER. The chapter concluded with the exploration of the psychometric properties of the GMDS-ER as noted in the manual established by the South African Griffiths Research Team. Finally, mention was made of the need to establish the relevancy of the GMDS-ER in a contemporary South African context when compared with the British norms. The following chapter will present the problem statement and the methodology employed in conducting the study.
CHAPTER 4
PROBLEM STATEMENT AND RESEARCH METHODOLOGY

4.1 Introduction

This chapter presents the problem statement as well as the global and specific aims of the present study. The methodology employed in conducting the study is introduced subsequent to the problem statement and aims of the study. The reader will also be introduced to the research design, the participants, the sampling method, the assessment measures, and the procedure. Finally, a description of the statistical analysis and ethical considerations relevant to the study will be explored.

4.2 Problem Statement

The developmental assessment needs in the contemporary South African context and the GMDS-ER as a probable assessment measure for South African children have already been explored in the preceding chapters. To summarise: Van Rooyen (2005) noted the fact that the GMDS-ER although having the potential to satisfy assessment needs in South Africa, has not been standardized on a South African population group. Van Rooyen further stressed the fact that the following can contribute to the enhancement of the GMDS-ER:

1. The development of South African norms for the GMDS-ER, through the utilization of a more representative sample.
2. An item level analysis of each subscale should be conducted to investigate whether items are placed appropriately for the South African context (i.e., in order of gradually increasing difficulty).

The current study satisfies some of the recommendations made by Van Rooyen (2005) in that a more contemporary South African sample was used.
Some studies have already been done on the performance of normal South African children on the original Griffiths Scales (Allan, 1988; 1992; Bhamjee, 1991), but to date only one study by Van Rooyen (2005) has investigated the relevancy of the GMDS-ER on a normal South African sample. Previous studies concerned with the performance of South African children on the GMDS-ER all involved clinical populations (Baker, 2005; Gowar, 2003; Makowem, 2005; Sandison, 2005; Schröder, 2004).

The present study concurs with Van Rooyen’s statement, namely, that before information can be obtained from the GMDS-ER and used accountably, knowledge needs to be accumulated on the performance of normal South African children on the Extended Revised Scales, as the GMDS-ER was standardized on a British norm group. Van Rooyen has recommended that the valuable work that relates GMDS-ER scores to clinical diagnoses be continued and that the inherent potential of the GMDS-ER in programmatic evaluation be subjected to scientific scrutiny. This is relevant to the proposed study as South Africa has undergone major political and societal changes in the last 11 years. Thus although replicating Van Rooyen’s study, the current study included a more contemporary South African sample. The purpose of the study was therefore to generate information on the applicability of British norms for a more contemporary South African population. It is also hoped that this study will further contribute to the enhancement of the GMDS-ER in South African clinical settings and programmatic intervention.

4.3 Aims of the Study

The global aim of the study was to compare and explore the performance of South African and British children aged 5-years to 6-years old on the Griffiths Mental Development Scales – Extended Revised. In order to achieve the above, the current study specifically aimed at the following:
Aim 1: To explore and describe the general development of 5-year and 6-year old children of the British and South African samples' overall performance separately on the GMDS-ER and across the six developmental areas assessed by the Subscales of the GMDS-ER.

Aim 2: To explore and describe the comparative developmental profiles of the two year groups (year VI and year VII) of the sample of British and South African children.

The results of the proposed study consequently provided exploratory information on the applicability of the GMDS-ER for use in the contemporary South African context.

4.4 The Research Design

The methodological process was guided by the specific and global aims of the research study as well as the current standards in test revision research. This study can be described as non-experimental and employed a quantitative design in an attempt to describe and compare the similarities and differences in the performance of South African and British children between the ages of 5-years to 6-years of age on the GMDS-ER. The design is quantitative, as the analysis of the results was numerical. The quantitative data were statistically summarized which made the interpretation easier.

Two common methods used to conduct quantitative research are the exploratory and descriptive approaches. These two methods were utilized in the present study. Through utilizing an exploratory-descriptive approach a systematic examination and organization of carefully observed information could be made about the performance of South African and British children on the GMDS-ER (Cozby, 1989, 1993; Dane 1990).
The descriptive approach attempts to describe (Struwig & Stead, 2001) and summarise test scores to make them more easily interpretable (Graziano & Raulin, 2000). The researcher wanted to describe the developmental profiles of both the British and South African samples, and intended to compare a more contemporary South African normative sample with British norms, thus making the need for a descriptive study clear.

On the other hand, the exploratory approach requires that the researcher investigate an area about which little is known. Although similar kinds of studies have been done in the past (Allan, 1998; Luiz & Bhamjee, 1991; Van Rooyen, 2005), this study was the first to utilize the revised Scales on a more contemporary normal South African sample, and:

- It collected a sample relevant to our current socio-political context;
- It was a comparative fit with the contemporary British standardization sample, in terms of age, gender and socio-economic status: and
- The focus of the present study was on normal developmental profiles and was not concerned with clinical populations.

The present study is thus exploratory, descriptive, as well as comparative in nature. Exploratory descriptive research establishes the foundations for future research and as mentioned the present study aims to contribute to the further enhancement of the GMDS-ER in South African clinical settings and programmatic intervention and is therefore considered to be a necessary step in the research process (Rosnow & Rosenthal, 1996). However, this type of research will prevent the researcher from making causal inferences (Babbie & Mouton, 2001). Furthermore, since the study was exploratory-descriptive in nature no specific hypothesis was formulated.

To meet the objectives of the study, two groups of children between the ages of 5 years, 0 months and 6 years, 11 months from South Africa and Britain were
compared. The groups were comparable in age, gender and SES, but like Van Rooyen’s (2005) study, the groups were not matched on a case-to-case basis but through a matched frequency distribution, mainly because the SES variable and the meaning linked to it could be extensively different when comparing the multicultural South African society with that of the first world British context. Thus by utilizing a match frequency distribution design the effect of influences could be minimized more than by using a case-to-case matching design (Barnard, 2006).

In addition, the effect of variables on the present study was investigated. As the study is non-experimental the direct manipulation of independent variables was not possible. Bhamjee (1991) found that if direct manipulation is not possible, there could be any number of extraneous variables which could influence the performance of subjects on the Griffiths Scales, for example, age, gender, SES etc. It was therefore necessary that extraneous variables, which are known to exert an influence on performance, be controlled. This was achieved by either holding the extraneous variables constant or by building them into the design. Several researchers have followed a similar pattern (e.g. Allan, 1988; Foxcroft, 1985; Kerlinger, 1973; Van Rooyen, 1989).

4.4.1 Holding extraneous variables constant

a. Normal Central Nervous System (CNS) Development

Only children considered to have normal CNS development (as described in section 2.2 of Chapter 2) were included in the sample;

b. Age

According to Bhamjee (1991), there is a possibility that age can exert an influence on the performance. Especially children in year III may perform differently to children in year VIII where the ceiling effect may prevent them from reaching a
ceiling. Therefore only children between 5-years and 6-years old were selected in the two samples.

4.4.2 Building subject variables into the design

a. Gender

Numerous studies have confirmed that gender differences in children do exist (Gallahue & Ozmun, 2006) although contradictory results have been reported. Despite this contradiction, gender has a known influence on the performance of children on the Griffiths Scales and therefore each sample represented both males and females.

A sample that matches the frequency distribution of the above sample (on the variables of age, gender and socio-economic status) was drawn from the children that took part in the restandardization of The Griffiths Mental Development Scales – Extended Revised in the British Isles. A matched sample frequency distribution technique was used to ensure that the British sample closely resembled the South African one. Subsequently, the following extraneous variable was built into the design by using it as a co-variant (Gravetter & Wallnau, 2002).

b. Socio-Economic status (SES)

There are numerous factors that have a known influence on the development of children and the performance of subjects on The Griffiths Mental Development Scales – Extended Revised, such as socio-economic status (SES) and gender. SES can be defined as the amount and quality of economic resources available to a person (Flanagan, Genshof & Harrison, 1997). The major indicators of SES are education, occupation and income (Knoesen, 2003). As differences in socio-economic status have been found to influence the performance of children on the
Griffiths Scales, the current study included relatively equal numbers of children from the lower, middle and upper SES levels.

Children from the upper; middle; and lower socio-economic stratum were selected using Riordan’s socio-economic classification system. Riordan (1978) developed the socio-economic classification system which set boundaries for upper, middle and lower classes for the Black, Coloured, Asian and White population groups in Port Elizabeth. This classification system has frequently been used for Griffiths' studies in Port Elizabeth (e.g., Allan, 1992, 1988; Barnard, 2000; Bhamjee, 1991; Foxcroft, 1985; Knoesen, 2003; Van Rooyen, 2005). Allan (1988) has investigated the validity of this classification system and has proved it to be valid for use in Port Elizabeth. The system was adapted however as it is believed that separate classification of Black, Coloured, Asian and White groups is no longer necessary.

Furthermore, previous studies (e.g., Allan 1992; Barnard, 2000) have found that ethnic group is not a predictor of performance on the Griffiths Scales. In South Africa SES discrepancies, between race groups are slowly becoming less but they are still evident and should be taken into account. According to Flanagan, Genshof and Harrison (1997), possible reasons for this discrepancy, and part of economic deprivation, may be that a person who receives his/her formulative socialization under environmental circumstances of economic deprivation may not be exposed to the materials, intellectual customs and practices, and occupational experiences that perhaps enhance performance in cognitive ability testing.

Furthermore, the Griffiths Scales have been constructed according to a universal activity namely play (Kagan, 1981) and have been adapted for use in several countries, suggesting that they are relatively culture-fair (e.g. Brandt, 1983; 1984; Cobos, Rodriques & De Venegas, 1971; Collins, Jupp, Maberly, Morris & Eastman, 1987; Laroche, Brabant & Brabant, 1976; Laroche, Gutz & Desbiolles, 1974; Luiz, Foxcroft & Stewart, 1999; Luiz, Foxcroft & Knoesen, 2003). Therefore it
is anticipated that the influence of ethnic group on overall outcome should be negligible. Thus, in this research study the same cut-off points were used when classifying population groups into upper, middle and lower SES groups. Riordan’s (1978) – occupational classification was utilized for this purpose.

It is important to note that it was assumed that there may be subjects whose socio-economic status would fluctuate as socio-economic boundaries are arbitrarily set and factors like occupation, level of education of the breadwinner and income could play an important role in the classification of subjects into the various socio-economic levels.

Where the sample does not equally represent all the socio-economic groups or gender groups, these factors were controlled by keeping them within similar frequency ranges between the two sample groups (Van Rooyen, 2005). According to Harris (1995) this technique is appropriate as the number of different categories is limited. It should be noted that the British sample was reclassified into SES groups using Riordan’s (1978) classification system. This ensured that both the South African and British samples were classified using equivalent criteria and consequently assigned the same number of points for parental occupation and education. The South African and British groups can thus be considered as highly comparable in terms of their subject characteristics. Differences that might be observed in the performance between the two subjects and age groups, can thus with reasonable confidence be considered to be a true or actual difference.

4. 5 Participants and Sampling

Previous research concerned with the applicability of British norms on a South African population were all based on a 1999 South African sample, collected as part of the early revision and restandardization process of the Griffiths Mental Development Scales - Extended Revised (Van Rooyen, 2005). This sample can no longer be viewed as representing a contemporary South African population. As a more contemporary South African sample may perform differently on the GMDS-ER,
the need has arisen to replicate Van Rooyen’s (2005) study. A South African sample was collected by using a non-probability purposive and convenience sampling method. Since the probability is not known, the researcher cannot generally claim that the sample is representative of the larger population. However, as with Van Rooyen’s study, this study also serves as a trial run for an anticipated larger study and the non-probability sample employed in this study can thus be viewed as adequate.

The total sample that was included in the present study comprised 31 children. The sample was collected from an existing database of the Nelson Mandela Metropolitan Psychology Clinic (UCLIN). Additional children were tested to make up the number of children required for the South African sample (i.e., n=31). All GMDS-ER assessments were done by Registered Psychologists, Registered Intern Psychologists and first year Masters Psychology students who had all been trained in the use of the GMDS-ER.

4.5.1 Description of the South African sample

The South African sample came from urban as well as rural areas. Table 4 presents the breakdown of the resulting South African sample by age category, ethnic group, socio-economic status and gender.

<table>
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<tr>
<th>Year</th>
<th>Total</th>
<th>Year VI</th>
<th>Year VII</th>
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</thead>
<tbody>
<tr>
<td><strong>Age Range</strong></td>
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<tr>
<td>5 yrs 0 months to 6 yrs 11.99 months</td>
<td>5 yrs 0 months to 5 yrs 11.99 months</td>
<td>6 yrs 0 months to 6 yrs 11.99 months</td>
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</table>
Table 4 depicts the degree of representativeness of the South African sample according to ethnic group. As can be seen, each ethnic group (Asian, Black, Coloured and White) is not equally represented. However, ethnic group is not a matching variable in the present study. Previous studies (e.g., Alan, 1992; Barnard, 2000) have found that ethnic group is not a predictor of performance on the original Griffiths, and therefore the influence of ethnic group on overall outcome should be negligible. Table 4 further presents the combined frequency distribution of socio-economic status of the South African sample, and as can be seen the overall sample has slightly more subjects in the middle SES group. This is preferable, as it is usually the stratum with the most subjects in the population (Van Rooyen, 2005). With regards to gender, there is only one more male (n = 16) than females (n = 15) in the total South African sample.

4.5.2 Description of the British Sample

The same British sample that Van Rooyen (2005) utilized was used in the present study. The British sample was drawn from the GMDS-ER standardization sample to match the frequency distribution of the South African sample. This method can be described as purposive sampling, as certain types of elements were criteria

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2 As with Van Rooyen’s (2005) study, black refers to children who would previously have been classified as Coloured, Asian, and Black.
for the selection of cases (Graziano & Raulin, 2000). The British Sample was matched with the South African sample in terms of age, gender and socio-economic status.

Table 5
British sample by age, socio-economic status (SES) and gender.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Year VI</th>
<th>Year VII</th>
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<tbody>
<tr>
<td><strong>Age Range</strong></td>
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<tr>
<td>5 yrs 0 months to 6 yrs 11.99 months</td>
<td>5 yrs 0 months to 5 yrs 11.99 months</td>
<td>6 yrs 0 months to 6 yrs 11.99 months</td>
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<tr>
<td><strong>Sample Size</strong></td>
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<tr>
<td>N = 62</td>
<td>n = 38</td>
<td>n = 24</td>
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<table>
<thead>
<tr>
<th>SES</th>
<th>Year VI</th>
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<tbody>
<tr>
<td>Lower</td>
<td>26%</td>
<td>16%</td>
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<tr>
<td>Middle</td>
<td>39%</td>
<td>37%</td>
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<tr>
<td>Upper</td>
<td>35%</td>
<td>47%</td>
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<table>
<thead>
<tr>
<th>Gender</th>
<th>Year VI</th>
<th>Year VII</th>
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<tbody>
<tr>
<td>Male</td>
<td>52%</td>
<td>47%</td>
</tr>
<tr>
<td>Female</td>
<td>48%</td>
<td>53%</td>
</tr>
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</table>

4.5.3 Inclusion criteria for the South African as well as British sample

The samples were selected according to date of assessment and age and will be discussed in the following section:

4.5.3.1 Assessment dates

Only children tested between 2004 and 2006 were included in the South African sample in order to ensure that it is contemporary. The British sample was drawn from the same standardization sample utilized in Van Rooyen’s study.
All the South African candidates were screened for normality before being included in the sample. This process was made possible by the careful screening of the Biographical Questionnaire (refer to Appendix A) that was completed for each of the participants. For those participants who were selected from the UCLIN database, adequate information was obtained in order to provide the researcher with the information required to complete the Biographical Questionnaire for these children.

The information obtained from the Biographical Questionnaire provided the capacity to ensure a normal sample. In this instance normalcy refers to the absence of central nervous system pathology (i.e., sensory, physical or mental handicap and/or severe developmental delay) and not a deviation in development (Luiz, et al., 2000a). A similar process was followed to establish normalcy for the British sample. In addition to the researcher, the biographical questionnaire was scrutinized by two independent people (a clinical psychologist and a researcher that was involved with the process of determining normalcy for the British standardization sample).

4.5.3.2. Age

Only children between the ages of 5 years 0 months and 6 years 11 months were included in the sample. It is in this age range where the GMDS-ER is possibly more frequently used, as this is mainly the age range where parents are faced with whether or not their child is developmentally ready to cope with the demands of formal schooling (Knoesen, 2003). Furthermore, South African children are by law compelled to begin Grade one in the year in which they turn seven. Children younger than this age requirement will only be allowed if the parents are able to provide the school with the necessary evidence (e.g., a psychological report/assessment) that the child is developmentally ready in all areas of their development (Department of Education, 2002) yet the school are only allowed to accept these learners if openings are available.
The Griffiths Mental Development Scales – Extended Revised can serve as a useful measure to be used in the psychological evaluation of children’s overall development when decisions have to be made regarding school entry. Most of the Griffiths testing completed at UCLIN between 2004 and 2005 as well as testing completed in 2006 were consequently done because parents requested assessment of their child in order to determine their school-readiness.

Furthermore the age range does not include 7 year and 8 year old groups as flattening of scores in the later year groups is evident due to children not reaching the required ceiling (i.e., had items been included for later ages, these differences may have been minimized). This may therefore hamper the comparable nature of data obtained should older children be used. Purposive sampling was thus employed as it is directed towards finding participants who manifest the certain characteristics the researcher is interested in investigating (Struwig & Stead, 2001).

4.6 Assessment Measures

Three measures were utilized in collecting the data that were employed in the present study: The Griffiths Mental Development Scales – Extended Revised, and the Biographical Questionnaire (Appendix A).

4.6.1 The South African sample

4.6.1.1 The Griffiths Mental Development Scales – Extended Revised.

The Griffiths Scales and their revision were discussed in Chapter 3 and will not be dealt with in depth again in this section.

Luiz et al. (2004) investigated the reliability and validity of the GMDS-ER and found that the overall reliability of the GMDS-ER was highly satisfactory (0.96). It was also found to be a valid diagnostic developmental test in that content-based and construct-related evidence were established. The Griffiths Mental Development
Scales – Extended Revised assessment was chosen as it provided information on the developmental level of the children in this study and it could be compared with their British counterparts. Participants were assessed on the GMDS-ER at UCLIN between 2004 and 2005. The outstanding number of children needed for the South African children were tested in 2006. The children included in the sample were tested by first year Masters’ Psychology students, Registered Intern Psychologists and Registered Psychologists, who had completed a registered Griffith’s course. Where possible, children were tested in their first (home) language.

4.6.1.2 The Biographical Questionnaire

“Assessment practitioners need a thorough knowledge of the individuals whom they assess, prior to assessing them” (Foxcroft & Roodt, 2001, p. 135), because developmental test scores are influenced by the personal circumstances of the test-taker and the timing of assessment. For this reason, the South African version of the Biographical Questionnaire (Appendix A) was used to summarize relevant biographical and developmental information about each of the participants in the study.

The Biographical Questionnaire enabled the researcher to extract the most relevant and valuable demographic information needed for the present study. It provided information such as the parents’ education, occupation and living conditions. This valuable demographic information allowed the researcher to calculate the SES of the child, based on Riordan’s (1978) socio-economic classification system. The biographical questionnaire was thus not only required to underline valuable demographic information but was also necessary to help extract additional information from the participant’s files, such as the birth history, attainment of developmental milestones and their development in numerous personal-social areas. This information provided the capacity to assure a normal sample. Refer to Appendix A for a copy of the Biographical Questionnaire.
4.7 Procedure

As mentioned before, a more contemporary South African sample was included in the present study. The following procedure was followed in order to achieve the aims of the study.

4.7.1 The South African sample

1 The research proposal was submitted to the Ethics Committee (Human) at the Nelson Mandela Metropolitan University (NMMU) and permission was obtained from the Advanced Degree Committee of the Faculty of Health Sciences of the Nelson Mandela Metropolitan University (NMMU) to continue with the present study.

2 Permission was also obtained from the UCLIN Director to utilize the UCLIN database. Each UCLIN client had signed a contract which gave permission for their raw data to be used for research purposes.

3 The database was accessed and the necessary raw data identified and extracted.

4 Additional children necessary for inclusion in the study were identified for testing.

5 Parents received information about the research project and testing procedure in their home language and consent forms were signed.

6 Biographical Questionnaires were completed.

7 The children were tested.

8 Important ethical issues such as privacy and confidentiality were identified and upheld for all the participants in the South African sample. In this case confidentiality was maintained and assured by using anonymous raw score results.

9 The South African children’s SES was recorded according to adapted Riordan (1987) criteria.

10 Data was captured and statistically analyzed.

11 Feedback was given to the parent(s).
12 The research report written.
13 Feedback provided to the local authorities.

4.7.2 British sample

The following procedure was followed:
1. Permission was obtained from the project leaders (Luiz, et. al., 2004) to utilize the raw data as captured.
2. Important ethical issues, such as ensuring the privacy and confidentiality of the participants, were considered. Confidentiality was maintained and assured by using anonymous raw score results of the children assessed.
3. The database was accessed and the relevant raw data identified.
4. Only the necessary raw data used in the present study was extracted.
5. The British participants were selected from the standardization sample in an arbitrary manner, to ensure that the frequency distributions of the two samples on the variables of gender, age and SES were similar. The researcher only utilized the relevant biographical details in order to achieve this.
6. The extracted data was statistically analyzed according to the aims of the present study and was compared to the South African sample.
7. Feedback was provided to the project leaders.
8. Results are illustrated and discussed in Chapters 5 and 6.

4. 8 Data Analysis

Due to the exploratory-descriptive nature of the proposed study, the researcher used descriptive statistics where relevant, to describe the data. This allowed the recorded data to be organized and interpreted (Graziano & Raulin, 2000). Raw quotients were used in the data analysis process and were computed using the Statistica (version 7) software package (Stasoft Inc., 2005).

In order to meet the first aim of the present study descriptive statistics were reported. For example: means, standard deviations, ranges and frequencies in order
to describe the performance of the two samples individually across the two year groups per subscale and for the General Quotient. Relevant variables such as age, socio-economic status and gender were taken into account for both samples. Lastly, to meet the second aim of the proposed study, independent sample t-tests were conducted to compare the average GQs of the British and South African samples. The t-test is a statistical test that is commonly used to determine whether the means of two groups of scores differ to a statistically significant degree (Gravetter & Wallnau, 2002). According to Gravetter and Wallnau (2002), an independent t-test can be used when two samples are not paired in any way. As is the case in the current study, the samples of the proposed study remained independent as no individual cases in the one sample were matched with an individual case in the other sample.

As discussed above, SES is known to have an influence on the dependent variable (GQ) (Flanagan, Genshof & Harrison, 1997). It was therefore, decided to use SES as a covariate in the comparisons between the British and South African samples. This was possible as both groups were classified into the lower, middle and upper SES groups using Riordan’s (1978) classification system. This technique allowed the researcher to hold the known effect of SES constant by controlling for it (Agresti & Finlay, 1999). This technique was also used in previous studies using the original Griffiths Scales (Luiz, Stewart, Barnard, Collier, & Kotras, 2000a). The two GQs differed to a statistically significant degree and therefore a Hotelling T² test was conducted to compare the two samples across the six developmental areas assessed by the Subscales of the GMDS-ER (Graziano & Raulin, 2000). Furthermore, histograms were used to represent and evaluate the normality of the two samples in a qualitative manner to give an adequate representation of the variables’ normality (Hair, et al., 1998).

4.9 Ethical Considerations

The primary purpose of ethical principles and values should be to protect the welfare and rights of research participants and to reflect the basic ethical values of
respect for individuals (Ethics in Health Research in South Africa, 2000). Permission for the proposed research study was obtained from the Ethics Committee (Human), the Nelson Mandela Metropolitan University (NMMU), the Eastern Cape Department of Education, and the project leaders involved.

4. 9. 1 The South African sample

Permission was obtained from the Acting Head of the Psychology Department at the NMMU as well as the Director of the Psychology Clinic to utilize the UCLIN database. Parents were informed that UCLIN acts as a training and research unit and that their records would be accessible to relevant researchers. All the parents of participants selected from the database as well as the parents of children that were tested had given written consent prior to their child being tested. (All the Biographical Questionnaires and record sheets were also coded by the regional coordinators to ensure the anonymity of the children and the confidentiality of the results).

Many of the ethical considerations used as standard measures are directly related to interaction with research participants. As this study entailed contact with the South African research participants, issues such as informed consent, confidentiality and privacy, safety issues and beneficence needed to be dealt with in this section.

4.9.1.1 Informed consent

According to Foxcroft & Roodt (2006), test-takers deserve and should be informed well in advance when and where the assessment measure is to be administered, what sort of material it contains, and what it will be assessing. In addition, Cody (2001), asserts that informed consent also implies that a person is informed about the nature of the research, the benefits and risks of the research and that they are free to withdraw from the research at any stage. Informed consent is thus the key to ethical research. The information above was explained to the parent/guardian of the participants of the present study by the relevant test
administrator in a language that they were in command of. As mentioned, permission was obtained in writing from the parents of the participants before the research was commenced. Furthermore, the parent/guardian/child was free to withdraw from the research at any point in time. Refer to Appendix B and C for information and consent letters as well as informed consent form.

4.9.1.2 Privacy and confidentiality

Cody (2001) has stressed the importance of confidentiality and asserts that confidentiality needs to be maintained at all times especially when working in the early childhood area. All data used in the present study were treated with confidentiality by ensuring that the identity of participants was not revealed in any discussion or description by anyone who was not authorized by the ethics committee to have access to the data. In addition, confidentiality was emphasized in the information letter to parents as well as in the consent form.

4.9.1.3 Safety issues

According to Kagan, (1981), play is considered to be a universal activity. Moreover, it can be regarded as a universal ‘safe’ activity. Although the Griffiths Scales were constructed according to such a universal activity special caution was taken with administering the items especially when administering the locomotor items of the Griffiths Scales. The researcher avoided exposing the South African participants in the present study to any physical or psychological harm. Specific ethical principles were also upheld regarding the British participants. Some of these principles are discussed below.

4. 9. 2. The British sample

The rights of the research participants to both privacy and confidentiality had to be protected at all times (Ethics in Health Research in South Africa, 2000) and
were ensured by obtaining permission from the South African Griffiths Research Team to use the collected British sample data. The researcher was not exposed to the actual names of participants and continued confidentiality was therefore assured.

As this study did not entail contact with the British research participants, issues such as informed consent, confidentiality and privacy, safety issues and beneficence will not be dealt with again in this section. However general ethical principles were also upheld throughout the study and will be briefly discussed in the section below.

4. 9. 3 Inclusion criteria

According to the information supplied by Ethics in Health Research in South Africa (2000), individuals must not be excluded unjustly or inappropriately based on their age, gender, race, religious beliefs, or disability. In the current study the above factors were considered and built into the research design. The inclusion and exclusion of research participants in the present study were done fairly and justly, based on ethical and scientific principles.

4. 9. 4 Reporting results

Another important guideline is knowledge of results, that is, parents have the right to obtain feedback on the results of their children measured by the GMDS-ER. According to Craig (1996), it is regarded as beneficial treatment if each child who participates in the study has the right to profit from beneficial treatments provided to other participants in the study. Each child tested received feedback from the respective person who tested them.
4. 9. 5. Transparency

It is essential that the release of research findings be conducted in an ethical manner (Ethics in Health Research in South Africa, 2000). Transparency and accountability for the current research were ensured by the submission of the proposal for the study to the Advanced Degrees Committee of the Faculty of Health Sciences of the Nelson Mandela Metropolitan University. No false anticipations were raised during the process, and the results are published in this treatise. Furthermore, a copy of the research study will be given to the Centre for Special Needs in Education.

4. 10. Chapter Overview

This methodology chapter included the problem statement, global aims as well as specific aims of the present study. The research design, the sample and assessment measures were outlined. This was followed by a description of the procedure of the research, the statistical analysis followed, and it concluded with ethical considerations relevant to the study. The following chapter will present and discuss the results of the study.
CHAPTER 5
Results and Discussion

5.1 Introduction

The primary aim of the study was to explore and describe the comparative performance of normal South African and British children aged 5-years to 6-years old on the Griffiths Mental Development Scales - Extended Revised (GMDS-ER). The empirical findings of the present study will be presented in this chapter in terms of:

a) Descriptions of the overall performance and mean performance per year group on the Extended Revised Griffiths Scales for the South African and British samples separately. In addition, descriptions of the overall performance of the South African children and their British counterparts across the six developmental areas on the Extended Revised Griffiths Scales will also be provided.

b) Comparisons of the South African and British samples’ overall performance on the Extended Revised Griffiths Scales as well as Comparisons of South African children and their British counterparts on each subscale of the Extended Revised Griffiths scales.

Descriptive statistics are presented to summarise the performance of both the South African and British samples. The results of the comparative performances of the two age groups discussed in this chapter make use of month-equivalents which are standard to the GMDS-ER. When converting the chronological age in years into their corresponding months the following month-equivalents are obtained. Year Group VI equals 60 – 71.9 months (5 year old children), whilst Year Group VII equals 72 – 83.9 months (6 year old children).
5.2  Aim 1: Descriptive Statistics Results

The following section will discuss the descriptions of the overall mean performance per year group on the Extended Revised Griffiths Scales for the South African and British samples separately. In addition, descriptions of the overall performance of the South African children and their British counterparts across the six developmental areas on the Extended Revised Griffiths Scales will also be discussed.

5.2.1 Mean age per year group (South African and British samples)

Figures 6 and 7 provide a description of the mean age per year group.

Figure 6
South African and British sample by mean age for year group VI (expressed in months)

The British mean age for group VI is 66.2 months whilst the South African mean age in group VII is calculated to be 67.4 months. There is thus only a one month and two days difference between the mean ages of the two samples in the year group making them highly comparable.

Figure 7
South African and British sample by mean age for year group VII (expressed in months)
As can be seen from Figure 7 above, the mean ages for Year Group VII are also very similar for the two samples in this year group.

Figures 6 and 7 indicate that in years VI and VII, the mean ages are both approximately half way between the upper and lower cut-offs of the year groups. The half way between the upper and lower cut offs for Year VI is 68, and 80 for Year VII.

5.2.2 Overall mean performances per age group

Raw scores for both the South African as well as the British samples were used, that is, sample scores for both samples were not converted to standard scores. Thus, as with Van Rooyen’s (2005) study, means will not reflect standard score means of around 100 and standard deviations of around 15. The mean performance of the South African sample overall and per year group is presented in Table 6 below.

Table 6
Performance of the South African sample

<table>
<thead>
<tr>
<th>Subscales</th>
<th>5 yrs – 6 yrs (60 – 83.9 months)</th>
<th>5 yrs (60 – 71.9 months)</th>
<th>6 yrs (72 – 83.9)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 31</td>
<td>N = 19</td>
<td>n = 12</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>Std.Dev.</td>
<td>Mean</td>
</tr>
<tr>
<td>GQ</td>
<td>113.0</td>
<td>9.0</td>
<td>114.7</td>
</tr>
<tr>
<td>AQ</td>
<td>120.3</td>
<td>11.3</td>
<td>125.5</td>
</tr>
<tr>
<td>BQ</td>
<td>115.9</td>
<td>10.7</td>
<td>117.4</td>
</tr>
<tr>
<td>CQ</td>
<td>110.9</td>
<td>13.9</td>
<td>112.1</td>
</tr>
<tr>
<td>DQ</td>
<td>107.9</td>
<td>12.4</td>
<td>107.9</td>
</tr>
<tr>
<td>EQ</td>
<td>110.0</td>
<td>14.8</td>
<td>112.5</td>
</tr>
<tr>
<td>FQ</td>
<td>112.5</td>
<td>11.9</td>
<td>112.7</td>
</tr>
</tbody>
</table>
The present study found that the overall South African sample obtained the highest scores in the Locomotor Subscale (marked with yellow) and second highest in the Personal-Social Subscale (marked with purple).

Van Rooyen's study (2005) found that the more intellectual scores (Subscales C and F) of the 1999 South African sample are higher than the ones relating to fine motor movement (Subscales DQ and EQ). In the present study a similar trend is evident. Subscale F (marked with blue) is also higher than subscales DQ and EQ (marked with green). Different from Van Rooyen's sample, subscale CQ is only slightly higher than the fine motor movement subscales.

Furthermore, as can be seen from Table 6, the South African Sample in Year Group VI performed considerably better on the Locomotor Scale (AQ), than in Year Group VII. The same trend was noted in Van Rooyen's (2005) study. In the present study, a noticeable decline in performance was also noted in year VI with regards to Personal-Social (BQ) and Eye-Hand Co-ordination (DQ) in comparison to the 1999 South African sample utilized in Van Rooyen's (2005) study. The mean performance of the British sample per year group is presented in Table 7.

Table 7
Performance of the British sample

<table>
<thead>
<tr>
<th>Subscales</th>
<th>5 yrs – 6 yrs (60 – 83.9 months)</th>
<th>5 yrs (60 – 71.9 months)</th>
<th>6 yrs (72 – 83.9)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Std.Dev. Mean Std.Dev. Mean Std.Dev.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GQ</td>
<td>118.3 10.7 120.7 12.3 114.4 6.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AQ</td>
<td>119.1 13.7 121.5 15.6 115.3 9.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BQ</td>
<td>114.2 12.2 115.8 13.0 111.5 10.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CQ</td>
<td>122.5 16.1 126.5 18.6 116.3 8.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DQ</td>
<td>117.8 14.4 120.6 16.8 113.3 7.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EQ</td>
<td>111.4 17.3 112.6 19.0 109.4 14.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FQ</td>
<td>124.6 13.3 127.1 15.9 120.6 6.1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
It is evident from the table above that the British sample achieved higher scores on the more intellectual scales namely subscales C and F. The British sample performed slightly better on Subscales A than on D whilst subscales B and E were the two scales which presented with the lowest scores. The poorest performance by the British sample was on Subscale E which is different to the South African sample as they obtained the lowest score on Subscale D. Furthermore, Year Group VI performed considerably better on the Language (CQ) as well as the Locomotor (AQ), Eye and Hand Co-ordination (DQ), and Practical Reasoning (FQ) subscales. A possible explanation for the better performance of Year Group VI in comparison to Year Group VII can be ascribed to the possible ceiling effect experienced in the later year groups.

The following section will focus on the comparisons of the South African and British samples’ overall performance on the Extended Revised Griffiths Scales as well as the comparisons of South African children and their British counterparts on each subscale of the Extended Revised Griffiths scales.

5.3 Aim 2: Comparisons between the South African and British Samples

A t-test was employed to compare the mean scores for the respective variables and a significance level of 5% was utilized ($\alpha = 0.05$).

5.3.1 Comparison of overall performance

The following tables present the results of the independent sample t-tests of the comparison between the GQs of the South African and British samples.
When comparing the performance of a contemporary South African sample and a British standardization sample, it was found there was a significant difference between the GQs of the two samples, $t_{(91)} = 2.3$, $p < 0.05$. Hotellings $\mathbf{T}^2$ indicated that significant differences were observed in the following subscales namely the Language Subscale (CQ), Eye and Hand Co-ordination Subscale (DQ) and Practical Reasoning Subscale (FQ). In these instances the British Sample performed better than the South African Sample. The Hotelling $\mathbf{T}^2$ will be discussed in the next section.

Although the sample size is too small to make inferences regarding the specific year groups in the study, independent sample $t$-tests, comparing the two year groups of the South African and British samples separately, will be explored.

Table 9
Independent sample t-test comparing the overall performance of year group VI

<table>
<thead>
<tr>
<th>Groups</th>
<th>Mean</th>
<th>t-value</th>
<th>df</th>
<th>p</th>
<th>NS/S</th>
</tr>
</thead>
<tbody>
<tr>
<td>British (n = 38)</td>
<td>120.7</td>
<td>1.9</td>
<td>55</td>
<td>0.07</td>
<td>NS</td>
</tr>
<tr>
<td>SA (n = 19)</td>
<td>114.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 9 indicates no significant difference between the overall performance of Year Group VI of a contemporary South African Sample and British standardization sample, $t_{(91)} = 1.9$, $p > 0.05$.  

Table 10
Independent sample t-test comparing the overall performance of year VII

<table>
<thead>
<tr>
<th>Groups</th>
<th>Mean</th>
<th>t-value</th>
<th>df</th>
<th>P</th>
<th>NS/S</th>
</tr>
</thead>
<tbody>
<tr>
<td>British (n = 24)</td>
<td>114.4</td>
<td>1.7</td>
<td>34</td>
<td>0.09</td>
<td>NS</td>
</tr>
<tr>
<td>SA (n = 12)</td>
<td>110.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Similarly, when comparing the performance of a contemporary South African sample and British standardization sample in Year Group VII no significant difference was found on the GQ. Table 8 suggests that the GQ comparisons between the South African Sample and the British standardization sample indicate significant differences. GQ comparisons of the specific year groups (Tables 9 and 10), on the other hand, found no significant differences. Thus although a statistically significant difference was found when comparing the GQs of both year groups, the performance of the individual year groups did not differ to a statistically significant degree. This can however most probably be ascribed to the small sample size of the individual year groups.

As already mentioned a similar study comparing the overall performance of the total 1999 South African sample with the British Standardization sample by Van Rooyen (2005) did not find any significant differences. Furthermore, previous studies on the original Griffiths Scales done by Allan (1988, 1992) also indicated no significant differences on the GQ performance when comparing 5- (Year VI) and 6-year old (Year VII) White, Coloured and Asian South African children with the British sample of Hanson and Alridge-Smith (1987). Allan (1992) as well as Mothuloe (1990) found that Black children aged 5, 6, and 7 (years VI, VII and VIII) performed similarly to the 1960 standardization sample rather than to the more contemporary British sample of Hanson and Alridge-Smith (1987). Asian, Black, Coloured and
White children were included in the current South African sample although no specific ethnic group comparisons were made.

Furthermore, Van Rooyen’s (2005) study suggested that it might be feasible to use the British norm tables in a clinical setting in order to reach conclusions about the level of general development of a South African child seeing that the South African children in the 1999 sample performed similarly to the British standardization sample as regards overall performance (GQ). However, Van Rooyen suggested that a more contemporary South African sample that is truly representative of our multicultural society is required. The contemporary South African sample utilized in the current study indicated different trends to the 1999 South African sample specifically regarding general development (GQ). The results of the current study therefore contradict Van Rooyen’s (2005) findings and may be an indication that utilizing British norms for a contemporary South African population seems questionable.

The researcher would, based on the abovementioned findings, like to suggest that clinicians be cautious when utilizing British norm tables in practice, in order to convert raw scores to standard scores. It is also suggested that no diagnosis be based on these results until sufficient testing has been done on a more representative contemporary South African sample. As with Van Rooyen’s (2005) study differences were also found between the subscales of each sample. Similar to Van Rooyen’s study, the two highest subscales for the British standardization sample, were identified as Subscales C and F. According to Luiz et al. (2004), these two subscales are generally considered to be the most intellectual of the subscales and therefore it is reasonable to assume that the GQ of the British standardization sample does indeed represent Spearman’s “g” factor of intelligence (Van Rooyen, 2005).

The South African sample paints a different picture. Subscales A and B correlated most highly with the GQ for the South African sample and led to the same
tentative conclusion reached in Van Rooyen’s 2005 study, namely that the GQs may represent different levels of general intelligence for the two samples. The following section will focus on the comparison of subscale performance and intends to bring more clarity to the above discussion.

5.3.2 Comparison of subscale performance

As with Van Rooyen’s (2005) study many differences were observed when comparing the subscales of the South African sample with the British Standardization sample. The following graph visually presents the differences detected.

Figure 8
Comparing mean subscale scores of the British and South African samples

Figure 8, below, indicates that the South African and British sample performed similarly on the Locomotor (AQ), Personal Social (BQ) and Performance (EQ) subscales.
Considerable differences can be noted in the overall performance of the two samples (GQ) as well as on the Language (CQ), Eye and Hand Co-ordination and Practical Reasoning (FQ) subscales. As can be seen, a great deal of variability exists between the South African and British samples and this will be discussed in the following section according to each Subscale.

5.3.2.1 Locomotor Subscale (AQ)

Figure 9
Histogram comparing the mean South African and British performance on the Locomotor Subscale (AQ).

![Histogram comparing the mean South African and British performance on the Locomotor Subscale (AQ).](image)

When comparing the performance of a contemporary South African and British Standardization Sample on the Locomotor Scale no significant difference was found for the AQ, $t(91) = -0.43 \ p > 0.05$.

As can be seen from Figure 9, the overall South African sample performed slightly better than the British sample on the Locomotor Subscale. Interestingly, the
South African Year Group VI obtained higher mean scores than the British sample. The British Sample, on the other hand, obtained higher mean scores in year group VII. This can possibly be ascribed to the specific items found in the later year groups which are based on the kinds of activities that are more likely to occur in a formal school setting and will be discussed in more below.

When compared with the 1999 sample utilized in Van Rooyen’s study, different findings were obtained. Van Rooyen’s study found that the South African sample performed significantly better than the British Sample on the Locomotor Scale. This was confirmed by Allan’s 1992 study which provided evidence that the Locomotor development of South African children was significantly more mature than for their British counterparts. These differences in performance on the Locomotor Scale seem to have become less significant as reported in Van Rooyen’s 2005 study which indicated that although South African children consistently scored better than their British counterparts these differences were seemingly smaller for the later year groups (children aged 6-years to 7-years of age) with no significant differences detected. Although the weather conditions in South Africa imply that South African children have more opportunities for outdoor play, the decline in performance of the South African children on the Locomotor Subscale seems to have continued.

Different levels of exposure to formal schooling were proposed by Van Rooyen (2005) as a possible explanation for the difference in performance between South African and British children on the various subscales. This together with the lack of high quality daycare centres seem like a possible explanation for the above decline in performance by the South African children in the present study. The average South African child has more opportunity to engage in physical activities in the earlier years than the average British child, as British children usually start their formal schooling at Reception or Grade 0, during the year in which they turn 5 (Waterhouse, 1993). This may therefore partly account for the higher South African scores in the present study on the Locomotor Subscale in year VI (Van Rooyen,
According to Van Rooyen the concept above seems to be further corroborated by the fact that once South African children enter compulsory formal schooling, the difference is overturned and is noticeable in the performance of the South African sample in year group VII.

The specific items found in the different year groups of the Locomotor Subscale could be a further possible reason for the differences found between year group VI and VII in the present study (Van Rooyen, 2005). The items found in year group VI are based on more basic movement activities for example running and jumping of stairs whilst the items in year group VII are the kinds of activities that are more likely to occur in a formal school setting, for example hop, skip and skipping with a rope. Seeing that British children aged 6 years old are exposed to more coordinated activities than their South African counterparts, they are provided with an opportunity to perform better on these items (Van Rooyen, 2005).

“Skills in using large muscles also develop through vigorous, active play. This kind of play usually takes place outdoors (Read, Gardner & Mahler, 1993). Gallahue and Ozmun (2006) further assert that play greatly influences the rate of development of locomotor, manipulative and stability abilities. Children need to find bits and pieces of wood, rope, stones, metal etc. to play with in order to develop their senses and imagination. Crime is one of the contextual factors that have increased drastically since 1994, and it is mentioned extensively in Chapter 2. With the high crime rate in South Africa, parents are allowing less time for children to play outside and in parks. This was a different situation 7 years ago (the collection period of the 1999 South African Sample). The high crime rate in South Africa, furthermore compel people to buy security complexes with limited space which directly influence children’s play. It is thus not surprising that it may have an affect on the South African children’s physical development.

In addition, according to Lynch (2005), television appears to be a factor that is affecting society, in particular family and cultural life. Eighty percent of the South
African sample from the present study is from an urban location and thus more exposed to television and lengthy periods of a sedentary position. Another possible reason for the decline in physical performance is that many pre-schools and primary schools in South Africa have no organized school sport. Furthermore, as discussed in Chapter 2, South Africa is a developing country and struggles to cope with the basic needs of the population, for example housing, schooling and the problematic infrastructure. Moreover, as mentioned many South African's live in small houses and security complexes which are not conducive to vigorous active play that is much needed for the physical development of the young child (Read, Gardner & Mahler, 1993).

5.3.2.2 Personal-Social Subscale (BQ)

Figure 10
Histogram comparing the mean South African and British performances on the Personal-Social Subscale (BQ).
When comparing the performance of a contemporary South African and British Standardization Sample on the Personal-Social Subscale, no significant difference was found, $t(91) = -0.50, p > 0.05$.

Van Rooyen (2005) suggested that the economic situation in South Africa may encourage earlier independence as a result of the cost and availability of day care facilities which may imply that many South African children have to take responsibility at an early age for personal hygiene, eating and dressing. He further proposed that in many cultures it is acceptable to use one’s hands at the table, and therefore the lack of utensils implies that children become proficient at the table at an earlier age. Chapter 2 highlighted that it was estimated in 2005 that there will be 3 million AIDS orphans in South Africa (UNICEF, 2006). This may imply that older siblings have to take responsibility for the household at an early age forcing younger siblings to become more independent at a very young age. This may be a possible reason for the high scores obtained by the South African children on the Personal-Social Subscale.

As mentioned in Chapter 2, all cultures have inherited different patterns of child rearing and there are also differences in the patterns for the rearing of boys and girls. Differences in child-rearing practices (i.e., allowing more independence) may therefore be another reason for the better performance of the South African Sample on the Personal-Social Subscale (Gallahue & Ozmun, 2006). In South Africa both parents usually have to work in order to provide income for the family, therefore parents often have to leave children at day care centres or family members from 6 months of age. In addition, child-rearing practices in Britain are influenced by the duration of maternity leave available to British mothers. They are allowed up to two years maternity leave which can lead to problems (i.e., separation anxiety and difficulty relating to two sets of disciplinary norms) once the child is looked after by day care givers or family care givers and may thus possibly influence the British child’s personal social development.
According to Van Rooyen (2005), another plausible explanation for the differences witnessed on the Personal-Social Subscale concerns the differences in weather patterns, which make dressing slightly more difficult for British children, as they can only play outside for about 5 months of a calendar year.

5.3.2.3 Language Subscale (CQ)

Figure 11
Histogram comparing the mean South African and British performances on the Language Subscale (CQ).

Comparing the developmental profiles of the contemporary South African Sample and the British Standardization sample on the Language Subscale revealed a significant difference, \( t(91) = 3.42, p < 0.05 \). As can be seen from Figure 11, the British sample performed significantly better than the South African sample on this subscale.
Research done on the original Griffiths Scales has indicated that the British means tended to be higher on the Language Subscale. However, not all the studies found significant differences. Studies done by Allan (1988; 1992) only found significant differences between Black South African and British children in Year VI of the Language Subscale. On the other hand, Luiz and Bhamjee (1991) found that British means tended to be higher for the later years (VI, VII and VII), but not significantly higher.

Different levels of exposure to formal schooling as proposed by Van Rooyen (2005) seem to be once again an explanation for the poorer performance of South African children. According to Riley (1992), English language training is one of the core subjects that British children are introduced to in their Reception or Grade 0 year (i.e., at the age of 4 years). South African children on the other hand only get introduced to a similar kind of training at the age of 6 years. A vast majority of South African pre-school children are left in the hands of untrained caregivers, whilst British children are monitored by the public sector (Waterhouse, 1993). British children are therefore exposed to formal language instruction approximately two years before their South African counterparts (Van Rooyen, 2005).

Furthermore, as mentioned in Chapter 2, South Africa also has 11 official languages. Language confusion is thus not uncommon, as most children are exposed to more than one language from an early age. Research studies indicate that children who develop more than one language are forced to divide the resources available in the process of first language acquisition (Louw, Louw & Van Eede, 1998). It may therefore be possible that poorer performance of South African children on the Language subscale could be attributed to the fact that they have to understand and speak more than one language at a very early stage of development.

In concurring with Van Rooyen (2005), this speculation needs further exploration and is therefore cautiously made. Another possible explanation may be
the level of education of the parents. Many parents in South Africa do not have the literacy levels to adequately provide stimulation to their children and some cultural groups in South Africa do not favour positive child development and perceive it as a harmful traditional practice (Jareg & Jareg, 1994). Lack of stimulation is one of the major negative influences on child development. Furthermore, poverty in South Africa could be a possible factor as it may possibly force both parents to work longer hours leaving less time for talking to their children. These are only some of the possible factors that could have influenced the poorer performance of the South African Sample on this scale.

5.3.2.4 Eye and Hand Co-ordination Subscale (DQ)

Figure 12
Histogram comparing the mean South African and British performance on the Eye and Hand Co-ordination Subscale (DQ).
A Hotellings $T^2$ comparing the performance of the British and South African samples on the Eye and Hand Co-ordination subscale indicated a significant difference between the two samples, $t\ (91) = 3.3, p < 0.05$.

The total British sample performed significantly better than its South African counterpart and the above figure illustrates an overall pattern of a significant better performance by the British children in the sample.

A comparative study done by Van Rooyen (2005) revealed a different result. No significant differences were found. Furthermore, studies done on the original Griffiths scales (Allan, 1988; 1992; Bhamjee, 1991) found no differences between the performance of South African and British children on Subscale D. However, as highlighted by Van Rooyen (2005), the British children in the sample from Hanson and Alridge-Smith (1987) were found to perform significantly better than the South African Black 5-year and 6-year olds and Coloured 5 year olds. Previous research in this regard thus tends to indicate better performance by British children, but this does not reach significant proportions (Van Rooyen, 2005).

Earlier exposure to formal schooling, has been mentioned a great deal in the present study and could once again be a factor influencing the performance on the Eye and Hand Co-ordination Scale. Furthermore, as mentioned in Chapter 2, at the moment early childhood programmes are diverse in nature and not geared to meet the individual needs of children in South Africa. The lack of pre-schools and ultimately the efficiency of educating pre-school children in South Africa are not successfully monitored by the government as opposed to British children who are examined by the public sector. Furthermore, day care facilities are not always equipped with trained teachers.

It seems to be a possible reason again for the better performance of British children on the Eye and Hand Co-ordination scale in the present study seeing that British children are exposed to writing letters and numbers at an earlier age than
South African children. This might thus be a plausible factor influencing the observed differences.

5.3.2.5 Performance Subscale (EQ)

Figure 13
Histogram comparing the mean South African and British performance on the Performance Subscale (EQ).

Comparing the profiles of the total samples indicated that, \( t (91) = 0.4, p > 0.05 \). It thus implies that no significant difference was found in the Performance Subscale (EQ) of the two samples. In both year VI and year VII British children performed better than South African children.

Previous research done on the original Griffiths scales (Allan, 1988; 1992; Bhamjee, 1991) all found a tendency for British children to perform better in year group VI. Van Rooyen's (2005) study also did not find any significant differences, however the study contradicted previous research as it revealed that South African
children performed slightly better than their British counterparts in year VI which is not the case in the present study.

It is expected that British children (being exposed to earlier formal schooling and thus more exposure to fine-motor activities) would perform better during year groups V and VI than South African children in these year groups. Television is another possible factor that could negatively influence fine motor development. Although British children may have a greater negative exposure to television than South African children, the influence of television on South African children cannot be denied. It can be seen as a further aggravating facet to the poor performance of South African children on this Scale.

Poverty in South Africa is another possible factor as there are many people who are concerned with meeting Maslow’s hierarchy of basic needs, for example, shelter, food and water (Craig, 1996). This may imply that many children in South Africa do not have the luxury of pencils and crayons or small toys to stimulate their fine motor development. The lack of toys might further influence test administration – the child being exposed to toys for the first time might feel overwhelmed and just want to play with them instead of finishing a test item in time.
5.3.2.6  Practical Reasoning Subscale (FQ)

Figure 14
Histogram comparing the mean South African and British performance on the Practical Reasoning Subscale (FQ).

The developmental profiles of the total samples revealed that the British sample performed significantly better than the South African sample on the Practical Reasoning Subscale, \( t (91) = 4.3, p < 0.05 \).

Van Rooyen (2005) found that British children tended to perform better in Year group VI and VII on Subscale F. However, the difference in Year group VII was the only one found to be significant. In the present study significant differences were found in both year groups although due to the small sample sizes, this finding could not be conclusive. Findings of studies done on the original Griffiths Scales (Allan, 1988; 1992; Bhamjee, 1991) presented similar trends to the present study. Like Van Rooyen’s (2005) study all of the above research indicated a trend towards better performance by British children in the year groups.
If subscale FQ is compared with the other more intellectual subscales on the GMDS-ER namely Subscale CQ, the above results can be attributed to the British formal schooling system (Van Rooyen, 2005). British children performed significantly better on both these subscales in comparison with the South African sample. According to Van Rooyen, the items found on Subscale FQ (e.g., counting and stating the names of the days of the week) are often introduced only when children enter formal schooling. Yet again, British children’s earlier exposure to learned knowledge could have influenced the differences in performance between South African and British children on the Practical Reasoning Subscale.

Furthermore, the lack of support structures in South Africa (i.e., day care facilities and hospitals) may be another reason why South African children performed consistently poorer in this sub-test. In Britain great emphasis is placed on the stimulation of children and the provision of support, for example a classroom assistant or occupational therapist, if a need has been identified.

As discussed in Chapter 2, HIV/AIDS, poverty, poor infrastructure and locus of policy making agency in South Africa are well-known factors that can possibly result in the lack of stimulation of a child (i.e., lack of exposure, lack of opportunities and lack of attention) and can pose further possible reasons for the poor performance of the South African sample.

5.4 Summary of Performance Comparison

Table 11 facilitates the summary of comparative results between the British and South African samples. Both non-significant trends as well as significant differences were considered. A yellow cell indicates a significantly better performance by the respective sample. A blue cell indicates that there was no significant difference, but a trend of better performance was noticed.
Table 11
Summary of performance comparisons

<table>
<thead>
<tr>
<th></th>
<th>GQ</th>
<th>AQ</th>
<th>BQ</th>
<th>CQ</th>
<th>DQ</th>
<th>EQ</th>
<th>FQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>South African Sample (N = 31)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>British Sample (N = 62)</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>South African Year group VI (n=19)</td>
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<tr>
<td>British Year group VI (n = 38)</td>
<td></td>
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<tr>
<td>South African Year group VII (n = 12)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>British Year group VIII (n = 24)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Yellow** indicates significant difference and better performance
- **Blue** indicates no significant difference, but trend of better performance

Table 11 illustrates that the total British sample performed significantly better on their overall performance (GQ) as well as on the Language (CQ), Eye and Hand Co-ordination (DQ) and Practical Reasoning Subscale (FQ). No significant differences were found on subscales AQ, BQ and EQ, however the South African sample performed slightly better than the British sample on the Locomotor and Personal-Social Subscales (AQ and BQ).

Table 11 furthermore indicates similar trends in year groups VI and VII. These are similar to the total British sample's performance. The British year groups VI obtained statistically significantly better scores on their overall performance (GQ) as well as on the Language (CQ), Eye and Hand Co-ordination (DQ) and Practical Reasoning Subscales (FQ), whilst Year Group VII differed the most in comparison with the overall performance (GQ). In this year group only the British Sample performed statistically better than the South African sample, namely on the Practical Reasoning Subscale. Furthermore, the performance scores on the rest of the subscales did not differ to a statistically significant degree, however the British...
sample performed better on all the subscales except for the Locomotor Subscale (AQ).

5.5 Chapter Overview

This chapter provided the reader with an overview of the primary and secondary aims of the study, together with the findings and a discussion thereof. The chapter was introduced by describing the South African and British samples. Although some differences were found, the samples were judged to be comparable. A comparison between the South African and British samples followed and was discussed for each subscale. Furthermore, reference was made to the findings and discussions from Van Rooyen’s 2005 study and compared with the present study’s findings.

The findings offered in this chapter report conclusions about the applicability of British norms to a contemporary South African population. Conclusions, limitations and recommendations will follow in the next chapter.
CHAPTER 6
LIMITATIONS, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter presents the limitations, conclusions and recommendations of the current study. Previous chapters concluded that in order to utilize the GMDS-ER accountably, knowledge first needs to be accumulated on the performance of normal South African children on the Extended Revised version of the Griffiths Scales. Therefore the purpose of the present study was to generate information on the applicability of British norms for a more contemporary South African population. This was explored by comparing the performance of South African children tested between 2004 and 2006 to that of a subsample of the British Standardization sample which was collected during the same time period.

6.2 Limitations

Methodological issues such as the experimental design, the sampling procedure, and uncontrolled variables limit generalizations from this study. Limitations mainly involved issues concerning sampling and differences in testing procedures. The following limitations need to be acknowledged.

6.2.1 Limitation of the research approach

The research design was exploratory in nature and hence the research approach employed was descriptive. When using this design, the researcher lacks full control over the extraneous variables in the study and consequently no cause-and effect conclusions can be drawn.
6.2.2 Limitations regarding the sample

A non-probability, purposive sampling methodology was applied to identify suitable children to be tested. Unfortunately by utilizing the above sampling method, the researcher cannot claim that the sample is representative of the larger population due to the fact that the researcher is not aware of the statistical probability that an individual will be included in the study. Furthermore, the entire sample was generated from the wider Port Elizabeth area, and is, thus not representative of all South African children between 5-years and 6-years of age.

Testing children is a time consuming process and as a result of deadlines as well as the limitation regarding the lack of South African norms (discussed below), the sample size can thus be criticized for not being large enough in order to compute the statistics for the two age groups employed in the current study and therefore the statistics may be viewed as being sample specific (Murphy & Davishoffer, 1994). Furthermore, four cultural groups were represented, but they were collapsed into one group due to the small sample size. It was thus not possible to investigate possible cultural bias as an influence of performance.

The sample is therefore not conducive to the external validity of the results and the consequence is that the generalisability of the research findings beyond the specific sample being studied is limited. However, according to Harris (1998), a non-probability sample may prove to be adequate if the researcher does not intend to generalize the findings beyond the study’s sample, or if the study is merely a trial run for a larger study, as is the case in the present study. It was never the intention of the study to provide any absolute values that approximate norms for the South African context.
6.2.3 Limitations regarding the lack of South African norms for the Revised Griffiths Scales

As mentioned, norms for South African children are not currently available for the Extended Revised Griffiths Scales. Furthermore, the use of the Extended Revised version of the Scales was brought to a halt by the Association for Research in Infant and Child Development (ARICD), on the 19 January 2005 whilst the norms were renormed and validated. This limited the number of extended revised protocols obtained from the UCLIN database and also limited the number of Griffiths administrators trained in the Extended Revised version that could assist in testing. The new set of norms were launched in May 2006 in the United Kingdom, London by the ARICD, giving Griffiths users worldwide the 'go ahead' to the GMDS-ER once again.

6.3 Conclusions

Although the researcher acknowledges the limitations of this study, the findings of the present study made valuable contributions to the advancement of the facilitation of the accountable use of the GMDS-ER in the South African context. It was speculated that a more contemporary South African sample might perform differently on the GMDS-ER from the 1999 sample used in Van Rooyen's (2005) study. From the following general findings, such a difference appears to be evident.

South African children aged 5-years to 6-years old seem to perform differently (as represented by the GQ) from British children on the GMDS-ER. Although exploratory in nature and not conclusive, both Van Rooyen's (2005) study, as well as the current study found some preliminary differences in performance between the subscales of a sub-sample of the British restandardization sample and a small sample of South African children. This offers support and justification for the more serious investigation regarding the accountable use of the GMDS-ER in the contemporary South African context, as well as the consideration of the
standardization on a South African population. This, in turn, may enhance the further relevance of the GMDS-ER in South Africa, as well as the development of appropriate and suitable programmatic intervention that is much needed. This was also stressed by Knoesen (2005)

According to AERA (1999), it is always better to use measures which have been standardized on the population on which the test is being used, though this is not often feasible. This promotes more accurate interpretations and comparisons of performance against culturally relevant norms. Given the multicultural context of South Africa, this is particularly relevant (Knoesen, 2005). Foxcroft (1997) stressed that the use of culturally relevant tests with appropriate norms is very important for enhancing the ethical and fair practices of psychological testing and assessment, especially in the light of the multitude of contextual factors that could possibly influence the development of children in the contemporary South African context. This is important to consider as it seems that a large number of South African children are “at risk” (Van Rooyen, 2005), and need instruments that will lead to accurate decisions regarding their development, appropriate intervention strategies and correct decisions regarding educational placement (Knoesen, 2005). The fact that differences were found between the British and South African samples therefore gives rise to the following recommendations.

6.4 Recommendations

Although the findings of the present study have raised concerns about the, British-based GMDS-ER, it has still been found to have the potential to satisfy the developmental assessment needs in South Africa, as it is currently being used across the world and represents a valuable and psychometrically sound measure. The researcher would therefore like to recommend that the results of the current study [together with Van Rooyen’s (2005) study and the experiences and insights gained from the revision and restandardization of GMDS-ER in the United Kingdom
and Eire] will encourage the standardization of the GMDS-ER in South Africa and lead to:

1. The accountable and cautious use of the GMDS-ER especially as regards the use of British-based norms on the South African population.
2. Ultimately, the development of South African norms for the GMDS-ER so that the GMDS-ER may be classified by the Psychometrics Committee of the HPCSA as a diagnostic developmental test for use in South Africa.

Several other recommendations can be reached accountably from the results of the present study namely:

3. The GMDS-ER needs to be researched with larger, more representative samples in South Africa.
4. Further investigation comparing the specific contemporary South African year groups’ performance with that of their British counterparts.
5. An item-level analysis of each subscale to investigate whether items are placed appropriately for the South African context.
6. As mentioned, four cultural groups were represented, but they were collapsed into one group due to the small sample size. It is therefore recommended that more emphasis be given to the cultural appropriateness of the British norms on a South African population. Therefore more systematic research is necessary to establish the effect of variables such as age, language, race on the performance of children on the Extended Revised GMDS.
7. As mentioned, South Africa has undergone major political and societal changes. The composite index of the Riordian socio-economic classification system, as developed by Riordian in 1978, was found to be outdated for the contemporary South African sample employed in the current study. The need for the adjustment of the Riordian socio-economic classification system has thus became apparent. Further studies in
establishing reliable and valid socio-economic stratification criteria could enhance GMDS-ER research in the contemporary South African setting.

8. Finally, continued work in the establishment of South African norms for the GMDS-ER is both necessary and essential. Such studies could include the comparison of the GMDS-ER with other South African appropriate assessment measures such as the JSAIS.

The above recommendations are offered as they are believed to further enhance context fair utilization of the GMDS-ER in the contemporary South African scene.

This study emphasized that the Griffiths Mental Development Scales – Extended Revised (GMDS-ER) could satisfy the developmental assessment needs in South Africa if adapted or proved to be applicable to the contemporary South African context. It further emphasized the need for the standardization of the GMDS-ER, as this will facilitate and strengthen the interpretation of the results of the GMDS-ER in clinical settings, as well as the development of appropriate and suitable programmatic intervention that is much needed in South Africa.
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APPENDIX A

Biographical Questionnaire to be completed by parent(s)

SECTION A

PERSONAL DETAILS

Child's Name and Surname: ___________________________________________

Address: __________________________________________________________

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

Suburb: ____________________________________________________________

Telephone number: ________________________________________________

Date of Birth: 20____/____/____

Date of testing: 20____/____/____

Gender: M F

Current School:

___________________________________________________________________

School Telephone No: ___________________________
Home language: _________________________________

How many children in your family? (state gender and age):
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

Where is your child positioned in the family? (i.e., eldest, youngest, etc)
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

SECTION B

1. Birth History:

Please describe anything unusual about the pregnancy or delivery:
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

Please tick the appropriate answer (Y = Yes, N = No):

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Was your pregnancy planned?</td>
</tr>
<tr>
<td>3</td>
<td>Did you give birth to your child naturally?</td>
</tr>
<tr>
<td>4</td>
<td>Was your child anoxic (i.e. did he/she lack oxygen at birth?)</td>
</tr>
<tr>
<td>5</td>
<td>Was your child born either prematurely or after more than 41 weeks of pregnancy?</td>
</tr>
<tr>
<td>6</td>
<td>Is your child one of a twin?</td>
</tr>
<tr>
<td>7</td>
<td>Did you bond easily with your child?</td>
</tr>
<tr>
<td>8</td>
<td>Did you breast feed your child?</td>
</tr>
<tr>
<td>9</td>
<td>Did you experience postpartum depression?</td>
</tr>
</tbody>
</table>

### Motor Development

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td>10</td>
<td>At what age did your child sit:.................months</td>
</tr>
<tr>
<td></td>
<td>Crawl:.................months</td>
</tr>
<tr>
<td></td>
<td>Walk:.................months</td>
</tr>
<tr>
<td>11</td>
<td>Is your child extremely underactive?</td>
</tr>
<tr>
<td>12</td>
<td>Is your child noticeably physically overactive?</td>
</tr>
<tr>
<td>13</td>
<td>Is your child clumsy?</td>
</tr>
</tbody>
</table>

### Language Development

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td>14</td>
<td>Did your child have difficulty with sucking and chewing?</td>
</tr>
<tr>
<td>15</td>
<td>At what age did your child start to babble? .................months</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td>16</td>
<td>Does your child use single words? If yes at what age Y/N</td>
</tr>
<tr>
<td>17</td>
<td>Does your child speak in sentences? If yes, at what age Y/N</td>
</tr>
<tr>
<td>18</td>
<td>Does your child ask repetitive questions? Y/N</td>
</tr>
<tr>
<td>19</td>
<td>Does your child talk to himself excessively? Y/N</td>
</tr>
<tr>
<td>20</td>
<td>Does your child echo words or phrases constantly? Y/N</td>
</tr>
</tbody>
</table>

**Emotional Development**

|21 | Does your child cry or laugh for no reason? Y/N |
|22 | Does your child prefer to be alone? Y/N |
|23 | Does your child enjoy cuddling and respond to affection? Y/N |
|24 | Does your child have temper tantrums regularly? Y/N |
|25 | Does your child display extreme distress for no apparent reason? Y/N |

**Social Development**

|26 | Does your child have difficulty in mixing with other children? Y/N |
|27 | Does your child make little or no eye contact? Y/N |
|28 | Does your child form inappropriate attachment to certain objects? Y/N |

**Sensory / Hearing Development**

|29 | Does your child appear as if he/she does not hear you? Y/N |
|30 | Does your child cover his/her ears? Y/N |
|31 | Is your child upset by noises? Y/N |
General

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>32</td>
<td>Is your child on any kind of medication? If yes for what</td>
</tr>
<tr>
<td></td>
<td>..........................................................</td>
</tr>
<tr>
<td>33</td>
<td>Does your child stutter?</td>
</tr>
<tr>
<td>34</td>
<td>Does your child faint frequently?</td>
</tr>
<tr>
<td>35</td>
<td>Does your child bite his/her nails excessively?</td>
</tr>
<tr>
<td>36</td>
<td>Has your child ever had any childhood diseases?</td>
</tr>
<tr>
<td></td>
<td>(If yes please list all childhood diseases and the ages at which they occurred)</td>
</tr>
<tr>
<td></td>
<td>..........................................................Age……</td>
</tr>
<tr>
<td></td>
<td>..........................................................Age……</td>
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<tr>
<td></td>
<td>..........................................................Age……</td>
</tr>
<tr>
<td></td>
<td>..........................................................Age……</td>
</tr>
</tbody>
</table>

SECTION C

The following questions are applicable to children of a broad age range; therefore, we do not necessarily expect your child to be capable of all of the tasks listed below.

We would appreciate a completely honest evaluation of your child’s ability. Please do not be concerned if your child is not yet able to complete each of the activities.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Does your child help with small household tasks?</td>
</tr>
<tr>
<td>2.</td>
<td>Does your child help with routine tasks when requested?</td>
</tr>
<tr>
<td>3.</td>
<td>Does your child help tidy a room?</td>
</tr>
<tr>
<td>4.</td>
<td>Does your child bath or shower with minimal assistance?</td>
</tr>
<tr>
<td>5.</td>
<td>Does your child clean his/her own teeth?</td>
</tr>
<tr>
<td>6.</td>
<td>Does your child wash own hands and face but needs assistance with drying?</td>
</tr>
<tr>
<td>7.</td>
<td>Does your child wash and dry own hands and face but needs</td>
</tr>
<tr>
<td>Question</td>
<td>Y/N</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>8. Does your child wash and dry own hands and face without assistance?</td>
<td></td>
</tr>
<tr>
<td>9. Does your child need some assistance to bath or shower?</td>
<td></td>
</tr>
<tr>
<td>10. Does your child bath or shower without assistance?</td>
<td></td>
</tr>
<tr>
<td>11. Does your child bath or shower, and dry him/herself without assistance?</td>
<td></td>
</tr>
<tr>
<td>12. Does your child need assistance to put on his/her own shoes and socks, e.g. putting shoes on correct feet?</td>
<td></td>
</tr>
<tr>
<td>13. Does your child put on his/her own shoes and socks without assistance?</td>
<td></td>
</tr>
<tr>
<td>14. Does your child choose his/her own clothes?</td>
<td></td>
</tr>
<tr>
<td>15. Does your child deliver a simple message?</td>
<td></td>
</tr>
<tr>
<td>16. Does your child go on instruction to get a specific item in a public area, e.g. go and get bread from the counter and bring it to mother?</td>
<td></td>
</tr>
<tr>
<td>17. Does your child go alone on errands to nearby shops, etc.?</td>
<td></td>
</tr>
<tr>
<td>18. Does your child make a small purchase in a shop with some assistance, e.g. checking the change?</td>
<td></td>
</tr>
<tr>
<td>19. Does your child make a small purchase in a shop without assistance?</td>
<td></td>
</tr>
<tr>
<td>20. Does your child demonstrate an understanding that it is unsafe to accept rides, foods, or money from strangers?</td>
<td></td>
</tr>
<tr>
<td>21. Does your child need to be reminded to follow the rules in a simple game?</td>
<td></td>
</tr>
<tr>
<td>22. Does your child follow a rule in a simple game, without being reminded?</td>
<td></td>
</tr>
<tr>
<td>23. Does your child neaten (brush or comb own hair in the morning?</td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Answer</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>24. Does your child ask to use the toilet?</td>
<td>Y/N</td>
</tr>
<tr>
<td>25. Does your child have bladder control during the day, with a few accidents?</td>
<td>Y/N</td>
</tr>
<tr>
<td>26. Does your child have complete bladder control during the day and night?</td>
<td>Y/N</td>
</tr>
<tr>
<td>27. Does your child get a drink of water from the tap without assistance?</td>
<td>Y/N</td>
</tr>
<tr>
<td>28. Does your child get a drink of water from the tap with some assistance?</td>
<td>Y/N</td>
</tr>
<tr>
<td>29. Does your child eat without assistance?</td>
<td>Y/N</td>
</tr>
</tbody>
</table>

Thank you for your co-operation in filling in this Questionnaire. All the information that you have supplied us with will be treated as strictly confidential.
APPENDIX B

Letter to parents for their permission to test their children

Dear Parent

Date

The Nelson Mandela Metropolitan University (NMMU) plans to conduct a research project exploring a developmental profile of normal children using the Griffiths Mental Development Scales. The six areas of general development assessed on these Subscales include: Locomotor; Personal-Social; Language; Eye-and-Hand Co-ordination; Performance and Practical Reasoning. The Griffiths Scales were developed in Britain in the 1960's and are used internationally for the developmental assessment of young children. A research team based at the NMMU has recently revised the Scales, making them more culture fair and contemporaneous.

The aim of the present study is to compare and explore the performance of normal South African and British children aged between 5 to 6 years on the Griffiths Mental Development Scales - Extended Revised (GMDS-ER). The purpose of the study is to generate information on the applicability of British norms for a contemporary South African population. Previous research concerned with the applicability of British norms on a South African population was all based on a 1999 South African sample. This sample can no longer be viewed as representing a contemporary South African population. The proposed study is thus aimed at including a more contemporary South African sample in order to contribute to the further

...
enhancement of the GMDS-ER in South African clinical settings and programmatic intervention.

Registered Psychologists, Intern Psychologists and Psychologists in training who have been trained in the use of the Revised Extended Griffiths Scales will administer the Scales to the identified sample of learners. The assessment will take approximately two hours and, if necessary, can be conducted over two sessions. As the Griffiths Scales are based on play, your child will find the assessment enjoyable. You, as the parents of the child to be assessed, will be asked to complete a Biographical Questionnaire. Your child will be informed that he/she will be free to refuse or withdraw from participating at any stage of the assessment.

On completion of the assessment, feedback will be given to you by the respective psychologist.

Prior to the commencement of the research, we require your permission that your child participates. We therefore kindly request that you complete the Consent by parent section attached, as well as the Biographical Questionnaire. All information gathered will be treated as strictly confidential.

Should you require any further information, please feel free to contact Ms. Rivca van Heerden at NMMU on (041) 504 2330.

We would like to stress that the success of this project depends entirely on your voluntary co-operation and we thank you in anticipation.

Yours sincerely

________________________
Ms R. van Heerden
Intern Counselling Psychologist
Dr L. Stroud
Co-Supervisor
(Director: UCLIN)

Dr J. Jansen
Co-Supervisor
(Special Support Programmes – Department of Education)

Dr A. Barnard
Supervisor
(Department of Psychology, NMMU)
Dear Mr. Spies,


The Nelson Mandela Metropolitan University (NMMU) has plans to conduct a research project exploring a developmental profile of normal South African children utilizing the Griffiths Mental Development Scales, Extended Revised (GMDS-ER). The six areas of general development assessed on this Scale include: Locomotor; Personal-Social; Language; Eye-and Hand Co-ordination; Performance and Practical Reasoning. The GMDS were developed in Britain in the 1960s and are used internationally for the developmental assessment of young children. A research team based at the NMMU has recently revised the Scales making them more culture fair and contemporaneous.

The aim of the present study is to compare and explore the performance of South African and British children aged between 5 and 6 years on the Griffiths Mental Development Scales - Extended Revised (GMDS-ER). The purpose of the study is to generate information on the applicability of British norms for a contemporary
South African population. Previous research concerned with the applicability of British norms on a South African population was all based on a 1999 South African sample. This sample can no longer be viewed as representing a contemporary South African population. The proposed study is thus aimed at including a more contemporary South African sample in order to contribute to the further enhancement of the GMDS-ER in South African clinical settings and programmatic intervention.

We are writing to ask for your permission to allow the undertaking of this research project, which involves an assessment of approximately 100 children (aged between five and six years old) from various schools in Port Elizabeth, on the Revised Griffiths Scales.

During the assessment, which takes approximately one hour, children are asked to complete a number of age appropriate tasks, such as building bricks, throwing a ball, drawing and naming pictures. The assessment will take place at the child’s school during September 2005, at a time which the teachers have allocated to us, and will not interfere with the child’s education.

Registered Psychologists, Intern Psychologists and Psychologists in training who have been trained in the use of the GMDS-ER will administer the Scales to the identified sample of learners. All information gathered will be treated as strictly confidential.

Furthermore there will be no costs involved for the parents and following the assessment, the principals of the schools as well as each child’s parents, will receive a written report regarding each child’s performance. The assessment results will be used for research purposes and all information will be treated as strictly confidential.

If you wish to obtain any further information about this project please contact us at the telephone numbers provided below.
We would like to stress that the success of this project depends on your consent and we sincerely thank you in anticipation.

Yours Sincerely

___________________
Ms R. van Heerden
Tel. 041 – 504 2330
Psychologist in Training (NMMU)

__________________
Dr L. Stroud
Tel. 041 – 504 2330
Director: UCLIN

___________________
Dr J. Jansen
Special Support Programmes – Department of Education

___________________
Dr A. Barnard
Tel. 041 - 504 2890
Department of Psychology (NMMU)
Letter to authorities informing them of the purpose of the study

Dear ........................................... date

Re: Permission to conduct research project

I refer you to our telephonic conversation regarding research into the developmental profile of learners.

The Nelson Mandela Metropolitan University (NMMU) has plans to conduct a research project exploring a developmental profile of normal South African children between the ages of 5 years to 6 years using the Griffiths Mental Development Scales, Extended Revised (GMDS-ER). The six areas of general development assessed on this Scale include: Locomotor; Personal-Social; Language; Eye-and Hand Co-ordination; Performance and Practical Reasoning. The GMDS were developed in Britain in the 1960s and are used internationally for the developmental assessment of young children. A research team based at the NMMU has recently revised the Scales making them more culture fair and contemporaneous.

The aim of the present study is to compare and explore the performance of South African and British children aged between 5 and 6 years on the Griffiths Mental Development Scales - Extended Revised (GMDS-ER). The purpose of the study is to generate information on the applicability of British norms for a contemporary South African population. Previous research concerned with the applicability of British norms on a South African population was all based on a 1999 South African sample. This sample can no longer be viewed as representing a contemporary
South African population. The proposed study is thus aimed at including a more contemporary South African sample in order to contribute to the further enhancement of the GMDS-ER in South African clinical settings and programmatic intervention.

Registered Psychologists, Intern Psychologists and Psychologists in training who have been trained in the use of the GMDS-ER will administer the Scales to the identified sample of learners. Prior to the commencement of the research, we require your permission that learners (year 5 and 6) at your school participate in the study. All information gathered will be treated as strictly confidential.

On completion of the study, feedback will be made available to the various schools involved in the study. Please find attached a copy of a covering letter, Biographical Questionnaire and a consent form to be completed by the parents of the children who are involved in the study.

Should you require any further information, please feel free to contact Ms Rivca van Heerden or Dr Louise Stroud on (041) 504 2330 or Dr Jenny Jansen on (041) 373 1226 or Dr Annemarie Barnard on (041) 504 2890.

We would like to stress that the success of this project depends entirely on your voluntary co-operation and we thank you in anticipation.

Yours sincerely

________________________
Ms R. van Heerden
Psychologist-in-training
Dr L. Stroud
Co-Supervisor
(Director: UCLIN)

Dr J. Jansen
Co-Supervisor
(Special Support Programmes – Department of Education)

Dr A. Barnard
Supervisor
(Department of Psychology, NMMU)
APPENDIX C

Information and Informed Consent Form

Exploring normal South African and British children: a comparative study utilizing the
Griffiths Mental Development Scales – Extended Revised.

Reference number:

Principal investigator: Ms. R. van Heerden
   Department of Psychology
   Nelson Mandela Metropolitan University
   Port Elizabeth
   6000

Contact telephone no.: 041 – 504 2330

<table>
<thead>
<tr>
<th>Declaration by or on behalf of patient / participant:</th>
<th>Initial</th>
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<tbody>
<tr>
<td>I, the undersigned,..............................................(name)</td>
<td></td>
</tr>
<tr>
<td>[I.D. No:.................................] the parent/guardian of the participant</td>
<td></td>
</tr>
<tr>
<td>.................................................... (name) [I.D.................................]</td>
<td></td>
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<td>of .................................................................</td>
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A. HEREBY CONFIRM AS FOLLOWS:

1. The participant was invited to participate in the above mentioned research project which is being undertaken by Ms. R. van Heerden of the Department of Psychology in the Faculty of Health Sciences of the Nelson Mandela Metropolitan University.

2. The following aspects have been explained to me the parent/guardian:

   Aim: The investigator is studying the typical development profile of a normal child on the GMDS-ER.

   The information will be used to compile normative data on normal children’s performance on the Revised Scales.

   Procedures: I understand that my child will be assessed at no cost, at his/her school at a time the teachers have allocated to the researcher.

   I understand that the assessment process could reveal information regarding concerns in my child’s development.

   I understand that a possible benefit of this assessment is that any developmental concerns could be detected timeously which would allow me to intervene in areas of concern sooner.

   Confidentiality: My identity will not be revealed in any discussion, description or scientific publications by the investigators.

   Access to findings: Any new information / or benefit that develop
during the course of the study will be shared with me.

Voluntary participation / refusal / discontinuation: My participation is voluntary. My decision whether or not to participate will in no way affect my present or future medical care/ employment / lifestyle.

3. The information above was explained to me the parent/guardian of the participant by ………………………………………………. (name of relevant person) in Afrikaans / English / Xhosa / Other………………….
I am in command of this language / it was satisfactorily translated to me by ………………………………………(name of translator)
I was given the opportunity to ask questions and all these questions were answered satisfactorily.

4. No pressure was exerted on me to consent to participation and I understand that I may withdraw at any stage without penalization.

5. Participation in this study will not result in any additional cost to myself.

B. I HEREBY CONSENT VOLUNTARILY TO PARTICIPATE IN THE ABOVE MENTIONED PROJECT.

Signed / confirmed at …………………….… On………………… 2005.

(place)                                  (date)
<table>
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<tbody>
<tr>
<td>Signature parent / guardian</td>
<td>Signature of witness</td>
</tr>
</tbody>
</table>