APPLICABILITY OF THE GRIFFITHS MENTAL DEVELOPMENT SCALES-EXTENDED REVISED TO THE SOUTH AFRICAN CONTEXT:

A SYSTEMATIC REVIEW

ZIKHONA JACOBS

Submitted in fulfillment of the requirements for the degree of

MASTER OF SOCIAL SCIENCE (PSYCHOLOGY)

Department of Psychology

Faculty of Social Science and Humanities

University of Fort Hare

January, 2016

Supervisor: Mrs. R Marais

Table of Contents

LIST OF TABLES

LIST OF FIGURES

DECLARATION OF AUTHENTICITY

Name:	Zikhona Jacobs
Student No:	200905296
Qualification:	Master of Social Science in Psychology
Title of Project:	Applicability of the Griffiths Mental Development Extended Revised to the South African context.

Declaration:

I hereby declare that this dissertation is my own work and has not been previously submitted for assessment to another University or for another qualification.

Name: _____

Sign: _____

Date: _____

ACKNOWLEDGEMENTS

- I would like to take this opportunity to thank the Almighty God for His guidance, providence and perseverance. He has been with me through it all.
- My sincere gratitude to my Supervisor, Mrs. Rivca Marais, who is responsible for the success of this dissertation. Thank you for always availing yourself, for your patience, guidance throughout the project and encouragement when needed.
- I also thank the whole staff from the Psychology Department at the University of Fort Hare who have been supportive and made me feel at home. The same goes to my mentor Mrs Chikungwa-Everson and my colleagues from GMRDC, for their support and encouragement.
- Mom and Dad, Thank you dearly for the unconditional love and support that you have shown me over all these years.
- Thanks to my family and friends who were always there when I needed help.

ABSTRACT

The contribution and value of developmental assessment in the developing world, and especially the impact it has on the cognitive development of the African child in terms of early diagnosis and intervention are increasingly being documented. However, unique tests for specific cultural groups are lacking and the development thereof is a complex, costly and time consuming endeavor. Adapting internationally researched tests that have been proven to be valid and reliable in other countries seem to be an effective solution at present. The Griffiths Mental Development Scales (Griffiths scales) is one such test that could answer the developmental assessment needs of the developing world. The Griffiths Scales was introduced in South Africa in 1977 and since then an expanding pool of research has been done on the Griffiths. This together with societal and cultural change and the lack of South African norms have influenced the need for a review. This study therefore reviews the applicability of the Griffiths scales for South Africa by assessing all accessible information. Both international and national literature done on the Griffiths scales in South Africa between 1977 and 2013 has been interrogated. Books, journals, articles, theses and computer data bases are employed to conduct this systematic review. The review presents a synopsis of the present state of knowledge and information regarding research done on the Griffiths scales in South Africa.

Keywords: Child development, Child developmental assessment, Normative Information Test bias, Test adaptation and Standardization sample.

CHAPTER 1: INTRODUCTION

1.1 Chapter preview

This chapter seeks to provide the context of the study. It will also introduce a number of concepts and definitions that are central to the overall theme of the review. Subsequently, the aim of the study will be dealt with while the conclusion will outline the chapters of the review.

1.2 Context of the review

Although this review took place within the framework of child developmental assessment, it is specifically located within the Griffiths Mental Development Scales Extended Revised, which is the latest version of the measure currently in use. For the purpose of the present study, the reviewer will refer to the measure in general as the Griffiths scales. Studies in various parts of the world demonstrate that the Griffiths scales are applicable to diverse populations and tap into experiences that are common to different cultures (Luiz, Collier, Stewart, Barnard & Kotras, 2000). However, Van Rooyen (2005) has stressed that British-based norms in the South African context may differ extensively from that of a normal British profile. Since South African children come from very diverse backgrounds, most researchers have stressed the need for reliable and valid measures to assess each child's developmental status (Knoesen, 2003). Accordingly, it cannot be assumed that the Griffiths scales apply seamlessly to the contemporary South African context. For assessment to be considered useful and valid; the psychometric properties of the measure require thorough research. This is particularly true in culturally diverse contexts, such as South Africa. To make a measure valid, reliable and contemporary, the movement towards constructing culture fair tests has become prominent. Culture fair tests contain content based on experiences that are common to different cultures. Assessment tools themselves are a product of a particular socio-cultural environment, and as such may be biased toward the culture from which they

came. Many assessment instruments put an emphasis only on a section of development, are standardised for specific ethnic groups to the exclusion of others, or are standardized for specific age groups to the exclusion of others and consequently have fragmented research backing and thus limited generalisability (Luiz, 1994; Schrodér, 2004).

This review focuses closely on the applicability of the Griffiths scales as a developmental measure for the developing world. It strives to sketch a clear picture of the applicability of the Griffiths scales in the South African context to inform the course of future studies on the measure. The Griffiths scales' successes are extolled while problematising their mistakes to heighten there view's efficacy. While contributing to the pool of research towards the standardisation of the measure to suit the diverse African continent.

1.3 Relevant concepts and definitions

This section will define all key concepts relevant to the systematic review.

1.3.1 Child development: child development speaks to how children develop through different stages or how children grow and learn. It also refers to the biological and psychological changes that occur in human beings between the start and end of adolescence. Children develop physically, emotionally, socially, educationally and cognitively. The stimulation and fostering of children to meet critical developmental markers is considered important to society. Understanding child development is therefore equally important (Leahdeville, 2012).

1.3.2 Child developmental assessment: Developmental assessment is the process of mapping a child's performance with children of a similar age. The comparison group is obtained from a representative sample of the population that the child comes from (BMJ, 2013).

1.3.3 Test bias: "Bias is present when a test score has meanings or implications for a relevant, definable subgroup of test takers that are different from the meanings or

implications for the remainder of test takers. Thus, bias is the differential validity of a given interpretation of a test score for any definable, relevant subgroup of test takers" (Cole & Moss, 1998, cited in Gregory, 2004, p. 242).

1.3.4 Test adaptation. "Test Adaptation is a change or adjustment to improve something, or to make it suitable to a different situation. It is a literal translation of some stimuli and to a change of others, so as to maximise their appropriateness in the target group" (Van de Vijver & Poortinga, 2005, p. 41).

1.3.5 Normative information. A normative group is usually referred to when discussing the properties of tests and measures. It refers to the sample of test takers who are representative of the population for whom the test is intended (Cohen, 2002).

1.2.6 Standardisation sample: A large sample of test takers who represent the population for which the test is intended (Cohen, 2002).

1.4 Research questions

The review answers the following core question:

- How applicable is the Griffiths Mental Development Scales – Extended Revised to the South African context?

Consequential sub-questions are:

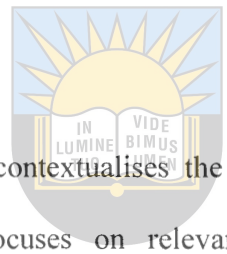
- How reliable and valid is the Griffiths scales for use in the South African context?
- How do South African children's developmental profiles compare to the British standardisation sample?

1.5 Aim of the study

The aim of this review is to explore and describe the applicability of the Griffiths Mental Development Scales – Extended Revised to South Africa. This has been done by focusing on the two technical requirements for applicability of a measure, namely, the validity and

reliability of the Griffiths scales. More specifically, the focus of the review is directed at investigating test bias while considering the adaptation of the Griffiths scales as well as normative information used to interpret test performance. The specific objectives derived from the primary aim are thus:

- To explore and describe the reliability and validity of the Griffiths scales in the South African context.
- To explore and describe the overall developmental profile comparisons between children in South Africa and the British standardisation sample of the Griffiths scales.



1.6 Chapter outline

This chapter introduces and contextualises the review by providing the setting in which the study took place. It focuses on relevant conceptual definitions of child developmental assessment and the Griffiths Mental Development Scales. It also explores the aim and objectives of the study. Chapter Two reports on the concept of child development and assessment in the developing world while Chapter Three provides a discussion of the theoretical aspects of the Griffiths Mental Development Scales – Extended Revised. Further, Chapter Four describes the problem formulation and methodology employed in the current review while Chapter Five provides a discussion of results. The findings of the study are captured in Chapter Six, which includes a discussion on the limitations of the current review.

CHAPTER 2
CHILD DEVELOPMENT ANDASSESSMENT: A DEVELOPING WORLD CONTEXT

2.1 Chapter preview

This chapter provides general views on child development against the background of Erik Erikson's theory on child development and Assessment. It also explores issues surrounding some definitions offered in the introductory chapter. There is a further exploration of child development followed by a discussion on the validity and reliability of Developmental assessment in South Africa.

2.2 Child development

Child development refers to the ordered emergence of interdependent skills of sensory-motor, cognitive-language and social-emotional functioning, all of which are affected by psychosocial and biological factors and by genetic inheritance (Dehart, Souse and Cooper, 2004). According to Shamrock (2001), each child develops in a unique way like all other children. Respectively, Psychologists who study child development are drawn to the shared and unique characteristics of each child. Davies (1999) states that gaining a working knowledge of development includes knowing salient tasks and abilities, as well as ways of thinking, communicating and behaving that characterize a given age.

Jains (2009) postulates that it is imperative that child development is viewed holistically. This is reflected in the interdisciplinary nature of information that exists about child development (Jakins, 2009). Psychologists, Sociologists, Anthropologists and Biologists have joined forces with professionals from fields such as Education, Medicine and Social Services in the search for solutions to problems faced by children on a daily basis (Stewart, 2005). Consequently, the field of child development has practical relevance for several disciplines resulting in a growing body of knowledge reflecting developmental

changes that are systemic in nature, and, as such need to be studied holistically. Griffiths emphasizes the need for a broad-based conception of development, and defines it as "the processes and rates at which growth and maturation of a child's attributes and abilities take place" (Luiz et al., 2006a, p.1). Griffiths believed that the assessment of mental development should involve a comprehensive investigation of a child's abilities including motor, social and cognitive abilities by direct observation, testing and reports from caregivers. In line with this holistic approach, Kail and Cavanaugh (2000) posit four forces fundamental to successful development, namely:

1) Biological (Genetic and Health factors),

2) Psychological (Perceptual, Cognitive, Emotional and Personality factors)

3) Socio-Cultural (Interpersonal, Societal, Social and Ethnic factors)

4) Life-cycle factors (similar events affect individuals differently)

Identifying each and every influence that determines what a child ultimately becomes is in reality impossible to account for. Therefore, this review will focus on some of the most apparent influences such as biological, psychological, and socio-cultural forces determining child development.

2.2.1 Differences in child development across cultures. It is important to keep in mind that there are probably as many overlaps among cultural groups as there are differences (Garcia-Cull, Ramos, Magnuson, Halpern, & Valcarcel, 1997) However, their particular expressions might differ given the different promoting and inhibiting environments to which they are exposed. Language acquisition, attachment to primary caregivers, and emergence of major emotional and cognitive systems are relevant processes in all populations. Further, one's language, one's attachment to some important figures, and the expression of emotions and cognitive skills in particular contexts might differ.

When discussing physical development, an individual's size and body structure are the points of interest. Changes do not take place in a vacuum separate from one's cognitive experience, social and emotional development, or cultural context (Gardiner & Kosmitzki, 2005). During infancy, the changes that take place in physical growth and development are enormous. In two short years, most infants make the transition from dependent, practically helpless babies to independent, curious children. As their bodies grow and respond to social and cultural cues, their nervous systems mature, and their cognitive experiences are enhanced. Quickly adapting to the world outside the womb, they slowly begin to imagine a future involving themselves and others, discovering useful methods for storing memories of past and present events (Gardiner & Kosmitzki, 2005).

Although motor development follows a virtually universal sequence, its pace does respond to certain cultural factors. A normal rate of development in one culture may be quite different in another. Infants raised in different ecological settings sometimes show significant variations in physical development (Von Wielligh, 2012). All infants do not follow the same sequence of motor accomplishments. The body of knowledge of the stages and timing of motor development are based largely on studies of infants in Western cultures. However, the possibility that there are considerable differences among cultures in the timing of motor development has been raised by a number of studies on African infants (Ainsworth, 1967; Keefer, Tronick, Dixon, & Brazelton, 1982).

Geber and Dean (1957a, 1957b) tested nearly 300 infants living in an urban area of Uganda. They found that these babies were clearly accelerated in motor development, relative to American white infants. The Ugandan infants' precocity is greatest during the first six months of life, after which the gap between the two groups tends to decrease. It closes by the end of the second year. The timing of motor development is not universal. North African children develop motor skills sooner than Western children do, and American Indian and East

Asian children develop them later (Field, 2007). Infants in European cities start walking at about 12 to 15 months, whereas Jamaican infants start walking sooner than British infants. African infants, however, do not start crawling sooner than their Western counterparts. It has also been well documented that the motor skills of African infants in such activities as sitting, walking, and running develop several months before they do in other infants. In Uganda, for example, infants begin to walk at about ten months (earlier than in most countries); in France, fifteen months is more typical; yet in the United States the average is around twelve months (Papalia et al., 2009).

The theory of black precocity states that black infants are more advanced than white infants in mental and motor development during the first fifteen months or so of life (Lynn, 1998). In the 1980's, the precocity of black South African babies was investigated by Richter-Strydom & Griesel (1984) who observed that black South African babies were significantly more advanced than American babies, as far as both mental and motor development was concerned. A study by Lynn (1998) posit that black infants are significantly more advanced than white infants from the age of 2 to 10 months; their advantage falls to non-significance between 12 to15 months, and from 18 months onwards,+ there are no differences. According to Louw and Louw (2007), available research has conflicting results regarding the theory of black precocity. Therefore, it cannot be conclusively maintained that early precocity is a common phenomenon among black African babies (Louw and Louw, 2007).

The foregoing differences in physical or motor development of infants from different cultural backgrounds should be accounted for. While there are many contributing factors, a few deserve a special mention. In most cases, it is the result of a combination of factors, including genetics, activity level, body type and physical maturation. Genetic factors play a major role in early motor development. Cultural and environmental factors, however, such as

interactions between the child and others in the micro- and mesosystems and the unique developmental niche, are also extremely influential. Individual styles of parenting help children to develop many of the fundamental motor abilities and this can vary considerably from one culture to another. During infancy, nutrition is of the utmost importance. Poor nutritional status and other effects of poverty are detrimental to physical growth and development of children (Gardiner & Kosmitzki, 2005).

Cultural variables play a part in the differences between groups' developmental milestones time tables (Gardiner & Kosmitzki, 2005). For example, many American infants never crawl on their belly or on their hands and knees. They may discover an idiosyncratic form of locomotion before walking, such as rolling, or they might never locomotor until they get upright (Adolph & Joh, 2009). In the case of an African Mali ethnic group, most infants do not crawl. Early "formal handling experiences" can stimulate physical/motor development. Caregivers in some cultures handle babies often which might advance motor development. Handling exercises may assist in gaining motor skill development; stretching exercises from early on, gradually introducing other activities, such as making them sit up, or playing games that promote jumping and walking skills (Gardiner & Kosmitzki, 2005).

Mothers in developing countries, for example, tend to stimulate their infants' motor skills more than mothers in modern countries (Hopkins, 1991). Parents and extended family members in many African cultures place considerable importance on babies' sitting and walking, thus actually providing early "formal handling experiences" that stimulate these behaviours (Gardiner & Kosmitzki, 2005). Richter-Strydom & Griesel (1984, p. 170) investigated the assumption that precocity in black South African babies is the result of specific child rearing practices such as mothers 'feeding, physical contact, carrying and expectations for development which may be influencing infants' abilities. As Rogoff (2003, p.159) explains: "In some communities, walking sooner is valued, yet in others it is not

desired." In Wogeo, New Guinea, infants were not allowed to crawl and were discouraged from walking until nearly 2 years of age and capable to take care of themselves and able to avoid dangers before moving about freely. African children are seldom placed on their stomachs, as Western infants are, and thus do not practise crawling as much. Further, African parents do not encourage or value this behaviour; it is generally regarded to be dirty and dangerous. In many African, Indian, and Caribbean cultures, mothers massage and stretch their infants during daily baths (Adolph, Karasik & Tamis-LeMonda, 2010).

The same is reported for Jamaican and Mali mothers who regularly massage their infants and stretch their arms and legs. Mothers in the Gusii culture of Kenya also encourage vigorous movement in their babies (Hopkins & Westra, 1988). These cultural variations seem to make a difference in the infant's motor development. When caregivers provide babies with physical guidance by physically handling them in special ways such as stroking, massaging, or stretching or by giving them opportunities for exercise, the infants often reach motor milestones earlier than infants whose caregivers have not provided these activities (Adolph, Karasik & Tamis-LeMonda, 2010). Nonetheless, even when infants' motor activity is restricted, many infants still reach the milestones of motor development at a normal age. Louw and Louw (2007) suggested that a complex interaction between cultural and genetic factors is responsible for the differences in the speed of early development that was seen in the cross cultural research.

2.2.2 Play: Play aimed at healthy development of body and mind is very important. It enables children to engage with the world around them to use their imagination. Discovering flexible ways to use objects and solve problems may prepare them for adult roles. Play contributes to all domains of development, with children stimulating their senses, exercising their muscles, co-ordinating sight with movement, gaining mastery over their bodies, making decisions and acquiring new skills, all being enhanced through play (Papalia et al., 2009).

Infants are active explorers and stimulus seekers, orchestrating their own perceptual, motor and cognitive development by exploring their environment and learning what it will allow them to do. By combining perception and action in their exploratory behaviour, infants actively create sensory environments that meet their needs and contribute to their own development (Gibson, 1988; Gibson & Pick, 2000). This need is one of those addressed in play.

While seeming to be a simple activity for adults, play is a highly complex and intricate achievement for a young child. Physical play builds on the relationship among a child's cognitive abilities, social experiences and cultural context. The simplest, least developed form of play is called functional play, consisting of a child making simple repetitive movements with or without an object. In constructive play, children learn how to Physically manipulate objects in order to construct or create something. In most cultures, children are encouraged to play with blocks or similar objects, providing fun as well as problem solving practice (e.g. building towers, colouring within the lines, and building simple jigsaw puzzles). Dramatic play (also called pretend play, fantasy play, or imaginative play) involves imaginary objects, actions, or roles; it rests on the symbolic function, which emerges during the last part of the second year. Adults use play to teach children the importance of play and work, stimulating co-ordination, encouraging imagination and fostering interpersonal relationships. It is also an important expression of cultural heritage (Papalia et al., 2009).

Cultural values affect the play environments adults set up for children and these environments in turn affect the frequency of specific forms of play across cultures (Bodrova & Leong, 1998). The opportunity to play, the central themes and styles of social interactions that occur during play, as well as space available for play, however, vary substantially across diverse cultures (Cook & Cook, 2005). For example, different cultures value work and play.

Children in the United States, Britain and South Africa spend most of their after school time in play, but children in Japan and Korea are more likely to spend time studying for school (Takeuchi, 1994). Japanese and Korean cultures place a high value on hard work, sacrifice, and educational achievement. In Japan, for instance, students study hard with the hope of getting into the best professional schools and universities. After graduation, Japanese citizens devote enormous time and energy to their occupations. Men work long hours and children have little opportunity to play or interact with their fathers (Takeuchi, 1994).

Spaces available for play also differ across cultures. In Britain, there is little open space, so children typically play indoors and in small groups (Takeuchi, 1994). In the West African nation of Senegal, children tend to live in communal "compounds" containing numerous households, all related to the eldest male in the compound (Bloch & Adler, 1994). Children play outdoors, roaming the compound in larger groups consisting mostly of siblings and cousins. Due to the extended family arrangement of the compounds, all available adults take responsibility for watching the children, and by the age of four, children roam the compounds rather freely. As in most cultures, gender typing is clear in these children's socio dramatic play. Senegalese girls tend to playact family roles, nurturing younger children and doing domestic chores like cooking and carrying water. Senegalese boys' playact at farming, herding animals, fishing, and working with machines and automobiles (Bloch & Adler, 1994). Through their play, these children learn the skills that are important in their cultures (Gardiner & Kosmitzki, 2005).

Only recently have cultural and ethnic differences in play been studied (Chen, French, & Schneider, 2006).American parents typically tend to encourage exploration, imagination, and independence in play and are more likely to play with their children. However, cross cultural studies reveal that parents across cultures have different attitudes about play. Some view play as unnecessary, undesirable, or unsafe. However, play might be difficult to achieve

if time, space, materials, and/or playmates are lacking. North American parents, on the other hand, view play as essential for development and tend to control their children's play activities (Scarlett, Naudeau, Ponte & Salonius-Pasternak, 2004).

Children in developing countries have a very different experience of childhood. They fill their days with home chores, sibling care, or work and school obligations and are encouraged by parents to work hard, take responsibility, and show initiative. "Play is at best tolerantly accepted by adults, and often it is discouraged or prohibited" (Harkness & Super, 1996, p. 359). Variations in play and social interaction are shaped by what adults believe children need to become productive members of their society. Play is a dominant activity of children in cultures around the world; in some sense both a cause and an effect of culture (Roopnarine & Johnson, 1994). Infants around the world engage in sensory motor play; symbolic and socio-dramatic play emerge in early childhood; later, play becomes more logical and realistic and often focuses on the physical skills that are important in the child's culture. It therefore stands to reason that culture in which children live can influence their play; where they play, with whom they play, and the main themes in their play. Play helps transmit the culture's important values and attitudes to the child, who will then pass them along to the next generation. Cultural values affect the play environment adults set up for children and these environments in turn affect the frequency of specific forms of play across cultures (Papalia et al., 2009).

The variety of activities involved in play (e.g. talking, touching, and interacting) help children to learn skills that will enable them to be active participants in later cultural interactions. These ideas fit into and support Bronfenbrenner's theory. For example, it is within the family context (mesosystem) that early parent child interactions take place. Here, infants are introduced to activities (e.g. play and use of language) that help prepare them for successful participation in the broader cultural context of the workplace (exosystem) and

understanding of important values and attitudes (macrosystem) (Gardiner & Kosmitzki, 2005). The context in which early social interactions take place, are characterised by different parameters that define the developmental niche, such as characteristics of the caregiver, general conditions of infant development, and the child caregiver relationship itself. These parameters vary from culture to culture, as do the developmental niche, thus providing each child in its first months of life with unique developmental challenges and opportunities (Rogoff, 2003).Development is a very wide ranging concept, permitting multiple theoretical interpretations, with each theory suggesting different ways to understand personal transitions. A critical evaluation of the theoretical framework of this study is explicated below.

2.3 Erik Erikson's Theory

Erik Erikson was a psychoanalyst who developed the Theory of Psychosocial Development. He argues that earlier achievements and failures influence later stages, whereas later stages modify and transform earlier ones. Erik's theory focuses on the entire development process in life in eight stages. He asserts that the environment interacts with an individual to influence one's development. In each of the phases, one encounters crisis and success depends on how he handles the challenges. Skills acquired in progression to another stage lessen insecurity in the individual. These challenges occur from infancy to older age.

2.3.1 Socio-cultural (interpersonal, societal, social and ethnic factors). The work of Erik Erikson has for a long time guided relevant professionals in understanding the emotional and social development of children. Erikson's concept of ego-identity allows for inner and outer elements of emotional development. A satisfactory level of acceptance towards self and group culture in which a person finds himself or herself indicates healthy development (Thomas, 1985). Erikson (1950, 1963) focuses mainly on psychosocial development. He emphasises the role of culture and society and the conflicts that can take place within the ego itself. According to his theory, the ego develops as it successfully resolves crises that are

distinctly social in nature. These involve establishing a sense of trust in others, developing a sense of identity in society, and helping the next generation prepare for the future. He then proposes a lifespan model of development, taking in five stages up to the age of 18 years and three further stages beyond, well into adulthood. There is always plenty of room for continued growth and development throughout one's life, he posits.

Erikson's (1959) theory of psychosocial development has eight distinct stages. According to the theory, a successful completion of each stage results in a healthy personality and the acquisition of basic virtues. Basic virtues are characteristic strengths which the ego can use to resolve subsequent crises. Failure to successfully complete a stage can result in a reduced ability to complete further stages and therefore a more unhealthy personality and sense of self. These stages, however, can be resolved successfully at a later time. The researcher will briefly discuss the first four stages of Erikson's stages:

1. Trust vs Mistrust: Erikson's first psychosocial crisis occurs during the first year or so of life. The crisis is one of trust vs mistrust. During this stage an infant is uncertain about the world in which it lives. To resolve these feelings of uncertainty, it looks towards the primary caregiver for stability and consistency of care. If the care received is consistent, predictable and reliable, an infant develops a sense of trust which they carry with them to other relationships, and may feel secure even when threatened. Success in this stage will lead to the virtue of hope. By developing a sense of trust, they can have hope that as new crises arise, there is a real possibility that other people will be there as a source of support. Failing to acquire the virtue of hope leads to the development of fear. For example, if the care has been harsh or inconsistent, unpredictable and unreliable, they are likely to develop a sense of mistrust and have no confidence in the world around them or in their abilities to influence events. Such infant may carry a basic sense of mistrust towards other relationships. It may

result in anxiety, heightened insecurities and an overwhelming mistrust in the world around them.

Consistent with Erikson's views on the importance of trust, research by Bowlby and Ainsworth has outlined how the quality of early experience of attachment can affect relationships with others in later life.

2. Autonomy vs Shame and Doubt: A child's physical development ushers in more physical mobility. Between the ages of 18 months and three years, children begin to assert their independence, by walking away from their mother, picking which toy to play with, and making choices about what they like to wear, to eat, etc. As a child grows, they discover that they have many skills and abilities, such as putting on clothes and shoes, playing with toys, etc. Such skills illustrate the child's growing sense of independence and autonomy. Erikson states that it is critical that parents allow their children to explore the limits of their abilities within an encouraging environment which is tolerant of failure. For example, rather than dressing a child, a supportive parent should have the patience to allow the child to try until they succeed or ask for assistance. So, the parents need to encourage the child to become more independent whilst at the same time protecting the child so that constant failure is avoided.

A delicate balance is required from the parents; they must try not to do everything for the child but if the child fails at a particular task they must not criticise the child for failures and accidents (particularly when toilet training). The aim has to be "self-control without a loss of self-esteem" (Gross, 1993). Success in this stage will lead to the virtue of will. If children at this stage are encouraged and supported in their increased independence, they become more confident and secure in their own ability to survive in the world. If children are criticised, overly controlled, or not given the opportunity to assert themselves, they begin to

feel inadequate in their ability to survive, and may then become overly dependent upon others, lack self-esteem, and feel a sense of shame or doubt in their own abilities.

3. Initiative vs. Guilt: Around age three and continuing to age five, children assert themselves more frequently. These are particularly lively, rapid-development years in a child's life. According to Bee (1992), it is a "time of vigor of action and of behaviours that the parents may see as aggressive." During this period, the primary feature involves the child regularly interacting with other children at school. Central to this stage is play, as it provides children with the opportunity to explore their interpersonal skills through initiating activities. Children begin to plan activities, make up games, and initiate activities with others. If given this opportunity, children develop a sense of initiative, and feel secure in their abilities to lead others and make decisions. Conversely, if this tendency is squelched, either through criticism or control, children develop a sense of guilt. They may feel like a nuisance to others and may therefore remain followers, lacking in self-initiative. The child takes initiatives which the parents will often try to stop in order to protect the child.

The child may often overstep the mark in his forcefulness and the danger is that the parents tend to punish the child and restrict his initiatives too much. It is at this stage that the child begins to ask many questions as his thirst for knowledge grows. If the parents treat the child's questions as trivial, a nuisance or embarrassing or perceive other aspects of their behaviour as threatening, the child may have feelings of guilt for "being a nuisance". Too much guilt can make the child slow to interact with others and may inhibit their creativity. Some guilt is, of course, necessary otherwise the child would not know how to exercise self-control or have a conscience. A healthy balance between initiative and guilt is important. Success in this stage leads to the virtue of purpose.

4. Industry (Competence) vs. Inferiority: At this stage, the child learns to read and write, to do sums, and to make things on his own. Teachers begin to play an important role in the child's life as they teach the child specific skills. It is at this stage that the child's peer group will gain greater significance and will become a major source of the child's self-esteem. The child now feels the need to win approval by demonstrating specific competencies that are valued by society, and begin to develop a sense of pride in their accomplishments. If children are encouraged and reinforced for their initiative, they begin to feel industrious and confident in their ability to achieve goals. If this initiative is not encouraged, if it is restricted by parents or teachers, the child begins to feel inferior, doubting his own abilities and therefore may not reach his or her potential. If the child cannot develop the specific skill they feel society is demanding (e.g. being athletic) then they may develop a sense of inferiority. Some failure may be necessary so that the child can develop some modesty. Yet again, a balance between competence and modesty is necessary. Success at this stage will lead to the virtue of competence.

In order for Psychologists to deepen the understanding of a child's competencies and resources, they need to assess the mental development to help a child make fullest use of his developmental potential.

2.4 Developmental assessment

Allan (1992) postulates that developmental assessment is the psychological examination of a child's abilities over a broad spectrum of behaviour, including motor, social and cognitive traits. A thorough and comprehensive assessment should measure a child's physical, cognitive, social and emotional development. In addition, the nature and severity of the difficulty should be assessed (Brooks-Gunn, 1990). The function of assessment in infancy is not to detect mental superiority or a precise IQ score, but to detect abnormal neurological conditions and subnormal development potential. Infant tests' main value has been diagnosis,

but they also contributed substantially to our understanding of the many factors contributing to the development of abilities in the first years of life (Zeanah, 2000).

Holt (1979) comprehensively summarises the necessity of assessment in childhood as follows: "Any child who is suspected of having congenital defect or deformity, a medical disorder, an impediment to educational progress or social activities or any deficiency of opportunities, is a potentially handicapped child and should be assessed" (p.151). Holt (1979) further adds that, "a handicap is not a medical, educational or social problem to be treated, trained or counselled, but it is a burden which is impeding a child's development. Our task is to ease this burden and so promote the development of the person. Comprehensive assessment is the cornerstone of this work (pp.161). Hence, the need for developmental assessment of infants and young children is crucial in the early identification of any possible handicaps. Information gained from assessments serves not only as a tool for the correct diagnosis of the handicap, but also assists in the construction of appropriate intervention programmes (Alridge-Smith, Bidder, Gardner & Gray, 1980; Griffiths, 1984). The early identification of children who have special needs is widely recognised as being of primary importance in assisting them to realise their potential. The Griffiths Scales of Mental Development play a pivotal role in this process (Luiz, 1994). Developmental problems, which are first evident in infancy or early childhood, interfere with the future development of the child and may cause a life time of lowered untapped potential. Assessing a child incorrectly, because of an unreliable and or invalid instrument, due to cultural bias, for example, is just as dangerous, if not more dangerous, than not assessing a child at all. Further, utilising items which are non-contemporaneous can also have far reaching negative outcomes for the individual being assessed. In this connection, there is a strong awareness of the need for a reliable, valid and contemporary assessment instrument for pre-school children. This is

especially true when one looks at the social situation of the children of South Africa (Allan, 1992; Bhamjee, 1991; Stewart, 1997).

Foxcroft's (2002) view that the notion and practice of psychological testing was largely "borrowed" from western culture and whether or not tests add value has often been challenged in Africa. However, this is not exclusively an African issue as doubts about the value of testing and concerns about whether tests and the use of test results leads to biased practices is well documented in the United States of America and various countries in Europe (Foxcroft, Roodt & Abrahams, 2009). Foxcroft (2000) observes such doubts in Africa when the tests used are not perceived to be culturally appropriate and psychometrically sound for the context and purpose for which they are used. The results are not interpreted and used in a fair and ethical way, which leads to inaccurate diagnoses or incorrect job selection decisions being made (Foxcroft, 2002).

How valid and reliable an assessment measure is for a specific context cannot be assumed without investigating test bias, and without strong consideration given to the adaptation and normative information used to interpret test performance (Foxcroft & Roodt, 2009). Before selecting an assessment instrument for use in counselling or research, counsellors and researchers are trained to verify that the test is appropriate for use with their population. This includes investigation of validity, reliability, and appropriate norm groups to which the population is to be compared. Validity and reliability take on additional dimensions in cross-cultural testing as does the question of the appropriate norm group. The instrument must be validly adapted, the test items must have conceptual and linguistic equivalence, and the test and the test items must be bias free (Fouad, 1993; Geisinger, 1994). Establishing applicability of an assessment measure therefore generally includes the following:

2.4.1. Test bias: The test user must find out that the test and the test items do not systematically discriminate against one cultural group or another. Test bias may occur when

the contents of the test are more familiar to one group than to another or when the tests have differential predictive validity across groups (Fouad, 1994). Culture plays a significant role in cross-cultural assessment. Whenever tests developed in one culture are used with another culture, there is the potential for misinterpretation and stagnation unless cultural issues are considered. Issues of test adaptation, test equivalence and test bias must be considered in order to fully utilise the benefit of cross-cultural assessment.

2.4.2 Test adaptation: Test Adaptation is based on retaining the original meaning but refers to a process of making a measure more applicable to a specific context while using the same language. In adapted tests, the language remains the same but the words and context are changed to be more relevant and applicable to a specific national, language, and/ or cultural group (Foxcroft & Roodt, 2010). When adapting an instrument, the researcher is able to compare the already-existing data with newly acquired data, thus allowing for cross-cultural studies both on the national and international level. Adaptations can also conserve time and expenses (Hambleton, 1993). Test adaptations can lead to increased fairness in assessment by allowing individuals to be assessed in the language of their choice (Hambleton & Kanjee, 1995). Adapting an existing instrument instead of developing a new one has both advantages and disadvantages.

One disadvantage of adaptation includes the risk of imposing conclusions based on concepts that exist in one culture, but may not exist in the other. There are no guarantees that the concept in the source culture exists in the target culture (Lonner & Berry, 1986). Another disadvantage of adapting existing tests for use in another culture is that if certain constructs measured in the original version are not found in the target population, or if the construct is manifested in a different manner, the resulting scores can prove to be misleading (Hambleton, 1994). Despite the difficulties associated with using adapted instruments, this practice is important because it allows for greater generalisability and for investigation of differences

among a growing diverse population. Once the test has been adapted, test equivalence must be determined.

2.4.3 Normative information: Norms are an important component of psychological tests. They are a reference system that places the tested person in relation to other persons, thus making the results interpretable and informative. Tests without norms are only meaningful if several persons were tested. The results are compared with each other in ranking order. For most test users, norms are an absolute requirement. This presents great challenges for the test publisher because the development of a new test, or updating a test, requires great effort. A distinction is made between two types of norms, the representative norm and the random sample. For a representative norm sample, at least 300 persons must have been tested and the minimum limit must be independent of the number of inhabitants in a country (Schuhfried, 2010). This norm represents a cross-section of the population (census). This means that the percentage of men and women in a country are depicted in the norm sample. Education and age also play a role (Schuhfried, 2010).

Further, additional demographic aspects can be taken into consideration (e.g. country vs. city, ethnic group membership, etc.). For random samples, samples that are only representative of specific groups of people, professions, or patients, smaller sample sizes of at least 150 people are often required: "For the good of the norm, however, it is not just the absolute number of the sample group size that is critical, but even more so, the quality of the composition of the sample, the collection of the data, and the description of the sample" (Schuhfried, 2010, p. 1).

2.5 Children's assessment in the South African context

In South Africa, developmental assessment and the assessment tools used for assessment need to consider the country's political, economic and social history (Claassen, 1997). The context of South Africa is both unique and complex, which creates challenges in the field of psychological assessment and the development of psychological tests (Claassen, 1997; Foxcroft, 1997). The assessment of children in South Africa is very important including the recognition that children from various cultural backgrounds need to be assessed. South African children learn in a diverse and multicultural setting, which requires a need for a culture-reduced developmental assessment that will allow for culture-fair assessment (Allan, 1992) of infants in South Africa. The measures that will be discussed below are some of the developmental measures that are used in South Africa.

2.5.1 The Denver Developmental Scales (DDST): The Denver Developmental Scales (DDST) was first published in 1967 and revised in 1990 as the Denver II scales (Frakenburg, Dodd, & Archer, 1990). They were developed as a screening instrument for children from birth to 6 years of age and assist in detecting potential developmental problems in young children. There are 125 tasks that tap a child's functional status in terms of four developmental areas: Language, Fine-motor-adaptive (includes imitation), Gross Motor and Personal-Social developmental areas. Its personal-social domain consists of 23 items, which evaluate the child's ability to socialise with others, to play appropriately, and to perform self-care tasks. The test includes a behaviour rating scale that rates the child's test-taking behaviour on dimensions of compliance, interest in surroundings, fearfulness, attention span, as well as speech intelligibility. Scores yield an overall classification of a child's current development into one of three categories, namely, abnormal, questionable or normal development (Nuttall, Romero & Kalesnik, 1992). According to Brooks-Gunn (1990), the DDST is a widely used screening measure. Due to their recent revision, little research has

been done on their reliability and validity. However, there is a growing body of research reporting on its psychometric properties (Nuttall, Romero &Kalesnik, 1992).

2.5.2 Vineland Adaptive Behaviour Scales, Second Edition (Vineland-II): The Vineland-II (Sparrow, Cicchetti & Bella, 2005) is a revision of the Vineland Social Maturity Scale and Vineland Social Behaviour Scale (Doll, 1965). The scales assess personal and social competence of individuals from birth to adulthood. The scales measure adaptive behaviour in four domains: Communication, Daily Living Skills, Socialisation and Motor Skills (Nuttall, Romero, &Kalesnik, 1992). They do not require the direct administration of task to an individual, but require a respondent who is familiar with the individual's abilities and general behaviour. This makes the scales attractive to use with individual's abilities and general behaviour (Foxcroft & Roodt, 2010).

2.5.3 The Bayley Scales of Infant Development: The Bayley scales of Infant Development were first published in 1933. The scales include 185 items applicable to the age range from birth to three years. However, scoring procedures were only provided for the first 18 months, and children in the standardisation sample were largely from the upper middle class. Thus the test was criticised for failing important psychometric requirements (Anastasi, 1982). The second edition of the scales (BSID-II) was published in 1969, and the revised and restandardised version was completed in 1993 (Bayley, 1969; 1993). The revised scale was designed for children between 1 and 42 months, who are suspected of being "at risk". The BSID-II consists of three parts: A Mental Scale (yielding a Mental Developmental Index) provides a normalised standard score and is intended to assess sensory-perceptual acuities and discrimination, object constancy, memory, learning, problem solving, early verbal communication, early abstract thinking and early number concepts.

A Motor Scale (yielding a Psychomotor Developmental Index) , on the other hand, is a standard score and evaluates body control, as well as fine and gross motor skills. The third

scale, a Behaviour Rating Scale, supplements information from the Mental and Motor scales and provides a qualitative assessment of attention, orientation, emotional regulation and motor quality (Brown, 1994). An accompanying instrument, the Bayley Infant Neurodevelopmental Screen (BINS), was designed to assess basic neurological functions, auditory and visual receptive functions, social and cognitive processes in children aged 3 to 24 months. Thus the BSID-II was designed to obtain information about a wide variety of developmental abilities and the achievement of developmental milestones. Considering the review on psychosocial development, the Bayley scales do not adequately cover personal-social development as the primary focus of the Behaviour scales appears to be on self-control. However, the infant's personal/social development can be assessed directly by items that appear on the BSID-II, such as smiling at the examiner, as well as indirectly, by how the infant responds to the examiner throughout the test session. The latter can be rated on several items on the Behaviour Rating Scale (Bayley, 1993). Anastasi (1982) considers the test construction procedures to be of a very high technical standard with an average reliability coefficient of .88 being reported.

However, despite the revision and re-standardisation, no attempts were made to improve the low predictive validity of the scales. Instead, Bayley states that all infant tests should basically be used to assess present developmental status and should not be utilised for the purpose of predicting future ability levels. She maintains that developmental abilities are generally influenced by several extraneous factors, which tend to render long-term predictions little value (Anastasi, 1982). In addition, information to use with special populations is lacking (Barnard, 2000). The BSID was standardised for use with Black South African children in 1988 (Richter & Griesel, 1988). However, no further validity or reliability studies were conducted.

2.5.4 The Herbst Measure: In 1994, Herbst constructed the Herbst Assessment Measure, which was designed specifically to suit the developmental assessment of Black children in South Africa (Schröder, 2004). The measure consists of a battery of items to determine the progression of the various aspects of development, namely, Cognitive Aspects (including visual perceptual abilities), Fine Motor Development and Gross Motor Development in 3- to 6-year-old Black children. It provides the practitioner with a quantitative depiction of the child's ability as well as possible neurological indicators. There's Limited information available regarding the procedures to norm the measure. A normative sample of 249 Black children was used. Normative data, including percentiles, is provided for each subtest of the Herbst measure. The Herbst measure is useful in its own right, but does not suit the general developmental assessment needs of the South African context. It is only for Black children, has not found its way into mainstream testing and no additional studies are available on the psychometric properties of the measure.

In light of the foregoing, it is clear that there are no South African measures that will completely fulfil the developmental assessment needs of the country. It is, of course, always an option to develop a new measure to fulfil these needs, but another more cost-efficient way is to explore the applicability of a measure developed elsewhere to the South African context. There are several well-established developmental assessment measures used in the international arena. One such measure in South Africa is the Griffiths Mental Development Scales-Extended Revised (Griffiths scales) to be discussed in the following chapter.

2.6 Chapter summary

This chapter has briefly dealt with the theoretical context of the study by exploring child development and its theories; thereafter the reviewer discussed Developmental assessment and highlighted some of the developmental tests that are used in the South African context.

CHAPTER 3
THE GRIFFITHS SCALES

3.1 Chapter preview

This chapter presents the Griffiths scales. The origin of the measure will be discussed, starting with a discussion on the Griffiths Infant scales and reporting on the subsequent versions of the measure. The theoretical view of the Griffiths scales will also be presented. The chapter will conclude with a section focusing on the Griffiths scales in the South African context.

3.2 The Griffiths Scales of Mental Development

The Griffiths scales were originally developed by Ruth Griffiths in the United Kingdom in 1954 to assess the development of children from birth to 2 years of age (Griffiths, 1954; 1970; 1986). The Griffiths Infant Scales were and still are regarded as one of the most precisely constructed infant scales and best-known tests developed in England (Von Wielligh, 2012). The main motivation for the development of the Griffiths scales was a need for the early detection of developmental delays in children. Initially, the scales were devised by drawing substantially on existing measures, in particular, the Gesell Developmental Schedules. Since previously published infant instruments such as the Stanford Binet Intelligence Test and the Wechsler Intelligence scale for Children lacked speech items, Griffiths included twice as many speech items in the scales. She believed that speech is a "unique human intellectual task" (Brooks &Weinraub, 1976, p.46) and should therefore be included in any infant assessment scale. Griffiths also added items of a social nature, especially, for the first year of development.

The Griffiths Infant Sales 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) subscales. Griffiths received many requests for the extension of 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 the ages from birth to 8 years and 4 months (Griffiths, 1970). Griffiths realised that certain skills and items of learning could not logically be fitted into any of the five existing subscales. As a result, a sixth subscale, the Practical Reasoning subscale (subscale F) was developed and included in the test for children aged 2 years and older. This subscale was to provide a more comprehensive coverage of young children's emerging problem-solving and logical reasoning skills (Griffiths, 1970). The construction of the Practical Reasoning subscale resulted in the development of the Griffiths Extended Scales.

The majority of developmental tests for children focus mainly on the cognitive development of the child. The Griffiths scales provide a comprehensive developmental profile which highlights areas of development such as motor and personal-social development in addition to the child's cognitive and perceptual skills. The items on the scales are diverse and tap the main aspects of a child's development which were mentioned above. Motor, personal-social, perceptual and language development is assessed directly and an astute clinician can glean from the test items information concerning emotion in an indirect manner. Most of the items are based on natural activities such as walking, talking and playing.

Play is considered to be a universal activity, and research findings indicate that different types of play emerge at about the same age in children from different cultures (Kagan, 1981). Constructing the Griffiths scales according to such a universal activity implies that the scales can be considered as being potentially culture-fair. In addition, research on the Griffiths scales has shown that they have practical and diverse applications in the evaluation and treatment of infants and young children from a variety of cultural backgrounds (e.g. Brandt, 1983; 1984; Cobos, Rodriques & De Venegas, 1971; Collins, Jupp, Maberly, Morris & Eastman, 1987; Laroche, Brabant & Brabant, 1976; Laroche, Gutzn & Desbiolles, 1974;

Luiz, Foxcroft & Knoesen, 2003; Luiz, Foxcroft& Stewart, 1999; Luiz, Foxcroft, Worsfold, Kotra & Kotras, 2001; Ramsay & Fitzharding, 1977; Sletten, 1970; 1977). For these reasons, the Griffiths scales have been adapted for use in several countries, further suggesting that they are relatively culture-fair. This is relevant to the present study as several cultural groups are included in the total sample, and any measure that would answer the South African developmental assessment needs would have to be potentially culture fair.

Griffiths (1970) stated that each of the six subscales was devised to be a separate and complete subscale in itself. This allows any one process of development to be measured independently and as completely as possible. The six subscales are equally difficult at each age level and contribute equally to the General Quotient (GQ).

A child's performance on the different subscales is plotted on a histogram, allowing his/her performance to be compared to the norm of each developmental area. The developmental profile therefore demonstrates the individual child's range of abilities and relative strengths and weaknesses. It is of particular use in clinical practice and programmatic intervention as it allows for the planning of interventions based on strengths. A comparison of profiles at different times can easily be affected to track progress or deterioration. Each subscale as well as the total scales yields a mental age that can be compared against the child's chronological age to express strengths and weaknesses to professionals and laymen in a meaningful way (i.e. in discrepancies in months between chronological and mental ages) (Griffiths, 1970, p. 34). Brief descriptions of the subscales are presented below:

3.2.1 Locomotor subscale (A): This subscale provides the opportunity to observe certain physical weaknesses, physical disabilities, neurological deficits and more definite inadequacies of movement. Items include activities such as walking up and down stairs, hopping, throwing and kicking a ball, and jumping over a rope. The items challenge the child's regular physical strength, skill and speed in movement, rhythm and poise, at a level

compatible with his age. The child's ability to focus and concentrate on the task at hand and the emotional determination to succeed further influence performance.

3.2.2 Personal-Social subscale (B): This subscale assesses personal and social development. At a level which corresponds with the child's age, a degree of self-help is required from the child in terms of his/her independence. Activities include personal cleanliness, efficiency at the table, the ability to wash his/her hands and face, to dress and undress, to fasten buttons, and so forth. Information such as the child's name, home address, family name, and so forth, can be gleaned through a casual conversation with the child, but is scored according to objective rules. Some degree of social interaction is necessary from the child as is co-operation in play with other children. Although emotional factors affect performance on all subscales, they usually have a more explicit influence on this subscale. Griffiths (1984) stated that the over-protected child and the neglected child usually do rather poorly on this subscale.

3.2.3 Hearing and Language subscale (C): This subscale has been considered to be the most intellectual of all of them (Luiz, 1999; Schröder, 2004) and assesses the growth and development of both receptive and expressive language. The subscale not only necessitates the comprehension of language, but also specific verbal expressive skills in terms of vocabulary, the use of different parts of speech, the use of sentences and paragraphs and the use of auditory memory. Items include the naming of colours, the naming of similarities and opposites, the repetition children, the gradual enhancement of expressive vocabulary, the use of different parts of speech, learning to use sentences and to develop paragraphs of description in relation to pictures are assessed. 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 suffer from hearing loss of sentences of various lengths, and the identification of stimulus picture cards. Regarding older.

3.2.4 Hand and Eye co-ordination subscale (D): This subscale comprises items relating to handwork and visual ability. The child is required to demonstrate manual dexterity, hand-eye co-ordination, manipulation and control of a pencil and persistence with a task. Items include inter alia the threading of beads, drawing, cutting paper and writing. From the child's drawings, it is possible to obtain information on his/her personality as well as his/her conception of special relationships. The test does not provide a structured method for interpreting the emotional significance of drawings and accuracy depends on whether the clinician has been trained in interpreting the projections of children from their drawings.

3.2.5 Performance subscale (E): This subscale assesses skill in fine motor manipulation, including the speed and precision of activities related to this skill. Spatial perception and visual acuity are required for the completion of the tasks on this subscale. Items correspond with those on the Hand and Eye Co-ordination Subscale as a certain degree of manual performance is required of the child. Items on this subscale include building stairs and bridges with blocks, the use of form-boards and pattern-making. This subscale supplements Subscale D in that manual dexterity and eye-hand co-ordination are assumed and the child is required to apply these skills to novel situations.

3.2.6 Practical reasoning subscale (F): Practical reasoning subscale is only introduced to children over the age of 2 years and focuses mainly on assessing the most primitive indications of arithmetic comprehension and the solving of the most basic practical problems. It has value in demonstrating a child's ability to benefit from formal schooling. Attention and concentration span influences performance on all subscales, but even more so with Subscale F. Items include the repetition of digits (which gives an indication of short-term sequential auditory memory) as well as differentiation of objects in terms of size, weight, length and height. A cursory comparison of the Griffiths subscales with the most

important domains of child development reveals that the Griffiths scales do indeed provide a comprehensive assessment of child development.

3.3 Griffiths' Theoretical view of child development

Griffiths (1954; 1970; 1984) developed the extended scales based on the same theoretical foundation as the Baby scales. Griffiths' (1954) view of child development is reflected in her philosophy based on the "the basic avenues of learning" (p.28). Her thinking is in line with modern systemic approaches as illustrated below (Figure 1).

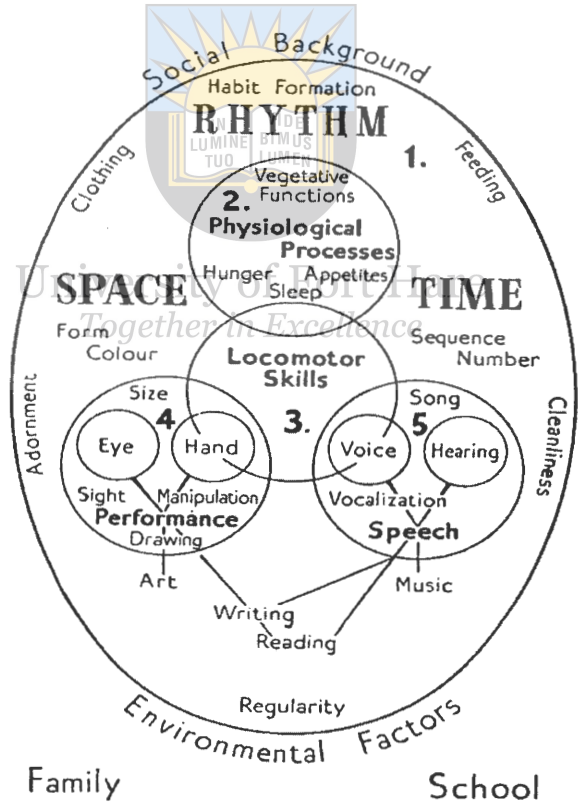


Figure 1: Griffiths' Basic Avenues of Learning

(Source: Griffiths, 1954, p.29)

The following paragraph provides a brief overview of Griffiths' (1954) description of her basic avenues of learning. The large circle represents the social background in which the child is situated. The social factor encircles the child from the beginning, modifying and influencing all his experiences. The next circle represents the physiological functions and organic movements, an awareness of which appears basic to experience. Superimposed on this physiological substrate, certain weak physical attempts to move the body in various way lead to locomotor development. Arm and hand movements, at first, vague and poorly directed develop later into more complicated manipulative acts. For successful manipulative development, both hand and eye must co-operate (Griffiths, 1954. pp.30-31).

The two develop together in manipulative performances of growing complexity. Almost from birth, the normal baby makes vague sounds, listens intently to sounds and to the voices of those around him. Hearing and voice together result in vocalisation and babble and the development of this is finally speech. All this development takes place in time and space. "Performance and Speech are the two main aspects of intellectual development, and together form the basis ultimately of formal education both practical and verbal" (Griffiths, 1954. pp.30-31. A more advanced stage is reached when the older child learns to read and write. All four main avenues of learning, eye and hand together with voice and hearing, all co-operate in the acquisition of this complex ability of understanding and reproducing written language. All these abilities form, as they develop, a complex and unified whole (Griffiths, 1954. pp.30-31).

Griffiths (1954) developed the Baby scales at a time when the psychometric views of intelligence played a dominant role in test construction and focused solely on the verbal, visual-spatial and quantitative domains as indicators of intellect. Her holistic view of a developing child was in stark contrast to her peers (Luiz et al., 2004a). In constructing the Baby scales, Griffiths acknowledged this psychometric view and stated that in construction of

the Griffiths Sscales, she had to "cast a wide net to include a large number of different specific abilities, so that g or general intelligence could be measured in as many as possible of its manifestations" (Griffiths, 1954, p.31). The object of Griffiths' work was to develop a measuring instrument that would be "reasonably exact, well-balanced and comprehensive so that those activities that later go to make an efficient person, or as many as possible of those skills that are measured in assessing intelligence in older subjects would be represented" (Griffiths, 1954, p.32). The Extended scales, which measured development in children from two to eight years of age, included a new subscale, the Practical Reasoning Subscale, which records the child's numerical reasoning ability. According to Stewart (2005), Griffiths' thinking was considerably advanced for that time period as it is in line with contemporary developmental theories.

3.4 The Griffiths Scales of Mental Development in South African

The Griffiths scales were introduced to South Africa in 1977, and, at present, there are more than 700 registered South African users. It has been translated, using the Brislin back-translation technique, into Afrikaans, Setswana and Xhosa, and has been used to make clinical assessments of the development of both black and white children (Tukulu, 1996). Various institutions make use of the Griffiths scales for evaluation purposes and numerous clinicians have indicated that they find it a useful and valid tool (Mothuloe, Richter, Barnes & Schoeman, 1994). A few studies have reported comparisons between the Griffiths scales and other psychometric instruments that are used successfully in South Africa with favourable results. Extensive research regarding the Griffiths Scales' cultural applicability has been conducted throughout South Africa, which has proved the Griffiths scales to be a worthy evaluation instrument in South Africa (Luiz, 1994a).

Van Rooyen (2005), however, has stressed the fact that caution should be taken with regard to the use of 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 are culturally diverse; they vary in cultural heritage, degree of acculturation, language, rural/urban location, socioeconomic background, parents' educational level, health, preparation for schooling and many other influences that shape human development (Foxcroft, 1997a). It can, therefore, not merely be assumed that the Griffiths scales would be applicable to the contemporary South African context. Considering the developmental assessment needs in the current South African context, the GMDS-ER could possibly meet these needs if the results of research studies done on the GMDS-ER are found to be applicable to South African context. More specifically, it is important for research to ensure that developmental assessment is up to date in the current South African political and societal ethos to ensure a comparative fit to a current standardisation sample (Van Heerden, 2007).

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, as this would strengthen the use of the GMDS-ER in the assessment of South African children (Van Heerden, 2007). The reality that the GMDS are regarded as a culture-fair test (Victoria &Baros, 1990; Luiz, 1994& Griffiths, 1970) seems to present ample reason to pursue further research in their adoption and standardisation with various population groups in South Africa. They have the added advantage of being underpinned by a vast amount of international as well as local research, which confirms its usefulness and appropriateness in South Africa (Luiz et al., 2001).

3.5 Chapter summary

Chapter three presented the Griffiths scales by focusing on a description of the measure, its origin and development as well as the theoretical aspects of the measure. The methodology that the reviewer employed for the systematic review will be discussed in the following chapter.

CHAPTER 4
RESEACH METHODOLOGY

4.1 Chapter preview

This chapter will provide an outline of the aims of the review and give a clear understanding of how this review was carried out. There's a specific research method that was used to locate, select and evaluate the contribution, analyse and report the evidence. This chapter will also look at the ethical considerations which were taken into account during the study.

4.2 Problem formulation and motivation

Developmental assessment in the developing world is characterised by shortcomings such as focusing on specific aspects of development or merely being screening in nature and measures being standardised for specific ethnic groups to the exclusion of others (Mpofu, 2002a). Western-orientated tests are also predominantly used in Africa due to heritage factors as well as time and expense obstacles in developing new standardised tests (Mpofu, 2002a; Mpofu & Nyanungo, 1998). Only a limited number of standardised tests are available to assess the development of children in the developing world. According to Foxcroft (2000), a central debate regarding assessment in the African context is whether it is appropriate to use Western-orientated tests or only culturally appropriate indigenous tests should be developed and used. Further, studies done on the Griffiths scales in the context of Africa are constantly expanding. Recent studies have cautioned the use of British based norms for a South African population while other studies have emphasised the culture fairness of the measure. Conflicting reports and an expanding pool of research done on the Griffiths scales which is in line with the growing trend of adapting Western-orientated tests (that are widely used internationally) to some African countries (Foxcroft, 2011) show the need for a systematic review.

4.3 Primary aim

The aim of the review was to explore and describe the applicability of the Griffiths Mental Development scales – Extended Revised to South Africa. This was done by focusing on the two technical requirements for applicability of a measure, namely, validity and reliability of the Griffiths scales. More specifically, the focus of the review was directed at investigating test bias and considering the adaptation of the Griffiths scales as well as normative information used to interpret test performance by means of a systematic review of the available literature published between 1977 and 2013.

4.4 Methods

This study employs the systematic review method. A systematic review is a specific methodology that locates existing studies, selects and evaluates contributions, analyses and synthesises data and reports the evidence in a way that allows reasonably clear conclusions to be reached about what is and is not known (Davies & Crombie, 2001). It is thus a further way of summarising research evidence that is already available. Systematic reviews are a relatively new methodology to psychology, but have been proven as a valuable methodology of choice (Enysenck, 1995). According to Enysenck (1995, p 12.) "They are ranked as the most valid form of research in several hierarchies of evidence and provide evidence-based recommendations from the synthesis and critical appraisal of primary studies" (Enysenck 1995, p 12). According to the Cochrane Handbook, the key characteristic of a systematic review contains:

- A clearly stated set of objectives with pre-defined eligibility criteria for studies
- An explicit, replicable methodology
- A systematic search that attempts to identify all studies that would meet the criteria

- A systematic presentation and synthesis of the characteristics and findings of the included studies

According to Tergoson (2003), systematic reviews may be conducted for various reasons, such as to address a specific, well focused, relevant question to search, locate and collect the results of the research systematically. It reduces bias at all stages of the review, publication, selection and other forms of bias. To appraise the quality of the research in light of the research question, synthesise the results of the review in an explicit way, make the knowledge base more accessible, identify gaps, and place new proposals in the context of existing knowledge. Propose a future research agenda, making recommendations and present all stages of the review in the final report to enable critical appraisal and replication Tergoson (2003).

1.4.1 The Systematic Review: According to Torgeson (2003), there is a long history supporting the use of systematic reviews in various disciplines. The science of research synthesis emerged in 1904 with a review of evidence on the effects of a vaccine against typhoid. In the 1950's, social science researchers explored approaches to undertaking meta-analysis, particularly, in the fields of education and psychology (Torgeson, 2003).

In 2003, the Cochrane collaboration was established with the aim of encouraging and publishing systematic reviews of health care interventions. This was in response to comments from researchers, in particular, Archie Cochrane, who criticised the medical field for not organising its knowledge in a systematic and reliable way. The international collaboration, named after him, is based on two principles: the need for unbiased comparison of interventions and the importance of collating evidence from different studies to obtain reliable information (MacDonell, Shepper, Kitchenham, & Mendes, 2009). While the Cochrane collaboration centres its efforts on the concept of evidence- based medical, initiatives, such as the Campbell collaboration, focus on the social and behavioural

disciplines, including education, criminal and social welfare. The modern systematic review owes its birth to the Cochrane and Campbell collaboration.

A systematic review can be an advantageous method to utilise in that scientific findings are consistent and can be generalised across populations, settings and treatment variations. It efficiently integrates existing information and provides data for rational decision making (Kitchenhame, 2004). In addition, it does not merely reflect the views of the authors, but contains a comprehensive summary of the available evidence (Davies & Crombie, 2001) as explicit methods limit bias in identifying and rejecting studies. Conclusions are thus more reliable as well as accurate because of systematic methods used. Large amounts of information can also be assimilated quickly by researchers (Enysenck, 1995).

However, systematic reviews have disadvantages. Availability of data can be limited due to a small number of institutions that conduct research on the topic at hand (Land, 2008). Hence an essential element of conducting a systematic review is accessing readily available literature. Systematic reviews involve a large volume of literature to be consulted and if the review is conducted poorly they may present skewed information. Further, topics may not always be well defined and the criteria for inclusion of studies may not be clearly described and fairly applied (Davies & Crombie, 2001).

4.5 Sampling

The reviewer used both national and international search engines located at the University of Fort Hare Catalogue, which hosts an array of online databases. To avoid limiting the study, the reviewer employed both qualitative and quantitative methods. The data needed for this review was located through the following sources and data bases: UFH OPEC (University of Fort Hare Library) online catalogue and circulation system in the UFH library. UFH library provides information about books, periodicals, government documents, pamphlets and other materials owned by the UFH library. The reviewer also made use of

EBSCOhost, an online reference system offering easy access to a wide variety of full text and bibliographic databases. It consists of various databases such as PsychINFO, Education Resources Information Center (ERIC) and Academic Search Completed. Psych INFO is renowned for scholarly journal articles, books, and dissertations. It is the largest resource base devoted to peer- reviewed literature in behavioural science and mental health (APA).

The reviewer searched for articles focusing on the applicability of the Griffiths Mental Development scales in South Africa. How reliable and valid are the Griffiths Mental Development scales to the South African context and how do South African children's Developmental profiles compare to the British sample standardisation sample. Only studies done after 1977 were considered. Fifty research reports reviewed, twenty were Included and thirty were excluded.

4.6 Procedure

The systematic review has developed a formal procedure, divided into seven steps, for their completion (Davies & Crombie, 2001). These seven structured steps are to define and refine a topic, designing a search:

4.6.1 Define and refine a topic: In this first step, the reviewer defines the topic thoroughly and carefully explains the aims of the study. A well formulated research question increases the efficiency of the review and helps maintain the focus of the study (Torgerson, 2003). Petticrew and Roberts (2006) point out that one of the types of questions that systematic reviews are proficient in answering is in "exploring risk and protective factors" (p.46). This systematic review was undertaken with the intention of answering the following research question: How applicable is the Griffiths Mental Development Scales – Extended Revised to the South African context?

4.6.2 Designing a search: The reviewer used an incorporative review to organise, synthesise and review the literature. It is imperative to be careful, systematic and organised

when conducting research. Parameters were set on the searches. Articles on the applicability of the Griffiths Mental Development Scales in South Africa between 1977 and 2011 were reviewed and considered for inclusion. These articles were considered for inclusion because they met the criteria as specified by the inclusion criteria forms. The reviewer examined a minimum of fifty research reports over four months.

4.6.3 Locating reports: The journal articles, books, computer databases and theses were located in the library. The reviewer used multiple search strategies instead of a single search method to counteract undue limitations. Abstracts allowed the reviewer to screen for relevant articles.

4.6.4 Searching the literature: According to Torgeson (2003), the three methods that are least liable for selecting bias in a systematic review are searching of electronic databases, hand searching of key journals and searching bibliographies of previous systematic reviews. This is because all of these methods employ a systematic approach. All three methods were employed for the purpose of this systematic review. The search included peer reviewed publications from electronic databases and print journals. The reviewer searched the literature carefully and systematically to avoid any bias.

4.6.5 Assessing the studies: After all possible studies were identified, the reviewer assessed each study for eligibility and quality against the inclusion criteria form. She then ensured that full text papers were retrieved for those that met the inclusion criteria form. Findings from each study were noted. Major concepts, main findings, design of search, sample, ideas for future study, discussions and results were recorded on charts.

4.6.6 Combining the results: After the reviewer had successfully searched for relevant articles, bibliographic citations for each reference were recorded. All articles in line with the inclusion criteria were filed separately from those that did not meet the inclusion criteria. Studies not meeting the criteria were excluded.

4.7 Data analysis

After selecting the studies for inclusion, the reviewer synthesised the results. She further determined if there were any discrepancies in the studies, considered the outcomes of various studies, attempted to classify each study, searched for flaws in the research designs and took note of the samples used as well as any limitations of the studies. This was done through data extraction and data synthesis.

4.7.1 Data extraction: Data extraction is the process through which the reviewer lists all the acquired information for inclusion in the study. This process allows the reviewer to select the relevant studies. The reviewer has to design a data extraction form. The copy of this form is attached as addendum A. After including and excluding studies based on quality appraisal, the next step for data analysis involves a simple descriptive evaluation of each study, commonly presented in a tabular format. Tables include the population under study, the interventions, and outcomes. Methods and biases are also included. The decisions about items to include in the description should relate to the research question.

4.7.2. Data synthesis: Data synthesis refers to an objective description of the main results (David, 2008).The aim of data synthesis in a systematic review is to collate and summarise the results of primary studies. The strength of the evidence is considered when results are organised.

4.8 Reliability and Validity

Reliability deals with how consistently an instrument is able to measure a certain phenomenon (Burns & Grove, 1993). Validity, on the other hand, in the context of a systematic review, measures the extent to which the design and conduct is likely to prevent systematic errors or bias (Moher et al., 1995). The goals of the systematic review are that it should be objective and repeatable (MacDonell, Shepperd, Kitchenham &Mendes, 2010). Standard practice for conducting a systematic review dictates that the reviewer makes explicit

the inclusion or exclusion criteria used and the reasons for exclusion of particular research. This transparency in method and process facilitates the reliability of the review (Petticrew& Roberts, 2006).

Further, the systematic review methodology dictates that rigorous procedures are adhered to at every stage of the process. This reduces the probability of inaccurate or distorted findings and the quality of results is largely dependent on the scientific rigour with which the process is followed. The following section describes the implementation of each step of the process as well as the steps taken to ensure the methodological soundness of the study.

Within the scope of systematic reviews, validity refers to transparency regarding how the information was gathered, accuracy, and appropriateness of the methods and consideration of legal and ethical issues (Petticrew & Roberts, 2006). The validity within the research context refers to the degree to which the research conclusions are sound (Van der Riet & Durrheim, 2006). Validity consists of internal and external validity. To ensure reliability and validity, the reviewer designed a grid for this review. Each article was reviewed by applying the grid which asked the same set of questions to determine the reliability and validity of results. The grid designed for this topic, therefore, allowed each article to be reviewed with more objectivity and consistency. To prevent the reviewer from citing appropriate studies in support of her own personal beliefs, the reviewer and supervisor carefully select the data for inclusion.

4.9 Significance of the study

Systematic reviews are relatively new to psychology, but have become a contemporary, progressive way to do research. They are internationally popular although South Africa has not conducted many of them. To date, no systematic reviews have been done in South Africa on the topic under review. The current review will contribute to this

body of knowledge and inform the revision of the measure and course of future studies on the Griffiths scales.

4.10 Ethical considerations

As this is a review of already published material, the reviewer envisaged limited ethical considerations. Given the extensive use of literature, a potential ethical problem might be copyright issues. The reviewer will prevent this by acknowledging all selected references. This may help one avoid plagiarism.

4.11 Chapter summary

This chapter provided a comprehensive overview of the research methodology employed in this study. The background and rationale for conducting this systematic review was established in the context of the aims. The methodology was clearly set out with reliability and validity issues given due consideration. The findings of the systematic review will be discussed in the following chapter.

CHAPTER 5
FINDINGS AND DISCUSSION

5.1 Chapter preview

This chapter presents the findings of the review in relation to the primary aim which was to explore and describe the applicability of the Griffiths Scales in South Africa. Data from primary studies were systematically reviewed. It is evident that South African children come from very different backgrounds and many researchers have acknowledged the need for reliable and valid measures to assess the South African child's developmental status (Knoesen, 2003). It can thus not just be assumed that the Griffiths Scales will be applicable to the present South African context. The findings of the present review are discussed below.

5.2 The Reliability of the Griffiths Scales in the South African context

Studies in various parts of the world have demonstrated that the Griffiths Scales can be applied to different populations and that they tap into experiences that are common to different cultures (Luiz, Collier, Stewart, Barnard & Kotras, 2000). Various studies further demonstrate that the Griffiths Scales are a measuring construct, which is consistent across cultures and through time, although there are differences generally, the patterns of measuring provided by the Griffiths Scales are consistent with diverse cultural groups. According to certain studies, the overall reliability of the GMDS-ER is highly satisfactory and the reliability of the individual subscales indicates a high level of internal consistency (Luiz, Foxcroft & Povey, 2006).These studies suggest that the Griffiths Scales have demonstrated reliability in the South African context in the past, although there are particular studies that stress the need for them to establish long-term reliability. Even so, the reliability of the Griffiths Mental Development Scales needs to be reviewed regularly because of, amongst other reasons, the rise in each successive generation's average IQ test scores.

5.3 The Validity of the Griffiths Scales in the South African Context

The other requirement from any measure is Validity: Validity concerns the accuracy of a measure and how well it measures (Foxcroft & Roodt, 2001, 2006). Content based evidence indicates that the items in each of the six subscales of the Griffiths Mental Development Scales –Extended Revised are representative of their respective content domains and that each item has a satisfactory degree of relevance to the construct being measured (Luiz, Barnard, Knoesen & Kotras, 2004).

A factor analysis was performed by Luiz, Foxcroft & Stewart (1999) with data for each South African ethnic group separately and the factor solutions were compared to determine whether the Griffiths Mental Development Scales-Extended Revised measure is similar to or different from constructs of South African ethnic groups. This study has found that the Griffiths Mental Development Scales-Extended Revised tends to measure similar constructs for White, Coloured, Asian and Black children alike. In addition, it was found that the pattern of inter-correlations for South African and British children were similar, thus suggesting that the Scales are consistent across cultures and through time (Luiz, Foxcroft & Stewart, 1999).

The Sweeny (1994) study examined the underlying dimensions tapped by the six Griffiths subscales using the common factor analysis. Most of them concluded that, except for the Performance subscale (for years 5 and 6); all the other subscales tapped complex skills. Sweeny (1994) conducted a cluster analysis on the Griffiths Scales in order to identify clinical typologies. The results indicated that clinical typologies could be generated for South African pre-schoolers and early school-going children. The results of this study once again added support to the construct validity of the Griffiths Scales in terms of its discriminative abilities.

5.4 Overall developmental profile comparisons between children in South Africa and the British Standardisation sample of the Griffiths Scales

Since the introduction of the Griffiths scales in South Africa in 1977, there has been a pool of research done on the overall development profile of South African children, comparing the South African and British Standardisation samples of the Griffiths scales. Based on the studies that have been reviewed from 1977 to 2005, South African and British children's overall performances (as measured by the GMDS-ER) were similar. However, Van Rooyen, 2005 study indicates a great deal of variability between the GMDS-ER profiles of normal South African and British children based on individual subscales and year groups. In general, South African children performed better on the Locomotor (this subscale provides the opportunity to observe certain physical weaknesses, physical disabilities, neurological deficits, and more definite inadequacies of movement) and Personal-Social (this subscale assesses personal and social development at a level which corresponds with the child's age, a degree of self-help is required from the child in terms of his/her independence)subscales, while British children performed better on the Language and Practical Reasoning (the language subscale has been considered to be the most intellectual of all the subscales and assesses the growth and development of both receptive and expressive language) subscales. Studies focusing on the Performance on the Eye and Hand Coordination subscale (this subscale comprises items relating to handwork and visual ability and require the child to demonstrate manual dexterity, hand-eye co-ordination, manipulation and control of a pencil and persistence with a task) has find similarities for the British and South African samples and on the Performance subscale performance was too variable to come to any general conclusions (Van Rooyen, 2005).

Van Heerden study showed a significant difference between the South African and British children's overall developmental profiles (as measured by the GMDS-ER). 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. 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 (Van Heerden, 2007).

Studies done after 2012 depict an increased GQ score for South African children making them more comparable to the British Standardisation sample. A study conducted by Von Wielligh (2012) suggests a positive comparison between South African infants and the British standardisation sample on the GMDS-ER. These recent studies could however be indicative of a possible Flynn effect that has taken place which can be defined as a rise in each successive generation's average IQ test scores over time (Flynn, 2007 and Flynn, 2009a).

5.5 Clinical studies

When looking at the applicability of a measure to a specific context, the researcher has to take into consideration factors that may hinder the positive outcome of that particular measure. Eric Erikson argues that achievements and failures of earlier stages influence later stages, whereas later stages modify and transform earlier ones. South Africa faces many challenges and there are factors that need to be considered when adapting a measure. Factors such as socio-economic status (SES), parents' educational level, health, and other influences that shape human development are important to consider (Foxcroft, 1997a). Numerous studies have been conducted on the influences that some of these factors have on the performance of children as measured by the Griffiths Mental Development Scales.

5.5.1 The performance of children from low socio-economic background (SES): Socio-economic status (SES) refers to one's access to economic and social resources and the social positioning, privileges, and prestige that derive from these resources (Hauser & Warren, 1997). The research outcomes of the studies that were explored, looking at the performance of children from low-socio backgrounds, revealed that the children from a low Socio-Economic Status performed better on the Locomotor subscale, followed by the Personal-social subscale, while they performed poorly on the Performance subscale. Their second weakest performance was on the Language subscale, followed by the Eye-Hand Co-ordination subscale and, finally, the Practical Reasoning subscale. The 3-year olds performed better on the Locomotor, Personal-social, Eye-Hand Co-ordination and Performance subscales whilst performing poorly on the Language and Practical Reasoning subscale.

5.5.2 Performance of black South African infants on GMDS- ER (Maternal education): One of the studies states that children of well-educated mothers have improved health because they live in affluent households. When comparing infants of highly educated and professional mothers with those of less educated, non-professional mothers on the GQ and the locomotor subscale (scale A), the former perform significantly better than their counterparts. Allan (1992) also found significant differences between English and Afrikaans high and low socio-economic groups on the GQ and on four of the six subscales (namely, Hearing and Speech, Eye Hand Coordination, Practical Reasoning and Performance). The discrepancy in the ages of the samples concerned may partly account for the variation in scores of the Griffiths scales in which differences were found. The effects of maternal level of education and by association, socio-economic status, may become more marked as the child develops, accounting for the more pervasive differences found (Allan, 1992).The findings of the review indicate that the contextual factor of socio-economic status and

maternal level of education are aspects that impact children's general functioning on this measure.

5.6 Overall findings

Studies done so far on the overall developmental profile of South African and the British standardization sample of the Griffiths scales have not found significantly different performances. However, certain trends did emerge across some subscales. It was noted that South African children generally performed poorly on the Language and Practical Reasoning subscales of the GMDS-ER. The above results can possibly be attributed to British children's earlier exposure to formal schooling (especially if considered in conjunction with results on subscale C – which is the other more intellectual subscale on the GMDS-ER). The kinds of items assessed by subscale F (e.g. counting and stating the names of the days of the week) are often some of the first things that children are taught in formal schooling. This would mean that British children's greater learned knowledge could possibly account for the rise of the differences observed above. Socio-economic aspects of the environment also have a significant impact on the experiences that moderate abilities, attitudes and behaviour as assessed by the Griffiths scales. When looking at the clinical utility of the Griffiths scales in South Africa, studies have provided evidence that the scales are useful in the clinical assessment and diagnosis of children from diverse population groups. The value of the Griffiths scales in South Africa could possibly lie in the fact that the measure has shown great promise in the administration of the measure across varying cultural and social contexts. Lastly, the majority of recent studies on GMDS-ER support and indicate the need for the Griffiths scales to be standardised for use in South Africa with most studies cautioning against the use of British based norms in the South African context.

5.7 Chapter summary

This chapter provided the results of the review. The aims of the study were revisited at the beginning of the chapter to contextualise the findings. Specific findings were discussed and thereafter overall findings were presented.

CHAPTER 6
CONCLUSION AND RECOMMENDATIONS

6.1. Chapter overview

A thematic analysis of the applicability of the Griffiths Mental Development Scales Extended Revised was presented in Chapter 5. However, this chapter deals with the findings and limitations and contributions of the study.

6.2 Conclusion

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).However, the norms of the standardisation sample should be comparable with the current day South African population or ideally norms should be developed for the South African context. From the studies under review, it is evident that the GMDS-ER has been well researched in the South African context. A number of studies locally and internationally have suggested that the GMDS-ER is a culture-fair measure applicable to a range of cultures tapping common experiences. The GMDS-ER has, for several years, provided a meaningful assessment of the development of the South African child (Allan, 1988, 1992; Bhamjee, 1991; Luiz et. al., 2004; Knoesen, 2005; Van Rooyen, 2005). This is of great importance in the South African context where the need for early identification is high (Amod, Cockcroft, & Soellaart, 2007).

Norms for South African children are, however, not yet available for the extended revised version of the Griffiths scales, and studies lend conflicting reports regarding the suitability of the revised British norms for use in the contemporary South African context. South African researchers have recognised 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) and Van

Heerden's (2007) studies are two of the various endeavors made by past South African specialists at a suitable appraisal measure that can fulfill developmental assessment needs (Von Wielligh, 2012). Despite previous research indicating that British based norms could be utilized, it is important to note that developmental assessment is influenced by the effects of time. The modern day South African child is also a different child, one that has been influenced by socio-political change and cultural heritage to name a few. The most recent studies conducted in South Africa comparing British based norms to the South African population has further stressed that the applicability of the Griffiths scales to the contemporary South African context cannot be assumed. Most recent studies caution against the use of British based norms in the South African context and highlights the need for comparing British based norms to a contemporary South African sample. The long term reliability of the Griffiths scales is also uncertain.

More specifically, it is important for research to ensure that the Griffiths scales is up to date in the current South African political and societal ethos including test adaptation, test equivalence and ultimately norm development. Despite research done on the Griffiths scales indicating favorable culture-fairness and applicability to the South African context, certainty regarding these in South Africa is unclear. However, past studies on the Griffiths scales' applicability to the South African context, coupled with their world-wide applicability, highlight the importance of extending the scales to mainstream testing and present ample reason to pursue further research into their adoption and standardisation across various population groups in South Africa.

6.3 Significance of the study

Much effort has been placed on improving the development of children while trying to find a psychological assessment measure to meet the needs of South African children. This review has provided insight into the Griffiths Mental Development Scales – Extended Revised and its applicability to the South African context. The current review further contributes to this body of knowledge and informs the revision of the measure and the course of future studies on the Griffiths scales.

6.4 Recommendations

This review highlights that the Griffiths Mental Development Scales – Extended Revised (GMDS-ER) could satisfy the developmental assessment needs of South African children. It is therefore recommended that:

- The Griffiths Mental Development Scales – Extended Revised (GMDS-ER) in South African context studies consist of unpublished treatises and there's a need for this studies to be published.
- More emphasis be given to the cultural appropriateness of the Griffiths scales in South Africa
- Caution should be taken against utilising British based norms in the South African context.
- Studies comparing British based norms to the South African population should utilise a larger, more contemporary sample. However, the need for the development of South African norms for the GMDS-ER outweighs the continued focus of comparative studies between the two population groups. Therefore, the standardisation of the GMDS-ER should be actively pursued.

6.5 Limitation of the study

A specific limitation of this review is that most of the studies on the Griffiths scales were done at the Nelson Mandela Metropolitan University, and, nearly all of them are unpublished treatises. Some of these studies were difficult to access however the reviewer was able to locate sufficient information for the review. A further limitation of the review was that most studies that were specifically aimed at the reliability and validity of the Griffiths scales were internationally based due to the fact that the GMDS-ER was developed in the United Kingdom and was therefore not always relevant to the South African focus of the review.

6.6 Chapter summary

This chapter has provided the findings, outlined the limitations of the review and made recommendations for future research. The GMDS-ER has 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.

REFERENCES

Adolph, K. E., & Joh, A. S. (2009). Multiple Learning Mechanisms in the Development of Action. In A. Woodward & A. Needham (Eds.), *Learning and the Infant Mind* (pp. 172-203). New York, NY: Oxford University Press.

Adolph, K. E., Kurashiki, L. B., & Tamis-LeMonda, C. S. (2010). Moving between cultures: Cross-cultural research on motor development. In M. Bornstein (Ed.), *Handbook of Cross-Cultural Developmental Science: Domains of Development Across Cultures* (pp. 61-88). Clifton, NJ: Psychology Press.

Ainsworth, M. D. (1967). *Infancy in Uganda: Infant Care and the Growth of Attachment*. Baltimore, MD: Johns Hopkins University Press.

Aldridge Smith, J., Bidder, R. T., Gardner, S. M., & Gray, O. P. (1980). *Griffiths Scales of Mental Development and Different Users. Child: Care, Health and Development, 6, 11-16.*

Allan, M. M. (1988). *A Comparison of the Performance of Normal Pre-school South African and British Children of the Griffiths Scales of Mental Development*(Unpublished master's thesis). University of Port Elizabeth, South Africa.

Allan, M. M. (1992). *The performance of South African normal preschool children on the Griffiths Scales of Mental Development*: A comparative study (Unpublished doctoral thesis). University of Port Elizabeth, South Africa.

Amod, Z., Cockcroft, K., & Soellaart, B. (2007). Use of the 1996 Griffiths Mental Development Scales for infants: A Pilot Study with a Black South African sample. *Journal of Child and Adolescent Mental Health*, 19(2), 123-130. Doe: 10.2989/17280580709486647

Anastasia, A. (1982). *Psychological Testing* (5th ed.). New York, NY: Macmillan Publishers.

Bailey, N. (1969). *The Bailey Scales of Infant Development*. New York, NY: Psychological Corporation.

Baker, S. (2005). The performance of children with Attention Deficit Hyperactivity Disorder on the Griffiths Mental Development Scales-Extended Revised. Unpublished master's treatise, Nelson Mandela Metropolitan University, Port Elizabeth, South Africa

Bangirana, P. (2011). Computerized rehabilitation for cognitive deficits after central Nervous system malaria in Ugandan children. *Stockholm, Sweden*: Karolinska Institutet and Makerere University, printed by Larserics Digital Print AB. Retrieved fromhttp://publications.ki.se/jspui/bitstream/10616/40420/8/phD%20Thesis_Paul%20 Bongirana on April 22, 2013.

Bayley, N. (1993). *Bayley Scales of Infant Development*: Manual (2nd ed.). San Antonio, TX: The Psychological Corporation.

Bhamjee, R. A. (1991). *A Comparison of the Performance of Normal British and South African Indian Children on the Griffiths Scales of Mental Development* (Unpublished Doctoral Dissertation).University of Port Elizabeth, South Africa.

Brooks, J., &Weinraub, M. (1976).A History of Infant Intelligence Testing. In M. Lewis (Ed.), *Origins of Intelligence: Infancy and Early Childhood* (pp. 19-58). New York: Plenum Press.

Bodrova, E., & Leong, D. J. (1998). The Role of Play in Early Childhood Development: Standing a Head above Himself. *Colorado Early Childhood Journal*, 1(1), 4-7.

Bloch, M. N., & Adler, S. M. (1994). African Children's Play and the Emergence of the Sexual Division of Labour. In J. L. Roopnarine, J. E. Johnson, F. H. Hooper (Eds.), *Children's Play in Diverse Cultures* (pp. 148-178). New York, NY: State University of New York Press.

Brandt, I. (1983*). Griffiths Entwicklungsskalen (GES) Zur Beurteilung der*

Entwicklung in den ersten Beiden Ledensjahren. Weinheim und Basel: Beltz Verlag.

Brandt, I. (1984). Fruherkenning Geistiger Behinderung im Sauglingsalter-ergebinisse einer Lansschittestudioes. In J. W. Dudenhausen & E. Saling (Eds), *Perinatale Medizin, 11 Deutscher kongrefs fur Perinatale Medizin Stuttgart*: Georg Thieme Verlag.

Brooks, J., & Weinraub, M. (1976). A history of infant intelligence testing. In M. Lewis (Ed.), *Origins of intelligence: Infancy and early childhood* (pp. 19-58). New York, NY: Plenum Press.

Brown, D. C. (1994). Subgroup Norming: Legitimate Testing Practice or Reverse Discrimination? *American Psychologist*, 49(11), 927-928. doi: 10.1037/0003-066X.49.11.927.

Brooks-Gunn, J. (1990). Identifying the vulnerable in young children. In D.E. Rogers & E. Ginsberg (Ends), *Improving the Life Chances of Children at Risk* (pp. 104- 124). Boulder: Westview Press.

Claassen, N. C. W. (1997). Cultural Differences, Politics and Test Bias in South Africa. *European Review of Applied Psychology*, 47(4), 297–307.

Cobos, F., Rodriques, C., & De Venegas, A. V. (1971). Practical Use of the Griffiths Scales in Older Children. *Interamerican Journal of Psychology*, 5, (3-4), 163-166.

Cockcroft, R., Amod, Z., & Soellaart, B. (2008). Level of Maternal Education and Performance of Black South African Infants on the 1996 Griffiths Mental Development Scales. *African Journal of Psychiatry*, 11(1), 44-50. Retrieved from http://www.ajol.info/viewerarticle.php?id=39214

Collins, J. K., Jupp, J. J., Maberly, G. F., Morris, J. G., & Eastman, C. J. (1987). An Exploratory Study of the Intellectual Functioning of Neurological and Myxoedematous Cretins in China. *Australian and New Zealand Journal of Development Disabilities*, 13, 13-20.

Cook, J. L., & Cook, C. (2005). *Child development – Principles and Perspectives*. New York, NY: Pearsons Education.

Chen, X., French, D. C., & Schneider, B. H. (2006). *Peer Relationships in Cultural Context*. New York, NY: Cambridge University Press.

Davies, D. (1999*). Child development: A Practitioner's Guide*. New York: The Guilford Press.

Davies, H. T. O., & Crombie, L. K (2001). *What is Systematic Review?* [Online] available: www.evidance-based-medical.co.uk

Davidson, G. (2008). *First and second born twins*: A comparative study utilizing the Griffiths Mental Development Scales-Extended Revised. Unpublished master's treatise, Nelson Mandela Metropolitan University, Port Elizabeth, South Africa

Enysenck, H. J. (1995). *Systematic Reviews Chalmers*. L. London: Altman DG BMJ published group.

Dehart, G. B., Sroufe, L. A., & Cooper, R. G. (2004). *Child development: It's Nature and Course.* New York, NY: Ms. Graw-Hill.

Doll, E. A. (1965). *Vineland Social Maturity Scale*. Minnesota: American Guidance Service.

Erikson, E. H. (1950). *Childhood and Society*. New York: Norton.

Erikson, E. H. (1959). Identity and the Life Cycle. *Psychological Issues*, 1, 1-171.

Field, T., Diego, M., & Hernandez-Reif, M. (2007). Massage Therapy Research. *Developmental Review*, 27, 75-89. doi: 10.1016/j.dr.2005.12.002

Foxcroft, C. D. (1997). Psychological Testing in South Africa: Perspectives Regarding Ethical and Fair Practices. *European Journal of Psychological Assessment*, 13(3), 229-235.

Foxcroft, C. D. (1997a). *Updated Policy Document on Psychological Assessment: The*

Challenges facing us in the New South Africa (Unpublished Manuscript). University of Port Elizabeth, South Africa.

Foxcroft, C. D., & Roodt, G. (2001). An Introduction to Psychological Assessment in the South African Context. Cape Town: Oxford University Press.

Foxcroft, C. D., Watson, A. S. R., Greyling, J., &Streicher, M. (2001, July).CBT Challenges relating to technologically unsophisticated test-takers in multicultural contexts. *Paper presented at the European Congress of Psychology in London* (Obtainable from first author at cheryl.foxcroft@nmmu.ac.za).

Foxcroft, C. D. & Roodt, G. (2006). *An Introduction to Psychological Assessment in the South African Context* (2nd ed.). Cape Town: Oxford University Press.

Foxcroft, C. D., Roodt, G., & Abrahams, F. (2009). The Practice of Psychological Assessment: Controlling the use of measures, competing values, and ethical practice standards. In C. D. Foxcroft& G. Roodt (Eds.), *An introduction to Psychological Assessment in the South African Context* (3rd ed.) (pp. 93-105). Cape Town, South Africa: Oxford University Press.

Frankenberg, W. K., Dodds, J., & Archer, P. (1990). *Denver II Technical Manual*. Denver, CO: Denver Developmental Materials.

Fouad, N. A. (1993). Cross-cultural Vocational Assessment. The Career Development Quarterly, 42, 4-13.

Garcia-Coll, C.T., Ramos, A., Magnuson, K., Halpern, L., & Valcarcel, M. (1997, April). *Puerto Rican and Anglo mothers and infants: Similarities and Differences in Developmental Goals and Processes*. Paper presented at the Society for Research in child development biennial meeting, Washington, DC.

Gardiner, H. W., & Kosmitzki, C. (2005*). Lives across cultures: Cross-cultural Human Development* (3rd ed.). Boston, MA: Pearsons Education.

Geber, M., & Dean, R. (1957a). Gesell Tests on African Children. *Pediatrics*, 20(6), 1055-1065.

Geber, M., & Dean, R. (1957b). The State of Development of Newborn African Children. Lancet, 1, 1216-1219.

Geisinger, K. F. (1994). Cross-cultural Normative Assessment: Translation and Adaptation Issues influencing the Normative Interpretation of Assessment Instruments. *Psychological Assessment*, 6, 304-312.

Gibson, E. J. (1988). Exploratory Behaviour in the Development of Perceiving, Acting and the acquiring of Knowledge. *Annual Review of Psychology*, 39, 1-41. doi: 10.1146/annurev.ps.39.020188.000245Gibson, E. J., & Pick, A. D. (2000). *An Ecological Approach to Perceptual Learning and Development*. New York, NY: Oxford University Press.

Gowar, R.V. (2003). The performance of children with autism on the Revised Extended Griffiths Scales of Mental Development. Unpublished master's treatise, University of Port Elizabeth.

Griffiths, R. (1954). *The Abilities of Babies. London*: University of London Press.

Griffiths, R. (1970). *The Abilities of Young Children. London*: Child development Research Centre.

Griffiths, R. (1984). *The Abilities of Young Children.* Amersham: ARICD.

Griffiths, R. (1986). The Abilities of Babies. Amersham: ARICD Hambleton, R. K. (1993). Translating achievement tests for use in cross-national studies. *European Journal of Psychological Assessment*, 9, 57-68.

Hambleton, R. K. (1993). Translating achievement tests for use in cross-national studies. *European Journal of Psychological Assessment*, 9, 57-68.

Hambleton, R. K. (1994). Guidelines for adapting educational and psychological tests: A progress report. *European Journal of Psychological Assessment*, 10, 229-244.

Hambleton, R. K., & Kanjee, A. (1995). Increasing the validity of cross-cultural assessments: Use of improved methods for test adaptation. *European Journal of Psychological Assessment* 11, 147-157.

Harkness, S., & Super, C. M. (1996). Parents cultural belief systems: *Their origins, Expressions and consequences.* New York, NY: Guilford Press.

Holt, K. S. (1979). Assessment of handicap in childhood. *Child: Care Health and Development*, 5, 151 – 162.

Hopkins, B. (1991). Facilitating early motor development: an intercultural study of West Indian mothers and their infants living in Britain. In J. K. Nugent, B. M. Lester & T. B. Brazelton (Eds.), *the cultural context of infancy: Multicultural and interdisciplinary approaches to parent relations* (pp. 93-143). Westport, CT: Ablex.

Hopkins, B., & Westra, T. (1988). Maternal handling and motor development: An intra-cultural study. Genetic Psychology Monographs, 114(3), 377-408. Kitchenham, B. (2004). Procedures for performing Systematic Reviews. *Journals on Technology.* Doi. 0400011T. 1

Jakins, T. A. (2009). *Comparing the development of a sample of South African pre-school boys and girls utilizing the Griffiths Mental Development Scales - Extended Revised* (Unpublished master's thesis). University of Port Elizabeth, South Africa.

Kagan, J. (1981). *The second year*. Cambridge, Massachusetts: Harvard University press.

Kail, R.V. and Cavanaugh, J.C. (2000). *Human Development* (2nd ed.). Belmont, CA: Wadsworth.

Keefer, C. H., Tonic, E., Dixon, S., & Brazelton, T. B. (1982). Specific differences in

motor performance between Guise and American newborns and a modification of the neonatal behavioural assessment scale. *Child development*, 53(3), 754-759. Retrieved from http://www.jstor.org/stable/1129389

Knoesen, N. (2003). *An exploration of the relationship between the Revised Griffiths Scales and the grade one scholastic development* (Unpublished master's thesis). University of Port Elizabeth, South Africa.

Knoesen, N. (2005). *Exploring the reliability and construct-related validity of the Locomotor Subscale of the Griffiths Mental Development Scales – Extended Revised (GMDS-ER)* (Unpublished doctoral thesis). Nelson Mandela Metropolitan University, Port Elizabeth, South Africa.

Lang, M. (2008). Dealing with sexually abused children: A framework for social worker. *In South Africa Justice System* retrieved on the 12 April 2013 from htt: //uir. Unisa.ac.za/bitstream/10500/1468/1/dissertation.pdf

Laroche, J. L., Brabant, G., & Brabant, J. (1976). Le temps de fixation comme indice de differenciation entre mère etranger chez le jeune enfant. *Journal de Psychologie*, 2.

Laroche, J. L., Gutz, H., & Desbiolles, M. (1974). Differenciation entre mere etranger chez jeune enfant, Communication au XVIIe Congres International de Psychologie Appliquée. Montreal.

Lonner, W.J., & Berry, J. W. (Eds.) (1986). *Field methods in cross-cultural research*. Beverly Hills: Sage.

Louw, D. A., & Louw, A. E. (2007). *Child and adolescent development*. Bloemfontein, S.A: Psychology Publications.

Luiz, D. M. (1994a). *Children of South Africa: In search of a developmental profile*. Port

Elizabeth: University of Port Elizabeth.

Luiz, D. M. (1999). *Children of South Africa: in Search of a Developmental Profile.* Inaugural and Emeritus Addresses D34. Port Elizabeth: University of Port Elizabeth.

Luiz, D. M., Barnard, A., Knoesen, N., & Kotras, N. (2004). *The Griffiths Mental Development Scales Extended Revised (GMDS-ER)*: Technical Manual. Amersham, UK: ARICD.

Luiz, D. M., Foxcroft, C. D., & Povey, J. L. (2006). The Griffiths Scales of Mental Development: A factorial validity study. *South African Journal of Psychology*, 36(1), 192-214.

Luiz, D. M., Barnard, A., Knoesen, N., Kotras, N., Horrocks, S., McAlinden, P., Challis, D., & O'Connell, R. O. (2006a). *Griffiths Mental Developmental Scales-Extended Revised: Two to Eight Years.* Analysis Manual. Oxford, MS: Hogrefe.

Luiz, D. M., Foxcroft, C. D., & Knoesen, N. P. (2003). *An Exploration of the Relationship between the Revised Griffiths Scales and Grade one Scholastic Development.* Unpublished Master's Treatise, University of Port Elizabeth.

Luiz, D. M., Foxcroft, C. D., & Stewart, R. (1999). The Construct Validity of the Griffiths Scales of Mental Development. *Child: Care, Health and Development*, 27(1), 73-83.

Luiz, D.M., Foxcroft, C.D., Worsfold, N., Kotras, N., & Kotras, H. (2001). The Griffiths Scales of Mental Development: An evaluation of their prediction of scholastic achievement. South African Journal of Education, 21(2), 81-83.

Lynn, R. (1998). New Data on Black Infant Precocity. *Personality and Individual Differences*, 25(4), 801-804. doi: 10.1016/S0191-8869(97)00235-3

Luiz, D. M., Foxcroft, C. D., Worsfold, L. B., Kotras, N. & Kotras, H. (2001). The Griffiths

Scales of Mental Development: An Evaluation of their Prediction of Scholastic Achievement. *South African Journal of Education*, 21(2), 81-84.

Luiz, D.M., Stewart, R., Barnard, A., Collier, P.T., & Kotras, N. (2000a). *Revision and Standardization of the Griffiths Extended Scales of Mental Development: A Working Document*. Unpublished Document: Department of Psychology, University of Port Elizabeth.

Moosajee, S. (2007).*Exploring the construct-related validity of the Personal-Social Subscale of the Griffiths Mental Development Scales – Extended Revised (GMDS-ER)* (Unpublished Doctoral Thesis). Nelson Mandela Metropolitan University, Port Elizabeth, South Africa.

Mothuloe, V. B., Richter, L. M., Barnes, C. J., & Schoeman, M. (1994). Griffiths Scales of Mental Development: A South African Validation Study. *South African Journal of Education*, 14(1), 38-43.

Mpofu, E. (2002a). Psychology in sub-Saharan Africa: Challenges and Prospects. *International Journal of Psychology*, 37, 179-186

Mpofu, E. & Nyanungo, K.R.L. (1998). Educational and psychological testing In Zimbabwean schools: Past, Present and Future. *European Journal of Psychological Assessment*, 14(1), 71-90.

Mucharunga, T. (2014). A systematic review of the performance of black children on the Griffiths Mental Development Scales – Extended Revised. (Unpublished Honours' treatise). University of Fort Hare, Alice, South Africa

Nguwi, M. (2010). *Psychometric Testing: Guide to Good Practice*. Accessed on June 23, 2011 from http://www.financialgazette.co.zw/comment/5109-psychometric-testing-guide-to-good-practice.html

Nampijja, M., Apule, B, Lule, S., Akurut, H., Muhangi, L., Elliott, A.M., & Alcock,

K.J. (2010). Adaptation of Western measures of cognition for assessing 5-year-old semi-urban Ugandan children. *British Journal of Educational Psychology*, 80(1), 15–30. doi: 10.1348/000709909X460600

Nuttal, E. V., Romero, I., & Kalesnik, J. (1992). *Assessing and screening pre-schoolers Psychological and educational dimensions*. Boston, MA: Allyn and Bacon.

Papalia, D. E., Olds, S. W., & Feldman, R. D. (2009). *Human development*. New York, NY: McGraw-Hill.

Povey, J. L. (2002). *The Griffiths Extended Scales of Mental Development: A South African factorial validity study*. Unpublished Master's Treatise, University of Port Elizabeth.

Ramsay, M., & Fitzharding, P. M. (1977). A Comparative Study of two Developmental Scales: The Bayley and the Griffiths. *Early Human Development*, 1, 151-157.

Richter-Strydom, L. M., & Griesel, R. D. (1984). *African infant precocity: A study of a group of South African infants from 2 to 15 months of age*. Pretoria, SA: University of South Africa.

Richter-Strydom, L. M., & Griesel, R. D. (1988). *Bayley Scale of Infants Development – Norms for interpreting the performance of black South African infants*. Pretoria, Z AR: University of South Africa (UNISA).

Rogoff, B. (2003). *The cultural nature of human development*. New York, NY: Oxford University Press.

Roopnarine, J. L., & Johnson, J. E. (1994). The need to look at play in diverse cultural settings. In J. L. Roopnarine, J. E. Johnson & F. H. Hooper (Eds.), *Children's play in diverse cultures* (pp. 1-8). Albany, NY: State University of New York Press.

Santrock, J. W. (2001). Child development (9th ed.). New York: McGraw-Hill Companies.

Scarlett, W. G., Naudeau, S., Ponte, I. C., & Salonius-Pasternak, D, E. (2004). *Children's play*. Thousand Oaks, CA: Sage.

Schuhfried Research Center http://www.schuhfried.at/meta-navigation/ueber-uns/Research Center/

Schröder, I. A. (2004). *The Performance of Hearing Impaired Children on the Revised Extended Griffiths Scales* (Unpublished Master's Thesis). University of Port Elizabeth, South Africa.

Shuttleworth-Jordan AB (1996) on not reinventing the wheel: A Clinical Perspective on Culturally Relevant Test Usage. *South African Journal of Psychology* 26: 96–102

Sletten, T. (1970). Psykologisk vurdering I smabarnalderen. Tisskrift norske laegeforening, 90, 501-518.

Sletten, T. (1977). *Intensive Treatment of Babies and Infants Based on the Griffiths Mental Development Scales*. Unpublished address to ARICD.

Stewart. R. (1997). *The Griffiths Scales of Mental Development: A South African Pilot Validity Study* (Unpublished Master's Thesis). University of Port Elizabeth, South Africa.

Stewart, R. (2005). The Griffiths Scales of Mental Development: Proposed New Items for the Revision of Subscales A, B, C, D and E. Unpublished Doctoral Thesis, Nelson Mandela Metropolitan University, Port Elizabeth, South Africa.

Sweeney, K. (1994). *Cluster Analysis of the Griffiths Profiles of a White South African Population* (Unpublished Master's Thesis). University of Port Elizabeth, South Africa.

Takeuchi, M. (1994). *Children's Play in Japan*. In J. L. Roopnarine, J. E. Johnson & F. H. Hooper (Eds.), *Children's Play in Diverse Cultures* (pp. 148-178). New York, NY: State University of New York Press.

Thomas, R. M. (1985). *Comparing Theories of Child development* (2nd ed.). California: Wadsworth Publishers.

Tukulu, A.N. (1996). The Denver II and the Griffiths Scales of Mental Development: A Correlative Study (Unpublished Master's Thesis). University of Port Elizabeth, South Africa.

Van de Vijver, F. (2002). Cross-cultural Assessment: Value for Money? *Applied Psychology*, 51,545–566.

Van der Riet, M., & Durrheim, K. (2006). Putting Design into Practice: Writing and Evaluating Research Proposal. In M. Terre Blanche, K. Durrheim, & D. Painter, *Research in Practice* (pp. 81-11). Cape Town: UCT Press.

Van Heerden, R. (2007). *Exploring Normal South African and British Children: A Comparative Study utilizing the Griffiths Mental Development Scales-Extended Revised.* Unpublished Master's Treatise, Nelson Mandela Metropolitan University, Port Elizabeth, South Africa.

Van Rooyen, K. (2005). *The Performance of South African and British Children on The Griffiths Mental Developmental Scales – Extended Revised: A Comparative Study*. Unpublished Master's treatise, Nelson Mandela Metropolitan University.

Venter A (2000). Cross-cultural issues in child development and assessment within the South African context. *South African Journal of Child and Adolescent Mental Health.*

Victora, M. D., Victora, C. G., & Barros, F. C. (1990*). Cross-cultural Differences in Developmental Rates: A Comparison between British and Brazilian Children. Child Care, Health and Development,* 16(3), 295-305. doi: 10.1111/j.1365-2214.1990.tb00647.x

Von Wielligh, J. (2012). *The use of the Revised Griffiths Development Scales in a Group of*

9-month-old South African Babies. Unpublished Manuscript, Northwest University, Potchefstroom.

Zeanah, C. H. (2000). *Handbook of Infant Mental Health* (2nd ed.). New York, NY: Guilford Press.

APPENDIX A: SEARCH STRATEGY AND RESULTS

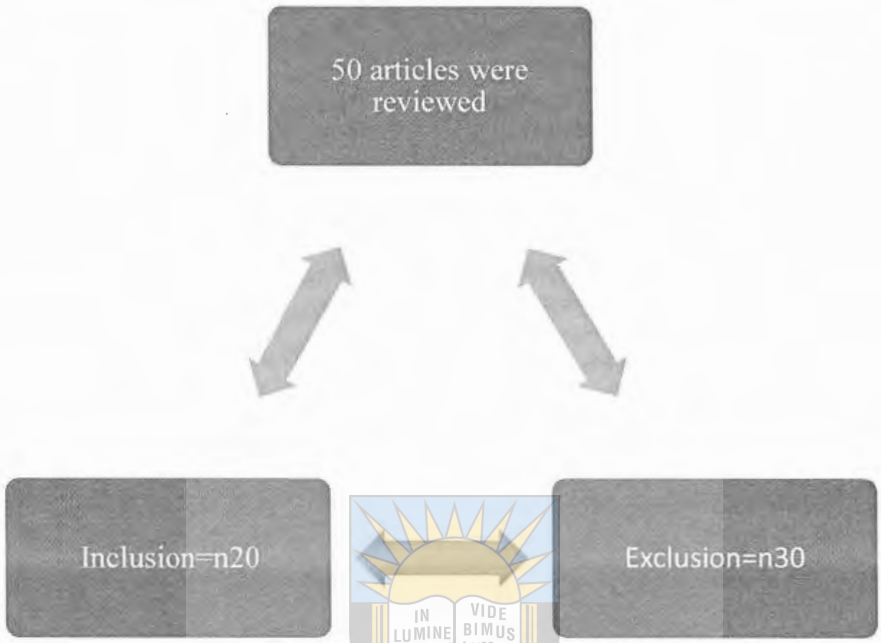


Figure 2: Flowchart of Included and Excluded

SEARCH STRATEGY AND RESULTS

Table 1: Record of search strings

Database	Search Strings	Search Output	Relevant Articles Selected
EBSCOhost Tylor Francis JSTOR	Validity of the Griffiths Mental Development Scales – Extended Revised Reliability of the Griffiths Mental Development Scales – Extended Revised OR Comparing SA development profile with British standardisation sample OR Test bias GMDS-ER OR Test Adaptation GMDS-ER OR Psychological test GMDS-ER OR Applicability of the GMDS-ER in SA OR The Griffiths Scales and its introduction to the SA context		

NOTE: Sample Record of Search Strategy

Table 2: Sample

Ref	Title	Authors	year	IN	EX
1	The construct validity of the Griffiths Scales of Mental Development	D M Luiz, CD Foxcroft and R Stewart	1999	X	
2	Use of the 1996 Griffiths Mental Development Scales for infants: a pilot study with a Black, South African sample	Zaytoon Amod, Kate Cockcroft and Bridgit Soellaart	2007	X	
3	The Griffiths Scales of Mental Development: A Factorial validity study	Dolores M. Luiz, Cheryl D. Foxcroft and Jenny-Louise Povey	2006	X	
4	The impact of a developmental movement programme on the performance of rural hearing impaired children on the Griffiths Scales of Mental Development	Jó-Marié v. d. M. Bothma, Munita Dunn and Shirley Kokot	2014	X	
5	The Use of the Revised Griffiths Development Scales in a Group of 9month-old South African Babies	J. Von Weilligh	2012	X	
6	The Performance Profile of Children from a Low Socio- economic Status on the Griffiths Mental Development Scales- Extended Revised	T.L. Kheswa	2009	X	
7	Comparing the Development of a Sample of South African Pre-school Boys and Girls utilizing the Griffiths Mental Development Scales- Extended Revised	T. A Jakins	2009	X	
8	The Performance of Hearing Impaired Children on the Revised Extended Griffiths Scales	I. A. Schroder	2004	X	
9	Exploring normal South African and British children: A Comparative Study Utilizing the Griffiths Mental Development Scales- Extended Revised	R. Van Heerden	2007	X	
10	The Performance of South African and British Children on the Griffiths Mental Development Scales-Extended Revised	K. Van Rooyen	2005	X	
11	Exploring the Construct- related Validity of the Personal- Social Subscale of the Griffiths Mental Development Scales- Extended Revised (GMDS-ER)	S. Moosajee	2007	X	
12	Longitudinal Developmental Profile of Children from Low Socio- economic	B. Laughton, D. Grove, M. Kidd., S.A. Madhi and M.F.	2010	X	

	Circumstances in Cape Town, using 1996 Griffiths Mental Development Scales	Cotton			
13	A Revision of a Section of the Hearing and Speech Scale of the Griffiths Scale of Mental Development	N. Kotras	1998	X	
14	The Denver II Scales and the Griffiths Scales of Mental Development: A Correlational Study	D.M. Luiz, C.D. Foxcroft, A.N Tukulu	2009	X	
15	A Comparison of the Performance of Normal Pre-school South African and British Children of the Griffiths Scales of Mental Development	M. M. Allan	1998	X	
16	The performance of children with Attention Deficit Hyperactivity Disorder on the Griffiths Mental Development Scales-Extended Revised	S. Baker	2005	X	
17	First and second born twins: A comparative study utilizing the Griffiths Mental Development Scales-Extended Revised	G. Davidson	2008	X	
18	The performance of children with autism on the Revised Extended Griffiths Scales of Mental Development	R. V Gowar	2003	X	
19	Exploration of the validity of the revised Eye and Hand Co-ordination Subscale of the Griffiths Mental Development Scales-Extended Revised	J. L. Povey	2008		
20	The Performance of South African Normal Preschool Children on the Griffiths Scales of Mental Development: A Comparative Study (Unpublished Doctoral Thesis).	M. M. Allan	1992	X	
21	The Griffiths Scales of Mental Development: an evaluation of their prediction of scholastic	Luiz, D.M.; Foxcroft, C.D.; Worsfold, L.B.; Kotras, N.; Kotras, H.	2001	X	
22	Exploring Childhood Development within the Amathole District: A case study utilizing Griffiths Mental Development – Extended Revised (Unpublished Master's Thesis)	Tshuma S. D	2004	X	
23	A longitudinal study of Children from infancy to 5 years of age using the Griffiths Mental Developmental Scales	Davies, L.N	2003	X	
24	The Griffiths' Practical Reasoning Scale: A Revision. Master's dissertation, University of Port Elizabeth, South Africa.	Barnard A	2000	X	
25	An international survey of the extended Griffiths Scales of Mental Development.	luiz D. M., Oelofsen N., Stewart R., Mitchell S. 1995	1995	X	

	Unpublished manuscript, University of Port Elizabeth, South Africa				
26	Comparison of South African Indian Children and others on the Griffiths Scales. Presentation to ARICD	Bhamjee, R A	1991	X	
27	The Abilities of Young Children. Amersham: ARICD	Griffiths, R.	1984	X	
28	The Abilities of Babies	Griffiths, R	1986	X	
29	The Griffiths Scales of Mental Development: Proposed New Items for the revision of subscales A, B, C, D and E. Unpublished Doctoral Thesis, Nelson Mandela Metropolitan University, Port Elizabeth, South Africa	Stewart, R.	2005	X	
30	Cluster Analysis of the Griffiths Profiles of a White South African Population (Unpublished Master's Thesis). University of Port Elizabeth, South Africa.	Sweeney, K.	1994	X	
31	A Systematic review of the performance of Black children on the Griffiths Mental Development Scales Extended- Revised.	Mucharunga, T	2014	X	

Table 3: Sample

Year	Number of studies
1984	1
1986	1
1991	1
1994	1
1992	1
1995	1
1998	2
1999	1
2000	1
2001	1
2003	2
2004	2
2005	3
2006	1
2007	3
2008	2
2009	3
2010	1
2012	1
2014	1

APPENDIX B: CRITICAL APPRAISAL

Table 4: Checklist for quality Appraisal for each included study

Title	**Use of the 1996 Griffiths Mental Development Scales For Infants: A Pilot Study with a Black South African Sample**
Authors	A. Zaytoon., C. Kate & B. Soellaart
Year	2007

Criteria	Yes	No	Comment
Was the purpose/were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are the methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?	X		

Critical Appraisal

Table 5: Checklist for quality Appraisal for each included study

Title	**The Use of the Revised Griffiths Development Scales in a Group of 9month-old South African Babies**
Author	J. Von Weilligh
Year	2012

Criteria	Yes	No	Comment
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are the methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?	X		

Critical Appraisal

Table 6: Checklist for quality Appraisal for each included study

Title	**The Construct Validity of the Griffiths Scale**
Authors	D.M Lulz, C.D, Foxcroft & Stewart
Year	1999

Criteria	**Yes**	**No**	**Comment**
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?	X		

Critical Appraisal

Table 7: Checklist for quality Appraisal for each included study

Title	**The Performance Profile of Children from a Low Socio-economic Status on the Griffiths Mental Development Scales- Extended Revised**
Author	T.L. Kheswa
Year	2009

Criteria	Yes	No	Comment
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?	X		

Critical Appraisal

Table 8: Checklist for quality Appraisal for each included study

Title	**The Griffiths Scales of Mental Development: Factorial Validity**
Author	D.M. Lulz, C.D. Foxcroft & J. L. Povey
Year	2006

Criteria	Yes	No	Comment
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate? Was the data analysis methods appropriate?	X		
Were the conclusions appropriate?	X		

Critical Appraisal

Table 9: Checklist for quality Appraisal for each included study

Title	**Comparing the Development of a Sample of South African Pre-school Boys and Girls utilizing the Griffiths Mental Development Scales- Extended Revised**
Author	T. A Jakins
Details	2009

Criteria	Yes	No	Comment
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?	X		

Critical Appraisal

Table 10: Checklist for quality Appraisal for each included study

Title	**The Performance of Hearing Impaired Children on the Revised Extended Griffiths Scales**
Author	I. A. Schroder
Year	2004

Criteria	Yes	No	Comment
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?		X	

Critical Appraisal

Table 11: Checklist for quality Appraisal for each included study

Title	**Exploring normal South African and British children: A Comparative Study Utilizing the Griffiths Mental Development Scales- Extended Revised**
Author	R. Van Heerden
Year	2007

Criteria	Yes	No	Comment
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?	X		

Critical Appraisal

Table 12: Checklist for quality Appraisal for each included study

Title	**The Performance of South African and British Children on the Griffiths Mental Development Scales-Extended Revised**
Author	K. Van Rooyen
Year	2005

Criteria	Yes	No	Comment
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?	X		

Critical Appraisal

Table 13: Checklist for quality Appraisal for each included study

Title	**Exploring the Construct-related Validity of the Personal- Social Subscale of the Griffiths Mental Development Scales- Extended Revised (GMDS-ER)**
Author	S. Moosajee
Year	2007

Criteria	Yes	No	Comment
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?	X		

Critical Appraisal

Table 14: Checklist for quality Appraisal for each included study

Title	**Longitudinal Developmental Profile of Children from Low Socio- economic Circumstances in Cape Town, using 1996 Griffiths Mental Development Scales**
Author	B. Laughton, D. Grove, M. Kidd., S.A. Madhi and M.F. Cotton
Year	2010

Criteria	Yes	No	Comment
Was the purpose/ research questions clearly stated?	X		
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?		X	
Are methods employed to collect data congruent with the theory and research questions?		X	
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate?	X		

Critical Appraisal

Table 15: Checklist for quality Appraisal for each included study

Title	**A Revision of a Section of the Hearing and Speech Scale of the Griffiths Scale of Mental Development**
Author	N. Kotras
Year	1998

Criteria	Yes	No	Comment
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?	X		

Critical Appraisal

Table 16: Checklist for quality Appraisal for each included study

Title	**The Denver II Scales and the Griffiths Scales of Mental Development: A Correlational Study**
Author	D.M. Luiz, C.D. Foxcroft, A.N Tukulu
Year	2009

Criteria	Yes	No	Comment
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?		X	
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?	X		

Critical Appraisal

Table 17: Checklist for quality Appraisal for each included study

Title	**A Comparison of the Performance of Normal Pre-school South African and British Children of the Griffiths Scales of Mental Development**
Author	M. M. Allan
Details	1998

Criteria	**Yes**	**No**	**Comment**
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?	X		

Critical Appraisal

Table 18: Checklist for quality Appraisal for each included study

Title	**Moving between culture: Cross-culture Research on Motor Development**
Author	K. E Adolph., L. B Kurashiki & C.S Tamis- LeModa
Year	2010

Criteria	**Yes**	**No**	**Comment**
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?	X		

Critical Appraisal

Table 19: Checklist for quality Appraisal for each included study

Title	**The Performance of South African Normal Preschool Children on the Griffiths Scales of Mental Development: A Comparative Study (Unpublished Doctoral Thesis).**
Author	M. M. Allan
Year	1992

Criteria	Yes	No	Comment
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?	X		

Critical Appraisal

Table 20: Checklist for quality Appraisal for each included study

Title	**Level of maternal education and performance of Black, South African infants on the 1996 Griffiths Mental Development Scales**
Author	Amod, Z, K.Cockcroft &B.Soellaart
Year	2008

Criteria	Yes	No	Comment
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?		X	
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?	X		

Critical Appraisal

Table 21: Checklist for quality Appraisal for each included study

Title	**The performance of children with Attention Deficit Hyperactivity Disorder on the Griffiths Mental Development Scales-Extended Revised**
Author	S. Baker
Year	2005

Criteria	Yes	No	Comment
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?	X		

Critical Appraisal

Table 22: Checklist for quality Appraisal for each included study

Title	**The performance of children with autism on the Revised Extended Griffiths Scales of Mental Development**
Author	R. V Gowar
Year	2003

Criteria	Yes	No	Comment
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are methods employed to collect data congruent with the theory and research questions?		X	
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?	X		

Critical Appraisal

Table 23: Checklist for quality Appraisal for each included study

Title	**Exploration of the validity of the revised Eye and Hand Co-ordination Subscale of the Griffiths Mental Development Scales-Extended Revised**
Author	J. L Povey,
Year	2008

Criteria	Yes	No	Comment
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?	X		

Critical Appraisal

Table 24: Checklist for quality Appraisal for each included study

Title	**First and second born twins: A comparative study utilizing the Griffiths Mental Development Scales-Extended Revised**
Author	G. Davidson
Year	2008

Criteria	**Yes**	**No**	**Comment**
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?	X		

Critical Appraisal

Table 25: Checklist for quality Appraisal for each included study

Title	**The Griffiths Scales of Mental development: an evaluation of their prediction of scholastic achievement**
Author	Luiz, D.M.; Foxcroft, C.D.; Worsfold, L.B.; Kotras, N.; Kotras, H.
Year	2001

Criteria	Yes	No	Comment
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?	X		

Critical Appraisal

Table 26: Checklist for quality Appraisal for each included study

Title	**Exploring Childhood Development within the Amathole District: A case study utilizing Griffiths Mental Development – Extended Revised (Unpublished Master's Thesis)**
Author	Tshuma, S. D
Year	2014

Criteria	Yes	No	Comment
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?	X		

Critical Appraisal

Table 27: Checklist for Quality Appraisal for each included study

Title	**A longitudinal study of Children from infancy to 5 years of age using the Griffiths Mental Developmental Scales**
Author	Davies L. N
Year	2013

Criteria	Yes	No	Comment
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?	X		

Critical Appraisal

Table 28: Checklist for quality Appraisal for each included study

Title	**A Systematic review of the performance of Black children on the Griffiths Mental Development Scales Extended- Revised**
Author	Mucharunga, T
Year	2014

Criteria	Yes	No	Comment
Was the purpose/ were research questions clearly stated?	X		
Was relevant background literature reviewed?	X		
Was the study design appropriate for the research questions?	X		
Are methods employed to collect data congruent with the theory and research questions?	X		
Was the process of selection described?	X		
Was the sampling method appropriate?	X		
Was the data collection method described clearly and completely?	X		
Were the data analysis methods appropriate?	X		
Were the conclusions appropriate?		X	

APPENDIX C: DATA EXTRACTION/ CLASSIFICATION SHEETS RANDOM SAMPLE

Table 29: Classification Sheet

	Author (S)	Title Of Article & Journal	Year, Volume, Page Number
A. Zaytoon., C. Kate & B. Soellaart		Use of the 1996 Griffiths Mental Development Scales For Infants: A Pilot Study with a Black South African Sample	2007
Purpose/ Main Focus		**Related Focus Points**	**Conclusions**
The use and application of the Griffiths Mental Development Scales with Black South African infants			
Research Methodology		**Population**	**Themes**
Specifically, the study aimed to make a preliminary cross-cultural comparison of the performance of Black South African infants and the British normative sample of the Griffiths Scales		The South African sample consisted of 40 infants aged between 13 and 16 months, with approximately equal numbers of boys and girls	
Results/ Findings			
The finding was that the South African sample performed significantly better than the British norm group on the Eye-Hand Co-ordination Scale (Scale D) and the Performance Scale (Scale E), while the norm group scored significantly higher on the Personal-Social Scale (Scale B).			
Recommendations			
Examination of item bias or score comparability with a larger sample is necessary to determine whether members of various groups demonstrate specific patterns of responses. This would contribute towards developing more reliable and valid assessment measures for South Africa.			

Table 30: Classification Sheet

Author (S)	Title Of Article & Journal	Year, Volume, Page Number
J. Von Weilligh	The Use of the Revised Griffiths Development Scales in a Group of 9month-old South African Babies	2012
Purpose/ Main Focus	**Related Focus Points**	**Conclusions**
the applicability of the Griffiths Development Scales–Extended Revised (GMDS-ER) in a contemporary South Africa		This study emphasised that the Griffiths Mental Development Scales – Extended Revised (GMDS-ER)could satisfy the developmental assessment needs in South Africa
Research Methodology	**Population**	**Themes**
Babies were selected on the basis of availability. All babies were tested with the Griffiths Development Scales Extended Revised (GMDS-ER).	For the empirical study the research group consisted of normal South African (n=120) babies from Potchefstroom and Klerksdorp	
Results/ Findings		
Statistical analysis of the data shows that South African and British babies' overall developmental profiles were similar. The South African sample performed slightly better (although not statistically significant) than the British normative sample on all the subscales.		
Recommendations		
Applicability of the GMDS-ER for South African use is essential and the establishment of South African norms for clinical utilisation should receive urgent attention. Caution with regard to the use of the British-based norms in the South African context is recommended		

Table 31: Classification Sheet

<table>
<tr><td colspan="2">3.</td><td>Author (S)</td><td>Title Of Article & Journal</td><td>Year, Volume, Page Number</td></tr>
<tr><td colspan="2"></td><td>D.M Lulz, C.D, Foxcroft & Stewart</td><td>The Construct Validity of the Griffiths Scale</td><td>1999</td></tr>
<tr><td colspan="2">Purpose/ Main Focus</td><td></td><td>Related Focus Points</td><td>Conclusions</td></tr>
<tr><td colspan="2">contribute to our knowledge of the construct validity of the Griffiths Scales of Mental Development (Griffiths Scales) through an examination of the underlying dimensions tapped by the six subscales, using Common Factor Analysis</td><td></td><td></td><td>The results indicate that the Griffiths Scales tend to measure one factor, and including only common variables, the factor appears to be similar cross-culturally</td></tr>
<tr><td colspan="2">Research Methodology</td><td></td><td>Population</td><td>Themes</td></tr>
<tr><td colspan="2">The study utilized a non-experimental, descriptive, correlational approach, and was exploratory rather than confirmatory in nature</td><td></td><td>A sample of 430 South African children, from four ethnic groups (i. e. White, Mixed Race, Asian and Black) participated</td><td rowspan="3"></td></tr>
<tr><td colspan="4">Results/ Findings</td></tr>
<tr><td colspan="4">A factor analysis was performed with the data for each South African ethnic group separately and the factor solutions were compared to determine whether the Griffiths Scales measure similar or different constructs for the groups</td></tr>
<tr><td colspan="5">Recommendations</td></tr>
<tr><td colspan="5"></td></tr>
</table>

Table 32: Classification Sheet

4.	Author (S)	Title Of Article & Journal	Year, Volume, Page Number
T.L. Kheswa		The Performance Profile of Children from a Low Socio - economic Status on the Griffiths Mental Development Scales-Extended Revised	2009
Purpose/ Main Focus		**Related Focus Points**	**Conclusions**
This study, focused on child mental development, has aimed to contribute and provide valuable information to a larger research project that is currently under way to create a set of norms for a South African population on the GMDS-ER			The need for the study is reflecting the real-life issues including HIV and AIDS, poverty, that are tampering with the children's potential and capabilities. Also in the context of an ever changing South African society, the study does add value in the area of child development.
Research Methodology		**Population**	**Themes**
A quantitative, exploratory-descriptive research design was employed. The participants were selected through a non-probability, purposive sampling procedure		The sample for this study consisted of 20 children (both males and females) aged between 3 and 8 years	
Results/ Findings			
The research findings revealed that the children from a low SES performed better on the Locomotor Scale, followed by Personal-social Scale, while their worst performance was on the Performance Scale. Their second worst performance was on the Language Scale, followed by the Eye-Hand Co-ordination Scale and finally, the Practical Reasoning Scale			
Recommendations			
Studies to be conducted in the future need to make use of a larger sample size in order to be able to generalize the findings to the entire population. In order to ensure better internal validity, the assessment should take place in the morning, as children tend to concentrate best in the morning, and the assessment time should be as short as possible, while not neglecting to administer all the items. Also, a longitudinal study of this nature is highly recommended in order to assess the children's performance on a long term basis.			

Table 33: Classification Sheet

<table>
<tr><td colspan="2">5.</td><td>Author (S)</td><td>Title Of Article & Journal</td><td>Year, Volume, Page Number</td></tr>
<tr><td colspan="2"></td><td>D.M. Lulz, C.D. Foxcroft & J. L. Povey</td><td>The Griffiths Scales of Mental Development: Factorial Validity</td><td>2006</td></tr>
<tr><td colspan="2">Purpose/ Main Focus</td><td>Related Focus Points</td><td colspan="2">Conclusions</td></tr>
<tr><td colspan="2">Explore Griffiths Scales of Mental Development psychometric properties, in particular its construct validity</td><td></td><td colspan="2">The Griffiths Scales should be revised, standardised and normed, not only in the United Kingdom but in South Africa as well.</td></tr>
<tr><td colspan="2">Research Methodology</td><td>Population</td><td colspan="2">Themes</td></tr>
<tr><td colspan="2">The study was exploratory rather than confirmatory in nature as it attempted to uncover the underlying constructs of each subscale rather than to confirm an a-priori factor structure</td><td>180 children between the ages of 48 and 60 months, 60 and 72 months, and 72 and 84 months for years 5, 6 and 7 respectively. The variables of gender, cultural group</td><td colspan="2" rowspan="3"></td></tr>
<tr><td colspan="3">Results/ Findings</td></tr>
<tr><td colspan="3">The findings suggest that each subscale taps more than one construct and that constructs differ for the different age groups.</td></tr>
<tr><td colspan="5">Recommendations</td></tr>
<tr><td colspan="5">The revision process subscales for each of the years need to be investigated further with regard to their construct validity</td></tr>
</table>

Table 34: Classification Sheet

6.	Author (S)	Title Of Article & Journal	Year, Volume, Page Number
I. A. Schroder		The Performance of Hearing Impaired Children on the Revised Extended Griffiths Scales	2004
Purpose/ Main Focus		**Related Focus Points**	**Conclusions**
Explore and describe the developmental profile of hearing impaired children on the Revised Extended Griffiths Scales		compare the performance of the clinical sample to a normal South African sample	
Research Methodology		**Population**	**Themes**
A quantitative, exploratory-descriptive research design was employed		The sample of hearing impaired children (N = 58), between the ages of 36 and 95 months, attended the Carel du Toit Pre-School in the Western Cape, South Africa	
Results/ Findings			
Generally, the results of the current study suggest that a specific developmental profile is obtained for hearing impaired children. In addition, this study has highlighted the success with which the Revised Extended Griffiths Scales can be utilised on a hearing impaired population			
Recommendations			

Table 35: Classification Sheet

7.	Author (S)	Title Of Article & Journal	Year, Volume, Page Number
T. A Jakins		Comparing the Development of a Sample of South African Pre-school Boys and Girls utilizing the Griffiths Mental Development Scales- Extended Revised	2009
Purpose/ Main Focus		**Related Focus Points**	**Conclusions**
To examine and compare a sample of South African pre-school boys and girls from a truly holistic developmental perspective on the recently released Griffiths Mental Development Scales-Extended Revised (GMDS-ER).			The GMDS-ER was considered to be the most appropriate developmental measure to guide the researcher with the comparison of the performance of the boys and girls within the present study
Research Methodology		**Population**	**Themes**
An exploratory descriptive quantitative research method was used.		5- and 6-year-old South African pre-school boys and girls	
Results/ Findings			
No significant gender differences were found when comparing the overall developmental and Subscale profiles of the boys and girls on the GMDS-ER. However, certain interesting trends did emerge from a review of the findings when compared to the literature review and previous studies			
Recommendations			
Due to the limited representation of children from the Black and Asian cultural groups in the present study, further investigation comparing the genders within these cultural groups should be undertaken.			

Table 36: Classification Sheet

8	Author (S)	Title Of Article & Journal	Year, Volume, Page Number
R. Van Heerden		Exploring normal South African and British children: A Comparative Study Utilizing the Griffiths Mental Development Scales- Extended Revised	2007
Purpose/ Main Focus		**Related Focus Points**	**Conclusions**
The purpose of the study was therefore to generate information on the applicability of British norms for the contemporary South African population.			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
Research Methodology		**Population**	**Themes**
Quantitative research are the exploratory and descriptive approaches		South African and British children aged 5-years and 6-years	
Results/ Findings			
There is a significant difference between the South African and British children's overall developmental profiles (as measured by the GMDS-ER)			
Recommendations			
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			

Table 37: Classification Sheet

	Author (S)	Title Of Article & Journal	Year, Volume, Page Number
B. Laughton, D. Grove, M. Kidd., S.A. Madhi and M.F. Cotton		Longitudinal Developmental Profile of Children from low socio- economic Circumstances in Cape Town, using 1996 Griffiths Mental Development Scales	2010
Purpose/ Main Focus		**Related Focus Points**	**Conclusions**
To describe the longitudinal developmental profile of infants from low socio-economic backgrounds at Tygerberg Children's Hospital by comparing the GMDS scores performed at 10 - 12 months and 20 - 22 months		The Griffiths Mental Development Scales (GMDS) have not been standardised in South African children. Neurodevelopmental scores of infants from deprived environments decline with age, but there is no evidence on how young South African children from such backgrounds perform on serial assessments	Scores on the GMDS of this group of children from low socio-economic backgrounds were normal at 11 months and, other than locomotor, decreased significantly at 21 months, with language the most affected
Research Methodology		**Population**	**Themes**
Not clearly stated		Thirty-one infants (14 girls, 17 boys) were assessed	
Results/ Findings			
All sub-quotients decreased significantly except for locomotor. The hearing and language sub-quotient was most affected, with a decrease in mean quotients from 113.0 to 93.2 ($p<0.001$). There was no evidence of inter current events to explain the decline.			
Recommendations			
Further research is needed to determine the specific reasons for the decline			

Table 38: Classification Sheet

Author (S)	Title Of Article & Journal	Year, Volume, Page Number
N. Kotras	A Revision of a Section of the Hearing and Speech Scale of the Griffiths Scale of Mental Development	1998
Purpose/ Main Focus	**Related Focus Points**	**Conclusions**
To revise the 20 small pictures and the large picture of the Hearing and Speech Scale of the Griffiths Scales, making them more culturally relevant for the children of our contemporary world, and especially in South Africa; and (ii) to describe the performance of South African children, between 60 and 83 months of age, utilizing the revised pictures		Studies completed in South Africa have demonstrated the invaluable role the Griffiths Scales have fulfilled in the assessment of South African children of all cultural and socio-economic groups
Research Methodology	**Population**	**Themes**
For the qualitative component of the study a questionnaire pertaining to the small and large "Experimental pictures" was completed by the participants	1 (n=204) and Sample 2 (n=180) were comprised of pre-school children aged between 60 and 83 months	
Results/ Findings		
A general trend noted for the four cultural groups of both samples, was that the percentage of children who passed successive age-appropriate items, did not decrease stepwise as would be expected from the placement of items in order of difficulty		
Recommendations		
It is recommended that for South African children the placement of the items for the small and large pictures of the Hearing and Speech Scale should be revised in terms of their order of difficulty. It is furthermore recommended that separate norms for South African children be established for the Hearing and Speech Scale		

Table 39: Classification Sheet

	Author (S)	Title Of Article & Journal	Year, Volume, Page Number
D.M. Luiz, C.D. Foxcroft, A.N Tukulu		The Denver II Scales and the Griffiths Scales of Mental Development: A Correlational Study	2009
Purpose/ Main Focus		**Related Focus Points**	**Conclusions**
This study identified the need for a valid developmental assessment of black preschool children		Investigate the use of the Denver II and the Griffiths Scales on a pre-school black Xhosa-speaking sample	The results lend further support for the use of the Griffiths Scales with a black preschool population. However, although there were significant statistical correlations between the Griffiths Scales and the Denver II Scales, the use of the Denver II as a valid and reliable screening measure for black pre-school children is Questionable
Research Methodology		**Population**	**Themes**
A correlational design was used and the sample was comprised of 60 Xhosa-speaking children between the ages of 3 and 6 years		Not clear	
Results/ Findings			
The findings revealed that there was a significant relationship between the overall performance of the Denver II and the Griffiths Scales. However, the Personal-Social Scale of the Denver II appeared to have items that were culturally biased			
Recommendations			
However, future research needs to clarify whether it is a function of the measure or of the child's performance. Future research may be able to establish cut-points for the Denver II Scales, which could provide the person undertaking the screening with information regarding the developmental domain(s) in which the child is experiencing difficulty.			

Table 40: Classification Sheet

	Author (S)	Title Of Article & Journal	Year, Volume, Page Number
K Cockcroft, Z Amod, B Soellaart		Level of maternal education and performance of Black, South African infants on the 1996 Griffiths Mental Development Scales	
Purpose/ Main Focus		**Related Focus Points**	**Conclusions**
The study compared the performance on the Griffiths Mental Development Scales of Black, South African infants with mothers who had twelve or more years of education and who were professionally employed with infants of mothers with fewer than twelve years of education and who were employed in non-professional jobs			It is suggested that, as the infant develops, the skills assessed by the Griffiths Scales, which are initially differentiated, become increasingly interrelated. Consequently, poor gross-motor skills, which may be more likely in infants from a low socio-economic status, may have far-reaching implications
Research Methodology		**Population**	**Themes**
		40 infants (aged 13-16 months)	
Results/ Findings			
The infants with professional mothers performed significantly better than their counterparts with non-professional mothers on the General Quotient, as well as on the Locomotor Scale. While maternal level of education did not appear to distinguish between infants in terms of social, fine motor, language, hearing, processing speed or practical reasoning, it did discriminate in terms of gross-motor functioning			
Recommendations			
It is important to consider maternal level of education and the socio-economic status background of the infant, as this may influence overall performance on the Scales			

Table 41: Classification Sheet

	Author (S)	Title Of Article & Journal	Year, Volume, Page Number
K. Van Rooyen		The Performance of South African and British Children on the Griffiths Mental Development Scales-Extended Revised	2005
Purpose/ Main Focus		**Related Focus Points**	**Conclusions**
This study explores the performance of South African children aged 4 to 7years of age as it relates to that of British children (from the standardisation sample).			British children generally performed better than South African children on the more intellectual subscales (Language and Practical Reasoning), whereas South African children performed better on the Locomotor and Personal-Social Subscales in the earlier year groups (Year V and VI). British children also performed better on the Hand and Eye Co-ordination Subscale and mixed results were obtained from the comparison between the two groups' performances on the Performance Subscale.
Research Methodology		**Population**	**Themes**
Descriptive statistics and simple t-tests were used to accomplish Aim 1 and Hotellings T2 tests were mainly used in order to accomplish Aim 2.		The samples consisted of normal South African (n=129) and British (n=161) children, where normalcy refers to the absence of sensory, physical, or mental handicap	
Results/ Findings			
South African and British children's overall performances (as measured by the GMDS-ER GQ) are similar. A great deal of variability exists between the GMDS-ER profiles of normal South African and British children (i.e., when individual subscales and year groups are considered).			
Recommendations			
Further investigation into the applicability of the GMDS-ER for South African use as well as the establishment of South African norms are final recommendations			

Table 42: Classification Sheet

	Author (S)	Title Of Article & Journal	Year, Volume, Page Number
S. Baker		The performance of children with Attention Deficit Hyperactivity Disorder on the Griffiths Mental Development Scales-Extended Revised	2005
Purpose/ Main Focus		**Related Focus Points**	**Conclusions**
Explore and describe the developmental profile of children with ADHD on the Griffiths Mental Development Scales-Extended Revised (GMDS-ER).			This study has contributed to the process of revising and re-standardising the Griffiths Scales, by focusing on a clinical population, namely, children with ADHD. It has highlighted that the GMDS – ER can be successfully used in evaluating the developmental profiles of these children
Research Methodology		**Population**	**Themes**
Quantitative, exploratory-descriptive research design was employed.		The sample (N = 38) of ADHD were selected by means of a non-probability, purposive sampling procedure, from various pre-school and primary schools in the Nelson Mandela Metropole. The normal sample (N = 38) was drawn from an existing database created during the revision of the Scales	
Results/ Findings			
The results of the study suggest that a specific developmental profile for children with ADHD exists. Additionally, the study highlighted the success with which the GMDS-ER can be utilised on a specific clinical population			
Recommendations			
More systematic research is needed in order to establish the effect of variables such as type of ADHD, presence of co-morbid conditions, and types of intervention received, on the development of children with ADHD			

Table 43: Classification Sheet

	Author (S)	Title Of Article & Journal	Year, Volume, Page Number
G. Davidson		First and second born twins: A comparative study utilizing the Griffiths Mental Development Scales-Extended Revised	2008
Purpose/ Main Focus		**Related Focus Points**	**Conclusions**
To contribute and provide valuable information to a larger research project that is currently under way aiming to increase the applicability of the Griffiths Mental Development Scales-Extended Revised (GMDS-ER) in the South African context			
Research Methodology		**Population**	**Themes**
Exploratory, descriptive quantitative design was used. Participants were selected through a combination of non-probability purposive, convenience and snowball sampling		Normal first born and second born twins, aged between 2 and 8 years 4 months old	
Results/ Findings			
Results showed that no significant differences were found between the first and second born twins' general development. Information generated from this study contributed to 1) child development research; 2) twin developmental research within a South African context; and 3) a greater group of studies on the GMDS-ER, currently underway in the United Kingdom and South Africa, aiming to contribute to the international credibility of this measure.			
Recommendations			
Future studies in this field can enhance their external validity by employing a larger sample than the one used for the current study			

Table 44: Classification Sheet

<table>
<tr><td colspan="2">Author (S)</td><td>Title Of Article & Journal</td><td>Year, Volume, Page Number</td></tr>
<tr><td colspan="2">R. V Gowar</td><td>The performance of children with autism on the Revised Extended Griffiths Scales of Mental Development</td><td>2003</td></tr>
<tr><td colspan="2">Purpose/ Main Focus</td><td>Related Focus Points</td><td>Conclusions</td></tr>
<tr><td colspan="2">Exploring the performance of children with Autism between the ages of 7 years (from 72 months) and 8 years (to 95.9 months), in South Africa (SA), utilising the Revised Extended Griffiths Scales of Mental Development (GSMD)</td><td></td><td></td></tr>
<tr><td colspan="2">Research Methodology</td><td>Population</td><td>Themes</td></tr>
<tr><td colspan="2"></td><td>30 children with Autism from four schools for Specialised Education for learners with Autism in SA, and a control group comprised of 30 "normal" children</td><td rowspan="3"></td></tr>
<tr><td colspan="3">Results/ Findings</td></tr>
<tr><td colspan="3">Children with Autism (years 7 & 8) showed a characteristic cognitive profile when tested with the revised Extended Griffiths Scales. Their performance indicates lower performance on subscales B, C and F than on the other Subscales. There was significant difference between the Autistic sample and the normal sample on the GQ</td></tr>
<tr><td colspan="4">Recommendations</td></tr>
<tr><td colspan="4">It is recommended that the results of the study, which focused on the children's areas of developmental weakness, be widely disseminated</td></tr>
</table>

Table 45: Classification Sheet

	Author (S)	Title Of Article & Journal	Year, Volume, Page Number
J. L. Povey		Exploration of the validity of the revised Eye and Hand Co-ordination Subscale of the Griffiths Mental Development Scales-Extended Revised	2008
Purpose/ Main Focus		**Related Focus Points**	**Conclusions**
To contribute to the broader standardisation project and focussed on gathering qualitative and quantitative construct-related validity evidence for one of the six Subscales of the GMDS-ER, namely the Eye and Hand Coordination Subscale (Subscale D).			A review of the age appropriateness of the items and the item analysis results from the revision seemed to indicate that some of the items assessing the older child may need to be revised
Research Methodology		**Population**	**Themes**
An exploratory descriptive method using a triangulation approach was used to explore the construct-related validity evidence of the Eye and Hand Coordination Subscale		1026 children between the ages 24 months and 96 months	
Results/ Findings			
The study has provided extensive qualitative and quantitative evidence for the construct-related validity of the Eye and Hand Coordination Subscale of the GMDS-ER, thus validating its use as a sound measure of eye-hand coordination development in children aged 2 to 8 years.			
Recommendations			
The researcher suggested that the revision should consider adding additional dimensions to the tasks assessed			

Table 46: Classification Sheet

<table>
<tr><td></td><td>Author (S)</td><td>Title Of Article & Journal</td><td>Year, Volume, Page Number</td></tr>
<tr><td colspan="2">S. Moosajee</td><td>Exploring the Construct related Validity of the Personal- Social Subscale of the Griffiths Mental Development Scales- Extended Revised (GMDS-ER)</td><td>2007</td></tr>
<tr><td colspan="2">Purpose/ Main Focus</td><td>Related Focus Points</td><td>Conclusions</td></tr>
<tr><td colspan="2">This study, which is part of a larger research project, attempted to explore and add further evidence of the construct validity of one of the six Subscales of the GMDS-ER, namely the Personal-Social Subscale (Subscale B).</td><td></td><td>In conclusion the current study has, through a dynamic, triangulated methodological process provided expanded evidence regarding the construct validity of the Revised Extended Personal-Social Subscale, and has laid the foundation for further research with this measure</td></tr>
<tr><td colspan="2">Research Methodology</td><td>Population</td><td>Themes</td></tr>
<tr><td colspan="2">An exploratory-descriptive design using a triangulation approach was utilized to explore the construct validity of the Personal-Social Subscale</td><td>Sample of 1026 children between the ages of 3 and 8 years</td><td rowspan="3"></td></tr>
<tr><td colspan="3">Results/ Findings</td></tr>
<tr><td colspan="3">Evidence was provided that the six constructs were equivalent for each of the socio-economic and gender subgroups explored. These findings suggest that the same constructs are being measured across these subgroups.</td></tr>
<tr><td colspan="4">Recommendations</td></tr>
<tr><td colspan="4">Provide clinicians with more accurate diagnostic information of a child's strengths and weaknesses. By identifying a child's area of weakness, appropriate and individually-tailored remediation programmes can be developed and implemented.</td></tr>
</table>

Table 47: Classification Sheet

	Author (S)	Title Of Article & Journal	Year, Volume, Page Number
Luiz, D.M.; Foxcroft, C.D.; Worsfold, L.B.; Kotras, N.; Kotras, H.		The Griffiths Scales of Mental development: an evaluation of their prediction of scholastic achievement	2001
Purpose/ Main Focus		**Related Focus Points**	**Conclusions**
To establish how accurately Grade I performance can be predicted from: (a) the General Quotient (GQ) of the Griffiths Scales and (b) the Sub quotients (SQs) of the six Griffiths Subscale			
Research Methodology		**Population**	**Themes**
A correlational method was employed with scholastic performance in Grade I as the criterion variable, whilst the predictor variables were the GQ and the SQs.		The sample comprised 124 urban preschool children. The subject variables of gender, cultural group and socio-economic status were controlled	
Results/ Findings			
The findings indicated that the Griffiths Scales correlated significantly with scholastic performance. Furthermore, it could be concluded that predicting Grade 1 1 scholastic performance and hence its classification could be obtained with a relative degree of accuracy.			
Recommendations			

Table 48: Classification Sheet

	Author (S)	Title Of Article & Journal	Year, Volume, Page Number
Tshuma, S. D		Exploring Childhood Development within the Amathole District: A case study utilizing Griffiths Mental Development – Extended Revised (Unpublished Master's Thesis)	2014
Purpose/ Main Focus		**Related Focus Points**	**Conclusions**
This study was therefore to investigate childhood development of African children from a rural setting.			The influence of economic and infrastructural development and lack of resources at home and preschools, as well as caregivers' limited knowledge on child development and stimulation were identified as contributing factors influencing African children's development in a rural setting
Research Methodology		**Population**	**Themes**
Both qualitative and quantitative data were utilized in a multiple case study method.		A sample (N = 12) of mainly Xhosa and English-speaking children between the ages of 5-years and 6-years living in the rural areas and enrolled in the playschools of the Amathole region was selected using a non-probability purposive sampling method	
Results/ Findings			
The results showed an average mean IQ for the sample with none of the children showing superior or very superior levels of development. High average performance scores were attained by the sample in the Locomotor and Performance subscales, whilst average scores characterised the other four subscales.			
Recommendations			

Table 49: Classification Sheet

	Author (S)	Title Of Article & Journal	Year, Volume, Page Number
Davies, L. N		A longitudinal study of Children from infancy to 5 years of age using the Griffiths Mental Developmental Scales	2013
Purpose/ Main Focus		**Related Focus Points**	**Conclusions**
This study describes the effects of prenatal alcohol exposure and interacting socio-demographic factors on early childhood development			Lower maternal education, unemployment and later recognition of pregnancy were associated with reduced social adaptive functioning, and language and eye hand coordination abilities, irrespective of amount of prenatal alcohol exposure over both time points.
Research Methodology		**Population**	**Themes**
Using standard diagnostic procedures and assessed using the Griffiths Mental Development Scales (GMDS/ER)		One hundred and twenty one children from the Northern Cape, South Africa, were clinically examined.	
Results/ Findings			
During infancy, the FAS/PFAS group showed significantly lower gross motor and language abilities, with delays in higher-order executive functioning becoming more apparent with age. No significant differences were noted during infancy between the PAE and Control groups over any developmental subscales.			
Recommendations			

Table 50: Classification Sheet

	Author (S)	Title Of Article & Journal	Year, Volume, Page Number
Muharunga, T		A Systematic review of the performance of Black children on the Griffiths Mental Development Scales Extended-Revised	2014
Purpose/ Main Focus		**Related Focus Points**	**Conclusions**
This study therefore sought to describe the developmental trends and review literature on the developmental performance of children from a non- white group on the Griffiths Scales.			The apartheid system divided the population to race which made access and provision of services to be biased towards the White population group
Research Methodology		**Population**	**Themes**
Systematic Review		Journals, Books, unpublished theses etc.	
Results/ Findings			
Black children tend to perform the strongest on locomotor subscale, a trend that is still evident since 1992. A decline in performance is noted although it remains the strongest performance in relation to the other subscale			
Recommendations			
The Griffiths Scales need to be standardised on South African children in order to allow a more informed analysis and fair assessment of South African children.			