EXPLORING THE CONSTRUCT-RELATED VALIDITY OF THE PERSONAL-SOCIAL SUBSCALE OF THE GRIFFITHS MENTAL DEVELOPMENTAL SCALES- EXTENDED REVISED (GMDS-ER)

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ABSTRACT

Child assessment has become imperative today as parents and teachers recognize the need for early diagnostic assessments to adequately cater for children's' diverse and growing needs so that children can benefit from services and attention in a psychological or educational setting. The Griffiths Mental Development Scales, an established and well-researched instrument is reported to be one of the most carefully designed measures of child development . Studies in various parts of the world have demonstrated that the Griffiths Scales are applicable to diverse populations and that they tap experiences that are common to different cultures. The recent revision and restandardisation of the Griffiths Mental Developmental Scales-Extended Revised (GMDS-ER) has necessitated investigations into its psychometric properties. In view of the important role that assessment measures play in the early identification of developmental delays, it is important that assessment measures are reliable and valid for their intended purpose(s). 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).

An exploratory-descriptive design using a triangulation approach was utilized to explore the construct validity of the Personal-Social Subscale. A non-probability purposively selected sample of 18 experts working with children participated in the facet analysis to identify the constructs underlying Subscale B (the qualitative aspect of the study). The sample for the quantitative aspects of this study (i.e., the empirical validation of the identified constructs) was collected as part of the broader restandardisation and represented a stratified random sample of 1026 children between the ages of 3 and 8 years from across the United Kingdom and Eire. Three measures, namely a biographical questionnaire, the GMDS-ER and a construct evaluation form were used to gather the qualitative and quantitative data. The qualitative data was analysed by means of facet analysis and literature control. The quantitative data was analysed by using exploratory common factor analysis using oblique (DQUART) rotation to

empirically verify the qualitatively identified construct model by specifying a one-factor solution for each underlying construct.

The important results of the current study can be summarized as follows:

1. Professionals working with children provided valuable information regarding the content coverage, underlying constructs and construct under-representation, of the Personal-Social Subscale. The information obtained from the facet analysis was integrated with information from the literature and the results from previous factor analytic studies. Six constructs were identiified as underlying the Revised Extended Personal-Social Subscale. These constructs were labeled: (1) Self Help: Feeding; (2) Self Help: Dressing; (3) Self Care: Personal Hygiene; (4) Co-operation; (5) Self knowledge and (6) Sociability: Peers.

2. The constructs derived through the facet analysis were empirically verified by factor analyzing items identified for each construct. Strong empirical evidence was found to confirm the six identified constructs.

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.

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.

KEY WORDS: Griffiths Mental Development Scales-Extended Revised, Personal Social Development, Factor analysis, Facet analysis, Construct Validity, Test revision.

CHAPTER ONE
INTRODUCTION

1.1 GENERAL INTRODUCTION

The primary aim of this study is to explore evidence, which may support the validity of the Personal-Social Scale of the recently revised Griffiths Mental Development Scales-Extended Revised (GMDS-ER). This introductory chapter aims to contextualise the present study by providing a summary of its rationale and its importance and relevance to the field of developmental assessment, with specific reference to the personal-social development and assessment of children. The chapter concludes with the delineation of the aims of the present study, as well as an outline of the chapters that follow.

1.2 DEVELOPMENTAL ASSESSMENT

The need for developmental assessments was identified as early as the beginning of the twentieth century. Dominated from its inception by psychometric models and measurement strategies used for older children and adults, childhood assessment gradually began to formulate a methodology that is unique to very young children. Earlier work was directed at determining whether infants' behaviour could predict later performance (Brooks-Gunn & Wienraub, 1983), and this has caused significant debate and dispute. Despite weaknesses, developmental assessment continues to play a significant role in decision-making provided that it is used in a fair and ethical manner by responsible practitioners (Foxcroft, Paterson, Le Roux, & Herbst, 2004).

The developmental assessment of children is very important to the identification of any possible handicaps, educational failures, behavioural problems on the one hand, and giftedness on the other hand so that adequate resources and intervention programmes can be initiated. A significant amount of research has revealed that pathology during early development may interfere with the later development of the child by distorting it in someway or slowing it down (Holt, 1974; Luiz, Stroud, & Jansen, 2005). This can sometimes result in a

lifetime of reduced potential, failure in school, inappropriate personal adjustment leading to either emotional and/or behavioural disorders, caused through frustration, depression and health problems (Bloom, 1977; Horn & Packard, 1985); negative future attitudes for children, teachers and parents (McKinney & Fagans, 1983); lowered expectations of achievement (Chapman & Boersma, 1980); the creation of a negative pattern for the child's life which could lead to despair (Cadigan, Entwisle, Alexander & Pallas, 1988); and expensive child care and support. This has hence motivated developmental researchers to arrive at possible solutions for the prevention of chronic disabilities, educational failures and behavioural problems (Holt, 1974). Furthermore, advances in medical science has on the one hand reduced neonatal and infant mortality rate greatly, but has at the same time resulted in the survival of many "at risk" babies with low birth weight or congenital abnormalities who might be handicapped (Holt, 1974). Developmental delays in children may also reflect the influence of adverse environmental circumstances such as child battering, emotional abuse and malnutrition, which need to be addressed and remedied (Grantham-McGregor, Stewart, Powell, & Schofield, 1979; Holt, 1974). An awareness of these negative consequences has emphasized the need for the prediction of "at risk" children to allow for timeous intervention to aid them to reach their full potential (Kroukamp, 1991). Reynold (1979) viewed the early identification of the "at risk" children as a valuable asset in remediation and a potentially strong tool for the primary prevention of learning, emotional and behaviour problems. A significant amount of contemporary research has also confirmed that early identification, coupled with early remediation, has a positive effect on the educational future of children (Nuttall, Romero, & Kalesnik, 1992).

Authors define developmental assessment in various ways, and due to its multifaceted use, it has been subjected to several interpretations in the assessment literature. Researchers have also used the terms developmental test and intelligence test interchangeably. For example, Brooks and Weinraub (1976) referred to the Griffiths Scales, Bayley Scales, and Cattell Scales as intelligence tests, whereas Illingworth (1980) referred to the same scales as developmental

tests. Thus it appears that in the case of infants and young children, the concepts intelligence tests and developmental tests are used interchangeably. Barnard (2000) integrated several well known definitions of developmental assessment (Bondurant-Utz & Luciano, 1994; Meisels, 1996; Nuttall, Romero, & Kalesnik, 1992; Rudel, 1988; Snow, 1998), and concluded that “developmental assessment can be defined as a comprehensive psychological investigation of a child’s abilities, including motor, social and cognitive (e.g., language, memory, reasoning, and problem-solving) abilities, through the use of direct observation, testing and report items” (p.12).

Many theorist and researchers are of the opinion that a child’s success is not solely determined by intelligence or general ability, as personality and emotions also play an important role (Ahammer & Schaie, 1970; Goleman, 1995). The following predictors are usually related to scholastic achievement, namely, academic skills/readiness, general cognitive ability (IQ), specific cognitive abilities (memory and conceptual abilities), language abilities, perceptual/perceptual motor abilities, motor skills, non-cognitive factors, temperament, behavioural-emotional functioning and biographical factors (e.g., gender, preschool attendance, age socio-economic status and culture). Kroukamp (1991), in a South African study, concluded that while biographical factors do play a role in the prediction of scholastic achievement, cognitive and personality related factors play a more significant role.

Many of the major intellectual assessment tools used today fail to test personal development and social functioning adequately. Standardized intellectual tests provide psychometrically refined measures of behaviour in response to a particular class of problems that involve reasoning, comprehension, or a broader base of factual information (Murphy & Davidshofer, 1998) especially for children over the age of six years. Measures of emotional well- being usually only include emotional functioning, emotional self-regulation, psychopathology, behaviour problems, and self esteem. According to Brooks - Gunn (1990) few standardized and easy to administer measures of emotional well-being have been constructed for young children.

Over the years various approaches have been used to measure the development and well-being of children. Well-being being defined by Brooks-Gunn (1990) as “social, physical, cognitive/academic, and emotional/mental health and development,” (p.105). The measures developed thus far have contributed significantly to the understanding of children depending on the level of analysis, the age range of interest, the scientific discipline undertaking the study, and the context in which children are studied (Brooks-Gunn, 1990).

The use of mental tests for infants and young children began several decades ago, and initially involved mostly studies of normal infant development (Griffiths, 1986). According to Honzik (1976) and Meisels and Atkins-Burnett (2003) tests have not only served the purpose of diagnosis but have also contributed substantially to our understanding of the development of the child. Squires, Nickel and Eisert (1998) maintain that the use of formal measures are essential as they outweigh the limitations of pure observation, provide a structure for observation and increase the identification of children with mild problems who would otherwise go unnoticed. It stands to reason that the assessment measures used must be appropriate, valid and reliable. A well-conducted developmental assessment using psychometrically sound assessment tools can be invaluable in providing parents and educators with information regarding the best treatment strategies for the child. However, an inaccurate assessment using assessment tools that are not appropriate for the investigation can result in an inaccurate decision being made resulting in dire consequences for the child and the family. According to Povey (2002) the disadvantages of formal testing can outweigh the positive aspects under the following circumstances:

1. If the measure used is not standardized for the groups on which they are used.
2. If the measures used are not reliable and valid.
3. If the measures used are not appropriate for the context and are not relevant for the problem being assessed.

There has however, been some opposition to the early identification of learning disabilities. It is argued that some of the characteristics of these children are part of the normal development in children (Gearheart, 1985) and the perceived dangers of “labelling” children (Bryan & Bryan, 1978) may cause negative expectations in these children. Tramontana, Hooper, and Selzer (1988) also suggested that it is also possible for some non-handicapped children to be misdiagnosed as having learning problems while others are overlooked and later “grow into a deficit” with the demands of the academic setting.

In spite of these criticisms, however, there appears to be a strong argument in favour of early identification of educationally high-risk pupils (Keogh, Tchir, & Windeguth-Behn, 1974). It is suggested that the critics of the early identification of risk factors or learning problems, based their contentions on the result of inadequate evaluations and/or assessments (Worsfold, 1993).

As the importance of formal and standardized assessment measures cannot be ignored, it is hence imperative that the developmental assessment process and the purpose for which the information is used must be legitimate. This process can be simplified into five categories, namely: identification; screening; in-depth assessment; programming and intervention; and evaluation.

The first step, *identification*, according to Widerstrom, Mowder and Sandall (1997), refers to the process of locating infants, toddlers and preschoolers and their families who may require early intervention. Peterson (1997) maintains that identification involves a variety of activities related to defining the target population, increasing public awareness of services, encouraging referrals, and canvassing the community for children and families who may require services.

The second step, *screening,* involves a process of initial investigations to determine if a child is in need of a more comprehensive assessment. It hence facilitates access to the population of children who may be in need of early intervention services. Screening should include members of a disciplinary team. The following aspects of a child’s functioning should be evaluated in a multidisciplinary screening programme: vision, hearing, physical health,

development in speech and language, motor skills, social and emotional growth and cognitive skills (Brooks-Gunn, 1990).

According to Brooks-Gunn (1990), a screening measure should have the following characteristics:

1. The test should be short.
2. It must be designed to use in post-natal clinics, paediatricians' offices, community health services, and outpatient hospital clinics.
3. A variety of professionals should be able to administer the test with a minimal amount of training.
4. The test should be geared to meet the constraints of a busy practice in order to ensure that it will be used regularly.
5. The test should be constructed in such a way as to discourage personnel from administering only parts of the test, as this would reduce the reliability and validity of the test.
6. Scoring systems should be simple and quick.
7. The test should minimize the number of false negatives (i.e., suspect children placed in non-suspect groups), as these children would not be reassessed using diagnostic measures.

The screening stage of the assessment process allows the examiner to obtain an overall picture of the child's general development and functioning, looking specifically at patterns of peaks and lows, with the goal of identifying areas that are in need of closer examination (Bondurant-Utz & Luciano, 1994).

Diagnosis is the third step in the assessment process. Widerstrom, Mowder and Sandall (1997) define diagnosis as the determination of the cause of the disorder or delay, in order to prescribe treatment that would lead to a cure. The process of diagnosis involves a comprehensive, in depth assessment to identify or verify the existence, nature, and severity of a developmental delay or disability so that appropriate interventions can be planned (Bondurant-Utz & Luciano, 1994).

This comprehensive analysis should provide a profile of the child's strengths and limitations. This profile of capabilities provides the cornerstone for the establishment of the goals of an intervention programme, and the basis from which to make suggestions about the best way a child can learn (Stewart, 1997).

According to Bondurant-Utz and Luciano (1994) an in-depth assessment should include:

1. A comprehensive and detailed analysis of child-development abilities that establishes the goal of intervention.
2. A score or product, and more importantly, qualitative information about how the child earned that score.
3. A profile of strengths and weaknesses with suggestions about the best way in which the child learns.
4. An analysis of the child's development, focussing on the problem areas identified during the screening and the factors that impact on the developmental areas requiring intervention.

The focus of this research is primarily on the diagnostic stage of the assessment process as this is where the Griffiths Scales are most often used. The Scales provide a comprehensive, norm-referenced assessment and an opportunity for the differential diagnosis of a child's mental status. The particular attributes of the Griffiths Scales will be discussed in more detail in Chapter 2.

The fourth step, *programming and intervention*, involves determining the intervention outcomes and objectives, and identifying useful intervention strategies to provide the services and support that the child and his family need (Widerstrom, Mowder, & Sandall, 1997).

The final step of the assessment process is to continuously *evaluate and research* the child's progress in order to determine the effectiveness of the intervention strategies and activities. It is important to change, modify or revise an activity that is no longer benefiting the child to ensure that he obtains maximum benefit from the intervention selected.

When evaluating a program the broad perspective as well as the narrow detail should be investigated. Usually repeated assessments are employed to assess the child's developmental gains across time and programme adjustments are made if necessary. To make comparisons through time it is useful to use the same instrument in the diagnostic assessment and the evaluation. The Griffiths Scales are particularly well suited to repeat assessments and have been employed in this capacity in many studies (Stewart, 1997).

According to Vance (1998) there is no such a thing as an untestable child. However, some children may pose a greater challenge to the assessment process as compared to others. This in turn requires the careful selection of assessment tools ensuring that accurate and valid conclusions are deduced regarding the child's developmental abilities. An overview of developmental measures for infants and children will be highlighted in Chapter 3.

1.3 CONTEXTUALISATION OF THE STUDY

According to Thomas (1970), the Griffiths Scales appear to be one of the most carefully designed infant measures available. Due to better standardisation, higher test-retest reliability and higher general predictive validity, the Griffiths Infant Scales has been viewed by many as a definite improvement over other infant scales (Brooks & Weinraub, 1976). The multifold application of the Griffiths Scales has been reflected in numerous studies worldwide (Allan, 1988, 1992; Bhamjee, 1991; Brandt, 1983; Cobos, Rodriques, & De Venegas, 1971; Collins et al., 1987; Grantham-McGregor, Stewart, Powell, & Schofield, 1979; Ludlow, 1980; Luiz, 1988a, 1988b, 1988c, 1988d; Welbourn, 1975). However, over time a number of research studies identified a need to revise the Griffiths Scales.

Comprehensive reviews in the 1980s and 1990s indicated that the 1960 norms were no longer valid. (Allan, 1988; 1992; Barnard, 2000; Hanson, 1982; 1983; Hanson & Aldridge Smith, 1982; 1987; Kotras, 1998; Luiz, Collier, Stewart, Barnard, & Kotras, 2000; Luiz, Oelofsen, Stewart, & Mitchell, 1995). Furthermore, with the steadily increasing General Quotient and the identification of outdated items necessitated that the Griffiths Scales be revised and standardized on a

more contemporaneous population. An overview of the revision of the Griffiths Scales will be highlighted in Chapter 2.

A significant consideration in the development, revision and restandardisation of any measure is an investigation into its psychometric properties, especially since many assessment measures in recent years have become available with less than satisfactory psychometric properties (Beers & Beers, 1980). According to Honzik (1976) and Meisels and Atkins-Burnett (2003) tests have not only served the purpose of diagnosis but have also contributed substantially to our understanding of the development of the child. Squires, Nickel and Eisert (1998) maintain that the use of formal measures are essential as they outweigh the limitations of pure observation, provide a structure for observation and increase the identification of children with mild problems who would otherwise go unnoticed. It stands to reason that the assessment measures used must be appropriate, valid and reliable. A well-conducted developmental assessment using psychometrically sound assessment tools can be invaluable in providing parents and educators with invaluable information regarding the best treatment strategies for the child. However, on the other hand, an inaccurate assessment using assessment tools that are not appropriate for the investigation can result in an inaccurate decision being made resulting in dire consequences for the child and the family. The 2002 Ethical Principles of Psychologists and Code of Conduct (2002) acknowledges the far reaching and long term implications that assessment measures have on the child by stating that psychologists should only use assessment instruments that are valid and reliable for the population being tested.

In light of the importance of psychometrically sound measures for the early identification of delays and the development of appropriate intervention strategies, together with the recent revision and restandardisation of the GMDS-ER, it is important to expand the revision on whether the six Subscales of the GMDS-ER are indeed reliable and valid for their intended use. As each subscale can be used independently as a measure of its own (Griffiths, 1970), this study focuses specifically on the revised Personal-Social Subscale to contribute to the

validity evidence of personal-social functioning as measured on this Scale. Preliminary studies into the construct-related validity of the Language, Practical Reasoning, and Locomotor Subscales were conducted by Kotras (2003), Barnard (2004) and Knoesen (2005) respectively on the restandardisation sample. These studies indicated that the constructs underlying each Subscale were multidimensional in nature and hence proposed multifaceted models for each Subscale. The current study aims to gather additional evidence to explore the construct-related validity of the Personal-Social Subscale. Guided by the recommendations from Kotras (2003), Barnard (2004) and Knoesen (2005), this study aims to investigate the constructs underlying the items on the Personal-Social Subscale by utilizing both qualitative and quantitative techniques.

In addition to exploring the construct-related validity of the Personal-Social Subscale for the restandardisation sample as a whole in this study, the constructs will also be corroborated across gender and socio-economic status (SES) groups. This was done in accordance with the AERA (1999) stipulations. Previous studies on the original Griffiths have indicated differential performance across the gender and SES groups and thus determining the equivalence of the constructs identified for these sample sub-groups is essential. This step was not conducted in the broader revision process and thus this represents a valuable contribution to improving the available information on the psychometric properties and the accurate diagnostic use of the Personal-Social Subscale, promoting the early identification of delays to initiate early remediation.

1.4 PRIMARY AIMS OF THE RESEARCH

The recent revision of the GMDS-ER would benefit from investigations into its psychometric properties. The global aim of this research study is to contribute to the body of knowledge of the revised Griffiths Scales by exploring the construct-related validity of the items of the Revised Extended Personal Social Subscale (Scale B), for boys and girls aged three to eight for all socio-economic status groups. The more specific aims derived from the overall aim are:

Aim 1: To conduct a facet analysis to explore and describe the constructs tapped by the Revised Extended Personal Social Subscale, for children aged three to eight years;

Aim 2: To verify the constructs empirically, via factor analysis, and

Aim 3: To investigate construct equivalence, for gender and socio-economic status groups, for the Revised Extended Personal-Social Subscale.

1.5 OUTLINE OF CHAPTERS

In order to contextualize and place the GMDS-ER*,* and in particular the Personal-Social Subscale, within the field of developmental assessment *Chapter 1* introduced the reader to the field of developmental assessment with particular reference to the domain of personal-social development. This was undertaken to contextualize the current study. *Chapter 2* provides an overview of the Griffiths Mental Development Scales and the revision of the Scales. The reader is provided with an overview of its historical origins, development and content. The extensive research conducted on the Scales in both a clinical and research setting is discussed. The rationale for the recent revision and restandardisation, the resulting changes in the Personal Social-Subscale and the current status of its psychometric properties will be discussed and related to the purpose of the current study.

Chapter 3 provides a detailed account of Erikson's Psychosocial Theory of child development and this is used as a backdrop to place and understand the personal-social development of children. An understanding of sequences in typical development is essential as a framework for the understanding and interpretation of developmental differences among young children. The methodological process of this study will be presented in *Chapter 4*. This chapter includes a discussion on the research design, sampling methods, measures employed, procedures followed and data analysis techniques utilized in order to achieve the aims of the research.

Due to the large quantity of data, the results are spread over Chapter 5 and 6 to facilitate a better understanding and presentation of the findings. *Chapter 5*

focuses on the results of Aim 1, which was to conduct a facet analysis to explore and describe the constructs tapped by the Personal-Social Subscale of the GMDS-ER. *Chapter 6* presents and discusses the empirical validation of the qualitatively identified constructs derived on the Personal-Social Subscale and its equivalence across gender and SES (Aim 3).

Chapter 7 summarizes the major findings of the study and discusses the resulting implications and limitations of the findings. Recommendations for future research into the clinical use and psychometric properties of the Personal-Social Scale of the study will also be presented.

CHAPTER TWO

GRITTITHS MENTAL DEVELOPMENT SCALES

2.1 INTRODUCTION

This chapter will provide an overview of the development and content of the original Griffiths Scales. This chapter will also provide an overview of national and international research completed on the original scales, structured according to the clinical, reliability, validity and normative studies. The rationale for its recent revision and restandardisation with specific emphasis on the changes to the Personal-Social Subscale and the current status of its psychometric properties will be discussed as the current study's global aim is to investigate the construct validity of the Personal Social Subscale of the Griffiths Mental Development Scales- Extended Revised (GMDS-ER). It is acknowledged that information presented in this chapter has been adapted from the Administration and Analysis Manuals of the GMDS-ER (Luiz et al., 2006a; Luiz et al., 2006b) and from Luiz et al. (2000).

2.2 THE ORIGINAL GRIFFITHS MENTAL DEVELOPMENT SCALES

2.2.1 An Overview of the Development and Content of the Original Griffiths Mental Development Scales

The Griffiths Mental Development Scales were developed and refined by Ruth Griffiths (1954; 1970; 1984; 1986) and is amongst the most widely researched scales for the assessment of infants and young children in the world today (Allan, 1992). This diagnostic instrument was initially designed to assess the development of babies in the first 2 years of their life. The major impetus for the development of the Scales was a need for the early diagnosis of mental conditions in children (Griffiths, 1954; 1984). The Griffiths Scales were developed in Great Britain by observing children in their natural environments while they were engaged in natural activities such as walking, talking, and playing. Play is said to be a universal phenomenon and research findings indicate that different

types of play emerge at about the same time in children from different cultures (Kagan, 1981). Piaget (1951) viewed play as an adaptive activity and suggests that play activities permit children to practice their competencies and conflicts in a relaxed and calm way. Meisels and Atkins-Burnett (2003) maintain that a productive approach to assessing typical development is to observe the child in naturally occurring situations that are both structured and unstructured. The items on the Griffiths Scales are diverse, tapping the main aspects of a child's development. The items are placed in order of gradual increasing difficulty.

According to Griffiths (1970; 1984), the Griffiths Scales were developed on the basis of five stringent criteria:

1. The development of the Griffiths Scales was based on detailed systematic observation of children. Children were observed in their natural environments, at home, at play, in the streets, on trains and buses and in school playgrounds and their behaviour was recorded. From these observations, material for test items emerged.
2. Previous and existing test methods and tests were taken into account and items from prominent tests were included in the Griffiths Scales (e.g., Gesell, 1925).
3. The Griffiths Scales had to fulfil stringent statistical requirements for reliability and validity.
4. The Griffiths Scales took into account the special needs of both handicapped and normal children.
5. The Griffiths Scales were based on a study of: (i) trends that appeared significant for mental growth; and (ii) the origins and interrelations among the "basic avenues of learning", namely, physiological / locomotor, eye and hand, voice and hearing, the development of which takes place with rhythm, in time and space and is influenced by environmental and social factors (Griffiths, 1984).

Based on the interrelations among the "basic avenues of learning", namely, eye, hand, voice and hearing, Griffiths (1986) classified the items in the original

Scales into five categories. These categories allowed for the assessment of: locomotor development, personal-social adjustment, hearing and speech, hand and eye co-ordination and performance.

The Griffiths Scales were developed during a period where attention was primarily focussed on the cognitive development of the child and the measurement of verbal, visuo-spatial and mathematical abilities (Knoesen, 2005). From the overview of the basic theoretical foundations of the Griffiths Scales it can be concluded that Griffiths (1954; 1970; 1984) was unlike her contemporaries and that her thinking and holistic view of development are in line with current trends. Her awareness of the importance between the various "avenues of learning" and her broad conception of mental development, in many ways, anticipated Gardner's (1993) multiple intelligences, and the bio-ecological transactional developmental models of Bronfenbrenner and Ceci (1994) and Magnusson (1995). Her awareness of social and emotional development factors, and the interplay between these and mental development, underlined the concept of 'emotional intelligence' later made popular by Goleman (1996). She was also among the first to open doors to awareness of the complex nature of biological influences, the central role of social and cultural difference, and the active role of the person in shaping his own development which, Greene (1990) argues are essential when considering the nature of child development. Thus it can be deduced that the Extended Griffiths Scales represents a diagnostic developmental measure which addresses the multidimensionality of development and taps into the child's physical, cognitive, social and emotional development (Brooks-Gunn, 1990). This sets it apart from many traditionally used cognitive or intelligence tests which only focus on cognitive development.

The Griffiths Infants Scales were initially standardised on 571 British babies. Griffiths demonstrated by means of a developmental profile, in the form of a graph or histogram, how the differential diagnosis of the mental status of a baby could be described (Griffiths, 1954; 1986). These histograms illustrated the individual child's range of abilities and relative disabilities.

The importance of the Griffiths Infant Scales in the clinical diagnosis of both normal and handicapped children has been widely acclaimed by clinicians from various disciplines (Griffiths, 1970; 1984). Griffiths received many requests for the extension of the Infant Scales for use in clinical practice with older children. To meet this need, a revised and extended version of the Scales was published in 1970. A sixth scale named Practical Reasoning (Scale F) was added to the Griffiths Scales for children aged 2 years and older, to provide a more comprehensive coverage of the young child's emerging problem-solving and logical-reasoning skills (Griffiths, 1970). Griffiths not only extended the infant scales, but also revised and restandardised the original scales. The revised Griffiths Scales now covered the period of development from birth to 8 years four months.

The Scales provides a general development quotient in addition to measuring the development of children on six domains in separate subscales. These subscales are: Locomotor, Personal-Social, Hearing and Speech, Eye and Hand Co-ordination, Performance, and Practical Reasoning.

2.2.2 Description of the Subscales

This section provides a brief description of the six Subscales of the Griffiths Mental Development Scales.

The Locomotor subscale (Scale A). This Subscale gives the opportunity to observe physical development in young children. Items include the ability to run fast out of doors, to bounce and catch a ball, to jump over a 15-25 cm rope to hop-skip, etc. This subscale requires skill in speed and movement, rhythm and poise at a level that is equivalent to the child's age and normal physical strength. Performance is also influenced by the ability to concentrate on a task and the emotional determination to succeed. The rationale of this Subscale is to point out any fall-outs in gross motor movement.

The Personal-Social Subscale (Scale B). This Subscale gives the opportunity to assess personal and social development. Items include the ability

of the child to give his/her home, address, to dress and undress self, to fasten buckles, tie a knot and so on. At a level compatible to the child's age a degree of self help is required from children in terms of personal cleanliness, efficacy at the table, and so forth. Some degree of social interaction is also required from the child and also co-operation in play with other children. This Subscale is important in identifying any emotional or social problems the child may be experiencing.

The Hearing and Speech Subscale (Scale C). This Subscale is the most intellectual of the Subscales and gives opportunity for the study of the growth and development of language. Items include naming colours, comprehension of items, opposites, repetition of sentences with 6 to 16 syllables and so on. Fallouts on this scale indicate a possibility of hearing impairment and/or poor verbal expressive skills. This subscale has subsequently been renamed the Language Subscale since its revision as no hearing items are included (Kotras, 1998).

The Eye and Hand Coordination Subscale (Scale D). This Subscale consists of items relating to the handwork and visual ability of the child. Items include drawing, copying designs, threading beads, and so forth. The tasks require manual dexterity, eye-hand co-ordination, diligence and persistence at a task. While the structured drawing of geometric shapes provides information on the child's conception of space and form relations, information on the child's personality and emotional status can be elicited from all the drawings, as is the case with projective techniques like the Draw-A-Person (Harris, 1963).

The Performance Subscale (Scale E). This Subscale is largely a scale of performance and enables the examiner to observe and measure skill in manipulation, speed of working and precision. Items include formboards, pattern making and so forth. Skills in manipulation, speed and accuracy, spatial perception and visual activity are needed to successfully complete these tasks. This subscale supplements Subscale D in that in Subscale E, manual dexterity

and eye-hand co-ordination are assumed and the child is required to apply these skills in novel situations.

The Practical Reasoning Subscale (Scale F). This subscale commences at the 3rd year of life and concentrates mainly on recording the earliest indications of arithmetical comprehension, and the realization of the simplest practical problems. This subscale requires the child to reason about practical problems. It can serve as a predictor of the child's school readiness ability in that it can provide an opportunity to assess whether he or she would benefit from formal schooling. Attention and concentration span also plays a major role in this subscale (Stewart, 1997).

2.2.3 Usefulness of the Griffiths Profiles

Griffiths (1970; 1984) suggested that the Infant Scales be used for the assessment of babies in their first year of life, and also for the assessment of older children with special disabilities. This is because the Infant Scales include more items on the various subscales and, therefore, provide a more comprehensive measure. Furthermore, the Extended Scales provide continuity (i.e., from birth to 8 years) when assessing older children.

In essence the Griffiths Scales provide a method of studying a child's range of abilities or relative disabilities – their patterns of mental growth. They have also increased the clinicians understanding of a child's behaviour and functioning in various situations. By observing and studying the profiles of a large number of children representing different populations, Griffiths (1984) identified a number of typical developmental profiles, which may be suggestive of specific developmental difficulties and thus assist in interpreting an individual child's performance.

The clinical merit of the Griffiths Scales continues to increase. Research on the scales using diverse clinical samples has been generated worldwide. Studies from several countries including, Canada, Columbia, France, Germany, China, Norway, Australia, Greece, Lebanon, United States, and South Africa have been

reported (Kotras, 2003). Hanson and Aldridge Smith (1982) identified diverse problems for which the Scales were applied. These included general developmental delay, delayed speech, locomotor delay, Down's syndrome, environmental deprivation, cerebral palsy, hearing-impaired, convulsions, and prematurity. Several authors have mentioned the uses of the Griffiths Scales, but Lister (1981) has most appropriately summarized it. According to Lister, it is possible to obtain a detailed diagnosis of a child's mental status using the Griffiths Scales, and the child's abilities and difficulties can be clearly represented. More specifically, according to Lister:

1. Profiles reveal whether the disability is general or specific.
2. The Scales assist in determining whether the retardation is global or specific.
3. They help to determine the degree of retardation and what assistance or management programmes are needed.
4. They identify specific learning disabilities or specific difficulties, with the hope that they would be correlated by applying appropriate intervention programmes.
5. They demonstrate the effect of treatment and educational provision after regularly repeated assessments.
6. They assist in providing information for future placement and decisions about the management of the child.

Research on the technical properties of the scales has demonstrated that the Scales are valid and reliable (Luiz et al., 2000). The technical properties of the Scales are important when considering the revisions of the Scales. A brief review of the technical research namely, reliability, validity and normative studies of the original Scales is presented below.

2.2.4 Reliability Studies

Reliability can be defined as the consistency of test scores over time (Murphy & Davidshofer, 1998; Smith 1996). Reliability can be tested in various ways. Griffiths (1984) used the test-retest method when testing for the reliability of the Extended Scales. The interval between assessments varied between 3 and 62 months. A test – reliability of 0.77 was obtained. Honzik, McFarlane and Allen (1966) reported a test-retest reliability coefficient of between 0.71 and 0.76 for test-retest periods of 6 to 12 months, indicating that Griffiths scales are stable measures of development (Luiz et al, 2000).

The inter-rater reliability of the Griffiths Scales was investigated by Aldridge Smith, Bidder, Gardner, and Gray (1980). A reliability level of between 0.6 and 1.0 was found for 78% of the cases. They found greater agreement between all raters on Eye-Hand co-ordination (84%), Performance (91%), and Practical Reasoning (95%), than on Locomotor, Personal Social, and Hearing and Speech Scales. Aldridge Smith et al. (1980) concluded that the small sample size, few scorers, and scoring based on the mother's reports might be responsible for the lower inter-rater reliability of the later three scales. Hanson (1982) extended the study of Aldridge Smith et al. (1980) and focused on item reliability as seen in inter-observer agreement. Hanson's study revealed that the Griffiths test users disagreed on the scoring for one third of the items. Hanson (1982) hence suggested that more clarity regarding the administration and scoring procedures of the Griffiths Scales be detailed in the manual to improve the level of inter-rater reliability.

2.2.5 Validity Studies

Construct and predictive validity of the original Griffiths Scales have been extensively researched.

Construct validity

Construct validity is defined as the extent to which an instrument measures a particular construct (Aiken, 1997; 2000; Murphy & Davidshofer, 1998). In

addition to Griffith's (1984) original validity studies, further international studies into the construct validity of the Griffiths Scales have found high positive correlations ranging between r = 0.73 and r = 0.98 with the Bayley Scales (Beail, 1985; Ramsay & Fitzharding, 1977; Ramsay & Piper, 1980) as well as the Cattell Infant Intelligence Scale (Caldwell & Drachman, 1964). An American study conducted by McLean, McCormick and Baird (1991) confirmed these findings. Furthermore Ludlow and Allen (1979) found high positive correlations ranging from r= 0.85 to r= 0.90 between the Revised Stanford Binet Scales and the Griffiths Scales for a sample of Down's Syndrome children suggesting that the two instruments measure similar constructs.

A number of South African studies also explored the construct validity of the Scales. Luiz and Heimes (1994) reported that the GQ of the Griffiths Scales and the General Intelligence Quotient (GIQ) of the Junior South African Intelligence Scale (JSAIS) showed high positive correlations for white children (r = 0.43 and r = 0.81). Mothuloe (1990) found high correlations between the Griffiths Scales and the Aptitude for School Beginners (ASB) test (r = 0.32 to r = 0.62). Similarly Luiz (1988b) reported a significantly high correlation of r = 0.92 between the Griffiths Hearing and Speech Subscale and the Reynell Verbal Comprehension Scale. Moderate correlations of r=0.68 for Afrikaans-speaking children and r=0.48 for English-speaking children were found on the School Readiness Evaluation by Trained Teachers Test (SETT) and the Griffiths Scales (Luiz, Fölsher, & Lombard, 1989).

In a more recent study Luiz, Foxcroft and Stewart (2001) examined the underlying dimensions of the Griffiths Scales using common factor analysis. The authors found that the Griffiths Scales tend to measure one factor, and the factors appear to be similar for White, Coloured, Asian and Black children. In addition, it was found that the pattern of inter-correlations for South African and British children was similar, further suggesting that the Scales are measuring a construct that is consistent across cultures and through time. Similarly Povey (2002) examined the underlying dimensions tapped by the six Griffiths Subscales

using common factor analysis. She 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 the clinical typologies could be generated for South African pre-schoolers and early school-going children. The results of this study once again added support for the construct validity of the Griffiths Scales in terms of its discriminative abilities.

These studies mentioned above were conducted in various countries, namely, United Kingdom, Canada and South Africa. This suggests that there is ample support for the construct validity of the original Griffiths Scales.

Predictive Validity Studies

Predictive validity is concerned with how accurately scores on a psychological measure predict scores on a criterion measure (Aiken 1997). Worsfold (1993) correlated the Griffiths Scales GQ and the six Subscales with the Grade 1 performance for 124 pre-school children (aged 5 years 6 months to 7 years). Worsfold found a contingency coefficient of C= 0.51 between the Griffiths GQ and Grade 1 performance, and contingency coefficients ranging from C= 0.22 to C= 0.44 for the six Subscales and Grade 1 performance. Worsfold's study supports the predictive validity of the Griffiths Scales in identifying scholastically and developmentally "at-risk" children. A study conducted by Conn (1993) in America revealed similar results, thus adding further support for the predictive validity of the Griffiths Scales. Other studies conducted in Switzerland (Largo, Graf, Kundu, Hunziker, & Molinari, 1990) and Australia (Bowen, Gibson, Leslie, Arnold, Ma, & Starte, 1996) have also found support for the predictive validity of the original Griffiths Scales in predicting later intellectual functioning in normal, at risk and retarded infants and extremely low birth weights in infants respectively. The results of these studies indicated the benefit of using the Griffiths Scales to identify children who may benefit from intervention prior to school entry.

2.2.6 Normative and other Studies

Although the Griffiths Scales were standardized on a fairly representative sample, later studies indicated that the population on which the Baby Scales and Extended Scales were standardized may no longer represent a contemporary population (Allan 1988; 1992; Hanson, Aldridge Smith, & Humes, 1985; Hanson & Aldridge Smith, 1987; Huntley, 1996).

In 1985, Hanson, Aldridge Smith and Hume found that the performance of the 1980 sample was approximately 10 points higher than the 1960 sample. Hanson and Aldridge Smith (1987) compared the Griffiths performance of British children, tested between 1978 and 1982, with the 1960 standardized sample. They reported large increases in the quotients for each of the subscales except the Eye and Hand Co-ordination Subscale confirming the upward trend in developmental quotients found in earlier studies conducted by Flynn (1982), Garfinkel (1975) and Garfinkel and Thorndike (1976). Studies conducted in Brazil (Victora, Victora, & Barros, 1990) and Malaysia (Ho, Amar, & Ismail, 2001) also found significant increases in the developmental quotients of Brazilian and Malaysian children respectively on most subscales when compared to the 1960 standardization sample. The increasing quotients observed on the Griffiths Scales was also confirmed in a study conducted by McLean et al. (1991) who found that American children obtained quotients that were considerably higher than those obtained on other measures, such as the Bayley Scales.

Allan (1988) investigated the applicability of the 1960 norms for White South African children. Allan's sample of 5-year-old South African children differed significantly from their British counterparts on the GQ as well as on four of the six subscales (Locomotor, Personal-Social, Hearing and Speech and Performance). Conversely no significant difference was found when Allan compared the South African sample to a more contemporary British sample (Hanson & Aldridge Smith, 1987). Allan concluded that SES was a factor in performance, with children from a higher SES performing better on the Griffiths Scales. In contrast to Allan's findings, Mothuloe (1990) found similar mean scores for Black South African children to those established for the 1960 normative sample. Despite

Mothuloe's (1990) findings other cultural groups surpassed the 1960 sample's performance on the Scales (Luiz, et al., 2000). For example, Bhamjee (1991) concluded that Indian South African children performed better than British children, especially at the pre-school level. Furthermore, age and socio-economic status were found to have a significant influence on the sample's overall performance on the GQ, and on four of the six subscales. Similarly, earlier studies conducted by Munro (1968), Hanson et al. (1985) and Hanson and Aldridge Smith (1987) on the Griffiths Scales also found social class differences in performance.

Allan (1992) found additional support for the influence of SES rather than cultural group. Furthermore Luiz et al. (2000) reported a significant difference between SES on the GQ of the original Griffiths Scales. In addition to the above British and South African studies, other international studies also found support for the influences of SES on the child's performance, including research conducted in Switzerland (Largo et al., 1990) and Malaysia (Ho et al., 2001).

With regards to the influence in gender, studies have produced contradictory findings. Allan (1988) found no significant differences between the performance of 5-year old White boys and girls, while slight differences were observed between Black boys and girls on the Locomotor Subscale (Mothuloe, 1990). Bhamjee (1991) found that South African Indian girls obtained significantly higher scores than Indian boys in respect of the Personal-Social Subscale. As Allan (1988), Bhamjee (1991) and Muthuloe (1990) used samples from different cultural groups, the contradictory findings may be related to cultural differences in respect of other subject variables and thus are not conclusive. An earlier longitudinal study conducted by Moore (1967) on a sample of British children found that girls generally scored a little higher during the first five years of life, after which no significant differences were observed between the genders. The decline in gender differences with increasing age was also found in studies conducted by McCarthy (1954) and Templin (1957).

2.3 THE REVISION AND RESTANDARDISATION OF THE GRIFFITHS SCALES

2.3.1 The Need to Revise the Griffiths Scales

The above review of the Griffiths Scales indicated that several studies conducted locally and internationally have researched and reported favorably on the Griffiths Scales' reliability and validity (Griffiths, 1984; Hanson, 1982; Heimes, 1983). However, a considerable number of research studies increasingly identified a need to revise the Griffiths Scales (Aldridge Smith & Humes, 1985; Allan, 1988; 1992; Barnard, 2000; Hanson, 1982; 1983; Hanson & Aldridge Smith, 1982; 1987; Laszlo, & Bairstow, 1985; Luiz et al., 2000; Luiz, Oelofsen, Stewart, & Mitchell, 1995). These studies indicated that the norms developed in 1960 were no longer providing the examiner with reliable and valid results on current evaluations of the child and hence new norms need to be developed.

Studies by Hanson (1983) and Luiz et al. (1995) identified areas in which the Griffiths Scales could be improved and indicated a need to revise a few items on the Griffiths Scales to maintain its contemporaneity. In addition, children as young as 5 years old were starting to reach their ceiling on the Scales and hence the usefulness of the Scales for normal children past their fifth year was questioned (Hanson & Aldridge Smith, 1987; Luiz et al., 2000). The need to revise the Scales was further exacerbated by the steadily increasing General Quotient (GQ), with normal children obtaining GQ's between 105-115 (Allan, 1988; 1992; Hanson & Aldridge Smith, 1987). Steadily increasing IQ scores has become a worldwide phenomenon and is often referred to as the Flynn effect (Flynn, 1987). Strauss, Spreen and Hunter (2000) maintain that the average gain is about 3 GQ's per decade. This is more than 15 points (a full standard deviation) in the last 50 years. This phenomenon necessitates the updating of norms. If this is not done, an average GQ or IQ score will gradually increase and will give a deceptive picture of the child's performance, resulting in the assessment practitioner obtaining scores that are neither reliable nor valid. This upward trend in GQ and IQ scores has been attributed to improved nutrition,

better health conditions, cultural changes, experience with testing, changes in schooling or childrearing, increased dissemination of information and early exposure to advanced technology, or other unknown factors (Flynn, 1984; Mtarazzo, 1972; Neisser et al., 1996). Furthermore, problematic items identified by the researchers are to be expected as many changes have taken place over the past few decades. These changes range from child rearing practices, lifestyle, scientific and technological advancement, educational methodology, environmental and socio-cultural changes.

All psychological tests require periodic revision in order to remain contemporaneous. According to AERA (1999), test revisions are necessary when new research, changes in the domain represented, or newly recommended conditions of test use may lower the validity of the test score interpretation. Similarly, the ethical standards for psychologists (APA, 1992) strongly maintain that psychologists are not to use tests that are outdated, obsolete or not useful for the current testing purpose. According to Smith (1996), it is essential for every test to be revised every few years, especially to update validity, reliability, and normative information. Murphy and Davidshofer (1998) maintain that it cannot be specifically determined when a test has to be revised, but that it is important to revise tests to keep them current and valid. They further maintain that the popularity of the test also influences the need for the revision of a test. Popular tests are subjected to considerable research activity. This leads to a substantial database that may add valuable information about the meaning of the test scores and their generalisability. New data often suggest the need for item content modifications, changes in test administration procedures, or alteration in the scoring of the test, as was the case with the Griffiths Scales.

2.3.2 The Revision of the Griffiths Scales

In the light of the issues mentioned above, the need to revise the Griffiths Scales became of critical importance. During a conference held in Manchester, England in March 1994, the Association for Research in Infant and Child Development (ARICD) established the need for revising and re-standardizing the

Griffiths Scales. Professor D.M. Luiz was appointed to co-ordinate the task of revising and re-standardizing the Extended Scales. A research proposal (Luiz, 1994) was submitted to the Executive Committee of the ARICD and seven objectives for the revision process were drawn up. These objectives were:

1. The basic qualities of the Griffiths Scales should be preserved. Throughout the revision process, the *child-friendly* nature of the scales should be preserved;
2. The *age range* of the Griffiths Scales should remain: While the revision of the Infant Scales had to be brought to finality, the revision of the Extended Scales would concentrate on the age range 2 to 8 years;
3. The revision should involve *international consultation* of all tutors and interested members of the ARICD: A survey should be conducted of all ARICD members, inviting them to identify the strengths and weaknesses of the scales;
4. The revision should improve the *content coverage* of the scales: The scales should represent current theoretical and empirical work and the items should be relevant and contemporaneous. Statistical procedures such as cluster and factor analysis should be employed in the attainment of this objective;
5. An update of the *psychometric quality* of the scales: Reliability and validity studies should be conducted, employing statistical procedures such as factor analysis;
6. An update of the *normative data* on the scales: The scales should be standardized on a contemporary sample that reflects the British Isles (and thereafter South African) population in terms of ethnicity, gender, and socio economic status of the parents;
7. Finally, *enhance the clinical utility* of the scales by collecting data on children with a clinical diagnosis.

The three main objectives of the revision process were thus: to make the content of the scales more relevant, to improve the comprehensiveness of the test domains, and to update the 1960 norms. The Executive Committee accepted

the above research proposal. Since 1994, several studies have contributed to these objectives (e.g., Barnard, 2004; Knoesen, 2005; Kotras, 2003; Luiz, Collier, Steward, Barnard, & Kotras, 2000; Luiz, Foxcroft, & Stewart, 2001; Stewart, 2005).

It is not the purpose of the current study to provide a comprehensive and detailed account of each step in the revision process highlighted above. The reader is referred to the Griffiths Mental Developmental Scales-Extended Revised Analysis Manual for a more detailed account of the technical aspects of each steps of the revision process (Luiz, et al., 2006b). However, a brief summary is provided below, and the focus will primarily be on the changes made to the Personal-Social Subscale.

Many studies were conducted to improve the content coverage of the Extended Scales commencing with an international survey amongst frequent users of the Griffiths Scales (N=111) with the aim of determining the strengths and the weaknesses of the Scales.

In order to establish which items were problematic, Luiz et al. (2000) developed a 10-point weighted scoring system in which each item was given a value based on the following criteria:

1. The percentage of negative responses given for each item (Luiz et al., 1995).
2. The area of concern expressed by the respondents in the survey (Luiz et al., 1995).
3. Hanson's (1983) comments regarding the item's reliability.
4. The overall difficulty of the item.
5. Whether there was a significant difference between the performances of the different ethnic groups.
6. Whether there was a significant difference between the performances of boys and girls.

Using these criteria a number of problematic items were identified. Scale A (Locomotor) contained 23 problematic items, Scale B (Personal-Social) had 21 problematic items, Scale C (Speech & Hearing) had 24, Scale D (Eye & Hand Co-ordination) had 2, and Scale E (Performance) only had 1, and Scale F

(Practical Reasoning) had 7. Scales A, B, and C were indicated as those that are in need of more extensive revision. Table 2 shows the 10 most problematic items on the Scales (Luiz et al., 1995). The reader should note that the item numbers presented in Table 1 are the original item numbers, as it was only in the final stages of the revision process that the item numbers were changed.

Table 1

The ten most problematic items (1970 version)

Rank	Original Item number	Item Description	Total no. of negative responses across nine categories
1	BVI.3	Can go alone on errands to nearby shop	172
2	AV.5	Can climb on and off a bus unaided	171
3	CIV.1	Names 6+ objects in the big picture	135
4	CIII.2	Picture Vocabulary (12)	124
5	BIII.2	At table uses spoon and fork	108
6	BV.5	Can fasten shoe buckles	103
7	BIV.5	Helps lay table: places a few items	102
8	AIV.3	Marches in time to music	98
9	CVI.4	Knows 10+ capital letters	91
10	CV.6	Names 12 objects in big picture	90

Adapted from the GMDS-ER Analysis Manual (2006b), p.5

Of the ten most problematic items, four items were from Scale B (Personal Social). Items BIII.2 (At table uses spoon and fork), and BIV.5 (Helps lay table: places a few items) were found to be culturally biased and out of date by the users, as these items measure culture bound practices such as letting children help lay the table or eating with cutlery (Luiz et al., 1995). Due to many societal changes since 1960, such as an increase in urban terrorism, and child abduction, many parents considered it too dangerous to allow young children to take a bus unaccompanied or go on errands, even to neighbourhood shops (Items BVI.3: Can go alone on errands to nearby shop; and AV.5: Can climb on and off a bus unaided). Furthermore, fashion has changed significantly, with the shoe buckle being often replaced by using velcro on shoes instead of the conventional shoelaces or buckles (BV.5: Can fasten shoe buckles).

These examples show that the revision of the Extended Griffiths Scales could not be separated from the broader social context in which children are currently growing up. If accurate developmental assessments of children from diverse backgrounds are to be developed, test items need to be adapted for the different contexts in which the test is used (Luiz et al., 1995).

While the majority of items were found to be acceptable, some items were in need of complete replacement, and other items needed to be modified to make them more acceptable and contemporaneous. The modification of an item might refer to the modification of the item's content, or that the item was earmarked to be rewritten, or that the administration or scoring procedures needed to be re-evaluated.

For the Personal-Social Subscale (Scale B), 21 problem items were initially identified. However, the South African Griffiths Team (SAGT) only identified six of these 21 items as being very problematic and in need of modification or replacement (Refer to Table 2). No specific reason was given for this.

Table 2

Extended Scale Items That Need To Be Modified Or Replaced For The Personal-Social Subscale (Scale B).

Scale B Items*	Item Description	M/R
BIV.5	Helps to lay table	M
BV.3	Uses knife and fork	M
BV.5	Can fasten shoes	M
BVI.3	Can go alone	R
BVI.4	Can go alone	R
BVI.5	Can brush & comb	M

Key: M = Modify. R = Replace. A = Administration. S = Scoring. T = Time Limit. Adapted from Technical Document of the GMDS-ER (2000), p.19
* Please note that these are the original item numbers of the Griffiths Scales.

In phases one and two of the pilot studies new items were developed, tested, refined and tested again. It was decided that a final round of pilot testing was necessary. Items that had been developed in phase two and had undergone

some refinement needed to be re-examined. Furthermore, decisions as to which new items would be the most appropriate replacements for problematic old items, as well as where the new items would be placed in the revised Extended Scales, needed to be made. To aid in making these decisions, the new items were tested together with the non-revised Extended Scales. The Extended Scales were administered in the normal fashion. The new items were grouped into different age groups based on the findings of phase one and two. The new items were administered to children in the target group as well as children in the age groups above and below the target age group.

The new and modified items of the Revised Personal-Social Subscale (Table 3) were included in a draft version of a Revised Record Book. Ruth Griffiths' original manual (1970) was updated to include the instructions for the new items, as well as the additional administration and/or scoring guidelines for the modified items. For a full description of the new items, refer to the Revised Administration Manual (Luiz et al., 2006a).

Table 3

New and modified items for the Personal Social Subscale (Scale B)

Old Item (1970 version)	New Item	Key
BIV.5	Helps with small household chores	N
BV.1	Washes own hands and face with some assistance	M
BV.3	Cleans own teeth (without assistance)	M
BV.5	Can fasten shoe buckles (test)	M
BV.6	Manages topcoat unaided or jersey unaided	M
BVI.3	Can fetch item in shop by request	N
BVI.4	Chooses own clothes	N
BVII.2	Can get a drink of water from a tap	N
BVII.4	Can eat without assistance	N
BVII.5	Washes and dries own hands	N
BVIII.3	Takes full responsibility for tidiness of hair	M
BVIII.4	Baths and showers without assistance	M

Key: N = New. M = Modified.
Adapted from the GMDS-ER Analysis Manual (2006b), p.38

Thus far, the reader has been taken through the revision process of the Extended Griffiths Scales with specific reference to the Personal-Social Subscale. Before providing information on the psychometric properties of the Revised Extended Scales (i.e., the GMDS-ER), a brief overview of the main features of the GMDS-ER, and especially the new features, will be provided. Readers are also referred to the Analysis Manual (Luiz et al., 2006b) for a detailed overview of the technical information pertaining to the GMDS-ER.

2.3.3 An overview of the changes made to the original Griffiths Scales

Although an attempt was made to launch the revised Griffiths Scales in 2004, the ARICD decided that further refinement of the norms and psychometric properties of the revised Griffiths Scales should be undertaken at that stage. Consequently, it was only in May 2006 that the GMDS-ER for 3- to 8-year olds was launched.

In comparison to the original Griffiths Scales, some improvements were made to the Administration Manual (Luiz et al., 2006a) for the GMDS-ER and

also to the test equipment (i.e., the Griffiths kit) in that equipment for new or modified items has been included. In addition, in the revised Griffiths Scales, the scoring and interpretation of the test results have been updated. Furthermore, the manner in which items are grouped in each Subscale has been changed in the GMDS-ER. In the original Griffiths Scales, items were grouped in individual year groupings from Year 3 to Year 8. In the GMDS-ER, items are no longer grouped in this way. Instead, they have been grouped into two sections, namely, Section III for Years 3 to 5 and Section IV for Years 6 to 8. Consequently, the numbering of the items in Sections III and IV became continuous per section and not per year group as was previously reflected in the original scales. No explanation is provided in either the Administration or Analysis Manuals for this change. However, if may be linked to the fact that the items in the revised Infant Scales, that are administered from birth to 2 years of age, were grouped into two sections (Section I and Section II) and not according to discrete age groups.

In addition, in the original Griffiths Scales, the only way to interpret performance on the subscales was through computing a subquotient. In the revised Griffiths Scales the main method for interpreting performance on the subscales is to convert the raw scores to percentiles and z-scores (standard scores) by using a set of norm tables. A range of confidence intervals and explanations of their meaning and use are given in the Analysis Manual. The examiner uses the standard scores to interpret the child's performance on individual subscales according to the qualitative descriptive categories prevalent in the child's societal context. For example, a z-score of 0 would place the child's performance on any subscale within the average range, whereas a z-score of below –2 would indicate a significant degree of developmental delay or learning disability on that subscale. Consequently, a low performance on any subscales is indicative of a general developmental delay or significant learning difficulties. Similarly, relative discrepancies in the percentile score from a mean of the 50th percentile by more than two standard deviations, or by comparison between subscales or over several assessment occasions, should be noted. These give

valuable indications of the child's strengths, weaknesses and rate of progress (Luiz et al., 2006b).

Furthermore, an age equivalent score, also known as the "mental age" or "developmental age", in a subscale can be obtained by finding the score most closely corresponding to that of the child in the 50th percentile column of the norm tables provided in the Analysis Manual (Luiz et al., 2006b). As was the case for the original Griffiths Scales, it is also still possible to calculate sub-quotients for each of the six subscales to further describe a child's performance on the GMDS-ER (ARICD, October 2006).

A general development score, called the General Quotient (GQ) in the GMDS-ER, can also obtained by taking the average of the raw scores for the six subscales, and by using the appropriate norm table in the Analysis Manual, a percentile, z-score and age equivalent can be established for this GQ score.

The section that follows highlights certain pertinent aspects regarding the norms of the GMDS-ER, and this is followed by an elaboration of certain reliability and validity studies that have already been conducted on the GMDS-ER.

2.4 NORMS OF THE GRIFFITHS MENTAL DEVELOPMENT SCALES-EXTENDED REVISED (GMDS-ER)

Following the revision, the Revised Griffiths Scales was administered to a representative normative sample to develop norms and to determine its reliability and validity. A total representative sample of 1026 children between the ages of 2 and 7 years were tested from England, Wales, Scotland, Northern Ireland and Eire. The reader is referred to Chapter Four where the sampling techniques and procedures followed during the restandardardisation are discussed in greater detail.

One of the goals of the restandardisation was to update the normative data by changing the criterion-referenced nature of the original Griffiths to a norm-referenced measure, thus aligning itself with many other frequently used developmental measures. Hence, percentiles and standard scores with a mean

of 100 and a standard deviation of 15 were computed for each subscale as well as the GQ. This enabled an accurate comparison of the child's performance across the six subscales. Furthermore as many other measures are also normed on a mean of 100 and a standard deviation of 15, accurate comparisons between the Griffiths Scales and other measures is also possible. Thus after scoring each of the six Subscales it becomes possible to convert the raw scores to z-scores (standard scores) and percentiles. As the GMDS-ER is now a norm-referenced measure, research focusing on the development of norms specifically for use in the interpretation of results in other countries has become essential. The GMDS-ER should hence be used cautiously in other countries until then.

2.5 RELIABILITY AND VALIDITY STUDIES CONDUCTED ON THE GMDS-ER

As mentioned earlier a few psychometric and clinical studies have already been conducted on the newly standardized GMDS-ER and are briefly discussed below.

Explorations into the reliability, and more specifically the internal consistency, of the six Subscales were undertaken as part of the restandardisation and are reported in the Analysis Manual (Luiz et al, 2006b). Reliability coefficients ranging between 0.90 and 0.98 were found across the six Subscales per year group, with an overall reliability coefficient of 0.99. With the exception of Subscale E for children with chronological ages of less than 48 months, the coefficients all comfortably exceed the conventional minimum acceptable value of 0.70. These coefficients appear to suggest that there are excessive inter-correlations between the items in the Subscales and that some of the items may be redundant. However, much of this apparent excess is due to the nature of the GMDS-ER and the large number of items included in some of the coefficients. Furthermore, many of the items on the six Subscales are tested repeatedly at various developmental levels (i.e., at increasing levels of difficulty) (Luiz et al., 2006b). More specifically, coefficients ranging between 0.77 and 0.87

were found for the Personal-Social Subscale. No studies were conducted into the reliability of the GMDS-ER across relevant sub-groups (e.g., gender, SES).

In the Analysis Manual (Luiz et al., 2006b) it is indicated that the content and construct-related validity of each of the GMDS-ER subscales was explored using a facet analysis. Luiz et al. (2006b) concluded that the findings of the facet analysis "indicated that the items in the six subscales are representative of their respective content domain and that each item has a satisfactory degree of relevance to the construct being measured" (p. 25). However, no indication is given in the Analysis Manual whether the identified constructs were empirically verified by means of a factor analysis and whether or not construct equivalence was established for any subgroups. Consequently, users of the GMDS-ER should regard the information provided in the Administration Manual on the constructs being tapped by each subscale as being preliminary in nature. Table 4 provides the preliminary findings of the constructs being measured on the Personal-Social Subscale.

Table 4

Construct Model of Subscale B: Personal-Social

CONSTRUCT	ITEM NAME	ITEM NUMBER
1. Social skill- Self concept	Gives first name Knows own gender Knows age Gives family name Knows address Knows full address Knows birthday 1 Knows birthday 2	BIII.2 BIII.5 BIII.10 BIII.12 BIV.6 BIV.12 BIV.13 BIV.20
2. Social skills- Interpersonal skills	Plays well with other children Has a special playmate Has one special school friend	BIII.6 BIV.1 BIV.11
3. Social skills- Domestic skills	Puts away toys when encouraged to Assists with small household tasks on request Can fetch an item in a shop on request Can lay a table completely, with some supervision Can lay a table completely without help or supervision, on all ordinary occasions	BIII.1 BIII.3 BIII.17 BIV.9 BIV.19

CONSTRUCT	ITEM NAME	ITEM NUMBER
4. Personal skills- Eating and drinking	Uses spoon and fork together, without help Can get a drink of water from the tap or bottle, without assistance Eats without assistance	BIII.4 BIV.2 BIV,8
5. Personal skills- Dressing	Can do up buttons Can undress self Can do up buttons Can put on socks and shoes, unaided Can dress and undress self Manages topcoat, cardigan or raincoat unaided Can fasten shoe buckles Can choose own clothes Can tie a single knot Can dress and undress completely, without help Can tie a bow knot Can tie own shoelaces Can tie a double bow-knot	BIII.7 BIII.8 BIII.11 BIII.13 BIII.14 BIII.15 BIII.18 BIV.4 BIV.7 BIV.10 BIV.14 BIV.15 BIV.17
6. Personal skills- Self care	Washes own hands and face, with some assistance Brushes own teeth, without assistance Cash wash and shampoo hair with some assistance Can shampoo hair, without any assistance Baths or showers and dries self, without assistance	BIII.9 BIII.16 BIV.3 BIV.5 BIV.16 BIV.18

Adapted from the GMDS-ER Administration Manual (2006a), p.15

Although preliminary information has been provided on the construct-related validity of the GMDS-ER subscales, further studies are necessary to provide additional, and especially empirical construct-related validity evidence.

Various studies, which have not been reported in the Analysis Manual, have attempted to gather further construct-related validity evidence for the subscales of the GMDS-ER. Kotras (2003), Barnard (2004) and Knoesen (2005) have explored the construct-related validity of the revised Language (previously referred to as the Hearing and Speech Subscale), Practical Reasoning and the Locomotor Subscales of the GMDR-ER. Kotras (2003) and Barnard (2004) used exploratory principal component factor analysis with oblique (Direct Quartimim-DQUART) rotation as a first step to determine the underlying structure of the three Subscales. However, as the resulting factor structures simply grouped the items in age related factors, they relied on the findings from a facet analysis

using a panel of experts and a literature control to identify the underlying constructs being tapped on the Language and Practical Reasoning Subscales. On their recommendation this step was omitted by Knoesen (2005) and the current researcher.

Findings from the facet analysis using the panel of experts and a literature control to identify the dimensions tapped on the Language (Kotras, 2003), the Practical Reasoning (Barnard, 2004) and Locomotor (Knoesen, 2005) Subscales provided evidence for the construct-related validity of the three Subscales. In order to empirically validate the identified construct models for the sample as a whole as well as per gender and SES group, exploratory common factor analysis with oblique (DQUART) rotation specifying a one-factor solution for each construct was conducted yielding satisfactory results. The results of their studies supported the construct-related validity of the Language, Practical Reasoning and Locomotor Subscales and confirmed the multidimensionality inherent in these three scales. The present study aimed to add to this growing body of knowledge by exploring the construct-related validity of the Personal-Social Subscale more comprehensively.

Other than construct related validity studies, one predictive validity study has also bee conducted. Knoesen (2003) explored the relationship between the revised Griffiths Scales and Grade one scholastic development and concluded that aspects tapped by the Revised Scales appear to be aligned with the outcomes evaluated in Grade One, therefore confirming that it is a useful diagnostic measure that can be used in the outcomes based system of education in South Africa.

One of the objectives stipulated for the revision process was to enhance the clinical utility of the GMDS-ER by collecting data on children with a clinical diagnosis. As the GMDS-ER has just been restandardised and published, limited research has been conducted into the use of the GMDS-ER with clinical populations. However, four recent studies conducted in South Africa have found support for the use of the GMDS-ER with a sample of HIV + infants (Sandison, 2005), a sample of hearing impaired children (Schroder, 2004), a sample of

autistic children (Gowar, 2003) and a sample of children with Attention Deficit Hyperactivity Disorder (ADHD) (Baker, 2005). The results of these studies provide clinicians with valuable information concerning the developmental profile of these four clinical groups enabling greater insight into the relative strengths and weaknesses of these children. This, in turn will assist in the development of appropriate therapeutic programmes for children diagnosed in these clinical areas. It is hoped that further studies will be conducted into the clinical utility of the GMDS-ER for other special needs groups to enhance the growing body of research supporting the application of the GMDS-ER in clinical settings.

To date, no studies have been conducted in which performance on the original and revised Griffiths Scales are correlated or where performance on GMDS-ER is correlated with performance on other similar developmental tests.

2.6 SUMMARY OF THE CHAPTER

This chapter provided an overview of the origins, development and content of the Griffiths Scales, the extensive research conducted both locally an internationally, and its recent revision. The importance of re-evaluating the psychometric properties of the GMDS-ER was highlighted especially in relation to the importance of gathering evidence to support its construct-related validity. An overview of the preliminary clinical and technical studies already conducted on the GMDS-ER was provided, with an emphasis on the need for further investigations into the psychometric rigor of the subscales of the GMDS-ER.

In order to contextualize and place the GMDS-ER, and in particular the Personal-Social Subscale, within the field of child development and its assessment, Chapter 3 introduces the reader to this field of enquiry by discussing child development with particular reference to the domain of personal-social development. The discussion on child development is used as a backdrop to understand the personal-social development of children and the need for its assessment.

CHAPTER THREE

PERSONAL-SOCIAL DEVELOPMENT OF CHILDREN

As previously discussed in Chapter 1, over the past few decades much attention has been focused on developmental measures and the assessment of children. Early assessment and intervention requires an understanding of child growth and development. According to Greenspan and Meisels (1996) all assessments in infancy and early childhood must be based on an integrated child developmental model. Researchers have formulated many theories in an attempt to understand and, explain human development and behaviour. Many theories of cognitive and psychosocial development, some more prominent than others, have arisen within the fields of behavioural, psychoanalytic, cognitive psychology and neuropsychology. Owing to the limited scope of the present study, only Erikson's Psychosocial Theory of Development will be highlighted. This theory is used in an attempt to understand the evolving sense of the self in the personal-social development of the child. This theory was chosen, as it is the only theory that specifies and focuses on the personal-social development of the child. Other prominent theories focus on the development of the child in general. The use of this theory will assist in highlighting prominent aspects of personal-social development in order to identify important and relevant constructs that will be necessary in the assessment of the personal-social development of a child.

This chapter will commence with a delineation of child development in general with specific emphasis on personal-social functioning. As some of the terminology used is often confusing, definitions of the important terms used in this study will be provided, before Erikson's Psychosocial Theory of child development will be discussed. This chapter concludes by providing an overview of developmental measures used for infants and young children that measure aspects of personal-social functioning. All this information will thereafter be used to determine if the identified constructs measured by the GMDS-ER Personal-Social Subscale are relevant and appropriate.

3.1 INTRODUCTION

Human growth is usually divided into four domains or areas: physical growth and development; cognitive and language development; personality development; and sociocutural development. Development in the physical domain involves changes in shape and size, plus changes in brain structures, sensory capabilities, and motor skills. Development in the cognitive domain includes acquiring skills in perceiving, thinking, reasoning, problem solving, and language. Development in the personality domain includes acquiring relatively stable and enduring traits and a sense of self as an individual. Lastly the sociocultural domain is comprised of socialization, which occurs when we are deliberately taught and trained by parents and others about how to fit in and function in society, with or without formal schooling, and enculturation, which occurs as we learn about our culture by observing others (Segall, Dasen, Berry, & Poortinga, 1999). Development is a holistic process in that change and continuities in each domain interact with each aspect of development in other domains. To consider only one area of development in isolation from others leaves unrecognized the influences of the other areas and may obscure our understanding of the child's abilities and challenges (Meisels & Atkins-Burnett, 2003).

Traditionally Personal-Social development was seen as falling outside the intelligence construct, so much so that a clear divide between cognitive and social development was apparent and the child was viewed as a solitary thinker, isolated from the social world (Dunn, 1996). Researchers have since realized that taking personal-social development into consideration is important as it forms an integral part of a child's general development, it has a direct and profound effect on intellectual development and that cognitive development directly impacts on aspects of personal-social development (Parker & Asher, 1987). Nuttall, Romero and Kalesnik (1992) have strongly emphasized that no assessment of child development can be considered complete without an assessment of personal-social development, especially in the pre-school period. Personal-social development also known as psychosocial development, and self

-help skills are now specified as essential parts of an assessment in the United States of America (Fewell, 1991). These terms are often used interchangeably in psychological literature.

Ruth Griffiths (1970) felt strongly about the importance of the Personal-Social Subscale, and stated that the significance of this part of the assessment cannot perhaps be stressed too often. She explained how the infant is initially totally dependent, and how, as he grows and develops, so his individuality begins to emerge. As he interacts socially with more children and adults, and becomes more aware of his environment, “he gradually becomes emancipated from the extreme limitations of infancy, and soon begins to develop a personality of his own” (p. 116). Griffiths noted that as the child enters the third year, they develop the capacity for co-operative play, which is a skill that opens the door to the social world. Griffiths also emphasized the development of self-help skill, possibly influenced by her work with atypically developing children, and she believed that these skills emerge parallel to the child’s increasing social awareness.

Early assessment and intervention requires an understanding of the child’s growth and development. Growth in the early years is rapid and is accompanied by large variations in when and how children manifest different skills and behaviours. Cultural influences that may affect opportunities for learning may alter the arrival and appearance of developmental milestones. By viewing the development of all children on a continuum, most children who are born with disabilities or developmental delays can be viewed from the perspective of children who are not yet functioning as expected in given areas, rather than children who are unable to acquire the skills of typically developing children. Assessment frameworks that exemplify this view of development provide important information for parents and interventionists because they place the child’s achievement within a normal continuum of accomplishments. They suggest a series of steps or experiences that must be rendered, rather than a set of milestones the child has failed to reach (Meisels & Atkins-Burnett, 2003).

Definition of Terms

Emotional, social, and personal development forms a very significant component of the growing child's life. Benner (1992) maintains that this aspect of development is multifaceted, and includes the development of attachment, the growth of self, the emergence of emotions, and the development of adaptive behaviours that include self-care. The child's emotional development is concerned with inner psychological states, for example, his thoughts, feelings, adaptability, and temperament. Social development is focused on the child's emerging interpersonal relationships, and includes social skills and competencies, prosocial behaviours, and learning social norms and conventions. Personal development refers to the development of the individual as a separate and independent being, and includes personal identity and self-care skills. There is considerable overlap and integration between these categories, however, separating them facilitates academic examination and assessment (Stewart, 2005).

3.2 ERIKSON'S PSYCHOSOCIAL THEORY OF DEVELOPMENT

Erikson's Psychosocial Theory offers a view of human development as a product of the interaction between individual needs and abilities and societal expectations and demands. He focused mainly on the effects of social interactions in shaping personality. Erikson (1950; 1963) postulated that the developmental process covers the entire life span, which is divided into stages or periods. Development consists of the product of interaction between biological needs and societal demands in life. He stressed that children are active, adaptive explorers who seek to control their environment rather than passive creatures that are moulded by their parents (Shaffer, 1994). He differs from Freud in that he de-emphasized the sexual theme in personality in favour of the psychosocial features of conflict between child and parent. They also differ in terms of how they view society and how it influences individual development. For Freud the major role of society is to restrain the idiosyncrasies and asocial behaviour of man (Cohen, 1976).

Erikson postulated a developmental theory characterized by stages and crises. A crises being a turning point in the individual's life that arises from physiological maturation and social demands made upon the person at that stage (Hjelle & Ziegler, 1981). In all eight developmental stages, we must confront and resolve a specific conflict or crises, and how we confront, handle and resolve these specific conflicts is a prime determinant of our personality development (Huffman, 2004). Conflict is a vital and integral part of Erikson's theory, because growth and an expanding interpersonal radius are associated with increased vulnerability of the ego functions at each stage. Erikson (1968) further maintains that crises connote "not a threat of catastrophe but a turning point, and therefore the ontogenetic source of generational strength and maladjustment" (p.286). Each psychosocial crisis includes both a positive and a negative component. If the conflict is handled in a primarily satisfactory manner (i.e., the person has a history of ego achievements), the positive component (e.g., basic trust, autonomy) is to a large degree absorbed into the emerging ego and further healthy development is assured. Conversely, if the conflict persists or is primarily resolved in an unsatisfactory manner, the developing ego is damaged and the negative component (e.g., mistrust, shame and doubt) is to a large degree incorporated into the ego. While the various theoretically defined conflicts emerge in developmental sequence, it does not mean that earlier achievements and failures are necessarily permanent. It is however, important that the person must adequately resolve each crisis in order to progress to the next stage of development in an adaptive and healthy manner (Erikson, 1964).

Erikson views the roots of the crises at each period of development in terms of both interpersonal (i.e., socially derived) and intrapersonal (i.e., biologically ordered) origins. Although Erikson sees a role of biological needs as a prime force in creating developmental crises, he also considered how social affiliations affect or is affected by such events. For example, in assessing the importance of biological needs during infancy, Erikson focuses upon the growth of trust, suggesting that biologically related caretaking should be viewed in terms of the

sharing of life and human needs between infant and mother as well in terms of its basic survival function (Cohen, 1976).

Erikson's psychological stages of development entails a conception of the child moving from one stage to another after certain psychological events have occurred, not simply because of chronological age. Piaget postulated that the psychological development that takes place at each stage has a significant impact on all subsequent sequential stages. Erikson (1968), however, described development through the stages as following the *epigenetic principle*. This principle indicates that there is a plan for growth so that each function emerges in a systematic way until the fully functioning organism has emerged (Refer to Table 5).

In Erikson's first psychosocial stage *trust versus mistrust,* an infant has to develop a basic sense of trust. Infants must be able to count on their primary caregiver to provide food, to relieve discomfort, and display warmth and affection, and so forth. Should close companions neglect, reject, or respond inconsistently to an infant, the infant will learn that others are not to be trusted. The development of trust provides the basis for healthy coping with the second major life crises, the conflict of *autonomy versus shame and doubt.* Infants who have learnt to trust people are likely to feel sufficiently confident to communicate their wishes and assert their wills. However, a toddler who mistrusts others may lack self-confidence to be assertive as a two year old, as a result, the child may fail to be autonomous and could experience shame and doubt. A year or two later this child may have difficulty initiating and pursuing activities during early preschool crises of initiative versus guilt and may instead be too inhibited to attempt new tasks. So Erikson proposed that the resolution of each life crises prepares the individual for the next psychosocial conflict. Although Erikson believes that the crises of childhood and adolescence set the stage of our adult lives, he views human beings as rational, adaptive creatures who will struggle to the very end in their attempts to cope successfully with their social environment (Shaffer, 1994).

Table 5

Erikson's Epigenetic Sequence of Psychosocial Development

Psychosocial Stage	Psychosocial Outcome	Social Achievement and consequence	
Stage 1: Oral – sensory. (birth to 1 year 11 months)	Trust versus Mistrust	Mutuality of interests, attachments	Withdrawal, Depression
Stage 2: Muscular-anal (2 to 3 years)	Autonomy versus shame and doubt, in which the issue is whether the child can feel independent of others	Self control, personal esteem	Failure, dependence
Stage 3: Locomotor-genital (4 to 5 years)	Initiative and responsibility versus guilty functioning, in which the issue is whether, the child can feel competent and be active.	Adventure; participation	Seclusiveness
Stage 4: Latency (6 to 11 years 11 months)	Industry versus inferiority	Skill development, technological mastery	Inadequacy, mediocrity
Stage 5: Adolescence (12 to 18 years)	Identity versus role diffusion	Integration of psychological roles	Psychosocial dissonance
Stage 6: (Young adulthood)	Intimacy versus isolation	Commitment to others, affiliation and partnership	Fears of others, self absorption
Stage 7: (Middle adulthood)	Generativity versus stagnation	Productivity, reproduction	Pseudointimacy, personal impoverishment
Stage 8: (Maturity)	Ego integrity versus despair	Wisdom, acceptance of past labours	Disgust, regret

Adapted from Newman and Newman (1984), p. 32

The psychosocial stages are briefly depicted in Table 5. In view of the age range of the subjects used in the present study, the author will focus on two of Erikson's psychosocial stages, namely, stage 2, the Muscular-anal Stage (2 to 3 years) and Stage 3, the Locomotor-genital stage (4 to 5 years). The author will discuss Erikson's theory on the basis of the following four organizational concepts, namely, developmental tasks, the psychosocial crisis, the central process for resolving the psychosocial crises, and coping behaviour (Newman & Newman, 1984).

Developmental Tasks

According to Havighurst (1953) developmental tasks consist of a set of skills and competences that are acquired as the child gains increased mastery over the environment. The tasks may reflect gains in motor, intellectual, social, or emotional skills. Mastery of the tasks of later stages of development often depends on the successful acquisition of earlier skills. For example, language development is one of the critical tasks of toddlerhood that needs to be mastered at this time of life. The person's ability to communicate in adolescence and adulthood depends, to a large extent, on having being able to acquire language during toddlerhood. There are many developmental tasks and each area of growth can be divided into components that need to be mastered before a more complex function is achieved. For example, language development is a primary task of toddlerhood, when many elements of language skills emerge.

Children vary in the ages at which they enter and leave stages. Due to psychological development and social expectations, the tasks are the primary activities that guide further development. Table 6 identifies the developmental tasks that need to be attained during childhood.

Psychosocial Crisis

According to Erikson (1950; 1963) psychosocial crisis refers to the person's psychological efforts to adjust to the demands of the social environment at each stage of development. The word crisis in this context refers to a normal set of

stressors rather than to an unusual set of events. At each stage of development the society within which one resides makes psychic demands upon the individual, which vary from stage to stage. This process produces a state of tension within the person that must be reduced in order for them to proceed to the next stage. It is this state of tension that produces the psychosocial crisis in a stage which forces the person to use the developmental skills that have recently been mastered. There is, therefore, an interrelationship between the developmental tasks of each stage and the psychosocial crises of that stage. In addition, resolutions of previous crises influence resolutions of current and future crises. Table 6 lists the crises of the stages of development, expressed in polarities, suggesting the nature of a successful or unsuccessful resolution of the crisis at each stage.

Table 6

Developmental Tasks, Psychosocial Crises and the Central Process for Resolution of the Psychosocial Conflict in Toddler and Early School Age

Life Stage	Psychosocial Crises	Developmental Tasks	Central Process
Toddlerhood (2 to 4 years)	Autonomy versus shame and doubt	1. Elaboration of locomotion 2. Fantasy and play 3. Language development 4. Self-control	Imitation
Early school age (5 to 7 years)	Initiative versus guilt	1. Sex identification 2. Concrete operations 3. Early moral development 4. Group play	Identification

Adapted from Newman and Newman (1984), p. 33.

The Central Process for Resolving the Psychosocial Crisis

Every psychosocial crisis reflects some discrepancy between the developmental competencies of the person at the beginning of the stage and the societal pressures for more effective, integrated functioning. A central process for conflict resolution refers to the dominant context in which the conflict is resolved. At every life stage the relevant players and the relevant competencies change. During toddlerhood (2 to 4 years), for example, imitation is identified as the central process for psychosocial growth. During this period children, have the opportunity to expand the range of their skills by imitating adults, siblings, television models and peers. They can take control over confusing events by imitating elements of those events in their play activity. Through imitative activity children acquire an expansion of their sense of self-initiated behaviour and control over their actions. It is these repetitive experiences that lead to the development of a sense of personal autonomy.

In Table 6 the central process that leads to the resolution of the psychosocial crisis, and to successful coping in two life stages are presented.

Coping Behaviour

Coping behaviour refers to active efforts to resolve stress and create new solutions to the challenges of each developmental stage. White (1978) referred to the three components of the coping process: (1) the ability to gain and process new information; (2) the ability to maintain control over one's emotional state; and (3) the ability to move freely within one's environment.

Erikson (1978) postulated prime adaptive ego qualities that provide resources for coping at each life stage. The ability to use these ego qualities depends on the successful resolution of each psychosocial crisis. These mental states form a basic set of orientation toward the interpretation of life experiences. For example, the sense that one has a purpose permits the early school age child to value and pursue goals without being weighed down by a sense of guilt. The ego qualities contribute to the child's dominant worldview and throughout life he or she must reformulate this worldview.

The primary ego quality for the Toddlerhood stage is *will* and it is defined as the determination to exercise free choice and self-control. The primary ego quality for early school age is *purpose,* which is defined as the courage to imagine and pursue valued goals.

Similar to traditional psychoanalytic opinion, Erikson also regards outcomes of unsuccessful attempts at resolving psychosexual crises as logical consequences. Although he notes that personal adjustment may be retarded or restrained at any given stage of development (i.e., fixated) as a function of the child's failure to respond adequately to biological problems, he also argues that the possible outcomes include psychosocial dimensions of comparable importance. For example, an individual who has not achieved a sense of personal identity through the integration of psychosocial roles during adolescence will not be able to assume more advanced commitments to others through affiliation and partnership in young adulthood and beyond.

In summary, Erikson's psychosocial theory offers a life span view of development. Predictability is found in the sequence of psychosocial stages and in the central process involved in the resolution of the crisis at each stage. Individuality is expressed in the achievement of the developmental tasks, in the development of a world perspective, and in the style and resources for coping that the person brings to each new life challenge. In view of the abovementioned psychosocial stages it is evident that the child's individual and societal needs and goals must be considered in conceptualizing their development in the stages of Toddlerhood and Early School Age.

Evaluation of Erikson's Theory of Development

According to Watson and Lindgren (1979) among the personality theorists who have followed in Freud's footsteps, none has made a greater contribution than Erikson (1963; 1968), whose concepts of development in childhood and adolescence draw on both psychoanalysis and cultural anthropology. Although Erikson's theory has contributed significantly to the contribution of personality

development and his theory has encouraged a significant amount of research, it has been criticized for the following reasons:

1. The labels used by Erikson to describe the eight stages may not be entirely appropriate cross-culturally. For example, in individualistic cultures, autonomy is highly preferable to shame and doubt, but in collectivistic cultures, the preferred resolution might be dependence or merging relations (Matsumoto, 2002).
2. It is difficult to squeeze an entire lifetime of development into one comprehensive theory (Huffman, 2004).
3. Critics have noted unevenness in the rate at which children develop cognitively. Thus the problem of horizontal declage does not seem compatible with the stage theory of cognitive development (Fischer, 1980; Flavell, 1985; Kuhn, 1980).
4. His theory has also been described as being vague about the causes of psychosocial development. His theory has been described as merely a descriptive overview of human social and emotional development that does not adequately explain how and why development takes place (Shaffer, 1994).

It may be postulated that the above studies support an established phenomenon, namely, that the quality of cognitive and psychosocial maturity differ with age (Eimas, 1970; Laughlin, Moss, & Miller, 1969; Mosher & Hornsby, 1966; Mussen et al., 1984; Niemark & Lewis, 1967; 1968; Newman & Newman, 1984; Salkind, 1985). Consequently, age is an important variable to control in a developmentally based research study. This theory represents the ideal, but reality never matches the ideal. Developmental disorders manifest in various children and need to be classified in spite of the fact that psychodiagnostic practices are impeded by many intrusive and potentially biasing factors (Garber, 1984).

It can be concluded that Erikson's Psychosocial Theory offers a view of that life proceeds in terms of a series of psychosocial crises and that personality

is a function of their outcome (Burns, 1979; Huffman, 2004; Watson & Lindgren, 1979). A literature review of other personality theories reflects that there is a considerable variation related to how personality is defined, and it is usually defined in terms of the theory postulated by the theorist (Hamachek, 1971; Hjelle & Ziegler, 1981; Huffman, 2004). For example, Rogers's views personality in terms of the self, which is an organized, permanent, subjective perceived entity, which is at the heart of all our experiences (Hamachek, 1971; Huffman, 2004; Nicholas, 2003). Allport defines personality as that which a person really is (Hamachek, 1971; Nicholas, 2003). Kelly regards personality as an individual's unique way of making sense out of life experiences (Hamachek, 1971). Cooley strongly emphasized the relationship between the self and the social environment. Cooley maintained that the person's feelings about himself are products of his relations with others that have affected him from the early years of life (Burns, 1979; Hamachek, 1971). Mead who expanded the work of Cooley maintained that the person's view of the self is a product of the social environment (Burns, 1979; Sarbin, 1971; Shaffer, 1993).

According to Huffman (2004) no one theory is more correct than another. Hjelle and Ziegler (1981) maintain that all the different conceptions of personality indicate that the meaning of personality extends beyond the original "superficial social image" concept, and refers to something much more essential and enduring about a person, and that the self is the core of the personality. Furthermore other features commonly found in definitions include the notion that behavior is seen as being organized and integrated by personality, it has distinguishing factors, and that personality represents an evolving process subject to a variety of internal and external influences, including genetic and biological propensities, social experiences and the changing environmental circumstances. Today many psychologists believe in the biopsychosocial approach, which is the idea that several factors overlap in their contributions to describing personality (Mischel & Shoda, 1999; Robie, Born, & Schmit, 2002). Of significance is that the self is seen as the core of personality patterns (Burns,

1979; Huffman, 2004; Hurlock, 1968). For this reason the researcher has decided to focus on the understanding of the evolving of the self.

3.3 UNDERSTANDING AND DEFINING THE SELF

In recent years the self has gained prominence in research studies done by personality theorists, social theorists and psychotherapists. As Fleming and Watts (1980) state, “This continuing fascination with the self-concept is easy to understand: what we think about ourselves is probably the central concept in our conscious lives” (p. 921).

There is however, a considerable amount of controversy that surrounds the definition of the self. It is often used synonymously with words such as body image, body concept, self-concept, self esteem, self-image, ego and identity, hence causing a significant amount of confusion (Riordan, 1975). Prominent theorist such as Rogers and Coopersmith use the terms self and self-concept interchangeably.

Social Identity theorists Tajfel and Turner (1981) maintain that the self is regarded as the sum of two sub-systems: a personal identity and a social identity. Personal self consists of aspects unique to the individual such as likes, dislikes, personal characteristics, and so forth. Social identity on the other hand refers to aspects of the self as a member of various groups: a girl, a daughter, a friend, and so forth. The social identity is regarded as a constituent part of the self and not external to the self as in mainstream views. Personal and social identities are regarded as end points of a continuum. The self is seen as shifting along this continuum according to varying social situations (Nicholas, 2003).

One of the most exhaustive definitions of the self has been offered by Rogers (1969):

> The self-concept or self-structure may be thought of as an organized configuration of perceptions of the self which are admissible to awareness. It is composed of such elements as the perceptions of one’s characteristics and abilities; the perceptions and concepts of the self in relation to others and to environment, the value qualities which are perceived as associated

with experiences and objects: and goals and ideals which are perceived as having positive or negative valence. (p. 136)

Hurlock (1968; 1974) has made a valuable contribution to the understanding of the development of the self. He distinguished four forms of the self, namely, the basic self, transitory self, social self and ideal self:

1. The b*asic self* is the child's realistic image of himself. This includes the realistic perception of his appearance, abilities and disabilities. It also includes his roles and aspirations in life;
2. The *transitory or situational self* depends on the specific situation and is influenced by his emotional status at the time. Thus his image may be either good or bad, depending on the situation. When the person's basic self-image is healthy and realistic, his self-image will be stable and will not change from situation to situation.
3. The *social self* involves the person's experiences of himself as others see him. This is also known as the mirror image. The social self-concept develops earlier than the basic self-concept and therefore forms the basis of the self-concept. Only when the child is able to assess the accuracy of this social self-concept, can his basic self-concept develop (Meyer, 1976).
4. The *ideal self* involves the ideal the person has for himself. It may be realistic in the sense that it is within the reach of the person, or it can be unrealistic because it could never be attained in reality.

   These four forms of self have physical as well as psychic components, with the physical self developing before the psychic self.

More recent research tends to focus on the notion that there are two aspects of self. The *existential self,* which emphasizes that the individual is unique and separate from other objects and people. This view focuses on the simple existence of a separate, distinct self for each individual (Steuer, 1994). The other aspect of the self is called the *categorical self* (Lewis & Brooks-Gunn, 1979). This view focuses on the social categories that that can be used to

describe the self, for example being a daughter, friend and so forth. The components of the categorical self change as the individual take on new social roles (Brooks-Gunn (1979).

In order to obtain clarity, the following terms will be used to understand and define the self. *The self* is commonly described as the process by which a person conceptualizes his behaviour, and defines himself (Sarbin, 1971). *Self-concept* will be referred to as the perception of a person's personal identity (knowledge of the self). This includes knowledge of both the existential self and the categorical self (Steuer, 1994). *Self-awareness* includes knowing yourself as a separate person and developing a sense of self, including self-recognition (Shaffer, 1994). The evolving nature of the self will be elaborated on in the next section.

3.3.1 The Development of the Self

Much controversy exists about the actual time a sense of self develops. According to theorist like Cooley (1902) and Mead (1934), infants are born without a sense of self. Other theorists don't necessarily agree with this. However, there seems to be agreement on the fact that any primitive form of self awareness that may be present very early will surely become more refined over the first 4 to 8 months of the child's life (Shaffer, 1994; Sigelman & Rider, 2003; Thompson, 1998), and that the physical component of the self develops before the psychic component, as the child is initially very preoccupied with his body. This preoccupation with the self and his body is called the phase of egocentricity by Erikson (1959) and was discussed earlier in the Chapter. Piaget (1952) maintained that it is likely that the infant's first knowledge of himself comes through his actions, that is, his kinesthetic self, and that the process of self-information begins during the sensori-motor stage through representational or dramatic play. Rogers (1969) comments as follows on the physical component of the self:

> A child's body is his equipment for living. Through it he receives impressions from the world and interacts with it. He uses his body to

> express his thoughts and feelings and to manipulate his environment. Others react to him in terms of appearance and as a result of others' reaction each child acquires a new concept of how he looks. (p.110)

According to Hamachek (1971), the physical component of self-awareness develops slowly as the child recognizes the distinction between "self" and "not self," between his body and the remainder of his visible environment. Only gradually does he learn to recognize and sort out his body parts, name, feelings, and behaviour as integral parts of a single "me" and build a cluster of beliefs about himself. The child's discoveries of the various parts of his body and the recognition of his own voice are the beginnings of his growing awareness of personal properties and resources. Much of infancy is devoted to this distinction (Lewis, 1997; Lewis & Brooks, 1974; Stipek, Gralinski, & Kopp, 1990). From birth to 3 months infants are open to stimulation. They begin to show interest and curiosity, and they smile readily at people (Sroufe, 1979). From 3 to 9 months infants actively learn about their bodies. Through watching and using the different parts on his body, and by studying his mirror image, the infant discovers the presence of his body and learns to distinguish the different parts of his body (Shaffer, 1994). According to Sroufe (1979) the important psychosocial development that takes place during this time includes, the infants anticipation of what is going to happen and experience disappointment when it does not. They show this by becoming angry or acting warily. They smile, coo and laugh often. This is also the time for social awakening and early reciprocal exchanges between the baby and caregiver. From 6 to 9 months they play "social games" and try to get responses from people. They "talk' to, touch and cajole other babies to get them to respond. They express more differentiated emotions, showing joy, fear, anger, and surprise. The self-concept continues to develop quickly during early childhood, because the child is so interested in himself.

In Erikson's (1959) theory of identity formation, he describes the child's interest in discovering his own body, and his degree of control over it, as the Muscular-anal period (2 to 3 years). The task involved results in autonomy

versus shame or doubt, and the “virtue” that emerges during this stage is *will* as discussed earlier in this Chapter. Toilet training and language are important steps toward autonomy and self-control. With language children are better able to make their wishes understood, they become more powerful and independent (Papalia, Olds, & Feldman, 2001). During this time attachments also form. Attachments form the basis of social functioning and have an influence on the development of social relationships. Attachments begin in the first days of life and research has shown that it is a stable affective bond that is important for healthy emotional and cognitive development, regardless of various childrearing practices and cultures (Lewis, 1987).

According to Erikson’s theory (1968) as discussed earlier in the chapter, the first stage of psychosocial development requires of the infant to develop a sense of trust in his environment and is dependent on the nature of his interactions with his parents or other care-givers. If the infant’s needs for food, proper care, attention, affection and love are met he will learn to view the world as secure, reliable and nurturing. However, if these basic needs are not met, he will become suspicious, fearful and mistrusting of his surroundings and future interactions. By observing and imitating the behaviour of people around them, infants begin to learn how they should behave.

From 9 to 12 months infants are intensely preoccupied with their principal caregiver. They become weary of strangers, and act subdued in new situations. By 12 months they communicate emotions more clearly, showing moods, ambivalence, and gradations of feelings (Sroufe, 1979). They also become capable of delaying their actions for a short time. They become more deliberate in testing and exploring their own responses and events they cause to happen. Between 12 and 18 months, infants begin to learn about social expectations and what happens when they test or explore the social world. They use the people they are most attached to as a secure base. As they master the environment, they become more confident and more eager to assert themselves (Sroufe, 1979). They may also become anxious during this time as they now realize how much they are separating from their caregiver. They work out their awareness of

their limitations in fantasy and in play and by identifying with adults (Sroufe, 1979). From 18 to 30 months children learn a great deal about themselves. They learn about their gender, their physical characteristics, their goodness and badness, what they can and cannot do. Awareness of sex roles develops at around 21 months (Goldberg & Lewis, 1969).

By the age of two years, the child has taken the first step towards self-awareness. The child discovers that he is actually a separate being, and this realization starts the process of becoming autonomous, a process that is facilitated by the child's growing motor and cognitive abilities. As the child's self-help skills increase, so does his sense of autonomy. As children learn to organize their experiences they are increasingly able to learn about the world and to participate in it actively (Goodman & Pollack, 1993). Around the age of 2 the infant also learns to recognize his name, which has significance for the development of his self-concept. By the end of the second year, children's language is filled with references to themselves. They also identify their preferences and possessions (Harter, 1988). Children know their names and use them, often describing their needs and feelings in the third person: "Sandy wants cake." As a growing child's experience broadens, his sense of personhood gradually extends to include things outside of him in which he feels personal involvement. The words "me" and "mine" take on a new significance, and the concept of ownership is clearly and strongly acted out. According to Levine (1983) assertiveness can be viewed as a cognitive achievement, not selfishness as children are increasing their understanding of self and others as separate beings. A review of studies of children's self concepts and social play concluded that the children who are most social also have more fully developed self-concepts (Harter, 1983). According to Hamachek (1971) when we think of "me" or "my", we include things like our home, possessions, groups we are loyal to, values we subscribe to, and most particularly, the people we love. The process of identification is an important part of coming to know and to expand our definition of self. As infants learn to recognize themselves, they also form a categorical self, that is, they classify themselves into social categories based on age, sex,

and other visible categories (Sigelman & Rider, 2003). They compare themselves with their parents, peers, and relatives, and realize that they are smaller than their older brothers and sisters, darker or fairer, fatter or thinner. In expressing the self, children demonstrate their capabilities. The concept of self is further elaborated and refined as children achieve mastery of language. The increasing use and accuracy of pronouns reflects the child's growing ability to conceive of himself as a separate individual with feelings, needs and attributes (Hurlock, 1981).

During the third year the growing ability to manipulate utensils and clothing allows the child to become increasingly more independent. He learns to feed himself either with a spoon/fork or other cultural specific modes, and eats skillfully. He is able to lift a cup and drink well without spilling, and replace the cup on the table. He is now able to ask for food and drink. He is able to put on his own hat and shoes. He can pull down his pants when using the toilet, but may experience some difficulty in replacing them. He is able to imitate domestic activities as he learns about these social activities. However, during this time he has little comprehension of common dangers. His imagination is developing and he may spontaneously engage in simple role or situation make-believe activities (Anselmo & Franz, 1995; Sheridan, 1997).

During the fourth year he learns to wash his own hands but may need adult supervision when drying. He can pull his pants down and up, but needs help with buttons and other fastenings. He still likes to participate in domestic activities, and is also able to assist with tidying. He now has vividly realized make-believe play, including invented people and objects.

During the fifth year we expect to see a child who eats skillfully in the culturally appropriate manner. He is able to wash and dry his own hands, and brush his teeth. He can undress and dress except for laces, ties, and back buttons. He is socially active and seeks the companionship of other children, engages in dramatic make-believe play, and shows concern for younger siblings and sympathy for playmates in distress (Anselmo & Franz, 1995; Sheridan, 1997).

During the sixth year the child chooses his own friends, and most of the time the play is co-operative, as he now understands the need for rules and fair play. He is developing a sense of humour. He is able to appreciate the meaning of time in relation to a daily programme (Sheridan, 1997).

According to Erikson (1950) unlimited freedom is neither safe nor healthy, and thus shame and doubt have a necessary place. As in all of Erikson's stages, an appropriate balance is crucial. Self-doubt helps children recognize what they are not ready to do, and shame helps them learn to live by reasonable rules (Papalia et al., 2001). If the child's initial attempts to do things for himself are successful, he believes that he has some control over himself and his world. If he does not achieve successful control over himself and his environment he starts to doubt his abilities and experiences a feeling of worthlessness. The "terrible twos" are a normal manifestation of the drive for autonomy. Toddlers have to test the new notion that they are individuals, that they have some control over their world, and that they have new exciting powers. They are driven to try out new ideas, exercise their own preferences, and make their own decisions (Papalia et al., 2001). This sets the stage for the next stage in the child's psychosocial development, Initiative versus Guilt as described by Erikson (1959). During this stage the issue is whether the child can feel competent and active. They need to deal with conflicting feelings about the self. The conflict arises from the growing sense of purpose, which enables a child to plan and carry out activities, and the growing pangs of conscience the child may have about these plans. This conflict marks a split between two parts of the personality: the part that remains a child, full of exuberance and a desire to try out new things and test new powers, and the part that is becoming an adult, constantly examining the propriety of motives and actions. Children who learn to regulate these opposing drives develop the "virtue' of purpose, the courage to envision and pursue goals without being inhibited by guilt or fear of punishment (Erikson, 1982). Erikson further maintained that if this crises is not adequately resolved, a child may turn into an adult who is constantly striving for success or showing off, or who is inhibited and unspontaneous or self-righteous, or who suffers from impotence or

psychosomatic illness. According to Erikson, parents play a very important role during these periods.

When parents encourage their infant to explore their environment and to be independent, they will obtain confidence in their autonomy and sense of self-control, and this would encourage them to try new things. Should the infant lack this support however, and receive parental disapproval and discouragement instead, the infant will begin to doubt his own abilities, adequacy and worth and feel a sense of shame at exposing himself prematurely and foolishly (Shaffer, 1994). Such feelings are the start of a poor self-concept. Self-reliance and self-adequacy are therefore important pillars of the self-concept at this stage (Kagan, 1981). Hence with ample opportunity to do things on their own, but under the guidance and consistent limits of their primary caregiver, children can attain a healthy balance and develop a healthy sense of self. The influence of parents will be elaborated on in next section of this Chapter.

Furthermore an awareness of the self paves the way for important emotional and social development (DesRosiers et al., 1999; Pipp-Siegal & Foltz, 1997). With the growing sense of self come more emotional reactions to others, sometimes in the form of temper tantrums. As toddlers become more aware of their feelings, they react more personally to frustration and hurt and may respond with intense emotion (Dunn & Munn, 1985).

Rogers (1970) also saw childhood as crucial for personality development. He emphasized the importance of early social relationships. He maintained that people need positive regard, warmth, and acceptance in order to grow and develop positive self-concepts. Rogers's believed that to enhance growth, children will engage in a wide variety of acts. However, this can be problematic as children may distort or deny their perceptions, emotions, sensations and thoughts and come to judge an event as good or bad on the grounds of whether it leads to approval or disapproval rather than to growth. Children may also internalize what Rogers called "conditions of worth". These are strong feelings about what kind of behaviours will bring them approval from others. Thus to Rogers, there are two criteria by which all experiences are evaluated: one leads

to self-actualization and one leads to social approval. To promote growth Rogers believed that parents and teachers should give children unconditional acceptance and love so that they do not become ashamed of their experiences and thoughts. By being unconditionally loved and accepted, Rogers maintained that people come to accept themselves to achieve self-actualization. Being able to accept themselves is a major step toward becoming autonomous.

Hurlock (1968) maintained that the *ideal self-concept* is developed by means of the child's play, starting at about three years of age. It reaches a peak between four to five years of age. In his play, the child sees himself as someone he idealizes, loves or envies. Later he meets people he envies, loves and idealizes. Thus the ideal self, the image he would like to be, develops. This self awareness will make possible the development of self esteem which can be defined as the affective (or emotional) side of self concept. To be able to have an emotional response to the self, it must first be possible to evaluate the self. Self-evaluation appears to begin in the preschool. The roots of the self esteem lies in self-knowledge, self-awareness and self-control (Anselmo & Franz, 1995).

There is strong evidence suggesting that siblings and peers have a profound influence on a child's personality and social development, particularly between the ages of two and ten (Bee & Boyd, 2002; Papalia et al., 2001; Sigelman & Rider, 2003). Siblings and peers set and maintain standards, provide models to emulate and act complementary roles in relation to each other through which they both develop and practice social-interaction skills (Mussen, Conger, Kagan & Huson, 1984). Research suggests that the only child tends to have a higher self-concept than children with siblings as they are likely to receive more attention (Felsenthal, 1972). The influence of peers and siblings will be elaborated on later in the Chapter.

During middle childhood self-knowledge expands to include a range of trait labels. They may describe themselves as popular, nice, helpful, smart in school, and good at sport. Self-attributes become logical, organized, and normally consistent (Craig & Baucum, 2002). The work of Broughton (1978) has provided greater insight into childrens' understanding of themselves. From his results he

theorized that children from 4 to 7 years function at an objective level, where they believe that reality is absolute and is associated with physical, concrete objects. In terms of self-knowledge in describing themselves they tend to focus on concrete facts for example “I have blue eyes” and “I am girl”. From about 8 to 12 years he found that children entered an “empirical” level where they were able to obtain information from the environment, and this is reflected in the type of self-knowledge that they have and the type of statements that they use to describe themselves for example, “I am the best reader in my class.”

During adolescence the self becomes more abstract, and adolescents often display concern about how others regard them. This is when they become capable of formulating philosophies and theories about the way things are and ought to be. With this new mental ability, adolescents develop a sense of ego identity as in Erikson’s theory: a coherent, unified idea of the self. Throughout adulthood there is a continuity and change in the self-concept. Major life events, new jobs, marriage, birth of children or grandchildren, divorce, unemployment, war and personal tragedy causes us to reexamine who we are with respect to our life circumstances (Craig & Baucum, 2002).

Self-concept plays a major role in the *emotional and social adjustment* of a child. Coopersmith (1967) and Burns (1979) suggest that the quality of the self provides an index to a child’s rate of development and psychological adjustment, because it includes how important he is to others, how he wants to be seen by others, as well as what he wishes to be. Hence a positive self-concept is an essential component of positive mental health, whilst a negative self-concept is a significant factor in poor psychological adjustment.

A poor sense of self apart form resulting in a lack of social skills and competence may also cause:

1. Depression (Wilson & Krane, 1980).
2. Unassertiveness (Phillips & Groves, 1979).
3. Loneliness, poor adjustment and greater self-focus (Goswich & Jones, 1981).
4. Multiple interpersonal problems (Kakle, Kulka & Klingel, 1980).

5. Uncertainty, lack of self-confidence, poor personal as well as social adjustment, and
6. Self-rejection, unsociability, immaturity, resentfulness, rebelliousness, aggressiveness, withdrawal and over dependent behaviour (Hurlock, 1974).

Conversely Coopersmith (1967) found that children with a good sense of self are less likely to show anxiety and stress, are better able to deal with threats than those children who have lower self-esteem ratings, are more expressive and happy, and are less sensitive to criticism and more willing to express themselves.

3.3.2 The Influence of Parents in the Development of the Self

Relationships with parents and peers are the focus of social well-being in children. The interactions and relationships between child and caregiver form the foundation of the child's ability to organize and respond to his or her world (Cohn, Patterson, & Christopoulos, 1991; Parke & Ladd, 1992; Weston, Irvins, Heffron & Sweet, 1997). According to Middlebrook (1980):

> All personality and self-theorists agree that parent-child interaction plays a vital part in the socialization process, particularly as it influences the child's self-concept. (p.59)

Socialisation can be defined as the process through which children acquire the behaviour, skills, motives, values, beliefs, and standards that are characteristic, appropriate, and desirable in their culture. The agents of socialisation are the individuals and institution that participate in the process, such as parents, siblings, peers, teachers, church, and television (Newcombe, 1996).

Children's growth and development are highly influenced by the caregiving environment in which the child is reared. It is known for many years that parental socio-economic status (SES) and education are key predictors of childhood developmental outcomes (Beckwith, 1990). Many studies have highlighted the importance of family variables (Barnard, Morisset, & Spieker, 1993; Cohn,

Patterson, & Christopoulous, 1991; Crnic, Greenberg, Ragozin, Robinson, & Basham, 1983; Maccoby & Martin, 1983; Pettit & Mize, 1993; Putallaz, 1987; Rauh, Achenbach, Nurcombe, Howell, & Teti, 1988; Sameroff, 1993; Sameroff & Chandler, 1975; Sameroff & Fiese, 1990).

A child's interaction with competent people, who can provide guidance and encouragement, allow children to master new challenges, hence enhancing the child's development (Vygotsky, 1978). In all societies, the nuclear family is the initial and most significant unit within which a child's personality is rooted and nourished. It is within the context of some kind of family unit that the child feels either loved or unloved, wanted or unwanted, capable or incapable, worthy or unworthy.

Parents are the most significant others in an infants environment and serve as models, feedback agents and evaluators regarding their children's behaviour. Felker (1974) proposed three prerequisites for the development of a positive self-concept, namely: experiencing a sense of belonging, feeling of competence and a sense of worth. The infant receives evidence of his worth through the quality of care he receives from his parents. His sense of belonging develops out of the security of his family environment where he experiences being accepted and valued. As the child gradually moves into a wider environment, his sense of self extends outside of himself to include other experiences, thereby eliciting feelings of competence. Should any of these areas lag or fail to develop, the beginnings of a negative self-concept will be evident.

Although most parents want to give their children the best they can give, children do not always turn out for the best. How a child is raised, whether by the biological parents or someone else, makes a significant difference in terms of how he feels about himself and other people (Hamachek, 1971). When the relationship between parents and child is strained or maladaptive and there is no substitute relationship, the long-term consequences for the child can be very negative (Fowler & Cross, 1986; Gorman & Pollit, 1996; Mize & Abell 1996; Sameroff, Seifer, Barocas, Zax, & Greenspan, 1987; Werner, 1990; Williamson, 1996). Research indicates that a child's self-concept is positively enhanced by

positive feedback from their environment (Nicholas, 2003; Van Zijl, 1985). Research with disadvantaged children and children raised in impersonal or abusive surroundings indicate that these children usually suffer from a number of socio-emotional developmental problems because they fail to form attachments (Huffman, 2004). These children tend to form shallow and anxious relationships, others are, withdrawn and uninterested in their caregivers, whereas others seem insatiable in their need for attention (Zeanah, 2000). They also tend to show intellectual, physical, and perceptual retardation (Belsky & Cassidy, 1994; Bowlby, 2000). Tenenbaum (1963) and Deutsh and Brown (1964) concluded in the sixties that children who grew up with restricted cultural and social opportunities suffered both intellectually and emotionally.

Since the 1920s, researchers have studied the effects of different methods of child rearing on children's behavior, development, and mental health (Huffman, 2004). Studies by Baumrind (1967) have found that parenting styles could be reliably divided into three broad patterns: permissive, authoritarian, and authoritative. She describes the three types as:

1. *Permissive*. The permissive parent behaves in nonpunitive, accepting, and affirmative ways with respect to children's impulses. Such parents consult with children on family decisions, give explanations for family rules, and make few demands for responsibility for household routines or orderliness. Permissive parents come in two styles: (a) permissive-indifferent, the parent who sets few limits and provides little in the way of attention, interest, or emotional support, and (b) permissive-indulgent, the parent who is highly involved but places few demands or controls on the child. Children of permissive-indifferent parents have poor self-control (becoming demanding and disobedient) and have poor social skills. Children of permissive-indulgent parents often fail to learn respect for others and tend to be impulsive, immature and out of control.

2. *Authoritarian*. These parents are rigid and punitive. They value unquestioning obedience and mature responsibility from their children, while remaining aloof and detached. They attempt to control and evaluate the behaviour and attitudes of the child in accordance with fixed or absolute standard of behaviour.

3. *Authoritative*. These parents are tender, caring and sensitive toward their children. They attempt to direct the child in a rational, issue-orientated manner. The reasoning behind what the parent does is shared with the child. Although firm control is exercised when parents and children cannot come to an agreement, the child is not forced by restrictions. The parent demonstrates self-respect, but also respects children as individuals with interests and special ways of their own. The authoritative parent affirms the child's present qualities but also set firm limits and enforces them, while encouraging increasing responsibility. As you might expect, children do best with authoritative parents. They become self-reliant, self-controlled, and high achieving. They also seem more content, goals oriented, friendly, and socially competent in their dealing with others.

Baumrind (1967) concluded that parenting styles influences both the emotional and social skills that a child develops. The children of authoritative parents were autonomous and independent, self reliant, self controlled and explorative. Children who tended to be withdrawn and distrustful had parents who were authoritarian in outlook. The children of the permissive parents were found to be the least self reliant, explorative and self controlled.

Although it can also be concluded that the authoritative pattern is perhaps the best and only way to raise children, it should be noted that many children raised in the other styles also become caring, cooperative adults. According to Huffman (2004) criticism of Baumrind's findings generally falls into three areas: child temperament (the child's unique temperament and reactions to parental efforts rather than the parenting style per se plays a vital role); child expectations

(a child's expectations of how parents should behave also play an important role in parenting styles); and parental warmth (the most important variable in parenting styles and child development might be the degree of warmth versus rejection parents feel toward their children).

After a review of several studies on child rearing practices, Burns (1979) concluded that child-rearing practices are crucial in self development because:

1. The concept of self is learned;
2. Much of this learning comes from feedback from significant others, particularly parents;
3. Parents are present most consistently in the important early years; and
4. The child has a physical, emotional and social dependence on them so that they are in a unique position to influence the child's learning about himself.

It can hence be concluded that a child cannot be assessed in isolation from his or her family. Without viewing the child within the familial context, inferences about young children's developmental status will be incomplete, and generalizations about the child's development may be seriously flawed (Meisels & Atkin-Burnett, 2003; Shriver, Kramer, & Garnett, 1993).

3.3.3 The Influence of Peers in the Development of the Self

The ability to interact with peers is a critical developmental task of early childhood (Guralnick, 1992; Odom & McConnel, 1989). Peers contribute in unique and major ways to the shaping of a child's personality, social behaviour, values, and attitudes. According to Newcombe (1996) the peer group instructs and trains children in critical social skills that cannot be learnt in the same way from adults. Children learn how to interact with age-mates, how to relate to a leader, how to deal with hostility and dominance. In later childhood, peers can also help one another deal with personal problems and anxieties. Siblings also influence each other's development and functioning. They serve not only as playmates for one another but also as sources of support, instruction, security, assistance, and caregiving (Brody, Stoneman, MacKinnon, & MacKinnon, 1985;

Herrera & Dunn, 1997; Howes, 1988; Ladd & Price, 1987; Lieberman, 1977; Whiting & Edwards, 1988). They can also be rivals and sources of mutual conflict and irritation (Vandell & Wilson, 1987).

According to Hurlock (1968; 1974) the self-concept is formed by the interaction between the individual and his environment. The primary social self-concept is acquired first and is based on experiences, which the child has in his home. The secondary social self-concept is based on experiences with significant others, including the child's peers and teacher. The social self-image develops earlier than the basic self-image and forms the basis for the self-concept. Hurlock (1968) concludes:

> If the child is accepted, approved, respected, and liked for what he is, he will be helped to acquire and attitude of self-acceptance and respect for himself. But if the significant people in his life, and other persons who will influence him, belittle him, blame him and reject him, the growing child's attitudes toward himself are likely to become unfavourable. As he is judged by others, he will tend to judge himself. (p.23)

Young infants are sociable creatures. Months before they form their first attachments, they are already smiling, cooing, or otherwise trying to attract the attention of their companion (Shaffer, 1994; Sroufe, 1979). The primary vehicle for the development of relationships with peers is play with other children (Newcombe, 1996). Between the ages of 2 and 5, children not only become more outgoing but also direct their social gestures to a wider audience. Observational studies suggest that 2 to 3 years-olds are more likely than older children to remain near an adult and to seek physical affection, whereas the sociable behaviors of 4 to 5 year-olds normally consist of playful bids for attention or approval that are directed at peers rather than adults (Harper & Huie, 1985; Hartup, 1983). Just as children become more peer orientated during the preschool years, the nature of the peer interactions change as well. Between the ages 2 and 5, preschoolers become less inclined to stand around and watch a playmate or to take part in simple initiative games; instead, they engage in

increasingly sophisticated, reciprocal exchanges, many of which will require players not only to assume complementary roles but also to agree on how these roles are to be played if their play activities are to continue successfully (Shaffer, 1994).

Shea (1981) in a study observing 3 and 4 year-olds at preschool concluded that nursery-school attendance has a very positive effect on young children's reactions to other children. Peer interactions contribute directly to the growth of children's social skills. Children who attend nursery school on a regular basis become quite familiar with their classmates and that familiarity among children breeds liking and sociability rather than contempt. As children get to know their classmates better, their interactions become less awkward and tentative and much bolder and more synchronous; is much more complex (Harper & Huie, 1985), and collaborative problem solving proceeds much more smoothly (Brody et al., 1983). Ladd (1990) found that children who enter kindergarten along with peers they had known in nursery school seemed to like school better and showed fewer adjustment problems than those who had little nursery-school experience or who entered kindergarten without familiar companions. So it can be concluded that parents can foster their children's social competence with peers by enrolling them in a nursery school.

Peer interactions become increasingly sophisticated throughout the early preschool years. Not only do co-operative forms of complex social pretend play become more commonplace, but by age 7 to10, children become enthusiastic participants in games (such as hopscotch, and marbles) that are governed by formal sets of rules (Hartup, 1983: Piaget, 1965). Another very noticeable way in which peer interactions changes during middle childhood is that contacts among grade-school children more often occur in true peer groups**.** True peer groups refers not merely to a collection of playmates but, rather, to a group that (i) interacts on a regular basis, (ii) defines a sense of belonging, (iii) shares implicit or explicit norms that specify how members are supposed to behave, and (iv) develops a structure of hierarchical organization that enables the members to work together toward the accomplishment of shared goals.

Individual differences in the development of reaction to peers are influenced by the kinds of early attachments that children develop. As discussed earlier attachment refers to the powerful emotional bond that develops between the child and, initially, the parents and other household members, and which in time can be generalized by the child to a great number of people. Its foundation is basic trust, which takes shape as the baby's physical and psychological needs are met. The end product of attachment is identification which is taking on the ways of and feelings of the people among whom one lives and develops (Stone & Church, 1984).

Researchers have found that parents of appropriately sociable preschool children tend to be warm, sensitive companions and playmates who (1) monitor their children's interactions to ensure that they comply with rules of social etiquette but who also (2) allow children considerable autonomy in structuring play episodes (both with themselves and with peers), as long as they follow the rules of social discourse that have been presented as guidelines (Mize & Abell, 1996).

According to Shaffer (1994) the unique roles that friends might play in one's social development have not been firmly established, but there are indicators that solid friendships;

1. Provide a sense of security and social support that helps children and adolescents to respond more constructively to stresses and challenges,
2. Promote the development of role-taking skills and an ability to compromise, and
3. Foster the growth of caring and compassionate feelings, which are the foundations of intimate love relationships later in life.

According to Middlebrook (1980) reference peer groups serve two functions for the individual. The "normative function" which pressures the individual to conform to what others in the group do, and the "comparative function" which gives the individual information against which to judge himself.

The child may develop many skills and competencies in school, at home and in the world of his peer group. What he does is an expression of himself. Therefore if he is successful and receives praise, he feels good. If he fails or is criticized, he feels bad (Naudé, 1982). As the child compares himself to his peers his self-esteem becomes a self-evaluation of his abilities, influence and popularity (Mize, Pettit, & Brown, 1995).

3.3.4 Self-Concept and its effect on Scholastic Performance and Achievement

Since the 1940s there have been many studies of self-concept, many having directly or indirectly addressed the relationship between self-concept and achievement (Cullen, Boersma, & Chapman, 1981; Larned & Muller, 1979; Ozehosky & Clark, 1970). In reviewing such studies Purkey (1970) concluded that the literature indicates a “strong reciprocal relationship and gives us reason to believe that enhancing self-concept is a vital influence in improving academic performance” (p.27). Purkey suggested a self-fulfilling effect whereby a favourable self-concept may lead to positive perceptions of ability and expectations of future success, which in turn may produce favourable outcomes on measures of both ability and achievement. It is evident that children come to school with all sorts of ideas about themselves and their abilities. They have formed pictures of their value as human beings and of their ability to cope successfully with their environment. When the aspirations of parents are unrealistically high in relation to the child’s ability, subsequent failure on the part of the child is often rationalized or the blame projected onto others by the child. Yet it leaves its mark on the self-concept and may lead to feelings of inferiority and inadequacy. Both unrealistically high and unrealistically low aspirations for achievement can lead to poor personal and social adjustment (Naudé, 1982).

According to Ambrou (1978) the child’s degree of self-esteem will affect his behaviour by limiting or extending the range of things he will attempt, whether in academic tasks, sports or friendships. In an extensive study undertaken by Williams and Cole (1968) significantly positive correlations were obtained

between self-concept measures and the following; conception of school, social status at school, emotional adjustment, mental ability, reading achievement and mathematical achievement. According to Raath (1985), poor scholastic achievement and negative self-concept are interrelated. A child with a negative self-concept is usually an underachiever and is usually not able to utilize his intellectual potential fully. The child tends to underestimate himself and has a great fear of failure. He cannot attempt difficult tasks with confidence and fails from the outset because he believes that he cannot succeed.

Long and Henderson (1968) found a relationship between a positive self-concept and school readiness. Furthermore, they found that low self-concept is associated with immature classroom behaviour, which in turn has an adverse effect upon school performance. Ebersole, Kephart and Ebersole (1968) found that certain acquisitions are necessary before a child can benefit from formal education. The first is the development of effective perceptual-motor development, and the second is the development of a healthy self-concept. They emphasized three interrelated types of acceptance that contribute to a healthy developed self-concept. They are the child's acceptance of himself; the child’s acceptance of others; and the acceptance of the child by others. According to Ebersole, Kephart and Ebersole (1968) the consolidation of these is imperative before a child can respond well to formal education. As mentioned earlier, Hurlock (1968) found that children with low self-concepts experience problems in accepting themselves and others, and as such are prone to be rejected by others. Thus children with poor self-concepts start school at a disadvantage as compared to children with good self-concepts (Ebersole, Kephart, & Ebersole, 1968; Hurlock, 1968).

In an extensive study undertaken by Williams and Cole (1968) significant positive correlations were obtained between self-concept and the following variables:

1. Conceptualization of school,
2. Social status at school,
3. Emotional adjustment,

4. Mental ability,
5. Reading achievement, and
6. Mathematical achievement.

The relationship between self-concept and reading achievement as well as mathematical achievement has been confirmed by many investigators (Black, 1974; Bodwin, 1959; Johnson, Fretz & Johnson, 1968). Although a strong relationship between self-concept and achievement has been found, there is no clarity as to whether there is a causal relationship between the two. Poor academic performance may contribute to the establishment of a negative self-concept. Carroll, Friedrich and Hund's (1984) study supported this statement. They found that handicapped children as a group have a lower self-concept than non-handicapped children. They concluded that children who do well at school, rate themselves higher on tests of academic self-concept than do those who do not perform well. Beery (1982) explains the relationship as follows: the individual's sense of worth is threatened by the belief that his value as a person depends on his ability to achieve and that if he is incapable of succeeding, he will not be worthy of love and approval. Thus, while achievement enhances a high self-concept, failure develops a sense of inferiority and inadequacy (Hurlock, 1974). It can hence be concluded that although the data does not provide clear-cut evidence about which comes first; a positive self-concept or scholastic success, a negative self-concept or scholastic failure, it does stress a strong reciprocal relationship and gives us reason to assume that enhancing the self-concept is a vital influence in improving academic performance (Purkey, 1970).

It can thus be concluded that the self-concept is therefore central to the life of the person to such an extent that experiences and impressions pertinent to the self are given content and meaning according to the self-evaluation. Environment and people are thus interpreted in the light of the person's self-conceptions while their problem solving and role behaviour are based upon and limited by these same concepts of self. Psychosocial development in early childhood Insight is

gained and reality testing is performed in terms of the image they have of themselves (Jacobs & Vrey, 1982).

3.4 THE ASSESSMENT OF PERSONAL-SOCIAL DEVELOPMENT

Many of the behaviours described above are difficult to measure and translate into a standardized test format. However, there are several methods that are recommended, and standardized tests are available. These tests will be discussed in an attempt to identify the primary constructs necessary to measure and describe personal-social development. This will hence guide the course of this study.

3.4.1 Introduction

The above discussion highlights that the self is the core of the personality pattern, and as such, influences the quality of the child's behaviour, development, and it plays a significant role in determining the type of adjustment the child will make alter in life (Hurlock, 1968). The child's sense of self emerges in the early years of life, through the interaction with people of importance, namely the parents, siblings and peers, and continues to develop into adulthood, becoming more complex as the individual's emotional and cognitive development deepens. The attachments formed during this time form the basis of social functioning and have an influence on the development of social relationships. When parents encourage their infant to explore their environment and to be independent, they will obtain confidence in their autonomy and sense of self-control, and this would encourage them to try new things. Should the infant lack this support however, and receive parental disapproval and discouragement instead, the infant will begin to doubt his own abilities. This usually results in the child not utilizing his intellectual potential fully, as the child tends to underestimate himself and has a great fear of failure. He cannot attempt difficult tasks with confidence and fails from the outset because he believes that he cannot succeed.

A summary of the primary psychosocial milestones that emerge during early childhood include: the development of the self-concept; emotions develop and become more complex as the child grows older. Altruism, aggression, and fearfulness are common emotions experienced by infants. Independence, initiative, and self control are milestones to be attained. Gender identity develops. Play becomes more imaginative, more elaborate, and usually more social. During this time the family is the focus of social life, but other children start becoming important. In middle childhood the self concept becomes more complex, affecting self esteem and peers start becoming important (Papalia et al., 2001).

Most general intelligence tests sample a broad array of intellectually challenging problems, but often do not focus on the emotional and social development of the child. The assessment of personal-social development is often not included in many intelligence batteries, particularly after the preschool period, probably owing to the perception that it does not form part of the intelligence construct (Anselmo & Franz, 1995). Furthermore, the domain of personal-social development is very broad, and because it is less well defined than other domains, there is more variability in the assessment content and process (Fewell, 1991). In addition, the assessment of personal-social skills is complex and is often facilitated by observing the child at play, and adopting a longitudinal approach (Bonderant-Utz & Luciano, 1994). However, today assessments are considered incomplete unless they view the child holistically and in relation to his or her family or caregivers (Meisels & Atkins-Burnett, 2003). The significant increase in the number of children with special needs today has also prompted the need to include this area of functioning in assessment measures so that the child can be adequately assessed so that treatment and management programmes, as well as school placement and so forth can be determined.

In order to guide the researcher to determine what constructs are necessary to include in a personal-social measure, an overview of currently available personal-social and adaptive behaviour measures will be presented in this section.

3.4.2 An Overview of Developmental Measures for Infants and Young Children.

A brief overview of some of the developmental scales and tests used with infants and young children worldwide will be provided. Universally prominent normative developmental measures that have been developed for infants and young children include**:** the Stanford-Binet Intelligence Scales, Bayley Scales of Infant Development, the Gesell Developmental Schedules, Cattell's Infant intelligence Scale, the Griffiths Mental Development Scales, the Wechsler Intelligence Scale for Children, and the Junior South African Individual Scales. Many other screening tests and non-verbal tests have also been developed. A comprehensive critique of all these assessment tools will not be undertaken in this study. However, it is important to emphasize that only the following of these prominent tests assess the personal-social functioning of the child: the Griffiths Mental Development Scales, the Bayley Scales of Infant Development, the Gesell Developmental Schedules, and the Denver Developmental Scales. There are several test that measure personal-social skills specifically. These include: the Vinelands Adaptive Behaviour Scales (VABS), the AAMD Adaptive Scales-School Version and the Scales of Independent Behaviour (SIB). Other recent and less well known measures that assess emotional-social functioning include: the AGS Early Screening Profiles (ESP), the FirstSTEP: Screening test for Evaluating Preschoolers, the AEPS Measurement for Three to Six Years Ages, and the Stages Questionnaires: Social Emotional (ASQ:SE).

The Griffiths Mental Developmental Scales will not be elaborated on in this section as it was extensively discussed in Chapter 2. It is however, noted that it is regarded as one of the most comprehensive and most carefully constructed Infant scales (Thomas, 1970). A brief overview of the prominent measures that include the assessment of personal-social constructs will be elaborated on. These measures were included to elicit and highlight the constructs being measured.

3.4.2.1 The Bayley Scales of Infant Development

The Bayley Scales of Infant Development were first published in 1933. The scale includes 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 standardization sample were largely from the upper middle class. Thus the test was criticized for failing important psychometric requirements (Anastasi, 1982).

The second edition of the scales (BSID-II) was published in 1969, and the revised and restandardized 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 which provides a normalized 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, which provides 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, and 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 Behavior Scale 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 restandardisation, no attempts were made to improve the low predictive validity of the Scales. Instead, Bayley stated that all infant tests should basically be used to assess present developmental status and should not be utilized for the purpose of predicting future ability levels. She maintained that developmental abilities are generally influenced by several extraneous factors, which tend to render long-term predictions of little value (Anastasi, 1982). Furthermore, information relating to use with special populations is lacking (Barnard, 2000).

The BSID was standardized for use with Black South African children in 1988 (Richter & Griesel, 1988). However, no further validity or reliability studies were conducted.

3.4.2.2 The Gesell Developmental Schedule

The Gesell Developmental Schedule provide standardized procedures for observing and assessing the patterns of human behavioural development in the child's daily life (Brooks & Weinraub, 1976).

The Gesell Schedules were criticized for being too subjective and poorly standardized. A later version of the scales provided more objective observational procedures. The age range of the revised scales is 4 weeks to 5 years, and five behavioural categories are covered: *Adaptive* (alertness, intelligence, constructive exploration), *Gross Motor* (balancing, sitting, locomotion, postural reactions), *Fine Motor* (manual dexterity), *Language* (facial expression, gestures, vocalizations), and *Personal-Social* (feeding, playing, toilet training). Age placements were determined by the percentage of subjects who passed each item. This allows for the comparison between the development of a particular child and a normative standard (Kaplan & Saddock, 1991).

Although the Gesell Scales have been criticized for poor reliability and validity they contributed a wealth of information on behaviour development in infants and young children. It is regarded as the main source of data for infant and preschool tests that have subsequently followed (Brooks & Weinraub, 1976). Researchers like Cattell (1940) and Griffiths (1954) designed their test by improving and modifying tests that already existed (Anastasi, 1982; Brooks & Weinraub, 1976). Gesell's contribution also exemplifies one of the first efforts to make theory and research meaningful to parents. He wrote for the layperson, providing age related typical descriptions of children's motor achievements, social behaviours and personality characteristics in an attempt to relieve parental anxieties relating to development (Luiz, 1994).

3.4.2.3 The Denver Developmental Scales (DDST)

The Denver Developmental Scales (DDST) was first published in 1967 and was 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*. Its personal-social domain consists of 23 items, which evaluate the child's ability to socialize 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 behavior 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).

There are several specific tests of personal- social development that are widely used, and are considered to be the most useful assessment measures of this domain (Nuttall, Romero, & Kalesnik, 1992). These measures have been developed to provide information about individuals, many of who are mentally retarded, to assist in the process of making classification, training and treatment decisions (Sattler, 1989). These measures include the Vinelands Adaptive Behaviour Scales, The AAMD Adaptive Behaviour Scales, and the Scales of Independent behaviour. These measures will be discussed below.

3.4.2.4 Vinelands Adaptive Behaviour Scales (VABS)

The Vinelands Adaptive Behaviour Scales is available in three versions (survey, expanded, and classroom edition), which can be used independently or in combination. The Vineland-II (Sparrow, Cicchetti & Balla, 2005) is a revision of the Vineland Social Maturity Scale and Vineland Adaptive Behaviour Scale (Doll, 1965). The scales assess personal and social competence of individuals from birth to adulthood. All these scales measure adaptive behaviour in four domains: *Communication* (receptive, expressive and written); *Daily Living Skills* (personal, domestic, and community); *Socialization* (interpersonal, play and leisure time, and coping skills); and *Motor Skills* (gross and fine) (Bondurant-Utz & Luciano, 1994). These scales are often used to assess the ability of handicapped and non-handicapped children to perform the daily activities required for personal and social sufficiency, as they do not require the direct administration of tasks to an individual, but instead require a respondent who is familiar with the individual's abilities and general behaviour.

The VABS was standardized in the USA on 3 000 individuals. The VABS is described by Nuttall, Romero and Kalesnik (1992) as a well-developed scale that needs additional psychometric research before it can be used diagnostically. Furthermore, the written communication domain is not suitable for use with preschoolers, as it begins with a child's ability to recite the letters of the alphabet and to identify all the printed letters of the alphabet (Nuttall, Romero, & Kalesnik, 1992).

Sattler (1989) reported that the VABS is a useful instrument for providing information about social competence, which is a very important facet of behaviour. However, he notes that the scales do not measure all aspects of social competences, are of less value with physical handicapped children, and rely on the objectivity of the informant.

3.4.2.5 The AAMD Adaptive Behaviour Scale – School Version

The American Association on Mental Deficiency produced this scale for use with mentally retarded, emotionally maladjusted and developmentally disabled individuals who are institutionalized. It is used with children between the ages of 3 to 16 years, to measure personal independence and social responsibility. Twenty-one domains are assessed on this instrument. The first nine domains use the following rating scales:

- Dependence and independence, including independence functioning (e.g., eating, toileting, cleanliness, appearance, care of clothing, dressing and undressing, and travel).
- Physical development (i.e., sensory and motor development).
- Language development (i.e., expression, comprehensive and social language development).
- Responsibility, and
- Socialization.

The other 12 domains in the second part of the scale are rated according to the frequency with which a behaviour occurs. Behaviours in this section include aggressiveness, rebelliousness, trustworthiness, mannerisms, and interpersonal manners. A percentile rank can be derived for each domain and five clusters (i.e., personal self-sufficiency, community self sufficiency, personal-social responsibility, social adjustment, and personal adjustment) (Bondurant-Utz & Luciano, 1994).

According to Murphy and Davidshofer (1998), the AAMD helps to provide a broader base for diagnosis by including a great deal of information about the

child's social competence. Furthermore, they help provide a profile of adaptive behaviour strengths and weaknesses that is used in evaluating children and developing education plans (Sattler, 1982).

3.4.2.6 Scales of Independent Behaviour-Revised (SIB-R)

These scales use the reports of parents or teachers to assess the independent functioning of individuals from infancy to adulthood, in home, social and community settings. The SIB-R assesses adaptive behaviour in the four domains (14 areas) of *Motor skills, Social Interaction, Communication Skills,* and *Community Living Skills.* In addition, the SIB-R provides information regarding three behaviour clusters (eight areas), including internalized maladaptive, asocial maladaptive, and externalized maladaptive. It can be administered as either a structured interview or a checklist. The focus is on estimating the ability of individuals to function independently in various settings, including the home, school and community. The Early Development Form applies to children from infancy through age 6 years (or older individuals through age 8 functioning within this range). It includes 40 items selected from the total test that are relevant to this age group (Lidz, 2003).

Scoring is complex, involving cluster scores, and is best carried out through a computer. Age equivalents can be determined directly on the protocol. Other scores available include Relative Mastery Indices and Adaptive Behaviour Skill Levels as well as percentile ranks and standard scores (mean of 100; *SD* of 15). In the case of problem behaviours, there are Maladaptive Behaviour Indices (Lidz, 2003). The SIB-R is usually useful in assessing preschoolers' adaptive behaviour and problem behaviors (Nuttall, Romero & Kalesnik, 1992).

The SIB-R was normed on 2182 American individuals. Split-half reliabilities for the four cluster scores all exceed .80. Test-retest stability with an early childhood sample and 7- to 14-day time gap yielded a correlation of .97 for the Early Development Form, .85 to .90 for the Problem Behaviours and .92 for the General Maladaptive Index. Interrater reliability for the Early Development Form comparing the independent ratings of teachers and aids yielded a

correlation of .91 for the Early Development Form, .68 to .83 for the Problem Behaviours, and .78 for the General Maladaptive Index (Bruininks et al., 1996). There is some evidence to support construct, concurrent, criterion, and discriminant validity. For example, using the Early Development Form, there were significant differences between children with and without disabilities regarding early development, as well as Internalized Maladaptive (not Asocial Maladaptive or Externalized Maladaptive) (Lidz, 2003).

3.4.2.7 AGS Early Screening Profiles (ESP)

The AGS Early Screening Profiles (ESP) (1990) was developed for the screening of children in order to identify those at risk for learning or developmental problems. This measure can be used with children between the ages of 2 years and 6 years 11 months. The measure has various components: a Cognitive/Language Profile, Motor Profile, and Self-Help/Social Profile. Furthermore, there is an Articulation survey, Home survey, Health History survey, and Behavior survey. The first three profiles are administered directly to each child, and the remaining components are in questionnaire form to be completed either by, teachers, caregivers, or assessors. The *Cognitive/Language Profile* includes four subtests: visual discrimination, logical relations, verbal concepts, and basic school skills. The *Motor Profiles* assesses fine and gross motor skills. The *Self-Help/Social Profile* includes communication, daily living skills, socialization, and a motor skills domain. The entire battery or selected portions of it may be used.

The ESP was standardized on 1149 American children. High internal consistency alpha coefficients for all profiles except Motor were reported. Interrater reliability was carried out only for the Motor Profile, which is more subjective than the other subtests. All coefficients were above .80, with many well above .90. Standard errors of measurement were generally low, with a slight tendency to increase at age 6, and with generally high standard errors of measurement for the Motor Profile. Validity evidence is presented in the manual to support content, construct, concurrent, predictive, and discriminant validity.

3.4.2.8 FirstSTEP: Screening test for Evaluating Preschoolers

This measure was developed by Miller (1993) for children between the ages of 2.9 to 6.2 years. The purpose of developing this measure was to screen children who are at risk for developmental delay. The 12 subtests tap the areas of cognition, communication, motor, social-emotional (optional), and adaptive (optional) functioning. Only the scores from the first three subtests make up the composite. There is also an optional parent-teacher scale that provides further information. Each of the three core domains has four subtests as follows: *Cognition* (quantitative reasoning, picture comparison, visual position in space, and problem solving), *Language* (auditory discrimination, word retrieval, association and sentence-digit repetition), and *Motor* (visual-motor integration, fine motor planning, balance, and gross motor planning). *The Social-Emotional Scale* includes rating by the assessor of the child's behaviors during the test session; these include task confidence, cooperative mood, temperament and emotionality, uncooperative antisocial behavior, and attention-communication difficulties.

Information is provided for internal consistency, decision consistency, interscorer agreement, test-retest stability, and standard error of measurement. The standard errors of measurement are generally low. The interscorer agreement coefficient exceeded .80 except for the social-emotional ratings (.77). Information regarding content, construct, concurrent, and criterion validity is presented in the manual. Correlations with other measures are at a high moderate level, supporting concurrent validity. Discriminant validity received strong support as well (Lidz, 2003).

3.4.2.9 AEPS Measurement for Three to Six Years

The AEPS (undated) comes in two volumes: one for assessment and one for curriculum. It is criterion-referenced and intended for use by direct service personnel including teachers and specialists, with the goal of developing Individual Education Plan (IEP) and Individualized Family Service Plan (IFSP) for Preschoolers with Special Needs. The content taps functional skills in the domains of fine motor, gross motor, adaptive, cognitive, social-communication,

and social development. Data are gathered through observation of children in their natural environments. Adaptations for children with disabilities may be made as needed. The intended use is for children who are at risk for or who have disabilities. The items are hierarchically arranged, and the procedure can be administered by various team members within their domains of expertise. The procedure and its curriculum are activity-based so that multiple domains can be addressed within any single activity. Family participation is assumed and built in.

The *Fine Motor Domain* includes manipulation of objects and prewriting. The *Gross Motor Domain* includes balance and mobility in standing and walking as well as play skills. The *Adaptive Domain* includes dining, personal hygiene and dressing. The *Cognitive Domain* includes participation, demonstration of understanding of concepts, categorizing, sequencing, recalling events, problem solving, play, pre-math, and prereading. The *Social Communication Domain* includes social-communicative interactions and production of words, phrases, and sentences. The *Social Domain* includes interaction with other, interactions with environment, and knowledge of self and others. This measure has not been standardized.

3.4.2.10 Ages and Stages Questionnaires: Social Emotional (ASQ:SE)

The ASQ:SE was developed by Squires, Bricker and Twombly (2002) for children between the ages of 6 to 60 months. These are a series of eight questionnaires to be completed by parents or caregivers. There is a separate questionnaire for each of the eight ages, including 6, 12, 18, 24, 30, 36, 48, and 60 months. The areas tapped include *self-regulation, compliance, communication, adaptive functioning, autonomy, affect, and interaction with people. I*tems were selected to be culturally sensitive and were written so as not to exceed a sixth-grade reading level.

The measure was standardized on 3014 American children. Children with developmental and social emotional disabilities were included. Internal consistency alpha ranged from 067 to .91, with an overall alpha of .82. Alphas were at the highest levels for the older preschoolers' ages. Test-retest stability

with an interval of 1 to 3 weeks yielded agreement between the two scores of 94% for the classifications of risk or no risk (Lidz, 2003). A study by Squires et al. (2001) reported test-reliability of .94. Significant gender differences were found at 30, 36, 48, and 60 months. Cutoff scores are available for boys but need to be revised for girls. Data was gathered to support concurrent and discriminant validity (Lidz, 2003).

3.4.3 Review of the Personal-Social Measures

The review of the above assessment measures of personal-social skills appear to focus on two major functions, which include the degree of independent functioning, usually related to the child's ability to take care of himself , and the degree to which the child meets the culturally imposed demands of personal and social responsibility (Sattler, 1982).

A summary of the constructs tapped by the above psychosocial measures reviwed include:

1. *Ability to socialize/ Ability to play appropriately* (Gesell Scales, Denver Scales, VABS, AAMD, SIB, ESP, FirstSTEP, AEPS, ASQ:SE, Griffiths Scales)
2. *Ability to perform self care tasks/independence/daily living skills/adaptive behaviours* namely eating, drinking, dressing, undressing, personal care and hygiene (Denver Scales, VABS, AAMD, SIB, ESP, FirstSTEP, AEPS, ASQ:SE, Griffiths Scales)
3. *Communication* (VABS, Denver, AAMD, SIB, ESP, FirstSTEP, AEPS, ASQ:SE, Griffiths Scales)
4. *Motor Skills* (Bayley, Gesell, Denver, VABS, AAMD, SIB, ESP, FirstSTEP, AEPS, Bayley Scales, Griffiths Scales)
5. *Self regulation* (Bayley Scales, ASQ:SE, FirstSTEP, Denver Scales)
6. *Cognitive Domain* (Bayley, ESP, FirstSTEP, Griffiths Scales)
7. *Compliance* /*Co-operative mood* ((Denver Scales, ASQ:SE, FirstSTEP, Griffiths Scales)
8. *Knowledge of self* (Gesell, Bayley Scales, VABS, AEPS, Griffiths Scales)

9. *Attention* (Bayley Scales, FirstSTEP, Denver Scales)
10. *Coping Skills* (VABS)
11. *Responsibilty* (AAMD)
12. *Confidence* (FirstSTEP),

The above findings are similar to that of Stewart (2005) who concluded a comprehensive assessment of personal-social development will usually cover the following aspects: personal identity, self-help skills, prosocial behaviour, self-concept, self-awareness, self-control, and adaptive behaviours. Each of these aspects of assessment is discussed below in more detail.

Self-concept (your perception of your personal identity) and personal identity (knowledge of self) are closely related and integrated concepts. Self-awareness includes knowing yourself as a separate person and developing a sense of self, including self-recognition; however, psychological self-awareness develops only later in the school years (Stewart, 2005).

Adaptive behaviour is a term that is defined by the American Association on Mental Deficiency (AAMD) as the effectiveness or degree with which individuals meet the standard of personal independence and social responsibility expected for age and cultural setting (Bondurant-Utz & Luciano, 1994). It is a term that is widely used in the domain of personal-social development. Adaptive behaviours are divided into three categories: physically/ personally; socially; and emotionally. Physical and personal adaptive behaviours involve basic functions, like self-care. Self-care skills are an important component of personal adaptive behaviours. The major self-care skills areas are dressing and undressing, eating and feeding, toileting, bathing and grooming, taking personal responsibility and avoiding danger (Benner, 1992). These skills are generally observed in the appropriate context.

Social adaptive behaviours or prosocial behaviours include communicating basic needs, appropriate use of toys, helping, sharing, or other co-operative actions and play skills that are intended to benefit others. These begin to develop during the preschool years and may be displayed by children as

young as 2 years old (Craig, 2002). Emotional adaptive behaviours include the formation of relationships that promote self-esteem and identity.

In terms of the assessment process, behavioural observation provides a direct assessment of preschoolers' adaptive behaviour skill and development. Because adaptive behaviours are typically specified in clear, observable behavioural term, direct, standardized assessment is possible. Many scales use parent or teacher informants, a method which can be less reliable, but more time- and cost-effective. The examiner must be sensitive to both the developmental and normative aspects of preschool behaviours, and it is in this context that behaviour scales that are standardized, normed, and psychometrically tested, are most useful (Nuttall, Romero, & Kalesnik, 1992). However, any measurement of adaptive behaviours must be contextualised, for example, taking into account the child's culture, SES, motivation and parental expectations (Sattler, 1989). Adaptive behaviour rating sales cannot be entirely objective, because parents teachers, and examiners may appraise the behaviours differently. In addition, the same behaviour may be considered adaptive in one setting but maladaptive in another (Sattler, 1989).

The descriptions of the personal-social measures discussed in the previous section illustrate that the cognitive domains sampled in each of these tests are much broader and less academic than the domain sampled for example by the Stanford-Binet or the Wechsler Intelligence Scale for Children (WISC). Hence, adaptive behaviour measures should not be seen as a substitute for a standard intelligence test, but represent an invaluable supplement to a measure of intelligence. Standard intelligence measures provide psychometrically refined measures of behaviour in response to problems that involve reasoning, comprehension, or a broad base of factual information. Adaptive behaviour inventories on the other hand provide a less defined but broader sample of behaviour in response to the types of problems encountered in everyday life.

In summary it can hence be concluded that emotional, social, and personal development form a very significant component of the growing child's life. The review of the measures reinforced the fact that an understanding of child

development is imperative in the development of a measure, furthermore that the assessment and intervention of children requires an understanding of growth and development. Growth in the early years is rapid and is accompanied by large variations in when and how children manifest different skills and behaviours. By viewing the development of all children on a continuum, most children who are born with disabilities or developmental delays can be viewed from the perspective of children who are not yet functioning as expected in given areas, rather than children who are unable to acquire the skills of typically developing children. Assessment frameworks that exemplify this view of development provide important information for parents and interventionist because they place the child's achievement within a normal continuum of accomplishments. They suggest a series of steps or experiences that must be rendered, rather than a set of milestones the child has failed to reach (Meisels & Atkins-Burnett, 2003).

As established in the review of Erikson's Psychosocial Theory, personal-social development is multifaceted, and includes the development of attachment, the growth of self, the emergence of emotions, and the development of adaptive behaviours that include self-care. The child's emotional development is concerned with inner psychological states, for example, his thoughts, feelings, adaptability, and temperament. Social development is focused on the child's emerging interpersonal relationships, and includes social skills and competencies, prosocial behaviours, and learning social norms and conventions. Personal development refers to the development of the individual as a separate and independent being, and includes personal identity and self-care skills (Benner, 1992). The review of the constructs underlying the personal-social measures revealed that they all measure to a greater or lesser extent, the psychosocial development of the child as outlined in Erikson's Psychosocial Theory.

3.5 SUMMARY OF THE CHAPTER

Chapter 3 has provided an overview of Erikson's Psychosocial Theory, which was used as a backdrop against which to view the development of the self, which is the core of personal-social development of the child. Prominent measures of child development that focus on personal-social development were also outlined. Important aspects of personal social functioning that the measures appear to be tapping include the ability to socialize and play appropriately, the ability to perform self care tasks like eating, drinking, dressing, undressing, personal care and hygiene, as well as co-operation. The assessment of communication, and motor skills were also given prominence on most measures,

In Chapter 4, the problem is formulated by providing a rationale for the current study. This will be followed by the methodological considerations and procedures followed to achieve the aims of this study.

CHAPTER FOUR
METHODOLOGY

4.1 INTRODUCTION

In this chapter the research problem investigated is formulated. This chapter also presents the research methodology employed in the current study and includes a discussion on the research design, sampling methods, measures employed, procedures followed and data analysis techniques utilized to achieve the aims of this study. The reader is reminded again that this study formed part of a larger research project of revising and renorming the Extended Griffiths Scales-Extended Revised (GMDS-ER) in the United Kingdom (UK) and Eire and therefore some of the methodological procedures employed in the broader project are also relevant to the current study. Furthermore some aspects related to the sampling and procedure sections detailed below were taken from the Technical and Analysis Manual of the GMDR-ER (Luiz et al, 2004; Luiz et al, 2006b).

4.2 PROBLEM FORMULATION

Chapter 1 established that developmental assessment measures play a vital role and are considered imperative today with regards to ensuring well-being in children. As pointed out in Chapter 2, the original Griffiths Scales, although very useful and well supported with research had to be revised as several comprehensive reviews in the 1980's and 1990's indicated a need to revise and restandardise the Griffiths on a more contemporary population. The scales no longer provided clinicians and researchers with reliable and valid information given that the norms for the scales were outdated and that some of the items were culturally biased and ambiguous.

In line with the importance of using psychometrically sound assessment measures to evaluate a child's strengths and weaknesses to encourage early intervention, the Association for Research in Infant and Child Development (ARICD) initiated a large-scale research project to revise and standardise the

Griffiths Scales. An international research team was established to coordinate the revision and restandardisation of the Griffiths Scales. The revision process was outlined in Chapter 2. The process of revising the Scales included omitting items and replacing them with new items, revising certain items and changing the order of some items in order of difficulty for all six Subcales. For the Personal-Social Subscale twenty-one problematic items were identified initially, however, it was decided by the research team that only six items needed to be modified or replaced.

An investigation into a measure's psychometric properties is an important consideration in the restandardisation of any measure. The importance of using tests that are reliable and valid for their intended purpose is crucial as it has far-reaching and long term implications on the lives of children and adults. Hence, having revised the Scales, it was imperative that the psychometric properties of the revised Scales be investigated. In fact, one of the primary objectives of the Griffiths restandardisation was to update the psychometric properties of the new Scales. As was pointed out in Chapter 2, very little validity information has been provided in the Administration and Analysis Manuals of the GMDS-ER. It is here that the current study aimed to contribute to the broader project by conducting additional investigations into the construct validity of one of the six Subscales of the GMDS-ER, namely the Personal-Social Subscale.

The validity of assessment measures has been discussed briefly in Chapter Two. Recently a significant amount of attention has been focused on issues of accountability in the area of validity (Eignor, 2001), which is in fact, regarded as the most fundamental consideration in developing and evaluating tests (AERA, 1999). The original Extended Griffiths Scales were constructed in such a way so that they could stand as six separated subscales, each measuring specific areas of development. The American Educational Research Association (AERA, 1999) highlighted that it is not only important to validate a measure as a whole, but it is also important to validate each subscale or subtest of a measure.

The validity of a measure concerns what the test measures and how well it does so (Anastasi & Urbina, 1997; Foxcroft & Roodt, 2003; Maloney & Ward,

1976). Validity is not a specific property of a measure. It is a process through which the validity of a proposed interpretation of test scores is investigated (i.e., how high or low the validity of a measure is for a specific purpose). It is entirely possible for a test to produce highly consistent, accurate and precise results, but not be valid (i.e., not be measuring what it is supposed to measure). If an instrument is not a valid measure of that which it was designed to measure, then the scores it generates do not mean what they are believed to mean. In other words, if the Revised Extended Personal-Social Subscale is not really a measure of the constructs such as, personal skills (which includes self-care) and social skills, then we are unable to interpret its results for an individual as meaning that the individual is average in their personal-social skills.

As the validity of a measure is a matter of degree, users will have to use their own (or others') judgment of the available evidence to decide whether a measure is valid for their requirements (Aiken, 2000).

Cronbach (1990) maintains that although a single study can provide some validation, the ideal is a process that accumulates and integrates evidence on appropriateness of content, correlations with external variables, and hypotheses about constructs. The process employed in the current construct validity study was a multi-phase procedure whereby accumulation and integration of evidence was employed as was suggested by Cronbach (1990).

There are three types of validation procedures: content description, criterion prediction, and construct-identification procedures (Anastasi & Urbina, 1997). They will be discussed briefly.

Content-description procedures. According to Maloney and Ward (1976) content validity involves a systematic analysis of the actual content/items to determine the adequacy of the coverage of the behaviour being measured. It is a non-statistical type of validity. There are two considerations of this type of validity. First it must be determined whether the individual test items are appropriate for the content area being measured. Secondly the adequacy of the coverage of the behaviour being sampled must be determined. A frequently used

procedure to ensure high content validity is the use of a panel of experts to evaluate the items during the construction phase. Item analysis and factor analysis is sometimes also employed. The outstanding feature of content validity is the heavy reliance on personal judgment and is therefore the least preferred approach to validity. In the 1985 Standards (AERA, 1999) the term content validity was changed to content-related evidence, emphasizing that it referred to one type of evidence within a unitary conception of validity. However, in the 1999 Standards the term was further refined to “evidence based on test content”. With reference to the current study, evidence based on test content was investigated in that facet analysis was used to identify the underlying constructs and thereafter consideration was given to how adequately these constructs covered the content domain of personal-social functioning. This will be elaborated on when the construct-related validity is discussed in this chapter.

Criterion-related Validity. Criterion-related validity involves determining whether scores on a psychological test are correlated with some external criterion. There are two types of criterion-related validity, Predictive validity and Concurrent validity. The distinction between these two types of criterion-related validity is based on the purpose for which the measure is used. *Predictive validity* refers to the accuracy with which a measure can predict the future behaviour or performance of an individual. The use of psychological measures for decision-making is implicit in the concept of predictive validity. *Concurrent validity* refers to the degree of similarity in scores between the measure being validated and another measure of the same construct administered at more or less the same time (McIntire & Miller, 2000). The distinction between predictive and concurrent validation is based not on time but on the objectives of testing. Concurrent validation is relevant to test employed for diagnosis of existing status, rather than prediction of future outcomes (Anastasi & Urbina, 1998). An exploration of the concurrent validity of the personal-social items from the Griffiths Revised Personal-Social Subscale, and the personal-social items from the Personal-Social Subscale of the Gesell Development Scale, would be an example of such

a study. The present study did not gather evidence of the criterion-related validity of the GMDS-ER. To date, no criterion related validity studies have been undertaken with the GMDS-ER.

Construct-identification procedures. The construct validity of a measure is the extent to which it measures the theoretical construct or trait it is supposes to measure (Anastasi & Urbina, 1998). According to Cronbach (1990), construct validity is the most difficult aspect of validity to define and to gather evidence about, but it is also the aspect of validity that is of the greatest long-term importance. The development of a valid test requires multiple procedures, which are employed sequentially at different stages of test construction to determine whether an assessment instrument designed to measure a certain psychological concept is actually doing so (Aiken, 2000; Anastasi & Urbina, 1997; Nunnally, 1978). Validity is thus built into the test from the beginning, rather than being limited to the last stages of test development, as in traditional, criterion-related validation.

Anastasi and Urbina, (1997) maintain that almost any information gathered in the development or use of a test is relevant to its validity. Data on internal consistency and on retest reliability help to define the homogeneity of the construct and its temporal stability. Norms provide additional construct specification, especially if they include separate normative data for subgroups classified by age, sex, or other demographic variables that affect the individual's experiential history and thereby their test performance. Furthermore, after a test is released for use, the interpretive meaning of its scores may continue to be clarified and enriched through the gradual accumulation of clinical observation and special research projects. All this enhance the validity of the measure.

It can hence be deduced that validity is conceptualized as a unitary concept with " different lines of evidence" to support " the intended interpretations of test scores," (AERA, 1999, p. 5). The purpose of a particular test may result in some evidence being more valuable to test users than others. According to the AERA (1999) and other researchers (Haynes, Richard, & Kubany, 1995; Huysamen,

2002; Messick, 1993; Moss, 1995), construct validity evidence subsumes all other categories of validity. In fact clinical judgments are strongly influenced by the construct validity of the assessment instruments that provide the data on which judgments are based (Haynes, et al., 1995). Therefore, the current study attempted to provide construct validity related evidence because construct validity is regarded as the primary source of validity-related evidence, and partly because the revision of the Personal-Social Subscale was concerned with improving this aspect of the Subscale. As clinicians use psychological tests to make important decisions regarding an individuals' future, it is very important that the psychometric properties of the test be investigated to ensure that they are sound and valid. In fact the Ethical Principles of Psychologists and Code of Conduct (2002) strongly maintain that, "psychologists should only use assessment instruments that are valid and reliable for the population being tested" (p.64).

In test construction theory, factor analysis is regarded as one of the most commonly used procedures in the development and evaluation of psychological instruments (Floyd & Widaman, 1995; Thompson & Daniel, 1996) and is frequently employed to investigate a measure's construct validity (McIntire & Miller, 2000). Kaufman and Kaufman (1983) not only regard factor analysis as the most frequently used method but also as the most important method of investigating the construct validity of psychological tests. Factor analysis enables an investigation into the underlying dimensions or constructs of a test.

The construct-related validity of the original Griffiths Scales received limited empirical attention in the past. A study conducted by Luiz et. al. (2004) found that the old subscales measured more than one construct, which varied from year to year. Stewart (1997) and Povey (2002) used common factor analysis to investigate the construct-related validity evidence of the original Griffiths Scales and they found that all the Subscales, with the exception of Subscale E, appeared to tap more than one construct with a number of complex skills.

Recent studies into the construct-related validity of the revised Language, Practical Reasoning Subscale and Locomotor Subscale of the GMDS-ER were

conducted by Barnard (2004), Knoesen (2005) and Kotras (2003). The results of their studies also found that these three Subscales yielded more than one construct. In light of the results of these studies, the current study aimed to investigate the underlying structure of the Personal-Social Subscale to offer a theoretically sound and empirically validated model of Personal-Social Development. Evidence for the validity of the Personal-Social Subscale will justify its use as a measure of personal-social functioning for children between the ages of two to eight relative to their development in other areas. The clinician will be able to obtain a profile indicating the child's strengths and weaknesses on the constructs being measured. This would promote early identification and promote early remediation.

As the primary aim of the studies conducted by Kotras (2003), Barnard (2004) and Knoesen (2005) was essentially the same as the current study, the researcher carefully considered the recommendations offered in these three studies when determining the methodology and steps followed in investigating the construct-related validity of the Personal-Social Subscale. Due to the developmental nature of the GMDS-ER in which items are grouped according to age-appropriate tasks, Kotras (2003), Barnard (2004) and Knoesen (2005) recommended that prior to conducting factor analysis, a facet analysis (using a panel of experts) and literature control be conducted to uncover the subdomains of the particular GMDS-ER Subscale to gain insight into its content coverage and contruct-related validity before empirically verifying the identified constructs.

Hotlz-Ebeling maintains that facet analysis does not refer to a specific research method per se but rather to a methodology of logical thought when facets are regarded as clearly defined, mutually exclusive and collectively exhaustive aspects, properties or characteristics of a class or specific object (Taylor, 1992). Reise, Waller and Comrey (2000) define facets as item sets with similar content that tap into narrow-band constructs and are expected to display high item correlations. Facet analysis essentially provides a conceptual framework within which the domain of items can be constructed (Möller, 2001). Facets are selected in a manner that highlights important similarities and

differences among variables. Each facet includes two or more elements, and provides an independent classification of the research area (Solomon, 1986). Relating this to the Personal-Social Subscale, the researcher aimed to obtain a clear definition of personal-social development as measured on the Personal-Social Subscale of the GMDS-ER, by identifying the underlying constructs tapped and considering whether they do indeed relate to the domain of personal-social development.

Content validation provides evidence about the construct validity of an assessment instrument (Anastasi, 1988). Haynes, Richard and Kubany (1995) maintain that content validity is an important component of construct validity because it provided evidence about the degree to which the items of the assessment measure (i.e., the Personal-Social Subscale) are relevant to and representative of the targeted construct(s). Hence, content-related validity is actually a sub-category of construct-related validity and is often used to gain a greater understanding of the underlying constructs before any empirical validation of those constructs. Rubio, Berg-Weger, Tebb, Lee and Rauch (2003) add further support for this approach and advocate the use of experts (through facet analysis) to identify to which factor or construct each item corresponds to enable a preliminary assessment of the factorial structure, in this case of the Personal-Social Subscale. In addition evidence regarding construct under-representation or construct irrelevance on the Personal-Social Subscale will also be gained from this process. For the purpose of the current study, the facet analysis conducted was concerned with the identification of the underlying constructs of the Revised Personal-Social Subscale.

Thereafter, the underlying constructs were further explored and verified using factor analysis. All of this in turn contributed towards the construct-related validity evidence of the Personal-Social Subscale of the GMDS-ER.

In addition to exploring the construct-related validity of the Personal-Social Subscale, the current study also explored whether there was evidence that the internal structure of the Personal-Social Subscale is appropriate for relevant subgroups, in particular, for the three socio-economic (upper, middle and lower)

and gender (boys and girls) groups. According to the AERA (1999) and the National Council on Measurement in Education (NCME), “when credible research reports that test scores differ in meaning across test taker subgroups for the type of test in question, then to the extent feasible, the same forms of validity evidence…” and “…reliability coefficients and standard errors of measurement… collected for the examinee population as a whole should also be collected for each relevant subgroup” (AERA, 1999, p.80; p.34). Several studies on the original Griffiths Scales have shown difference in performance for SES (Allan, 1988; 1992; Luiz et al. 2000) and gender (Huntley, 1996; Tukulu 1996). Consequently, the researcher investigated the equivalence of the constructs of the Personal-Social Subscale for the gender and SES groups. This step was not conducted for the broader revision project and thus this represents a valuable contribution to improving the psychometric rigor of the GMDS-ER, given the importance placed on corroborating psychometric properties for different subgroups.

4.3 AIMS

The original Extended Griffiths Scales were constructed as six separate Subscales, each measuring a specific area of learning or process of development. The AERA (1999) maintain that in addition to a measure as a whole being validated, each subscale or subtest of the measure should be validated. Hence to ensure that the latest Standards of Educational and Psychological testing are met, this study attempted to fulfill the following aims.

The general aim of this research study was to contribute to the validity evidence of the GMDS-ER by exploring the construct-related validity of the items of the Revised Extended Personal-Social Subscale (Scale B), for boys and girls aged three to eight for all socio-economic status groups. The more specific aims derived from the general aim were:

Aim 1: To explore and describe the constructs tapped by the Revised Extended Personal-Social Subscale, for children aged three to eight years using a facet analysis.

Aim 2: To verify the constructs empirically, via factor analysis.

Aim 3: To investigate the equivalence of the constructs for gender and socio-economic status groups, for the Revised Extended Personal-Social Subscale.

4.4 RESEARCH METHOD

The methodological process was guided by the general and specific aims of the study as well as the current standards in test revision research (AERA, 1999). As this study aims to contribute towards the investigations into the psychometric properties of the Revised Personal-Social Subscale, an exploratory approach was deemed most suitable (Pennock-Roman & Seo, 1999). Hence this study used a non-experimental research method, which was exploratory-descriptive in nature and was based within a broad framework of triangulation research.

The exploratory-descriptive aspect of this study involved the systematic examination and organization of carefully observed information about the construct under study (Cozby, 1989; 1993; Dane 1990). The primary criteria for conducting this type of research are a flexible design, an inductive approach to reasoning and the use of literature surveys, interviews, focus groups, case studies and/or informants to enrich the data and promote the discovery of new ideas and insights (Barnard, 2004). An advantage of exploratory research is that it promotes the development of theory by increasing one's understanding of a particular field or construct. Pennock-Roman and Seo (1999) support the use of an exploratory approach when no previous research has comprehensively investigated the underlying constructs of a measure, as in this study. An exploratory approach is also recommended when the researcher cannot specify in advance the number of factors underlying a measure. In this study, the factors that provided the best statistical fit to the data were derived. Therefore, no specific hypotheses were generated. The methodological process was guided by the aims of the study, and the recommendations provided in the construct validity studies of the GMDS-ER conducted by Barnard (2004), Knoesen (2005) and

Kotras (2003). Furthermore, the researcher maintained a dynamic process allowing the results from each stage to inform the subsequent stages. In addition, the researcher used inductive reasoning to draw conclusions based on information obtained from literature surveys, and quantitative statistical analyses.

Hence, this type of research enabled the current researcher to explore the underlying constructs of the Revised Extended Personal-Social Subscale. However, this type of research prevented the researcher from making causal inferences (Babbie & Mouton, 2001). This however, did not pose a serious problem to the current study, as this study was concerned with investigating the validity of a measure and not with finding causal explanations for differences found on the Personal-Social Subscale.

The study was also descriptive in nature, and attempted to describe the underlying constructs of the Personal-Social Subscale of the newly revised Extended Griffiths Scales (Tabachnick & Fidell, 2001).

Both qualitative and quantitative approaches were used to collect and analyze the data. For the qualitative approach, a technique called facet analysis was used. As mentioned earlier in the chapter, facets can be defined as item sets with similar content that tap into narrow-band constructs and are expected to display high item correlations (Reise, Waller & Comrey, 2000). Data was gathered from experts working with children between the ages of 3 to 8 years old. These professionals comprising of occupational therapists, social workers, speech therapist, teachers and pediatricians assisted in determining and identifying the constructs being tapped by the items of the revised Extended Personal-Social Subscale. After the facet analysis, factor analysis was used to verify the constructs identified for the sample as a whole, as well as for gender and socio-economic status (SES) groups. The resultant information obtained on the constructs being tapped by the items was then further synthesized and integrated and was reflected against research findings and developmental theories to establish its trustworthiness. An advantage of using quantitative results and quantitative data together enables the researcher to present multiplicities of data in a coherent and functional way (Struwig & Stead, 2001).

4.5 PARTICIPANTS

According to McIntire and Miller (2000) sampling techniques and procedures are crucial factors in obtaining data to investigate the psychometric properties of a measure because the quality of the data directly depends upon the adequacy of the sample on which it is based.

The following is a description of the participants and sampling procedures used.

4.5.1 Participants for the Qualitative Aspects of the Study

Experts used for the qualitative aspects of the study were sampled by means of a non-probability, purposive sampling technique. This technique involved procedures that are directed towards obtaining a certain type of element (Dane, 1990) and relies on the researcher's judgment and the purpose of the study (Babbie & Mouton, 2001; Singleton, Straits & Straits, 1993). As only professionals working with young children were included for this stage of the project, a purposive technique was deemed most appropriate. Rubio, Berg-Weger, Tebb, Lee and Rauch (2003) maintain that it is important that the panel of experts consist of content experts who have worked or published in the field under enquiry. Therefore when selecting the participants for the expert panel, the researcher ensured that each member was suitably qualified in the area of working with children, had worked with children for a considerable period of time, had relevant experience in the field and had a general interest in the development and well-being of children (Osman, Kopper, & Barrios, 2004). Psychologists were however, not used as it was decided by the Griffiths team that their thorough knowledge of the Griffiths Scales could bias the results obtained.

A shortcoming of using a non-probability sampling method is that the researcher cannot generalize the findings. However, in the intended purpose of the current study was not to make generalizations to the broader population, but rather to investigate the underlying dimensions that the Personal-Social Subscale

was tapping and to validate the theory behind this Subscale. In addition, a literature control was used to ensure the trustworthiness of the findings.

The literature is diverse when it comes to the number of experts needed (Knoesen, 2005). Lynn (1986) recommends a minimum of three, whereas others suggest a range of two to twenty experts (Gable & Wolf, 1993; Walz, Strickland, & Lenz, 1991; Rubio et al., 2003). According to Grant and Davis (1997), the number of experts depends on the desired level of expertise and diversity of knowledge. For the purpose of the current study, the final number of experts included in the study was determined at the point of data saturation. Data saturation refers to the technique of gathering data until no new themes emerge and thus represent the point at which the topic has been exhausted (Willig, 2001). Therefore at the point at which the experts were providing the same information concerning the underlying constructs/themes of the items on the Personal-Social Subscale no additional experts were sampled.

A variety of professionals working with children were consulted. Professionals included pediatricians (n=4), speech therapists (n=3), social workers (n=2), physiotherapists (n=4) and teachers (n=5). Given the diverse range of professionals and the fact that no new themes were emerging, the researcher did not feel that additional experts would add any further insights into the underlying constructs of the Personal-Social Scale and therefore regarded this as the point of data saturation.

Table 7
Years of Experience of Panel of Experts

Expert	Speciality	Years of Experience	Male	Female
1	Pediatrician	32	X	
2	Pediatrician	30	X	
3	Pediatrician	14	X	
4	Pediatrician	8	X	
5	Speech therapist	15		X
6	Speech therapist	10		X
7	Speech therapist	5		X
8	Social worker	19		X
9	Social worker	22		X
10	Physiotherapist	20		X
11	Physiotherapist	12		X
12	Physiotherapist	10	X	
13	Physiotherapist	8		X
14	Teacher	27		X
15	Teacher	20		X
16	Teacher	18		X
17	Teacher	17		X
18	Teacher	12		X

As can be seen from the above table, the eighteen specialists had experience in the area of child development and assessment and had a collective work experience of 299 years. The pediatricians had a collective work experience of 84 years. The speech therapists had a collective work experience of 30 years, while the social workers had a collective work experience of 41 years, the physiotherapist had a collective work experience of 50 years, and the teachers had a collective work experience of 94 years.

4.5.2 Participants for the Quantitative Aspect of the Study

The sample for the quantitative aspect of this study was collected as part of the larger restandardization project. Therefore the sampling procedures followed for the broader project are outlined here. A number of tables relating to the restandardization sampling demographics have been cited from the Technical and Analysis Manuals of the GMDS-ER (Luiz et al, 2004; Luiz et al, 2006b).

A clear understanding of the target population is important to ensure that the sample selected is indeed representative and a cross section of the identified target group. The target population for the broader project under which the current study falls, was normal children (i.e., the absence of any sensory, physical impairment or learning difficulties) between the ages of 24 and 96 months of age living in the UK and Eire, and whose first language was English. A variety of sampling techniques are available to ensure a representative sample. The one most closely associated with normative studies is stratified random sampling, which was employed in the restandardization of the GMDS-ER. When using stratified random sampling, the likelihood of selecting an atypical, or biased, sample is minimized by ensuring a greater degree of representivity (Aiken, 2000) and reducing the probable sampling error (Babbie & Mouton, 2001; Kline, 1994). This is achieved by dividing the heterogeneous population (all children between the ages of 24 and 96 months in the UK and Eire) into a number of more homogeneous populations, and then combining the homogenous sample to form a representative sample.

Furthermore, when deciding on the size of the sample, the general philosophy is that larger samples enables researchers to draw more accurate conclusions and make more accurate predictions (De Vos, 1998). A minimum sample size of 500 is generally suggested when standardizing a measure to reduce the occurrence of standard errors (Luiz, Collier, Stewart, Barnard, & Kotras, 2000). In view of this, it was decided at the onset of the restandardisation that a sample of about 1000 participants was to be used. Children between the ages of 3 to 8 years from the United Kingdom and Eire, and whose first language was English were randomly selected from the Child Health System or equivalent system. The five geographical regions included in the study were Wales, Scotland, Northern Ireland, England, and Eire. The strata were proportionate to the population ratios obtained in 1997 for the UK and Eire by the Office for the National Statistics (ONS) and the Central Statistics Office (CSO) for children between the ages of 2 to 8 years of age (Luiz et al., 2004). From these percentages it was determined that 799, 79, 45, 32 and 45 children should be

selected to represent England, Scotland, Wales, and Northern Ireland, respectively. Table 8 presents the breakdown of the age ranges on the GMDS-ER that were used for the sampling.

Table 8

Age ranges used for sampling

Age in range (in years, months, days)			Age range (in months)	Griffith's age group (i.e. year of life)
2y:0m:0d	To	2y:11m:30d	24.0 to 35.9	Third year
3y:0m:0d	To	3y:11m:30d	36.0 to 47.9	Fourth year
4y:0m:0d	To	4y:11m:30d	48.0 to 59.9	Fifth year
5y:0m:0d	To	5y:11m:30d	60.0 to 71.9	Sixth year
6y:0m:0d	To	6y:11m:30d	72.0 to 83.9	Seventh year
7y:0m:0d	To	7y:11m:30d	84.0 to 95.9	Eight year

Note: Adapted from the GMDS-ER Analysis Manual (2006) p.9

The total number of children tested during the restandardization was 1045. Before commencing with any analysis of the data, the South African Griffiths Research Team (SAGRT) examined the data for outliers, as recommended by Tabachnick and Fidell (2001). An outlier is an unusual, atypical data point that is distinct from the rest of the data and can unduly impact on the results and may even lead to serious distortions of results (Pedhazur & Schmelkin, 1991). There is some debate concerning the appropriate treatment of outliers. However, given the relatively few numbers of outliers identified (i.e., 19) and the large sample size, these outliers were simply excluded from the database rather than using alternative mathematical approaches. As only normal children were included in the sample, the source of the outliers may have been due to atypical behaviour of the child or due to administration, scoring or clerical errors by the examiners (Knoesen, 2005).

This resulted in the final restandardization sample being 1026 children between the ages of 2 to 7 years (Year III to Year VIII) representing children from Wales (n=107), Scotland (n=61), Northern Ireland (n=102), Eire (n=103) and England (n=653) (Luiz, Barnard, Knoesen, & Kotras, 2004). Although the final restandardization sample was not exactly proportionate to the population ratios in the five regions. It still revealed similar trends with the majority of the sample representing the largest region in the UK, namely England (Luiz, Barnard, Knoesen, & Kotras, 2004).

In addition to sampling a relatively proportionate number of children from each region, an attempt was also made to achieve an evenly spread sample in terms of age, gender, urban/rural and socio-economic status (calculated from parental occupation and highest education) using a quota sampling technique. Although equal proportions of children were selected for each of these sampling variables, the final cell sizes were not exactly equal due to a combination of factors, including time to obtain Multi Research Ethics Committee (MREC) and the Local Ethics Committee's (LECs) approval, availability of examiners and availability of the children at the time of testing (Luiz, Barnard, Knoesen, & Kotras, 2004).

Below is a description of the age, gender and SES characteristics of the restandardization sample. This is important as Aim 3 explores the psychometric properties specific to these demographic breakdowns. In addition, the mean ages for each sample subgroup are also provided. Slightly older children within the same year group may perform differently to a child who has just entered that year group. Therefore it is important to look at the mean ages to verify the similarity across the sample subgroups (Knoesen, 2005).

Age

The mean chronological age for children in the sample ranged between 30.9 months (year III) to 89.7 months (year VIII). Table 9 presents the mean ages, standard deviations and ranges per year group.

Table 9

Mean Ages per Griffiths' age Group

Year of Life	Mean CA (in months)	Standard Deviation	Minimum (in months)	Maximum (in months)
Third Year	30.94	3.35	24.06	35.9
Fourth Year	42.92	3.59	36.03	47.8
Fifth Year	53.83	3.23	48.03	59.9
Sixth Year	66.35	3.34	60.00	71.9
Seventh Year	78.09	3.55	72.00	83.9
Eight Year	89.68	3.21	84.03	95.9

Note: Adapted from the GMDS-ER Analysis Manual (2006) p.10

Table 10 presents the distribution of the sample across the six year groups. The sample was relatively evenly spread across the six year-groups with slightly more children falling in year VII (i.e., 6 years of age) and comparatively fewer children in year III (i.e., 2 years of age) (Luiz, Barnard, Knoesen, & Kotras, 2004).

Table 10

Sample Breakdown In terms of Age Group

Year	Number of children (n)	Percentage
Third Year	141	14%
Fourth Year	176	17%
Fifth Year	178	17%
Sixth Year	169	17%
Seventh Year	196	19%
Eight Year	166	16%

Note: Adapted from information provided in the GMDS-ER Analysis Manual Luiz et al, (2006), p.11

Gender

The ratio of boys to girls was similar with slightly more girls (n=542; 53%) than boys (n=484; 47%). Table 11 provides a breakdown of the number of boys

and girls in each year group. The mean chronological age of the boys and girls was similar with boys having a mean age of 60.4 months, and girls a slightly higher mean age of 62.1 months.

Table 11

Sample Breakdown for Gender in terms of year groups

	Year III	Year IV	Year V	Year VI	Year VII	Year VIII	Total
Boys	73(52%)	82(47%)	83(47%)	86(51%)	91(46%)	69(42%)	484(47%)
Girls	68(48%)	94(53%)	95(53%)	83(49%)	105(54%)	97(58%)	542(53%)
Total	141	176	178	169	196	166	1026

Note: Adapted from information provided in the GMDS-ER Analysis Manual, Luiz et al (2006)

Socio-economic status (SES)

SES refers the "broader indices of a person's or family's social standing" (Foxcroft & Roodt, 2001, p.332) and can be classified as "the amount and quality of economic resources available to a person" (Flanagan, Genshof & Harrison, 1997). Research indicates that one of the most consistent findings in the intelligence literature is that children from the lower and working classes perform below their middle class age-mates on standardized intelligence tests. (Belsky & Cassidy, 1994; Zeanah, 2000). It has been found that these differences in IQ are not due to tests and testing procedure. Nor is there any conclusive evidence that indicated that they result from genetic differences. Perhaps the best explanation for group difference in IQ is the environmental hypothesis that maintains that many poor people and minority group members score lower on the IQ tests because they grow up in impoverished environments that are less conducive to intellectual development (Deutch & Brown, 1964; Shaffer, 1994; Tenenbaum, 1963). Family income and other indicators of social class such as parental education generally influence scores significantly (Klebanov, Brooks-Gunn, McCarton & McCormick, 1998). According to Flanagan et al. (1997), possible reasons for this discrepancy, and part of the consequences of economic

deprivation, may be that a person who receives his or her formative socialization under environmental circumstances of economic deprivation may not be exposed to the materials, intellectual customs and practices and occupational experiences that perhaps enhance performance in cognitive testing. Furthermore, research with disadvantaged children and children raised in impersonal or abusive surroundings indicate that these children usually suffer from a number of personal, social and emotional developmental problems because they fail to form attachments (Huffman, 2004). For this reason, it was essential that the sample represent children from all SES classes.

As the major indices of SES are education, occupation and income (Klebanov et al., 1998), the SES of the children in the restandardization sample was inferred from the parents'/carers' level of education and occupation. An adapted version of Riordan's classification system (1978) was used to determine the SES of the participants. Riordan (1978) assigns a numerical value to the breadwinner's highest level of education and occupation and summates these two indices. Numerical ranges are then provided which indicate whether the child falls within the upper, middle or lower SES for each population group (i.e., Black, Coloured, Indian and White). This classification system was originally designed for use within the old South African context where apartheid prevented equal and fair opportunities for all population groups. Therefore, Riordan's classification system had to reflect different ranges for the various population groups to account for this discrimination. However, as the restandardization sample was British and due to the fact that the majority of the children were from the White population group, and British and White South African children performed similarly on the Griffiths Scales, the ranges used for White South African were deemed most suitable to classify the SES of the restandardization sample. This South African originated classification system was scrutinized and verified as a suitable technique for the restandardisation and was approved by the Association for Research in Infant and Child development (ARICD). Appendix 4 outlines the criteria used by Riordan (1978) when classifying individuals into SES groups and only reflects the summated ranges used in the restandardisation.

The Parental Questionnaire (Appendix 2) was completed by parents and provided important information concerning the overall development of the child, as well as their level of education and socio-economic status (Luiz et al, 2000). The South African Griffiths Team (SAGRT) then classified each child's SES using the Riordan criteria. Almost half of the sample was from the middle SES group (44%, n = 457) with the remainder of the sample being equally distributed between the lower (24%, n= 245) and upper (32%, n = 324) SES groups (Luiz, Barnard, Knoesen & Kotras, 2004). Table 12 presents the number of children from each socio-economic status group per year group. The mean chronological ages of the three SES groups were very similar with lower, middle and higher SES children having mean ages of 61.8 months, 61.6 months and 60.5 months respectively.

Table 12

Sample Breakdown in terms of SES per region

	Year III	Year IV	Year V	Year VI	Year VII	Year VIII	Total
Lower	26(18%)	49(28%)	45(25%)	37(22%)	41(21%)	47(28%)	245(24%)
Middle	58(41%)	76(43%)	82(46%)	78(46%)	95(48%)	68(41%)	457(45%)
Upper	57(41%)	51(29%)	51(29%)	54(32%)	60(31%)	51(31%)	324(31%)
Total	141	176	178	169	196	166	1026

Adapted from information provided in GMDS-ER Analysis Manual, Luiz et al., (2006)

The overall sample size (N= 1026) is regarded as large enough to produce statistically significant results for validity estimates (Christenson, 1997). In addition, although an even distribution of the sample subgroups was not achieved, the cell sizes are still large enough to accurately explore the psychometric properties specific to this groups. Furthermore, as indicated above, the mean ages of the children in each gender and SES group were very similar thus eliminating the influence of age on the results.

4.6 MEASURES

Three measures were used to gather the data for the study, namely the Personal-Social Construct Evaluation Form, the GMDS-ER, and the Parental Questionnaire. Below is a description of these measures.

4.6.1 Personal-Social Construct Evaluation Form

The researcher developed a Construct Evaluation Form specifically for the current study in order to assist the facet analysis process (Appendix 3). This form consisted of a list of all the items of the Revised Personal-Social Scale. Professionals were asked to comment individually on the underlying constructs being measured on each item of the scale, the age this item is normally attained during a child's development, and the relevance of this item in assessing the Personal-Social development of a child.

4.6.2 The Revised Griffiths Scales of Mental Development (GMDS-ER)

The Griffiths Extended Scales of Mental Development (Griffiths, 1970) was used to assess the developmental level of the children in the sample for the quantitative study. The Griffiths Scales and their revision were discussed in detail in Chapter 2 of this study. Of the six subscales, only (i.e., the Personal-Social Subscale) was the focus in this study.

This subscale is generally administered after the child has developed a rapport with the examiner. A number of items can be scored on the basis of parental/guardian report but where possible the examiner is advised to confirm that the child is able to do the task during the assessment process.

4.6.3 The Parental Questionnaire

Each child's parent or legal guardian was required to fill in a detailed biographical questionnaire, called the Parental Questionnaire (Appendix 2). This questionnaire assisted in providing valuable information to the research team regarding each child's overall development, birth history, socio-economic background, sensory, physical and mental health. This questionnaire was also

included to aid in the screening of children to ensure that only children who are considered to have a normal birth and developmental history were included in the sample. The design of this questionnaire was based on the neurological questionnaire and checklist designed by Foxcroft (1985) for use with other measures of perceptual and mental development. This questionnaire and checklist was based on the criteria proposed by Petersen and Eeg-Oelfson (1971) for determining whether a child's central nervous system can be classified as normal. This approach of determining the normality of children has been used in other studies utilizing the Griffiths Scales (Allan, 1988; 1992; Barnard, 2004; Bhamjee, 1991; Kotras, 2003) and thus appears to be a popular and well-used method of screening normality (Knoesen, 2005).

In addition to determining the normality of the child, the questionnaire was also used to select equal proportions of children in each gender and SES group. As a number of studies on both the original and revised Griffiths Scales have found differences in the performance of children as result of their SES and contradictory findings regarding differences between the gender groups (Allan, 1988; 1992; Bhamjee, 1991; Hanson & Aldridge Smith, 1987; Luiz et al., 2000), it was important that these variables be included in the questionnaire to enable further investigation into these demographic characteristics (Aim 3). This questionnaire also helped to gather information on the child's personal-social development as many of the items on Scale B require information from the parent, and deal with different aspects of home life. A parental information letter and consent from (Appendix 1) also accompanied this questionnaire.

4.7 PROCEDURE

The current study emanating from the broader restandardisation project. A brief overview of the data collection procedure followed during the restandardisation process will be provided. This is necessary as the quantitative results of the current study are based on the restandardisation sample and thus knowledge of the processes followed to collate this sample is important to ensure

the integrity of the results. The procedural aspects specific to this study will follow thereafter.

4.7.1 Procedures for the Quantitative Aspects of this Study

Approval from the Multi-Research Ethics Committee (MREC) and the five regions Local Ethics Committee (LEC) was required prior to the commencement of the restandardisation and the testing of the children. A principal coordinator, four regional coordinators and the South African team of researches (SAGRT) were appointed to coordinate the testing of the restandardisation sample. The regional coordinators collated a team of local examiners and trained them on the standardised administration instructions and scoring criteria of the Revised Griffith's Scales. Potential children to be tested were then randomly selected from the Child's Health or equivalent system and parent(s)/guardian(s). Only children whose parent(s)/guardians had given their consent, and whose development was normal (biographical questionnaires screened by the SAGRT), were tested by the trained Griffith's users. Participants were allowed to withdraw at any stage during the broader project.

The Griffiths Scales were administrated according to the standardised administration instructions stipulated by Ruth Griffiths (1970). Thus examiners started administering the Scales four months below the child's chronological age. A basal of six consecutive passed items was required before the examiner could continue with the other test items. If the child failed any of the first six items administrated, the examiner needed to administer earlier items until the basal of six passes was achieved. Once the child had reached his ceiling (i.e., six consecutive failed items), the examiner stopped testing. Therefore not all items were administered to every child as it was regarded unethical to expose a child to age-inappropriate tasks (discussed in the next section on Ethical considerations). A report summarizing the child's overall performance on the Scales was provided to the parent(s)/guardian(s). Record sheets were anonymised and coded to ensure confidentiality as stipulated by the AERA (1999). These were then sent to the SAGRT for further analysis. Upon gathering all the restandardision data, the

SAGRT inputted the data into the database, and then cleaned (i.e., removed the outliers) and smoothed the data.

The researcher extracted the information pertaining to Subscale B from the larger database for the purpose of the current study.

4.7.2 Procedures for the Qualitative Aspect of this Study

To obtain data for the facet analysis, professionals working with children were identified and contacted to inform them of the purpose of the study and to request their assistance in identifying the constructs being measured on the Personal-Social Subscale using the Personal-Social Construct Evaluation Form. The researcher interviewed the professionals individually. A construct model was then developed based on the input of the professionals and a literature review.

4.8 ETHICAL CONSIDERATIONS

The following ethical procedures were followed to ensure that the qualitative and quantitative aspects of the current study adhered to the necessary ethical considerations that are stipulated by the AERA (1999).

4.8.1 For the Qualitative Sample

1. Participation in completing the construct questionnaires was voluntary. Participating professionals were ensured of strict confidentiality.
2. A literature control was conducted to ensure the trustworthiness of the data obtained.

4.8.2 For the Quantitative Sample

1. Permission was obtained from the Multi Research Ethics Committee (MREC), the Local Ethics Committees (LECs), and the Nelson Mandela Metropole University's Committee (previously known as the University of Port Elizabeth) for the commencement of the restandardisation process.
2. Parents were informed about the restandardisation project and were required to provide their written consent prior to their child being tested.

Only children for whom parental consent was obtained were included in the restandardisation project. Parents were allowed to withdraw their children at any point during the restandardisation for whatever reason.

3. Only normal children (i.e., absence of any sensory or mental impairment) were included in the restandardisation sample thus not exposing children with already identified difficulties to tasks that they would not be able to perform.
4. All items were not administered to every child as it was considered unethical to administer more advance items to a younger child, and easier items to older children. Testers began administering the Scales approximately four months before the child's chronological age.
5. All biographical questionnaires and record sheets were coded by the regional coordinators before being sent to the South African Griffiths Research Team (SAGRT) to ensure the anonymity of the children and the confidentiality of the results.
6. Only qualified Griffiths users trained in the administration and scoring of the Revised Griffiths Scales were allowed to test the restandardization sample. Standardized training workshops were held in this regard to ensure that all examiners were skilled in the administration and scoring of the revised Scales.

4.9 DATA ANALYSIS

The researcher used a variety of data and statistical analysis techniques. These will now be elaborated on with respect to each of the aims. The remainder of the data analysis section will be discussed according to the aims of the current study.

4.9.1 Aim 1

Facet analysis, which entails a content analysis of each item of the Personal-Social Subscale, was undertaken to identify underlying constructs tapped by items (Aim 1). This approach was used on the recommendation of

Kotras (2003) and Barnard (2004). Kotras (2003) and Barnard (2004) explored the construct validity of the Language and Practical Reasoning Subscales of the GMDS-ER respectively. They recommended that prior to conducting a factor analysis, a facet analysis (using panels of experts) and literature control be conducted to uncover the sub-domains of the GMDS-ER thus gaining insight into the construct validity of the Scales before empirically verifying the identified constructs.

Clarke and Watson (1995) content that when referring to construct validity, it is important to ensure that the content domain of a scale or subscale is represented accurately and comprehensively. They reported that in order to achieve this, it is necessary to clearly define the content domain, and to ensure that the constructs relate to the domain of the subscale. By using facet analysis the researcher hence aimed to obtain a clear definition of the Personal-Social Subscale of the GMDS-ER, by identifying its underlying constructs and ensuring that they do indeed relate to the domain of personal-social development.

Facet analysis is a formal approach to theory construction, which breaks down a field of study into its basic components. It requires generating criteria for classifying significant aspects of a topic that will lead to the definition of the universe of observations for a research study. These criteria, lead to the definition of the universe of observations for a research study. These criteria, or dimensions of differentiation, are expressed as facets. Facets can be defined as item sets with similar content that tap into a narrow-band constructs and are expected to display high item correlations (Reise, Waller, & Comrey 2000). Facets are selected in a manner that highlights important similarities and differences among variables. Each facet includes two or more elements, and provides an independent classification of the research area (Solomon, 1986).

Rubio et al. (2003) maintain that using experts to identify to which factor or construct each item corresponds enables a preliminary assessment of the factorial structure of a measure or Subscale. The facet analysis conducted in the current study, aimed to identify the underlying construct(s) measured by each item on the Personal-Social Scale. The information obtained from the

professionals working with children provided evidence for the construct validity of the Personal-Social Subscale. Information was collated from the experts by approaching them personally and asking them to identify the constructs tapped on the Personal-Social Scale. The Construct Evaluation Form was used for this process. After the information was collated from all the experts, the researcher reviewed the constructs identified for each item and integrated the results by extracting the constructs most consistently identified for each item.

The findings of the facet analysis were further supplemented by a literature control, which is a process of finding, reading and critically analyzing published research and theory on a given topic (Roberts & Burke, 1989) to ensure the trustworthiness of the findings. According to Rubio et al. (2003) the feedback of experts is subjective and therefore more than one source of evidence into construct validity is important to ensure its objectivity. A literature control aims to contribute towards a clearer understanding of the nature and meaning of the research problem (De Vos, 1998). During this phase of the research, the researcher consulted relevant literature in the area of personal-social development, other tests of personal-social development and the results of previous analytic studies on the original Scales (Luiz, Foxcroft, & Stewart, 2001; Povey, 2002; Stewart 1997; 2005) and compared these findings to the constructs identified during the facet analysis. Another advantage of conducting the literature control was that it enabled the researcher to identify aspects of the construct domain not represented on the Personal-Social Subscale thus assisting in identifying aspects of construct under-representation and construct irrelevance on this Subscale.

From the results obtained during the facet analysis and the literature control, and through a process of synthesis, analysis and integration, the underlying constructs of the Personal-Social Subscale were identified and assigned a label or name that most characterized that specific content domain. The individual constructs were presented to the research team and coordinators from the broader project for their clinical evaluation to further ensure the

trustworthiness of the construct. The constructs were thereafter refined and were ready to be validated (Aim 2).

4.9.2 Aim 2

The second aim of the study was to verify the constructs empirically via exploratory factor analysis. Specifically, common factor analysis with oblique (DQUART) rotation was used to verify the internal factorial validity (i.e., construct validity) of the Personal-Social Subscale of the GMDS-ER by testing a one-factor solution for each construct identified during the facet analysis and literature control. The BMDP Statistical Programme was used (Dixon, 1990).

Factor analysis can be described as a technique used to analyze patterns of correlations among different measures (Hair et al., 1998; Murphy & Davidshofer, 1998). It is a multivariate approach as the major purpose of factor analysis is to reduce the number of variables in a group of variables (or in this case, items) by taking into account the correlations among them (Aiken, 2000; Kerlinger, 1986). Essentially, this method converts a matrix of the correlations of each of the variables to a smaller number of factors or hypothetical sources of the variance in the original measurements (Jensen, 1980). Reducing the number of variables assists in the location and identification of fundamental properties underlying tests and measures (Kerlinger, 1986). Hence it is one of the most commonly used procedures in the development and evaluation of psychological instruments (Floyd & Widaman, 1995; Thompson & Daniel, 1996), and in particular their validity (Ferketich & Muller, 1990; Kaufman & Kaufman, 1983; McIntire & Miller, 2000) as it provides an analytic method of determining the number of factors and the statistical characteristics of those factors (Murphy & Davidshofer, 1998). Nunnally (1978) maintains that factor analysis and construct-related validity have long been associated with each other and that construct validity is even often spoken of as factorial validity.

Factor analysis produces several linear combinations of observed variables, each representing a factor that is largely independent of other factors, which in turn summarize the pattern of the observed correlations (Tabachnick & Fidell,

1989; 2001) thus achieving considerable parsimony. Hence it reduces the multiplicity of variables to greater simplicity indicating which items (e.g., of the Personal-Social Subscale) belong together, or measure the same thing (Knoesen, 2005).

It is important to consider the different types of factor analysis in order to choose the most suitable technique in terms of research goals, the nature of the constructs assessed and the type of measuring instrument examined (Knoesen, 2005). According to Reise et al. (2000) the proliferation and abuse of factor analysis in recent times has resulted in some factor analytic studies being neither informative nor trustworthy due to sample idiosyncrasies and the over reliance on the default options found in many statistical packages. According to Floyd and Widaman (1995), the choice of a particular factor analytic technique requires justification. Furthermore, Clarke and Watson (1995) reported that although factor analysis requires the researcher to make a number of tactical decisions, these decisions typically have less effect on the resulting factor structures than is commonly believed. They stated “in fact, factor structures have been shown to be highly robust across different methods of factor extraction and rotation” (p.317).

There are many methods of factor analysis. The most important distinction is between exploratory factor analysis, in which the factors that provide the best statistical fit to the data are derived, and confirmatory factor analysis, in which the factors are defined in terms of a specific hypothesis that is being tested by the researcher (Murphy & Davidshofer, 1998).

Exploratory factor analysis is used when the researcher does not have any prior hypothesis about the number of factors underlying the data and is therefore simply exploring the underlying structure on which it is based (Laurent, Swerdlik, & Ryburn, 1992). According to Tabachnick and Fidell (1989; 2001) exploratory analysis seeks to describe and summarize data by grouping together variables that are correlated. The variables may or may not have been chosen with potential underlying processes in mind. In an ideal situation, the resultant factor structure is consistent with the theory on which it was based. If a factor structure emerges that is inconsistent with that suggested by the theory, the validity of the

test is questioned (Laurent, Swerdlik, & Ryburn, 1992). Exploratory factor analysis is therefore often referred to as a theory-generating procedure (Stevens, 1996) and answers the question asked by construct validity which is whether the test measures what it is supposed to be measuring (Nunnally, 1978).

In contrast, confirmatory factor analysis is viewed as a theory-testing procedure and is based on the principle of confirming a prior hypothesis. The hypothesis is based on strong theoretical and or empirical grounds and specifies which variables will be correlated with which factors, and which factors are correlated (Stevens, 1996). Confirmatory procedures can be used to refine instruments and their existing factorial structure (Floyd & Widamen, 1995). Hence in essence exploratory factor analysis focuses on retaining factors that account for significant amount of variance in the data, and confirmatory factor analysis seeks to optimally match the observed and theoretical factor structures for a given data set to assess the goodness of fit of the predetermined factor model based on the variance remaining after the factors are taken into account (Floyd & Widamen, 1995).

Many criticisms have been leveled against both exploratory and confirmatory factor analysis and there is continued debate concerning which method is the best to use in specific instances (Hair et al., 1998). Historically, the majority of earlier factor analytic studies were exploratory in nature and many researchers still consider this to be the primary function of factor analysis (Gorsuch, 1983; Hair et al., 1998; Kim & Mueller, 1978). Mulaik (1987) however, questioned the perception that exploratory factor analysis may find optimal knowledge, as there is no rationally optimal way to extract knowledge from experience without making certain prior assumptions. Furthermore Stapleton (1997) maintains that exploratory factor analysis yields factor structures determined by the mechanics of the method and are dependent on specific theories and methods of extraction and rotation process. Thus exploratory techniques do not provide any way of indicating when something is wrong with the assumptions. Rather it suggests hypotheses but provides no way of justifying them. Nunnally (1978) also states that it is often complicated to interpret factors

measured by a few variables. Mulaik (1972) suggests that the difficulty in interpretation occurs because the researcher lacks prior knowledge and therefore has no basis on which to make an interpretation. However, despite its limitations, there is no doubt that exploratory factor analysis serves a useful purpose in suggesting hypotheses for further research. Gorsuch (1983) states that confirmatory factor analysis is more powerful and theoretically correct, as it provides explicit hypothesis testing for factor analytic problems and should be more widely used of the two major factor analytic approaches. However, most computer programmes are not designed to conduct confirmatory factor analysis on dichotomous variables (such as the type used on the GMDS-ER) and therefore yield inappropriate results (Reise et al., 2000). Only the more recent computer programmes (e.g., Mplus) accommodate dichotomous and polytomous variables in confirmatory factor analytic procedures (Muthen & Muthen, 1998). According to Tabachnick and Fidell (2001) exploratory factor analysis is usually performed in the early stages of research to provide a tool for consolidating variables and for generating hypotheses about underlying processes. Confirmatory factor analysis on the hand is used in the advanced stages of the research process to test a theory about the latent processes. Furthermore, in cases where the number of factors cannot be specified beforehand, but rather must be based on the resulting statistical outcomes, an exploratory approach is recommended to establish the construct validity of the scores.

Taking the above information into consideration, for the purposes of the current study, exploratory factor analysis was regarded as the most appropriate factor analytic technique as an exploration into the underlying structure of the individual Subscales on some of the GMDS-ER, including the Personal-Social Subscale has as yet not been conducted. Furthermore, the researcher had no expectations about any latent variables that underlie the Personal-Social Scale. The researcher attempted to discover whether the items identified during the facet analysis measure a specific construct and whether they loaded on one or more factors. Furthermore, due to the small number of items per year group (i.e., six items per year group) and the fact that every item was not administered to

every child in the restandardisation sample, confirmatory factor analysis using structural equation modeling was not regarded as a suitable factor analytic technique. Although specifying one-factor solutions is not the norm in exploratory factor analysis, given the developmental nature of the GMDS-ER and the recommendations of Kotras (2003) and Barnard's (2004) construct validity studies on the Language and Practical Reasoning Subscales of the GMDS-ER this was regarded as the most meaningful and accurate way to explore and verify the underlying constructs of the Personal-Social Subscale.

Exploratory factor analysis generally has two predominant uses in the analysis of measures to assess psychological constructs, namely data summarization or explanation and data reduction. Data summarization falls within the neo-classical model of factor analysis and explores a domain of functioning to identify separable dimensions, representing theoretical constructs within the domain. The analysis aims to discover the latent variables that underlie the scale (Floyd & Widaman, 1995). The goal of data summarization is achieved through the use of common factor analysis, which recognizes both a random and systematic component in measurement error. Common factor analysis uses the correlation matrix with estimated communalities (i.e., percentage of variance a variable shares with the common factors) to identify the latent variables, or factors, that explain the covariances among the observed variables (Reise et al., 2000). Data reduction, on the other hand, is achieved through the use of principal component analysis, a component of the classical model of factor analysis, and contends that all measurement error is random. Principal component analysis, also known as component factor analysis, reduces a large number of related variables to a smaller number of dimensions that have a maximal variability and reliability (Floyd & Widaman, 1995). The components are estimated to represent the variances of the observed variables without exploring the latent variables underlying the observed variables. Therefore principal component analysis should be used primarily for data reduction, whereas common factor analysis should be used to understand the relations among a set of measured variables in terms of underling latent constructs (Knoesen, 2005).

The essential difference between common factor and principal component analysis lies in the variance that is analyzed. For the purpose of factor analysis, total variance is comprised of common, specific and error variance. Common variance, or variance associated with the latent variables is defined as, “ That variance in a variable that is shared with all other variables in the analysis (Hair et al., 1995, p.375). Specific or unique variance on the other hand, “ Is a combination of reliable variance that is specific to the given measured variable and random error variance in a variable” (Floyd & Widamen, 1995, p.287). Error variance is the variance associated with unreliability in the data collection, measurement error or a random component in the measured phenomenon. Common factor analysis is concerned with the communalities, which is the common variance that variables share with the latent variables underlying the data set of observed measures. It attempts to estimate and eliminate variance due to error and variance that is unique to each variable (Tabachnick & Fidell, 2001). Principal component analysis on the other hand considers the total variance and derives factors that contain small proportions of unique variance and, in some instances, error variance (Hair et al., 1995). Here factors are seen as the effects rather than causes of the variables correlations (Reise et al., 2000). As the purpose of the current study is to understand the relations among a set of measured variables (i.e., the items on the Personal-Social Subscale) in terms of their common underlying latent variables (i.e., data summarization) and because the researcher has little knowledge of the amount of their specific and error variance (and thus wants to eliminate this variance), common factor analysis was regarded as the most suitable method of exploratory factor analysis to meet the purposes of Aim 2 of this study.

Subsequent to extracting the underlying factors using common factor analysis, orthogonal or oblique rotation was used to improve the interpretability and scientific utility of the factor solution by creating a simpler more theoretically meaningful structure. Orthogonal rotation assumes that the factors are independent of each other and are therefore uncorrelated, whereas oblique rotation accounts for correlations between variables (Tabanick & Fidell, 2001).

The oblique rotation was selected for the current study because it is assumed that the theoretically important underlying dimensions are not uncorrelated with each other. Correlations between the items on the Personal-Social Subscale are expected as they all essentially assess a child's personal-social development. Furthermore, previous research on the Scales has shown that the variables (items) are likely to be correlated (Griffiths, 1970). Reise et al. (2000) maintain that it is unreasonable to assume that any set of psychological variables are truly uncorrelated. Hence oblique rotations represent a more realistic modeling of psychological phenomenon (Loo, 1979). Research supports the superiority of oblique rotations in terms of their factor replicability and their ability to meet the simple structure criteria (Dielman, Cattell, & Wagner, 1972; Gorsuch, 1970). The Direct Quartimin (DQUART) method of oblique rotation recommended by Jenrich and Sampson (1966) was used to rotate the factor matrix in the current study.

Prior to using factor analysis the researcher had to ensure that certain basic statistical and conceptual assumptions underlying this mode of analysis were met. From a statistical standpoint, Floyd and Widaman (1995) maintain that the most basic requirement for optimal use of factor analysis is the high quality data. With this in mind, the data used was scrutinized for outliers, following the guidelines of Tabanick and Fidell (2001). An outlier refers to an unusual, atypical data point that is distinctly different from the rest of the data and can unduly impact on the results leading to a distortion in interpretation as they have such extreme values (Pedhazur & Schmelkin, 1991; Tabanick & Fidell, 2001). The existence of outliers lead to Type I and Type II errors, a pervasive problem in social sciences, and it was therefore important that they were eliminated from the data before verifying the factors in the model. As only children with normal development were included in the restandardisatrion sample, the researcher did not anticipate that there would be many observations distinctly different from the rest. The distribution of the Sub-Quotients obtained on the Personal-Social Subscale were examined for outliers and only few cases were identified as deviating from the norm and removed from the database.

Furthermore Floyd and Widaman (1995) recommend that data for factor analysis be distributed in a multivariate normal fashion. Although this is a rather stringent criterion in many cases, they maintain that factor analysis is more likely to yield clearer, more easily replicated factor patterns if the data conform to multivariate normality. However, although this is the ideal, factor analysis appears to be relatively robust against violations of normality (Floyd & Widamen, 1995). Only where other violations of assumptions also occur (e.g., small sample size, non-independence of variates and error) do non-normal distributions become more problematic (Floyd & Widamen, 1995). An investigation into the distribution of scores on the Personal-Social Subscale reveals that the data conformed to multivariate normality. This was done by comparing the actual percentages of children scoring one, two and three standard deviations above and below the mean with the theoretical proportions expected under the normal distribution curve.

Another important consideration before conducting factor analysis is the sample size. There is much debate concerning the minimum sample size required to obtain a robust factor solution (Floyd & Widamen, 1995; Goldberg & Digman, 1994; Guadagnoli & Velicer, 1998; Hair et al., 1998; Tabanick & Fidell, 2001; Velicer & Fava, 1987; 1998). Some suggest that no fewer than 100 individuals should be included in a factor analytic study provided there are 5-10 participants per variable (Gorsuch, 1983; Hair et al., 1998; Kline 1994; Streiner, 1994), whereas others recommended that between 500 to 1000 respondents are required (Goldberg & Digman, 1994). Floyd and Widamen (1995) maintain that the more participants, the better. They advocate the 4:1 or 5:1 subjects-to-variables ratio when determining the appropriate sample size. Relating this to the current study, as there are 38 items on the Personal-Social Subscale, a sample size of 190 children would be required to meet the 5:1 subjects-to-variables ratio. The current size of 1026 children more than met the stipulated minimum sample size required and was therefore large enough to produce meaningful, robust factor solutions.

In addition to the above, it is important to ensure that the data matrix has sufficient correlations to justify the application of factor analysis (Floyd & Widaman, 1995; Tabachnick & Fidell, 2001). It is important to determine whether items underlying a particular construct on the Personal-Social Subscale correlate with each other. According to Hair et al. (1998) visual inspection must reveal a substantial number of correlations greater than 0.30 for factor analysis to be appropriate. For the present study, the researcher employed Guilford's criteria (1965, p.219) to interpret the size (magnitude) of the correlations. These criteria are as follows:

<0.20	Slightly; almost negligible relationship
0.20 – 0.40	Low correlation; definite but small relationship
0.40 – 0.70	Moderate correlation; substantial relationship
0.70 – 0.90	High correlation, marked relationship
0.90 – 1.00	Very high correlation; very dependable relationship

In addition to looking at the size of the correlation, the researcher also considered the significance of the observed correlations at the 0.05 significance level. In order for the correlation matrix to be factorable, the majority of the correlations had to be significant (Tabachnick & Fidell, 2001). A critical value (i.e., correlation coefficient) of 0.09 and 0.12 was required for significance at the 0.05 and 0.01 levels respectively (Harris, 1998). As the current study was exploratory in nature, more stringent tests of significance were not deemed necessary.

Once the statistical and conceptual assumptions of factor analysis were met and it was determined that the data was factorable, the researcher was ready to apply exploratory common factor analysis with oblique rotation, to verify the underlying constructs of the Personal- Social Subscale identified during the facet analysis. As previously discussed, the researcher aimed to explore a fit for a 1-factor solution per construct in the model to verify whether the items identified as measuring that one construct loaded together as such.

According to Hair et al. (1998), factors analysis seldom uses a single criterion to determine the best factor structure. Furthermore, the choice of the final factor structure was guided by the principles of parsimony and interpretability of the factors/constructs (Osman et al., 2004). Therefore, bearing this in mind, the researcher followed an integrated rational approach when deciding on the best overall fit of the items on the Personal-Social Subscale and was guided by a number of quantitative an qualitative indicators that are commonly used and that, in practice, seem to yield the best result. These are discussed below.

The most commonly used method in deciding on the number of factors to be extracted is the *Latent root criterion* (Hair, 1995) or *The Kaiser-Guttman criterion* (Floyd & Widaman, 1995). The latent root/Kaiser-Guttman criterion maintains that only those factors with eigenvalues greater than 1 should be regarded as significant and retained in the factor structure. Each factor has an eigenvalue, which is the amount of variance accounted for by that factor. The sum of all eigenvalues equals the number of variables in factor analysis. The rationale for the latent root criterion is “That any individual factor should account for the variance of at least a single variable if it is to be retained for interpretation” (Hair et al., 1998, p.103). Therefore, an eigenvalue less than 1 indicates that a factor accounts for less variance than a single variable (Floyd & Widaman, 1995).

Although the Kaiser-Guttman criterion can sometimes retain too many factors, and has been criticized for this (Reise et al., 2000) it is usually a good indicator under normal conditions when there are relatively few factors and many cases, as in the case of the GMDS-ER (Knoesen, 2005). For the current study, only factors with eigenvalues greater than 1 were retained in the final factor structure. Although one-factor solutions were specified and then verified, in cases where the eigenvalues indicated more than one underlying construct within the general factor, further refinements were made until the final construct model adhered to the Kaiser-Guttman criterion.

The *scree test* is also frequently used to determine how many factors to retain (Cattell, 1996). The scree test is derived by plotting the latent roots against

the number of factors in their order of extraction and the shape of the resulting curve is then used to evaluate the cutoff point, which is the point at which the curve plateaus. This is the point at which the eigenvalues form descending linear trends (Bentler & Yuan, 1998; Reise et al., 2000). This point indicates the number of factors that should be retained. As this approach requires the subjective interpretation of the curve, it usually results in more factors being considered (Cattell, 1996).

The *percentage of variance criterion* was also applied. The decisive factor here is the cumulative percentages of the variance extracted. The purpose is "to ensure practical significance for the derived factors" (Hair, 1995, p.378). There are contradictory estimates of what this percentage should be. In the social sciences, factor solutions that account for 60% of the variance are regarded as satisfactory compared to the more stringent 95% threshold set in the natural science (Hair et al., 1998). Streiner (1994), on the hand, suggests a more lenient cut-point of 50% variance explained by the individual factors, while the total set of factors should account for 80% of the estimated common variance. For the current study, the researcher followed the recommendation of Hair et al., (1998) for the social sciences and ensured that each factor accounted for at least 60% of the variance.

An estimate of the internal consistency, or communality, of the solution is provided by the squared multiple correlation (SMC) of the factor scores predicted from scores on observed variables (Tabachnick & Fidell, 1989). The SMC's provides information on multicollinearity by indicating the degree to which the individual items are related to each other. Well-defined factors are linked to items with higher SMC's whereas unstable, ill-defined factors are linked to items with lower SMC's. SMC's less than 0.25 are regarded as too low and suggest that the variables share low consistency or communality with the other variables.

In conjunction with the SMC's, communalities are also considered when determining the best possible factor solution. The communality of a variable is an estimation of the shared or common variance among all the variables and is the squared multiple correlation of a variable (Hair, 1995). According to Hair et al.

(1998) if the communalities are too low, the researcher can either retain the "problematic" items/s and interpret the solution, or remove it from them from the solution. In cases where the present researcher could justify the psychological meaningfulness of a low communality item within a construct (through the results of the facet analysis and personal knowledge and experience), and provided there were adequate factor loadings, the item was retained.

The reliability of a factor solution and more specifically its internal consistency is also important. The rationale for internal consistency is that the individual items of particular underlying construct should be measuring that same construct and thus be highly correlated. The most widely used measure of internal consistency is Cronbach's Alpha. There is much debate concerning the acceptable reliability value. The generally agreed upon lower limit for Cronbach's Alpha is 0.70 (Hair et al., 1998), although some researchers advocate a more stringent criteria ranging between 0.80 and 0.95 as acceptable (Tucker & Lewis, 1973; Wolfaardt, 2001). In exploratory research, Cronbach's Alpha' values of 0.60 are regarded as satisfactory. For the current study, the researcher aimed to obtain the highest Cronbach's Alphas possible for one-factor solution ensuring that no values went below the 0.60 lower limit prescribed for exploratory research.

The number of items that load on an individual construct also needs to be considered. The general rule of thumb is that at least three variables must load onto any one factor (Comrey, 1988; Guadagnoli & Velicer, 1988). Where two items correlate highly with each other and are relatively uncorrelated with other variables, a two-item factor solution might be reliable. However, Tabachnick and Fidell (2001) caution against the interpretation of factors defined by two variables under even the most exploratory conditions. For the purpose of the current study, the researcher followed the recommendation by Floyd and Widaman (1995) who asserted that the more items per factor the better as "increasing the number of indicators per factor improves factor stability" (p.292).

The factor loadings which reflect the correlations between the original variables and the factor are also used in interpreting factor solutions (Hair et al.,

1998; Tabachnick & Fidell, 2001). The general rule of thumb is that factor loadings greater than 0.30 or 0.40 are considered to meet the minimum level (Floyd & Widaman, 1995; Hair et al., 1998; Tabachnick & Fidell, 2001). However, the greater the loading, the more the variable is a pure measure of the factor. Comrey (1973) suggested that loadings greater than 0.71 (50% overlapping variance) are considered excellent, 0.63(40% overlapping variance) very good, 0.55(30% overlapping variance) good, 0.45 (20% overlapping variance) fair, and 0.32 (10% overlapping variance) poor. According to Hair et al. (1998), loadings in excess of 0.50 are considered to be practically significant. Given that the extremely high loadings (0.80 and above) are not typical, practical significance of a factor loading is an important criterion. In addition to considering the practical significance of the factor loadings, statistical significance was also assessed. In interpreting the statistical significance of factor loadings, the sample size needs to be taken into account. According to Hair et al., (1995) for determining statistically significant factor loading at the 0.05 level, the larger the sample size, the smaller the factor loading needs to be, to be considered significant. Given the large size in the current study (N=1026), a minimum factor loading of 0.30 was regarded as statistically significant. However, in addition to considering the statistical significance of factor loadings, the researcher also evaluated the practical significance (as discussed above) when interpreting the factor loadings. Following the guidelines of Floyd and Widaman (1995), all factor loadings (including those less than 0.30) were reported to ensure sufficient information for a full evaluation of the results.

Determining the best factor structure is not based on a single criterion (Hair et al., 1995), nor is it solely based on quantitative evidence, hence as the internal factorial validity of a developmental measure was being investigated, the researcher also considered the psychological value that each item added to that construct to warrant its inclusion on that construct. Consequently where the quantitative evidence, such as a low factor loading, was questionable but the psychological value of the item justified its inclusion on a specific construct, the

item was retained on that construct. Such decisions were guided by the expert panel discussions and the thorough literature control.

The researcher has reported on all of the above indicators of the factor structure in detail in Chapter 6. This was done to comply with the suggestion of Floyd and Widaman (1995) that factor analytic studies must be reported in sufficient detail to enable a full interpretation of the results by interested readers.

4.9.3 Aim 3

The third Aim of the study was to investigate construct equivalence of the derived constructs, for gender and socio-economic status, for the Revised Extended Personal-Social Subscale. Construct equivalence, which is also known as measurement invariance, is often viewed as an extension of factor analysis and asks the critical question of "Whether the instrument measures the same construct across samples". According to test evaluation guidelines, once a construct model is tested for a sample as a whole, it is necessary to validate the construct equivalence across subgroups (AERA, 1999). Relevant sample subgroups may be defined by race or ethnicity, culture, language gender, disability, age, socioeconomic status, or any other classification that might affect responses on the measure (AERA, 1999; Floyd & Widaman, 1995). According to the European Federation of Professional Psychological Association's (EFPA) Review Model for the Description and Evaluation of Psychological Tests (Bartam, 2001) and the Standards for Educational and Psychological Testing published jointly by the AERA, the American Psychological Association (APA) and the National Council on Measurement in Education (NCME), evidence must be provided to validate the comparability of constructs across various sample subgroups, such as gender and socio-economic status. Furthermore, the Joint Committee on Testing Practice (1998) encourages test developers to indicate the nature of the evidence obtained concerning the appropriateness of each construct for the varying groups who are likely to be tested. Smith and McCarthy (1995) maintain that without evidence of replication, it is quite possible that the

items will correlate less highly with a new sample, or that the factor structure will prove to vary.

Previous research on the Griffiths Scales has shown that children from the different gender and SES groups may perform differently on the Scales (Allan, 1988; 1992; Bhamjee, 1991; Hanson & Aldridge Smith, 1987; Hanson et al., 1985). Therefore, in light of this, the researcher investigated the construct equivalence (factorial invariance) of the Personal-Social Subscale for the gender (boys and girls) and SES (lower, middle and upper) subgroups. Comparisons between the subgroups would only be meaningful and valid if the same construct (s) are measured/tapped for each of the subgroup populations. If the factor structure fails to show invariance across groups, then generalisability is compromised and meaningful comparisons across groups on the latent variables are precluded (Floyd & Widaman, 1995; Widaman & Reise, 1997). This, in turn makes the interpretation and presentation of the constructs of personal-social development considerably more complicated. However, if measurement invariance is established, the group differences accurately reflect the differences on the latent characteristics assessed by the factor. Thus, a careful analysis of the validity evidence for different subgroups had to be conducted to determine whether the Personal-Social Subscale can in fact be used with different subgroups. This step was not conducted for the broader revision and of the GMDS-ER and thus this represents a valuable contribution to improving the psychometric rigor of the GMDS-ER in light of the importance placed on corroborating validity evidence for different subgroups.

Exploratory factor analysis is one of the most frequently applied techniques for addressing construct equivalence (Harman, 1976; McDonald, 1985). Therefore, exploratory common factor analysis with oblique rotation was used to verify the one-factor solutions for each construct for the individual gender and SES groups, following the same procedures outlined for Aim 2. The researcher interpreted the factor structures according to the same quantitative and qualitative indicators provided earlier in this chapter (e.g., eigenvalues, variance explained, SMC, and factor loadings) and ensured that all results were

reported for each factor as suggested by Floyd and Widaman (1995) to enable full interpretation of the results by interested readers. Jöreskog and Sörbom (1989) recommended that the pattern of significant factor loadings should be similar across the same subgroups to maintain its factorial invariance. In addition to similar factor loadings across the subgroup they recommend that a more stringent test be calculated to determine the extent of agreement (i.e., factorial agreement) or correlation of the factor loadings across gender and SES groups (Van de Vijver & Leung, 1997). For this purpose, Harman's (1967) formula for the calculation of a coefficient of congruence for measuring the degree of factorial similarity in different groups was used.

The coefficient of congruence can range between –1 (perfect inverse correlation) and +1 (perfect correlation), where zero suggests no agreement or correlation. Guilford's criteria (1965), which was outlined earlier in this chapter, was used to interpret the magnitude and significance of the coefficients. If congruency coefficients are high (e.g., >0.90), then evidence has been provided for the similarity of factors across the sample subgroups investigated (Hurley & Cattell, 1962). This calculation was done for each factor separately for the gender and all the combinations of SES groups (i.e., upper with middle, upper with lower, and middle with lower).

Although useful, the reliance on congruency coefficients for determining factor pattern similarity has recognized problems (Floyd & Widaman, 1995; Reise et al., 2000). Paunonen (1997) demonstrated that the expected values of congruency coefficients change as a function of various data features such as the number of variables in the analysis and the number of high-loading variables per factor. For this and other reasons, some researchers propose that factor replicability or invariance should be investigated using confirmatory factor analytic procedures (Alwin & Jackson, 1981; Byrne & Baron, 1994; Hoyle, 1991). However, given the exploratory nature of this study, as discussed earlier during this aim, and due to the frequent use of the coefficient of congruence in determining factorial invariance, this method was deemed suitable for the current study.

4.10 SUMMARY OF THE CHAPTER

This chapter attempted to provide a rationale for the current study and to formulate the research problem on which the aims are based. The current study aimed to contribute towards the construct-related validity evidence of one of the six Subscales of the GMDS-ER, namely the Personal-Social Subscale. The methodology employed to realize the specific aims of the current study were also outlined. An exploratory-descriptive method using a triangulation approach was utilized to explore the construct-related validity evidence of the Personal-Social Subscale of the GMDS-ER. Stratified random and purposive non-random techniques were employed to select the participants for the quantitive and qualitative aspects of the study. Three measures, namely a Construct Evaluation Form, GMDS-ER and a Biographical Questionnaire were used to gather the data while ensuring that all the ethical considerations were adhered to. The qualitative data was analyzed by means of a facet analysis and literature control whilst the quantitative data was analyzed using common factor analysis with oblique rotation computed. The coefficient of congruence was computed to determine the equivalence of the constructs across gender and SES groups. Chapter 5 and 6 present the results of the study.

CHAPTER FIVE

FACET ANALYSIS: QUALITATIVE RESULTS

5.1 INTRODUCTION

Before attention is given to the results and discussion thereof, the reader is again reminded of the study's general and specific aims. The general aim of this research study was to explore the construct-related validity of the items of the revised extended Personal-Social Subscale (Scale B) of the Griffiths Mental Developmental Scales- Extended Revised (GMDS-ER). The more specific aims derived from the overall aim were: to explore and describe the constructs tapped by the revised Personal-Social Subscale; to verify the constructs empirically, via factor analysis, per construct; and to investigate construct equivalence, for gender and socio-economic status groups for the revised Personal-Social Subscale.

The results and discussion are structured according to these specific aims and are spread over two chapters. This was necessary to enhance the presentation of the results considering the immense quantity of the data that emerged. The researcher will begin by presenting the findings from the facet analysis and literature control to identify the constructs of personal-social development (Aim 1) tapped by the Personal-Social Subscale. Thereafter the empirical validation of the constructs will be provided in Chapter 6 (Aims 2 and 3).

Although the results of each step are reported separately, each step aimed to build validity evidence (i.e., achieving the general aim) for the revised Personal-Social Subscale. Ultimately the validity of the Personal-Social Subscale, and the interpretation of scores of the subscale, relies on all the available evidence relevant to the psychometric properties of this subscale. However, due to the overwhelming quantity of data accumulated throughout the process, only construct-related validity was explored and only the relevant information, pertinent to the aims, will be presented.

5.2 RESULTS OF THE FACET ANALYSIS

A facet analysis of the items of the revised Personal- Social Subscale was conducted by using professionals working with children to uncover the underlying dimensions (constructs) of the Personal-Social Subscale. The characteristics of these professionals were described in Chapter 4.

The 38 items of the Personal-Social Scale were reduced to 30 unique items in order to simplify the process of analysis. The process of arriving at the unique items entailed analysing the items to see if they were similar in nature and could thus be grouped together. For example, “Gives first name on request” was grouped with, “Gives family name on request”. However, in some instances, although some items were similar in nature they were not grouped together as the researcher reasoned that the same item required more skill at a higher developmental level, and it was therefore assumed that different constructs could be measured at the higher level. For example, “Can lay the table with some supervision,” and “Can lay the table without help or supervision” essentially tap the same task, however, the latter requires independent functioning (ability to perform task on own) to be credited.

Table 13

Unique Items of Subscale B

UNIQUE ITEMS	ITEM NUMBER
Gives first name/ Gives family name	BIII.2; BIII.12
Uses spoon and fork together, without help	BIII.4
Puts away toys when encouraged to do so	BIII.1
Knows own gender	BIII.5
Can undo buttons/ Can do up buttons	BIII.7; BIII.11
Can put on shoes and socks, unaided	BIII.13
Knows age	BIII.10
Plays well with other children	BIII.6
Assists with small household tasks on request	BIII.3
Can undress self / Can dress and undress self	BIII.8; BIII.14
Washes own hands and face with some assistance	BIII.9
Knows address/ Knows full address	BIV.6; BIV.12
Brushes own teeth, without assistance	BIII.16
Can fasten shoe buckles	BIII.18
Manages topcoat, cardigan or raincoat unaided	BIII.15
Has a special play-mate/ Has one special school friend	BIV.1; BIV.11
Can tie a single knot/ Can tie a bow-knot/ Can tie own shoelaces/ Can tie a double bow-knot	BIV.7; BIV.14; BIV.15; BIV.17
Can fetch item in shop by request	BIII.17
Can choose own clothes	BIV.4
Can shampoo hair, with some assistance	BIV.5
Can get a drink of water from a tap or bottle, without assistance	BIV.2
Eats without assistance	BIV.8
Wash and dry own hands and face, without any assistance	BIV.3
Can dress and undress completely without help	BIV.10
Can shampoo hair, without any assistance	BIV.16
Baths or showers and dries self, without assistance	BIV.18
Knows birthday 1/ Knows birthday 2	BIV.13; BIV.20
Can lay the table completely, with some supervision	BIV.9
Can lay the table completely, without help or supervision, on all ordinary occasions	BIV.19

Due to the immense quantity of data that emanated from the panel of professionals only a summarized account of the underlying constructs per item as identified by the 18 professionals will be presented in Table 14**.** Responses will be presented for each professional grouping separately so that comparisons can be made if necessary.

More than one construct was identified per item due to the multidimensional nature of the tasks. Furthermore, the reader will notice that the nature of the additional detail provided is related to the area of expertise and demonstrates the specialized knowledge that each professional imparted during the facet analysis. For example, physiotherapists focussed more on the underlying skills required,

such as, fine motor skills for dressing. Speech Therapists focussed more on the communication skills necessary, for example, verbal skills required for items needing a verbal response like “Gives first name on request”. As the multiple experts worked independently, they also often referred to constructs in a different way. Hence, synonyms and terms that mean the same were reduced to the most commonly used word(s) or terms. For example, verbal skills was used instead of communication; “eating” was used as the collective term to refer to “ability to feed self/ eating skills/ and self help. When presenting the summarized list of constructs in Table 14, the researcher listed the construct(s) for each item that were most frequently identified (denoted by the asterisks) by the professionals within each discipline and used asterisks to denote the number of professionals within each discipline who had identified the construct. For example, one asterisks (*) indicates that one professional identified the construct whereas three asterisks (***) indicates that three professionals identified the construct.

Table 14
A Breakdown Of The Constructs Identified By The Various Professionals

UNIQUE ITEMS OF SUBSCALE B	PHYSIOTHERAPISTS (n=4)	SPEECH THERAPISTS (n=3)	SCHOOL TEACHERS (n=5)	SOCIAL WORKERS (n=2)	PEDIATRICIANS (n=4)
Gives first name/ Gives family name	Self knowledge**** Verbal skill*	Self Knowledge*** Verbal skill** Social skills*	Self knowledge**** Social skills*** Verbal*	Self knowledge** Verbal skill*	Verbal skill*** Social skill** Self knowledge**
Uses spoon and fork together without help	Self help: feeding**** Fine motor**	Self help: Feeding *** Fine motor**	Self help: Feeding ***** Fine motor***	Self help: Feeding ** Social skills* Independence*	Self help: feeding **** Fine motor** Vision*
Puts away toys when encouraged to do so	Co-operation**** Social skill** Fine motor skills** Gross motor skills**	Co-operation ***	Fine motor * Helpfulness* Co-operation***	Co-operation**	Co-operation*** Social skill**
Knows own gender	Self knowledge**** Identity* Verbal skills*	Self Knowledge*** Social skills*	Self knowledge***** Verbal skills*	Self-knowledge** Reasoning*	Self Knowledge*** Social skill*
Can put on shoes and socks unaided	Self help: Dressing**** Fine motor** Independence	Self Help: Dressing*** Independence*	Self Help: Dressing***** Fine motor**	Self Help: Dressing**	Self Help: Dressing*** Vision**

UNIQUE ITEMS OF SUBSCALE B	PHYSIOTHERAPISTS (n=4)	SPEECH THERAPISTS (n=3)	SCHOOL TEACHERS (n=5)	SOCIAL WORKERS (n=2)	PEDIATRICIANS (n=4)
Knows age	Self knowledge*** Identity*	Social skill* Self knowledge** Verbal skills**	Self knowledge***** Verbal skill***	Self knowledge**	Self knowledge**** Social skills** Memory*
Plays well with other children	Sociability; Peers*** Social skills*	Sociability: Peers*	Sociability: Peers*****	Sociability; Peers**	Sociability: Peers ****
Assists with small household tasks on request	Co-operation**** Fine motor**	Co-operation ****	Co-operation**** Ability to make decision* Independence** Reasoning* Concentration *	Co-operation **	Co-operation**** Social skill **
Washes own hands and face with some assistance	Self help: Personal Hygiene**** Independence** Fine motor**	Self help: Personal Hygiene***	Self help: Personal Hygiene***** Independence**	Self help: Personal Hygiene**	Self help: Personal Hygiene**** fine motor** vision*
Knows address/ Knows full address	Self knowledge***	Self knowledge*** Social skills** Independence* Verbal skills* Memory*	Self knowledge***** Verbal skills*** Memory*	Self knowledge**	Self knowledge**** Social skill* Memory*
Brushes own teeth (without assistance)	Self help: Personal Hygiene**** Independence** Fine motor **	Self help: Personal Hygiene ***	Self help: Personal Hygiene *****	Self help: Personal Hygiene **	Self help: Personal Hygiene**** Fine motor** Vision*
Can undress self/ Can dress and undress self	Self help: Dressing **** Independence** Fine motor ***	Self help: Dressing***	Self help: Dressing ***** Self confidence*	Self help: Dressing**	Self help: Dressing**** Fine motor**
Can fasten shoe buckles	Self help: Dressing**** Fine motor ** Independence*	Self help: Dressing*** Fine motor ** Independence*	Self help: Dressing ***** Fine motor***	Self help: Dressing**	Self help: Dressing**** Fine motor** Vision*
Manages topcoat, cardigan or raincoat unaided	Self help: Dressing**** Independence** Fine motor **	Self help: Dressing***	Self help: Dressing***** Social skills** Fine motor**	Self help: Dressing**	Self help: Dressing**** Fine motor** Vision*
Has a special play-mate/ Has one special school friend	Sociability: Peers**** Social skills*	Sociability: Peers***	Sociability: Peers *** Emotional Independence* Verbal skill * Ability to make	Sociability: Peers**	Sociability: Peers**** Social skill*

UNIQUE ITEMS OF SUBSCALE B	PHYSIOTHERAPISTS (n=4)	SPEECH THERAPISTS (n=3)	SCHOOL TEACHERS (n=5)	SOCIAL WORKERS (n=2)	PEDIATRICIANS (n=4)
			friends*		
UNIQUE ITEMS OF SUBSCALE B	PHYSIOTHERAPIST (n=4)	SPEECH THERAPIST (n=3)	SCHOOL TEACHERS (n=5)	SOCIAL WORKERS (n=2)	PEDIATRICIANS (n=4)
Can tie a single knot/ Can tie a bow knot/ Can tie own shoe laces/ Can tie a double bow-knot	Self help: Dressing**** Fine motor*** Independence* Concentration*	Self help: Dressing*** Independence** Fine motor **	Self help: Dressing***** Fine motor****	Self help: Dressing** Fine motor*	Self help: Dressing**** Fine motor***
Can fetch item in shop by request	Co-operation*** Social maturity* Social skills*	Co-operation**** Memory *	Co-operation**** Helpfulness*	Co-operation**	Co-operation**** Social skill**
Can choose own clothes	Self help: Dressing*** Independence** Ability to make* choices Maturity*	Self help: Dressing*** Independence** Ability to make choices*	Self help: Dressing***** Independence** Ability to make choices*	Self help: Dressing** Independence*	Self help: Dressing**** Independence**
Can shampoo hair, with some assistance	Self help: Personal hygiene**** Fine motor **	Self help: Personal hygiene ***	Self help: Personal hygiene*****	Self help: Personal hygiene**	Self help: Personal hygiene*** Fine motor**
Can get a drink of water from a tap or bottle, without assistance	Self help: feeding *** Independence** Fine motor **	Self help: feeding ** Independence**	Self help: feeding *** Ability to make decisions* Ability to use utensils* Persistence*	Self help: feeding ** Independence*	Self help: feeding ** Fine motor** Vision*
Eats without assistance	Self help: feeding *** Fine motor skills*** Independence**	Self help: feeding *** Independence**	Self help: feeding ***** Fine motor***	Self help: feeding ** Ability to use utensils*	Self help: feeding **** Fine motor**
Wash and dry own hands and face, without any assistance	Self help: Personal hygiene** Independence**	Self help: Personal hygiene***	Self help: Personal hygiene***** Independence**	Self help: Personal hygiene**	Self help: Personal hygiene****
Can dress and undress completely	Self help: Dressing**** independence*	Self help: Dressing*** Independence*	Self help: Dressing***** Independence*	Self help: Dressing**	Self help: Dressing**** Fine motor**

UNIQUE ITEMS OF SUBSCALE B	PHYSIOTHERAPISTS (n=4)	SPEECH THERAPISTS (n=3)	SCHOOL TEACHERS (n=5)	SOCIAL WORKERS (n=2)	PEDIATRICIANS (n=4)
without help			Reasoning*		
UNIQUE ITEMS OF SUBSCALE B	PHYSIOTHERAPIST (n=4)	SPEECH THERAPIST (n=3)	SCHOOL TEACHERS (n=5)	SOCIAL WORKERS (n=2)	PEDIATRICIANS (n=4)
Can shampoo hair, without any assistance	Self help: Personal hygiene** Independence** Fine motor**	Self help: Personal hygiene** Independence**	Self help: Personal hygiene** Independence** Hand eye coordination*	Self help: Personal hygiene**	Self help: Personal hygiene** Gross motor* Fine motor*
Baths or showers and dries self without assistance	Self help: Personal hygiene*** Independence**	Self help: Personal hygiene** Independence**	Self help: Personal hygiene**	Self help: Personal hygiene**	Self help: Personal hygiene** Gross motor*
Knows birthday 1 / Knows birthday 2	Self knowledge****	Self knowledge** Social skills* Verbal skills*	Self knowledge**** Verbal skills** Memory*	Self knowledge**	Self knowledge** Social skill* Memory*
Can lay the table completely, with some supervision	Co-operation***	Co-operation** Social skills* Visual spatial*	Co-operation*** Independence** Helpfulness** Reasoning*	Co-operation** Social skill*	Social skill*** Co-operation*** Fine motor*
Can lay the table completely without help or supervision, on all ordinary occasions	Co-operation*** Independence**	Co-operation *** Independence** Visual spatial*	Co-operation **** Independence**	Co-operation** Social skill**	Co-operation*** Fine motor** Social skill*

From the results presented above it is clearly evident that more than one construct underlies each item, thus reflecting and confirming the multidimensionality of the items tapping personal-social skills. It is incorrect to assume that any personal-social skill is solely dependant on one aspect of development and that it occurs in isolation. However, when reviewing the results of the professionals, it does appear that for each unique item there are some constructs that are regarded as more important than others or are more representative of the task at hand, and hence were more frequently identified by

the experts within and across the four disciplines (frequency indicated by the asterisks). Table 15 (below) summarizes the input of the various professionals captured in Table 14 (above) to allow for easier reading (frequency is indicated by numbers).

Table 15

A Summary of the Personal-Social Constructs Identified On Scale B by the 18 Professionals

Unique Item	Construct(s)	Frequency
Gives first name/ Gives family name	Self Knowledge Verbal skills Social skills	15 8 6
At table uses spoon and fork together without help	Self help: Feeding Fine-motor Social skill Independence Vision	18 9 1 1 1
Puts away toys when encouraged to do so	Co-operation Social skill Fine motor Gross motor Helpfulness	15 4 2 2 1
Knows own gender	Self knowledge Social skill Verbal skill Reasoning	17 2 2 1
Can undo buttons / Can do up buttons	Self help: Dressing Fine motor Independence	18 9 4
Can put on shoes and socks, unaided	Self help: Dressing Fine motor Independence Vision	18 6 2 2
Knows age	Self Knowledge Verbal skills Social skills Identity	16 4 3 1
Plays well with other children	Sociability: Peers Social skills	15 1
Assists with small household tasks on request	Co-operation Social skill Fine motor Independence Ability to make decisions' Reasoning Concentration	18 2 2 2 1 1 1
Washes own hands and face with some assistance	Self help: Personal hygiene Independence	18 4

Unique Item	Construct(s)	Frequency
	Fine motor Vision	4 1
Gives address / Knows full address	Self Knowledge Verbal skills Social skills Memory Independence	17 4 3 3 1
Brushes own teeth (without assistance)	Self help: Personal hygiene Fine motor Independence Vision	18 4 2 1
Can undress self / Can dress and undress self	Self help: Dressing Fine Motor Independence Self confidence	18 5 2 1
Can fasten own shoe buckles	Self help: Dressing Fine motor Independence Vision	18 9 2 1
Manages jacket or raincoat unaided	Self help: Dressing Fine motor Independence Vision	18 6 2 1
Has a special play-mate/ Has one special school friend	Sociability: Peers Social skills Emotional Independence Verbal skills	17 2 1 1 1
Can tie a simple knot/ Can tie a bow knot / Can tie shoe laces/ Can tie a double bow knot	Self help: Dressing Fine motor Independence Concentration	18 10 3 1
Can fetch item in shop by request	Co-operation Social skills Social maturity Helpfulness Memory	17 3 1 1 1
Can choose own clothes	Self help: Dressing Independence Ability to make choices Maturity	17 9 3 1
Can shampoo hair, with some assistance	Self help: Personal hygiene Fine Motor	17 5
Can get a drink of water from a tap or bottle, without assistance	Self help: Feeding Independence Fine motor Ability to make decisions Ability to use utensils Persistence Vision	12 4 3 1 1 1 1
Eats without assistance	Self help: Feeding Fine motor Independence	17 8 4

Unique Item	Construct(s)	Frequency
	Ability to use utensils	1
Wash and dry own hands and face, without assistance	Self help: Personal hygiene Independence	16 4
Can dress and undress without help completely	Self help: Dressing Independence Fine motor Reasoning	18 3 2 1
Can shampoo hair without any assistance	Self help: Personal hygiene Independence Fine motor Gross motor	10 6 4 1
Baths and showers and dries without assistance	Self help: Personal hygiene Independence Gross motor	11 4 1
Knows birthday 1 / Knows birthday 2	Self knowledge Verbal skills Social Skills Memory	14 3 2 2
Can lay the table completely with some supervision	Co-operation Social Skills Helpfulness Visual Spatial Fine motor	13 5 2 1 1
Can lay the table completely without help or supervision, on all ordinary occasions	Co-operation Independence Social Skills Helpfulness Fine motor Visual Spatial	15 4 2 2 2 1

Through a process of synthesis and integration, the researcher narrowed the list of constructs presented in Table 15 even further. Firstly, constructs such as gross and fine motor skills, memory, reasoning and visual spatial skills, which are measured more specifically on the other Subscales and are not the primary constructs associated with personal-social development, were eliminated. Secondly, the constructs that were most frequently identified across the expert reviewers from all the four disciplines for each unique item were singled out, and related constructs were grouped in an attempt to find the most prominent underlying construct for each item (Table 16). It is important to emphasize at this point that the researcher was not attempting to negate the multidimensionality of personal-social tasks by identifying one prominent underlying construct for each

item. Rather, the researcher attempted to identify the primary unique underlying construct that was most salient or prominent when performing each personal-social task rather than all the general underlying constructs.

Table 16

A Breakdown of the Personal Social Constructs Identified For Scale B

Unique Item	Underlying Main Construct
Gives first name/Gives family name	Self Knowledge
At table uses spoon and fork together without help	Self help: Feeding
Puts away toys when encouraged to do so	Co-operation
Knows own gender	Self knowledge
Can undo buttons/ Can do up buttons	Self help: Dressing
Can put on shoes and socks, unaided	Self help: Dressing
Knows age	Self Knowledge
Plays well with other children	Sociability: Peers
Assists with small household tasks on request	Co-operation
Washes own hands and face with some assistance	Self help: Personal hygiene
Knows address/ Knows full address	Self Knowledge
Brushes own teeth (without assistance)	Self help: Personal hygiene
Can undress self/ Can dress and undress self	Self help: Dressing
Can fasten shoe buckles	Self help: Dressing
Manages topcoat, cardigan or raincoat unaided	Self help: Dressing
Has a special play-mate/ Has one special school friend	Sociability: peers
Can tie a single knot/ Can tie a bow knot/ Can tie own shoelaces/ Can tie a double bow knot	Self help: Dressing
Can fetch item in shop by request	Co-operation
Can choose own clothes	Self help: Dressing
Can shampoo hair, with some assistance	Self help: Personal hygiene
Can get a drink of water from a tap or bottle without assistance	Self help: Feeding
Eats without assistance	Self help: Feeding
Wash and dry own hands and face, without any assistance	Self help: Personal hygiene
Can dress and undress completely without help	Self help: Dressing
Can shampoo hair, without any assistance	Self help: Personal hygiene
Baths and showers and dries self, without assistance	Self help: Personal hygiene
Knows birthday 1/ Knows birthday 2	Self knowledge
Can lay the table completely, with some supervision	Co-operation
Can lay the table completely, without help or supervision, on all ordinary occasions	Co-operation

After reducing the number of constructs to reflect only those that were the most prominently identified across the professional reviewers from the four disciplines, it is clear from Table 16 that, six underlying constructs are being tapped across the items of the Personal-Social Subscale of the GMDS-ER, namely:

1. Self Help: Feeding
2. Self Help: Dressing
3. Self Help: Personal Hygiene
4. Co-operation
5. Self Knowledge
6. Sociability: Peers

It is important to note that all the professional reviewers identified the above constructs across all four disciplines.

Table 17 provides each of the six identified constructs and the unique items grouped under each one. This provides further evidence that the relevant items were grouped together and that the constructs were appropriately named.

Table 17

Further synthesis of unique items measuring the same construct(s)

CONSTRUCT	UNIQUE ITEM	ITEM NUMBER
1. Self help: Feeding	Uses spoon and fork together, without help	BIII.4
	Can get a drink of water from the tap or bottle, without assistance	BIV.2
	Eats without assistance	BIV.8
2. Self help: Dressing	Can undo buttons	BIII.7
	Can do up buttons	BIII.11
	Can put on socks and shoes, unaided	BIII.13
	Can undress self	BIII.8
	Can dress and undress self	BIII.14
	Can fasten shoe buckles	BIII.18
	Manages topcoat, cardigan or raincoat unaided	BIII.15
	Can tie a Single knot	BIV.7
	Can tie a bow knot	BIV.14
	Can tie a double bow-knot	BIV.17
	Can choose own clothes	BIV.4
	Can tie own shoelaces	BIV.15
	Can dress and undress completely, without help	BIV.10
3. Self help: Personal Hygiene	Washes own hands and face, with some assistance	BIII.9
	Brushes own teeth, without assistance	BIII.16
	Wash and dry own hands and face, without any assistance	BIV.3
	Can shampoo hair, with some assistance	BIV.5
	Can shampoo hair, without any assistance	BIV.16
	Baths or showers and dries self, without assistance	BIV.18
4. Co-operation	Puts away toys when encouraged to do so	BIII.1
	Assists with small household tasks on request	BIII.3
	Can fetch item in a shop on request	BIII.17
	Can lay a table completely, with some Supervision	BIV.9
	Can lay a table completely, without help or supervision, on all ordinary occasions	BIV.19
5. Self Knowledge	Gives first name	BIII.2
	Knows own gender	BIII.5
	Gives family name	BIII.12
	Knows age	BIII.10
	Knows address	BIV.6
	Knows full address	BIV.12
	Knows birthday I	BIV.13
	Knows birthday 2	BIV.20
6. Sociability: Peers	Plays well with other children	BIII.6
	Has a special playmate	BIV.1
	Has one special school friend	BIV.11

Although Tables 18 and 19 present a substantially summarized and integrated list of constructs for each of the items of the revised Personal-Social Subscale, the inherent multidimensionality of the personal-social tasks is

acknowledged. Personal and Social development is not piecemeal but holistic as was indicated in Chapter 3. Human beings are biological, cognitive and social creatures and each of these components of “self” depends on changes that are taking place in other areas of development. Hence it is important to note that a child’s development cannot be strictly compartmentalized. For example, many of the items on the Personal-Social Scale required *hand eye co-ordination* (all the self help items), *verbal skills* (ability to say name, address, birthday etc), and *memory* (ability to remember, name, address, age etc.). These items are more comprehensively assessed in Scales C, D and E respectively. It is also acknowledged that for a child to undertake an assessment of any nature *attention and concentration, vision (ability to see)* as well as a certain level of *general cognitive and reasoning ability* is required. As these constructs are more thoroughly assessed on the other subscales, and as they are not the primary focus of Subscale B they were not identified as constructs specific to Subscale B, and hence were not included in the list of six salient constructs that Subscale B was identified as tapping. However, it is important to bear these other constructs in mind when interpreting the performance of a child on the Personal-Social Subscale. If this is not done, erroneous conclusions could be reached due to poor performance of the scale, implying that the child is experiencing personal-social difficulties, when in fact the difficulties are due to factors like poor hand eye co-ordination or delayed speech development.

Having identified that the Personal-Social Subscale appears to tap six constructs, the researcher next consulted relevant literature and research in the field of personal-social development to further enrich the facet analysis process. This literature control also contributed towards the trustworthiness of the information gathered from the experts and the way in which the researcher synthesized this information.

5.3 FINDINGS FROM THE LITERATURE CONTROL

According to Griffiths (1970; 1984) the Personal-Social Subscale assesses personal and social development of a child. A degree of self-help, appropriate to

the child's age is required in terms of personal hygiene, efficiency at the table and dressing. Moreover, some degree of knowing about oneself and social interaction with peers and family is required from the child. Although the influence of emotional factors is evident on the other scales of the Extended Griffiths Scales they are more prevalent on Subscale B (Griffiths, 1970). Griffiths (1984) maintained that emotionally disturbed children usually perform poorly on this subscale primarily for two reasons; firstly, an overly protected child is often found to be slower in terms of personal self care, because he/she has not been exposed to parental practices, which would enable him/her to initiate such activities. The child is usually served upon at home by his/her parents or other members of the family. Secondly, a neglected child who receives insufficient attention or care from his/her parents may manifest emotional and/or behavioural disturbances in a variety of ways.

The reader is reminded that the concept of the self as was discussed in Chapter 2, is the very core of the personality structure and individuality of the child. The child's personality can be analyzed in terms of traits, which might describe him as outgoing, sociable, withdrawn or introverted. His personality might include dispositions like aggressiveness or peaceful behaviour, assertiveness or dependency, and so on, all of which are integrated and comprised into a whole (Riordan, 1975). Heredity, environmental factors, personality traits, early learning experiences, family, schooling and peers have a significant influence on the adjustment and emotional well being of an individual as was discussed in Chapter 3. The six constructs identified will now be discussed and reflected against literature.

5.3.1 Constructs: Self Help: Feeding
Self Help: Dressing
Self Help: Personal Hygiene

An overview of the items of Scale B strongly indicates the need for the child to help himself/herself. Both the original Extended Subscale B (Griffiths, 1970) as

well as the recent revision of Subscale B (Luiz, et al., 2006a) dedicates about 60% of the items to measure the child's competence in taking care of themselves. Items range from the child's competence in **Eating and Drinking** (3 items), competence in **Dressing** (13 items) and competence in practicing **Personal Hygiene** (6 items). The child is required to perform self help tasks either completely on his/her own or with some assistance.

"Self help" or "self care" can be defined as the ability an individual has to feed and dress themselves, ability to practice personal hygiene (bathing and grooming), toileting, taking personal responsibility and avoiding behaviour (Benner, 1992). Self care is also known as "daily living skills" on other measures like the Vinelands Adaptive Behaviour Scales (VABS) and is described as the basic skills that one needs to move through ones daily routine. Daily living skills for children include but are not limited to, using the toilet, bathing oneself, brushing teeth, eating appropriately, dressing, using the telephone, eating, and assisting around the house.

Measures that assess personal-social skills were reviewed by the researcher in Chapter 3, and it was found that self help or self care is a very important construct that was included in all measures reviewed, namely, the Vinelands Adaptive Behavior Scales (VABS), the American Association on Mental Deficiency (AAMD), the Denver Scales, Scales of Independent Behaviour (SIB), the Bayley Scales, Gesell Scales, AGS Early Screening Profiles (ESP), FirstSTEP Screening Step for Evaluating Preschoolers (FirstSTEP), AEPS Measurement for 3 to 6 years (AEPS) and the Ages and Stages Questionnaire: Social Emotional (ASQ:SE).

The VABS, which is one of the most widely used measures of assessing personal and social skills has, as one of its primary domains, the Daily Living Skills Domain. This domain is further broken down into subdomains, viz. the *Personal Subdomain* which assess the person's ability to eat and drink, toileting, dressing, bathing, grooming and health care; *the Domestic Subdomain* which assess skills in housekeeping, kitchen chores, caring for clothes; the *Community Subdomain* that assess safety skills, telephone skills, money skills, time and

date, left-right orientation, restaurant skills and job skills (Sparrow, Balla, & Cicchetti, 1984). The Griffiths Scales are not as comprehensive as the VABS. A possible reason for this is that the VABS is a more extensive measure and it also caters for adult functioning unlike the Griffiths. The items of the Griffiths are however, developmentally appropriate as they focus primarily on the personal sub domain viz. ability to eat and drink, dressing, bathing and grooming. However, other significant items especially toileting are not covered by the Griffiths Scales. Of the Domestic Domain, only some housekeeping and kitchen chores are included in the Griffiths Scales. This is however, developmentally appropriate for children. Experts during this study, however, identified these items as a prosocial behaviour, viz. co-operation.

The Denver Scales (DDST) consists of 23 personal-social items, which evaluate the child's ability to perform self-care tasks, to socialize with others and to play appropriately. The AAMD Behaviour Scales has as one of its nine domains "Dependence and Independence". In this domain the child's eating, toileting, cleanliness, appearance, care of clothing, dressing and undressing as well as travel skills are measured. The Scales of Independent behaviour (SIB) also measure the independent functioning of individuals in home, social and community settings. The Fairview Self help Scales also includes the Self-help Skills Domain, which assesses the child's skills in toilet training, dressing, eating and grooming. Similarly the ESP, FirstSTEP, AEPS and ASQ:SE measure aspects of self care.

From the review of other developmental measures, it can thus be concluded that the inclusion of items of the revised Personal-Social Subscale that tap self help skills in dressing, eating and personal hygiene is appropriate as most measures of personal-social or adaptive functioning tap these self help skills. In addition, the label 'self help" that was used to name the construct for items in Subscale B that tap dressing, eating and personal hygiene also appears to be appropriate as this term or a synonym (e.g., self care) is used in most other measures.

It should be noted that in the construct model for Subscale B by Luiz et al. (2006a) three “personal skills” were identified which are identical to the three “self help” constructs identified in this study. However, as argued above, the label “self help” is more appropriate than the label “personal skills”.

Having established that, based on other measures, the items of the revised Personal-Social Subscale that relate to dressing, eating and personal hygiene were appropriately labeled as being ”self help skills”, the researcher reviewed appropriate literature to establish the role that these skills play in the developing child.

As highlighted in Chapter 3, a major aim of socialization is to encourage children to become self-reliant and to take pride in their accomplishment. An independent/autonomous child is one who is able to accomplish many objectives without the assistance of others. As infants are developing a sense of self, one cannot ask them about their sense of personhood, but one can judge it from their independence or dependence, in their self assurance and assumption of competence, and in their ease at giving and receiving affection (Stone & Church, 1984).

As was indicated in Chapter 3, by the age of two years, the child has taken the first steps towards self-awareness. The child discovers that he is actually a separate being, and begins to experiment with their new abilities attempting to determine what they are able to control. This realization starts the process of becoming autonomous, a process that is facilitated by the child’s growing motor and cognitive abilities (Dunn & Munn, 1985). An important aspect of personality development is the child’s sense of well-being, and autonomy (Erikson, 1950; 1963; 1967). Autonomy has been defined in literature as the capacity to make decisions independently, to serve on ones own source of emotional strength, and to otherwise manage one’s life tasks without depending on others for assistance (Shaffer, 1994), and is regarded as an important developmental task for children (Shaffer, 1994). In Erikson’s Psychosocial theory he describes the second stage in a child’s development as, “A*utonomy versus Shame and Doubt.”* One of the chief issues in childhood is to develop autonomy. If the child does not develop

autonomy, he/she will doubt their abilities. The main ingredient in autonomy is the sense of being in charge of one's decisions and carrying them through. Another important component is a sense of competence, or having what it takes to be in charge. "Shame and doubt" by contrast, mean fear of taking charge, a sense of incompetence and impotence, and generally negative feelings toward one's own body and functioning. During this stage children either exert their wills or attend to their own basic needs or else become passive, dependent, and lacking in self confidence depending on circumstances (Erikson, 1950; 1963; 1967).

As highlighted in Chapter 3, many factors promote feelings of a good sense of self and independence in a child but the crucial ingredient is how parents raise their children (Roediger et al, 1984). When children are born, they are completely dependent on those around them. If children are well taken care of, their basic needs are met, and they will develop a sense of trust in their caregivers. A good outcome is when a child feels a sense of autonomy that lets them explore and learn. Such children grow up believing that other people are approachable, trustable, and generally good and loving and more importantly that they are capable and competent. However, some infants are not well taken care of for various reasons, and they never receive the love and care they need. Parents may also inhibit such autonomy by being too strict, restrictive, or punishing when the child is independent. When this occurs, the child may feel shame and doubt over the goals he or she is completing. Such infants may develop a sense that they are unworthy, incapable, that others are not to be trusted and may develop a lifelong pattern of mistrust in others, suspiciousness, and feelings of estrangement, isolation, or just plain social discomfort when around others. Overly protective parents can also cause problems, in that they can hinder the child's natural urge to explore and to encounter a wide variety of life events and experiences. For example, parents who do not allow children to dress, eat and wash themselves may cause their child to grow up believing that they are not competent and they may begin to harbor thoughts of doubt and shame. Similarly

parents preventing their child from rough and tumble play with other children may cause their child to grow up doubting his or her ability to get on with others.

Although no child achieves full autonomy, a child that has acquired a sense of basic trust in infancy, together with the new powers of mobility and communication, develops a more refined awareness of a separate identity, with individual wants, sensitivities and capabilities. New possibilities for action emerge, matching the toddler's new patterns of competence. Toddlers want to try out new things for themselves, without help or hindrance or coercion from others (Stone & Church, 1984). If the child's beginning attempts to do things for themselves are successful, the child will believe that they have some control over themselves and their world. If the child does not achieve successful control over themselves and their environment, the child will start to doubt their abilities and experiences a feeling of worthlessness (Erikson, 1950; 1959; 1963; 1967; 1978).

During the school years, from ages 5 or 6 onward, children's sense of self is based mainly on developing talents and skills. The child thinks of him or herself in terms of actions: as someone who can do this or cannot do that, such as recite the alphabet, dress themselves, wash themselves, eat by themselves, tie their own shoes, read, walk to school by themselves, tell time, or write in cursive writing (Harter, 1988). Furthermore, children increasingly begin to compare their skills and abilities with those of others. They are known to be better or worse than other children. This is the beginning of social comparison, which most people engage in, to varying degrees and do so for the rest of their lives (Baumeister, 1997). Social comparison is the evaluation of oneself or one's performance in terms of a comparison with a reference group. "Am I faster, smarter, more popular, and more attractive?" is the question that children repeatedly ask themselves during this period of development. It should be noted that Griffiths (1970) did not include this aspect of social comparison in her items on Subscale B. The revision has also not included items that tap social comparison. This is in accordance with other personal social measures.

In conclusion, the literature reviewed stresses the importance of gaining autonomy and independence for healthy development of the child's self concept

and personality. It is thus crucial that developmental measures tap the extent to which the child is gaining autonomy and independence. The self-help items of the revised Personal-Social Subscale of the GMDS-ER provide a means of gaining insight into this critical aspect of a child's development.

5.3.2 Construct: Co-operation

Closely related to the self help construct is co-operation. Prominent personal-social measures like the Vinelands Adaptive Behaviour Scales (VABS) include the Domestic subdomain as part of the Daily Living Skills Domain. Experts during this study, however, identified items involving domestic help as a prosocial behaviour, viz. co-operation.

Having established that, based on other measures, the items of the revised Personal-Social Subscale that relate to dressing, eating and personal hygiene were appropriately labelled as being "self help skills", the researcher reviewed appropriate literature to establish the role that these skills play in the developing child

Stipek, Recchia and McClintic (1992) in their research on the origins of children's self esteem concluded that at about 2, children begin to seek the approval of their mothers when they achieved a goal, and they avoid social contact when they were unsuccessful. This indicates that the reaction of others becomes important to children from this age. Harris (1998) maintained that as children get older, they begin to understand that emotions can be influenced not just by achieving or failing to achieve goals, but also by approval and disapproval. In other words, they begin to understand that emotions can be regulated by one's social environment and that co-operation enables them to attain the approval that they seek to feel good about themselves.

Similarly, Erickson's Theory of Identity Formation (1959) as elaborated on in Chapter 3, maintains that parents play an important role in the formation of the child's identity. When parents encourage their infants to explore their environment and to be independent, they will obtain confidence in their autonomy and sense of self-control. Should the infant lack this support however, and

receive parental disapproval and discouragement instead, the infant will begin to doubt his own abilities, adequacy and feel a sense of shame at exposing himself prematurely and foolishly. Such feelings are the beginning stages of the development of a poor self concept (Kagan, 1981).

Rogers (1970) also saw childhood as crucial for personality development. He emphasized the importance of early social relationships. He maintained that people need positive regard, warmth, and acceptance in order to grow and develop positive self-concepts. Rogers's believed that to enhance growth, children will engage in a wide variety of acts in order to seek approval. However, this can be problematic as children may distort or deny their perceptions, emotions, sensations and thoughts and come to judge an event as good or bad on the grounds of whether it leads to approval or disapproval rather than to growth. Children may also internalize what Rogers called "conditions of worth". These are strong feelings about what kind of behaviours will bring them approval from others. Thus to Rogers, there are two criteria by which all experiences are evaluated: one leads to self-actualization and one leads to social approval. To promote growth Rogers believed that parents and teachers should give children unconditional acceptance and love so that they do not become ashamed of their experiences and thoughts. By being unconditionally loved and accepted, Rogers maintained that people come to accept themselves to achieve self-actualization. Being able to accept themselves is a major step toward becoming autonomous.

Items on this Subscale of the Griffiths include: BIII.1 (Puts away toys when encouraged to do so), BIII.3 (Assists with small household tasks on request; BIII.17 (Can fetch item in shop on request); BIV.9 (Can lay a table completely, with some supervision; BIV.19 (Can lay a table completely without help or supervision) were identified by the professionals as measuring a prosocial behavior viz. co-operation. The Fairview Self-help Scales, Denver Scales, ASQ;SE and FirstSTEP also measure some degree of co-operation however, such items are normally assessed as part of evaluating the child's ability to interact with others (viz. social interaction) or as part of the domestic subdomain of the daily living skills domain as in the VABS.

Furthermore it should be noted that in the construct model for Subscale B formulated by Luiz et al. (2006a) the three items identified as “Social Skills: Domestic skills” was identical to the Co-operation construct identified by the professionals in this study. Considering the literature provided in Chapter 3 and above, the researcher decided to maintain the label Co-operation as it is more appropriate.

In summary, the above literature review confirms the importance of this construct (co-operation) in the healthy development of the child’s emotional well being. The approval that the child receives and internalizes by co-operating with family members and peers form part of the essential building blocks that develop and maintain a healthy self concept.

5.3.3 Construct: Self Knowledge

Self knowledge can be described as the general knowledge that an individual has about himself or herself, including knowledge of the *existential self* and the *categorical self*. The “existential self” can be defined as that aspect of the self that recognizes its own basic separateness and distinction from the rest of the world. The “categorical self” is the definition of self in terms of social categories and attributes such as age, gender, social roles and abilities (Steuer, 1994).

According to Piaget’s theory, an achievement of the sensorimotor stage is the *sense of having an identity of one’s own*, apart from those of other people. This sense of a separate identity is an important milestone in the lifelong development of self-awareness and understanding (Stone & Church, 1984).

Lewis and Brooks-Gunn (1979) in a comprehensive study of self-development during infancy concluded that self knowledge unfolds in an orderly manner during the first two years of life. The first glimmer of a self-concept occurs in infancy, when the child learns that some things are always there (e.g., its body) and some things are there only sometimes (e.g., the mother’s breast). The child makes a distinction between its own body and everything else: it discovers that boundaries exist between what is “me” and what is “not me.”

Gradually the infant comes to realize that it is distinct from the rest of the world. This distinction forms the rudimentary sense of self and awareness of one's body (Larson & Buss, 2002).

As was indicated in Chapter 3, an important stage in self knowledge comes when babies learn to recognize their own reflections in the mirror (Stone & Church, 1984). Among the first aspects of the self that people learn to identify and associate with themselves are gender and age. Lewis and Brooks-Gunn (1979) found that infants appeared to find the qualities of gender and age especially useful in distinguishing themselves from others. This typically occurs between 2 and 3 years of age, when a child calls himself a "boy" or herself a "girl", and refers to other children as boys or girls. A rudimentary knowledge of age also develops with a child learning to hold up the number of fingers that designate their age. Children at this age also expand their sense of self to include reference to their family. A child might say, "I'm Sarah's brother," implying that part of his sense of self includes being in the same family as Sarah (Larson & Buss, 2002). The process of identification is an important part of coming to know and expand our definition of self (Hamachek, 1971).

Felker (1974) proposed three prerequisites for the development of a positive self-concept, namely: experiencing a sense of belonging, a feeling of competence and a sense of worth. The infant receives evidence of his worth through the quality of care he receives from his parents. His sense of belonging develops out of the security of his family environment where he experiences being accepted and valued. As the child gradually moves into a wider environment, his sense of self extends outside of himself to include other experiences, thereby eliciting feelings of competence. Should any of these areas lag or fail to develop, the beginnings of a negative self-concept will be evident.

Items BIII.2 (Gives first name on request), BIII. 5 (Knows own gender), and BIII.10 (Knows age); BIII.12 (Gives family name); BIV.6 (Knows address); BIV.12 (knows full address) and BIV.13 (Knows birthday I) and BIV.20 (Knows full birthday) on the revised extended Subscale B attempt to gather information on the child's sense of self knowledge. As was evident from the literature reviewed

above, determining if the child is developing a healthy sense of self is vital to ensure the emotional well being of the child and the development of a healthy personality. The construct Self knowledge has not been given significant prominence in the Vinelands Adaptive Behavior Scales (VABS). However, on the Fairview Self Help Scale, an important construct under the Social Interaction domain is Identification, which taps the child's ability to tell others his first name, full name and address.

The items identified as Self Knowledge in this study were identical to the items described as "Social Skills: Self Concept" in the GMDS-ER Manual (Luiz et al., 2006a). Considering the definitions of self concept and self knowledge as was discussed in Chapter 3, it is argued that the label Self Knowledge is more appropriate for these items.

In summary, it is clear from the literature reviewed that some of the items on the revised Personal-Social Subscale of the GMDS-ER assess self knowledge, which is vital to the development of a healthy individual, making this an important construct to include in a developmental assessment measure.

5.3.4 Construct: Sociability (Peers)

Sociability is a term that describes the child's willingness to engage others in social interaction and to seek their attention or approval (Shaffer, 1994). Self-growth does not occur in a vacuum; it occurs within a social framework, through the establishment of direct personal relationships. It involves people and experiences, some of which exert situational, and others more permanent effects. The organization of these experiences in the life of each individual is a very complex undertaking. Fortunately this process is aided by standardized roles people play (e.g., as parent, teacher or friend), as well as by common experiences all of us share during the course of development (e.g., first bath, first day at school etc.). These social interactions are the medium of exchange though which one hones perceptions of the outside world, develops interpersonal skills, extends intelligence, and acquires attitudes (Hamacheck, 1971).

Socialization has been referred to as “A process by which individuals acquire knowledge, skills, and dispositions that enable them to participate as more or less effective members of groups and ….society” (Brim in Cohen, 1966, p.3). The socialization experience plays a critical role in the formation of social and personal attitudes and behaviours.

Relationships with parents and peers are the focus of social well-being in children. As Putallaz and Heflin (1990) have noted:

> Parental involvement, warmth, and moderate control appear to be important in terms of children’s self-competence. Within the social context of the family, children appear to learn certain interactional skills and behaviours and then transfer to their interactions with peers. (p. 204)

As infants grow older, the social boundaries of the world expand. Their mobility enables them to explore the environment and to meet more children. Most children begin to react positively toward peers by 8 months of age and begin to form relationships with peers during the second or third year of life. Gradually they become less dependent on the caregiver to supply all of their social stimulation and a new affection system begins to form (Fein, 1978).

Between the ages of 2 and 5, children not only become more outgoing but also direct their social gestures to a wider audience. Observational studies suggest that 2 to 3-years-olds are more likely than older children to remain near an adult and to seek physical affection, whereas the sociable behaviors of 4-to 5-year-olds normally consist of playful bids for attention or approval that are directed at peers rather than adults (Harper & Huie, 1985; Hartup, 1983). Just as children become more peer orientated during the preschool years, the nature of the peer interactions change as well. Between the ages 2 and 5, preschoolers become less inclined to stand around and watch a playmate or to take part in simple initiative games; instead, they engage in increasingly sophisticated, reciprocal exchanges, many of which will require players not only to assume complementary roles but also to agree on how these roles are to be played if their play activities are to continue successfully (Shaffer, 1994).

Individual differences in the development of reaction to peers are influenced by the kinds of early attachments that children develop. Attachment refers to the powerful emotional bond that develops between the child and, initially, the parents and other household members, and which in time can be generalized by the child to a great number of people. Its foundation is basic trust, which takes shape as the baby's physical and psychological needs are met. The end product of attachment is identification which is taking on the ways of and feelings of the people among whom one lives and develops (Stone & Church, 1984).

In a classic study of preschoolers at play, Parten (1932) concluded that the play activities of pre-school children could be placed into four categories, arranged from least to most social:

1. *Solitary play:* children play alone, typically with toys, and largely ignore what other youngsters are doing.
2. *Parallel play:* children play side by side with similar toys or materials but interact very little and do not try to influence the behavior of other players.
3. *Associative play:* children now interact by sharing toys, swapping materials, and following each other's lead, but they do not assume distinct roles or cooperate to complete a shared goal.
4. *Cooperative play:* most complex form of play, in which children join forces to achieve a common goal. They can divide the tasks necessary to create joint products (that is, collaborate); they can assume reciprocal roles such as "mommie" and "boy" in pretend play; and according to Parten (1932) they can follow the rules of simple games.

Howes and Matheson (1992) recently proposed a new developmental sequencing of young children's play based on the cognitive complexity of children's social activities. Their six categories of play from least to most complex are as follows:

1. *Parallel play:* two children perform similar activities without acknowledging each other.
2. *Parallel aware play:* children engage in parallel play with eye contact.

3. *Simple social play:* children engage in similar activities while talking, smiling, sharing toys, or otherwise interacting.
4. *Complementary and reciprocal play:* children demonstrate action-based role reversals in social games such as run-and chase or peek-a-boo.
5. *Co-operative social pretend play*: children play complementary nonliteral, or pretend roles (for example, mommie and baby) but without any planning or communicating about the roles or the forms that the play will take.
6. *Complex social pretend play*: children actively plan their pretend play. They name and explicitly assign roles, propose a play script, and may stop playing to modify the script if necessary.

Howes and Matheson (1992) in a longitudinal study found that the play described above developed sequentially and that there was a clear relationship between the child's social competences with peers. They observed that children who engaged in more complex play at any given time were rated as more outgoing and prosocially inclined and as less aggressive and withdrawn at the next observational period. They thus concluded that the complexity of a child's play, particularly pretend play, is a reliable predictor of a child's future social competencies and popularity with peers.

According to Shaffer (1994), the unique roles that friends might play in one's social development have not been firmly established, but there are indicators that solid friendships;

1. Provide a sense of security and social support that helps children and adolescents to respond more constructively to stresses and challenges,
2. Promote the development of role-taking skills and an ability to compromise, and
3. Foster the growth of caring and compassionate feelings, which are the foundations of intimate love relationships later in life.

On the extended Griffiths Subscale B, the following items, namely, BIII.6: Plays well with other children; BIV.1: Has a special playmate and BIV.11: Has a

special school friend, assess whether children are forming relationships with peers so that the foundation is laid for healthy adult relationships, as highlighted in the literature reviewed above. However, when the various theories and research related to the development of social interaction and play in children are considered, it is concerning that the revised Personal-Social Subscale of the GMDS-ER mainly emphasizes whether a child has a special friend and does not include items that could assess the various levels of social interaction observed in children's play activities.

The Vinelands Adaptive Behavior Scales (VABS) has similar items on the interpersonal relationships subdomain of the broader Socialization Domain. For example, items include; "Shows a preference for some friends over others"; "Has a preferred friend of either sex"; and "Has a best friend of the same sex". The VABS also includes the assessment of the child participating in games with other children for e.g., "Plays very simple interaction games with others"; "Follows rules in simple games without being reminded". This is not the case with the GMDS-ER Subscale B. Significantly more items are included in the VABS as compared to the Griffiths Subscale B. Similarly, of the 23 items of the Denver Scales which measure personal-social functioning, a significant number of these items measure the child's ability to play properly.

Furthermore it should be noted that in the construct model for Subscale B formulated by Luiz et al. (2006a) the items identified as "Social Skills: Interpersonal skills" were identical to the Co-operation construct identified in this study. Considering the literature provided and the review of items being measured on other assessment measures, it is argued that the label Sociability: Peers is more appropriate.

In summary, while it is clear from both a review of the literature and other measures that some of the items of the revised Personal-Social Subscale of the GMDS-ER assess sociability with peers, the range of competencies assessed is limited when compared to both theories of play and the formation of social interactions as well as other developmental measures that tap social functioning.

5.4 CRITICAL COMMENTS REGARDING CONSTRUCT REPRESENTATION

After a comprehensive review of measures that assess personal social skills, Stewart (2005) maintained that a comprehensive assessment of personal-social development usually covers the following aspects: personal identity (knowledge of self); self awareness (knowing yourself as a separate person and developing a sense of self); self concept (perception of the personal identity); self control; self help skills (feeding, dressing and personal hygiene/bathing and grooming, toileting and avoiding danger); prosocial behaviour (communicating basic needs, appropriate use of toys, helping, sharing, co-operative actions and play skills); and emotional adaptive behaviours (formation of relationships).

An evaluation of the construct coverage of the revised Griffiths Personal-Social Subscale reveals that the construct self help is fairly well represented. However, of concern was the exclusion of toileting skills and avoiding danger as these are considered to be important self help skills. Personal identity or knowledge of self was also fairly well represented with the items on the scale. It was however, noted that the professionals did not make specific distinctions between self awareness, self concept, and so forth and instead grouped the items together under knowledge of self. A possible reason for this is that there are very subtle differences between these concepts.

With regards to assessing prosocial behaviours or socially adaptive behaviours, too little emphasis has been placed on assessing this construct on Subscale B. Items do not specifically focus on communicating basic needs, appropriate use of toys, or other co-operative actions and play skills that are intended to benefit others. No specific items are included to assess the child's relationship with parents or significant caregivers.

After reviewing other measures that focus specifically on personal-social skills it was noted that the following constructs were also extensively assessed on these measures: communication (VABS; Fairview Self Help Scale; Denver Scales, AAMD, SIB, ES, First STEP and ASQ:SE); Motor skills (VABS, Fairview Self Help Scales, Bayley Scales, Denver scales, AAMD, SIB, ESP, FirstSTEP,

and AEPS); Social interaction (Gesell Scales, Denver Scales, VABS, AAMD, SIB, ESP, FirstSTEP, AEPS, ASQ:SE and Fairview Self Help Scales); Community Daily living skills (VABS); Self Direction including independence, play activity, household tasks, time sense, number sense and reading (Fairview Self Help Skills). Although some of these constructs were identified on the GMDS-ER Personal-Social Subscale, limited emphasis has been placed on them. However, some of these skills (e.g., motor skills; language) are more thoroughly assessed on the other five Subscales.

It can hence be concluded that while the Personal-Social Subscale taps a range of personal-social skills, it does not provide a comprehensive assessment of all aspects of personal-social functioning of a child. Consequently, it should be used more as a screening measure. Should problems be identified on it, a more comprehensive test like the VABS is recommended.

With reference to the constructs identified by Luiz et al. (2006), this study found an identical grouping of test items. However, the constructs were only labelled differently. Considering the literature and other measures of personal-social functioning, it is argued that the labels given in this study be retained.

5.5 SUMMARY OF THE CHAPTER

This chapter primarily focussed on Aim 1 of the study, which was to explore the underlying constructs of the Personal-Social Subscale by means of a facet analysis. Professionals working with children were consulted and a review of pertinent literature and other measures of social, behavioural and adaptive functioning was conducted to uncover the underlying dimensions tapped by the items on the Personal-Social Subscale. Through a process of synthesis and integration of all the available sources of information, the predominant construct underlying each item on the Personal-Social Subscale was identified and then the constructs were grouped together. The six salient constructs identified were: Self Help: Feeding; Self Help: Dressing; Self Help: Personal Hygiene; Co-operation, Self Knowledge; and Sociability: Peers.

Chapter 6 presents the results of the factor analysis (Aims 2 and 3) to provide empirical evidence and support for the validity of the constructs identified qualitatively in this chapter for the sample as a whole, as well as gender and socioeconomic status (SES) groups.

CHAPTER SIX

RESULTS AND DISCUSSION

EMPERICAL VALIDATION OF THE CONSTRUCT MODEL

6.1 INTRODUCTION

Chapter 5 entailed an in-depth qualitative analysis of the constructs underlying each individual item on the Personal-Social Subscale. Taking into consideration the qualitative evidence and support for the identified six constructs tapped by the Personal-Social Subscale, this chapter provides quantitative evidence to validate the constructs empirically (Aim 2) and to determine their construct equivalence across the gender and socio-economic status (SES) groups (Aim 3).

To attempt to empirically validate the constructs identified during the facet analysis and literature control (Aim 1), an exploratory common factor analysis with oblique (DQUART) rotation was performed for each of the six identified constructs. Separate one-factor solutions were specified to test the internal factorial validity of each construct individually. As discussed in Chapter 4, when interpreting the results of the factor analysis, the researcher was guided by the principles of parsimony and interpretability of the factors/constructs (Osman, Kopper, & Barrios, 2004) and followed an integrated rational approach when deciding the best overall fit for the items of a particular construct. In addition to evaluating the numerous quantitative indicators discussed in Chapter 4 (i.e., the latent root/Kaiser-Guttman criterion, the scree test, percentage of variance, SMC, communality, Cronbach's alpha, number of items, and factor loadings), the researcher also considered the psychological meaningfulness of the factor structure when determining the best possible fit of the items on the Personal-Social Subscale.

The results of the factor-solutions for each construct are presented below. The results will be presented according to the steps in performing a factor analysis as discussed in Chapter 4. The reader is reminded that prior to factor analysis, the factorability of the data matrix had to be established for each of the

constructs. This was done to determine if the data matrix had sufficient correlations to justify the application of factor analysis. Although the specific number of salient correlations required is not specified, salient correlations should exceed a magnitude of .30. If all the correlations are positive, it suggests that all the items of that particular subscale measure the same construct (Murphy & Davidshofer, 1991).

6.2 FACTORIAL VALIDATION OF THE IDENTIFIED CONSTRUCTS OF THE PERSONAL-SOCIAL SUBSCALE FOR THE SAMPLE AS A WHOLE

In accordance with Aim 2, the constructs were empirically verified by factor analysis. Each construct with its respective items was considered separately. The presentation of the results for each construct will follow the same format beginning with the correlation matrix for that construct, followed by a discussion of the eigenvalues, variance explained, squared multiple correlations (SMC's), Cronbach's Alphas, communalities and the factor loadings. The constructs will be presented in the following order: Self Help: Feeding; Self Help: Dressing; Self Help: Personal Hygiene; Co-operation; Self Knowledge; and Sociability: Peers.

6.2.1 Construct 1: Self Help: Feeding

The construct Self Help: Feeding is comprised of three items ranging from Year III to Year VII. The correlation matrix presented in Table 18 revealed that two (67%) of the three correlations were above .30 and significant at the 0.05 level, which supports the factorability of the data matrix.

The strongest correlations found were between items BIV.8 (Eats without assistance) and BIV.2 (Can get a drink of water from the tap or bottle without assistance). These two items measure essentially the same skill (child's ability/independence to feed themselves). The weakest correlation was between items BIII.4 (Uses spoon and fork together without help) and BIV.8 (Eats without assistance). Although these two items appear to be measuring the same skill, the possible reason a poor correlation was obtained is probably due to the opposite

nature of the two items (eats with utensils/assistance versus eats with no assistance).

Table 18

Self Help: Feeding Construct: Correlation Matrix for overall sample

	BIV.2	BIV.8	BIII.4
BIV.2	1.00		
BIV.8	0.66	1.00	
BIII.4	0.33	0.25	1.00

The histogram of eigenvalues (Figure 1) suggested that a 1-factor solution was the most appropriate for this data matrix.

Figure 1

Self Help: Feeding Construct: Histogram of Initial Eigenvalues for overall sample

Eigenvalue	Histogram
1.26	**********

Similarly, Table 20 shows that 100% of the variance can be explained by this one factor, thus supporting the fact that these items measure a similar construct.

Table 19

Self Help: Feeding Construct: Variance Explained by a 1-Factor Solution for overall sample

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		In data space	in factor space	
1	1.48	1.00	1.00	1.00

All the SMCs except for item BIII.4 (Uses spoon and fork together, without help) were above .25 (Table 19). This may be attributed to the fact that this item may be a culturally-biased item. Many culture groups do not use utensils when

eating or may only use a spoon to eat. The communalities indicated that the items shared between 13% and 83% of the variance with the factor scores. In addition, one of the communalities indicates a slight relationship, one a moderate correlation and one a high correlation (Guilford, 1965). All the individual Cronbach's Alpha values were above .40 suggesting that these items were reliable.

Table 20

Self Help: Feeding Construct: SMCs, Cronbach's Alpha and the Communality Values for overall sample

Item	SMC	Cronbach's Alpha	Communality
BIV.2	0.46	0.40	0.83
BIV.8	0.44	0.50	0.52
BIII.4	0.11	0.79	0.13

Table 21 provides the sorted rotated factor loadings.

Table 21

Self Help: Feeding Construct: Sorted Rotated Factor Loadings and Cronbach's Alpha for overall sample

Item		Factor 1
BIV.2	Can get a drink of water from the tap or bottle, without assistance	0.91
BIV.8	Eats without assistance	0.72
BIII.4	Uses spoon and fork together, without help	0.36
Cronbach's Alpha		0.68

In considering the rotated factor loadings, presented in Table 21, it is clear that they were all salient and above .30, thus, substantiating the fact that these items belong together. The Cronbach's Alpha value for all the items of the factor was .68, which met with the lower limit of r>.60. Thus, the construct was reliable in terms of exploratory research. The researcher concluded that a simple 1-factor structure had been derived for Self Help: Feeding. Strong empirical evidence was

thus found that the items identified in the facet analysis as tapping Self Help: Feeding loaded together on one factor, implying that they tap the same construct.

6.2.2 Construct 2: Self Help: Dressing

The construct of Self Help: Dressing is comprised of 13 items ranging from Year IV to Year VIII. The correlation matrix revealed that 65 (83%) of the 78 correlations were above .30, which supports the factorability of the data matrix.

The strongest correlation found was between items BIV.15 (Can tie shoe laces) and BIV.14 (Can tie a bow knot). A possible explanation could be that these two items, which fall within the same age group, measure the same skills. The weakest correlation was between items BIII.7 (Can undo buttons) and BIV.14 (Can tie a bow knot). Item BIII.7 requires more complex skills than BIV.15.

The histogram of initial eigenvalues suggested that up to two factors could be extracted, that is, two factors had eigenvalues above 1 (see Figure 2).

Figure 2

Self Help: Dressing Construct: Histogram of Initial Eigenvalues for overall sample

Eigenvalue	Histogram
6.33	**********
1.83	**********
0.54	***
0.20	*

As can be seen from Figure 2, although two factors had eigenvalues above 1, the first factor accounted for a far greater percentage of the variance in the data set. This raised the possibility that there might be only one salient factor. Furthermore, the scree test also suggested that a one-factor rather than a two-factor solution might be more appropriate.

To explore this matter further, the researcher tested the data set for a 2-factor solution. A closer inspection of the rotated factor loadings revealed that items tended to load together in terms of age groups. Items from year VI (BIV.1,

BIV.2 and BIV.4); V (BIII.14 and BIII.15); and VII (BIV.7) loaded together on one Factor 1. Items BIII.18, BIV.4 and BIV.7 loaded on both factors whilst items from year VII (BIV.7,BIV.8 and BIV.10) and items on year VIII (BIV.15 and BIV.17) loaded on Factor 2. The fact that some items loaded saliently on both factors suggested that a simple factor solution had not been achieved. Furthermore, the two factors were not really interpretable, except for the fact that more of the items for younger children loaded on factor 1 and more of the items for older children loaded on factor 2. Consequently, the researcher re-ran the factor analysis specifying a one-factor solution to see whether this would result in a simple factor solution that was interpretable.

According to the results presented in Table 22 below, the one factor solution for the Self Help: Dressing construct explained a satisfactory 76% of the total variance.

Table 22

Self Help: Dressing Construct: Variance Explained by a 1-Factor Solution for overall sample

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	In factor space	
1	6.18	0.76	1.00	0.97

According to the results presented in Table 23, the SMCs, communalities and Cronbach's Alphas for the Self help: Dressing construct were all appropriate. More specifically, all the SMCs were above the suggested 0.25 minimum. The communalities indicated that the items shared between 23% and 60% of the variance with the factor scores. In addition, communalities indicated moderate to high correlations (Guilford, 1965). All the individual Cronbach's Alpha values were above .90 suggesting that these items were reliable, as they all far exceeded the 60% minimum level.

Table 23

Self Help: Dressing Construct: SMCs, Cronbach's Alpha and the Communality Values for overall sample

Item	SMC	Cronbach's Alpha	Communality
BIII.15	0.65	0.91	0.60
BIII.18	0.60	0.91	0.60
BIV.7	0.63	0.91	0.60
BIII.14	0.69	0.91	0.59
BIV.4	0.54	0.91	0.54
BIV.10	0.56	0.91	0.53
BIV.14	0.74	0.91	0.49
BVIII.13	0.54	0.91	0.44
BIV.15	0.86	0.92	0.41
BIV.17	0.84	0.92	0.40
BIII.11	0.62	0.92	0.38
BIII.8	0.52	0.92	0.36
BIII.7	0.50	0.92	0.23

The sorted rotated factor loadings are presented in Table 24.

Table 24

Self Help: Dressing Construct: Sorted Rotated Factor Loadings and Cronbach's Alpha for overall sample

Item		Factor 1
BIII.15	Manages topcoat, cardigan or raincoat unaided	0.78
BIII.18	Can fasten shoe buckles	0.78
BIV.7	Can tie a single knot	0.77
BIII.14	Can dress and undress self	0.77
BIV.4	Can choose own clothes	0.74
BIV.10	Can dress and undress completely, without help	0.73
BIV.14	Can tie a bow-knot	0.70
BIII.13	Can put on socks and shoes, unaided	0.67
BIV.15	Can tie own shoe-laces	0.64
BIV.17	Can tie a double bow-knot	0.63
BIII.11	Can do up buttons	0.62
BIII.8	Can undress self	0.60
BIII.7	Can undo buttons	0.48
Cronbach's Alpha		0.92

According to the rotated factor loadings in Table 24, all the items on the Self Help: Dressing construct loaded saliently on one factor and a simple solution was thus obtained. The fact that the factor loadings were significant (i.e., above 0.30) suggested that these items belong together as they share much in common. The researcher thus concluded that the simple factor structure presented above for the Self Help: Dressing construct represented an adequate one-factor solution and that this provided strong empirical validation that these items assess a single construct (i.e., Self Help: Dressing), which was identified during the facet analysis and literature control.

6.2.3 Construct 3: Self Help: Personal Hygiene

The construct of Self Help: Personal Hygiene is comprised of six items ranging from Year IV to Year VIII. The correlation matrix, presented in Table 25, revealed that 12 (80%) of the 15 correlations were above .30 and significant at the 0.05 level, which supports the factorability of the data matrix.

The strongest correlation found was between items BIV.5 (Can shampoo hair, with assistance) and BIV.3 (Can wash and dry own hands and face). A possible explanation could be that they are measuring the same skill (ability to wash oneself), although different body parts are specified in the items. The weakest correlation was between items BIV.16 (Can shampoo hair with some assistance) and BIII.9 (Washes own hands and face). A possible reason for this is that item BIII.9 requires that the child washes himself independently.

Table 25

Self Help: Personal Hygiene Construct: Correlation Matrix for overall sample

	BIV.3	BIV.5	BIII.16	BIII.9	BIV.18	BIV.16
BIV.3	1.00					
BIV.5	0.67	1.00				
BIII.16	0.56	0.58	1.00			
BIII.9	0.48	0.46	0.58	1.00		
BIV.18	0.49	0.44	0.34	0.24	1.00	
BIV.16	0.38	0.40	0.28	0.19	0.50	1.00

The histogram of eigenvalues (Figure 3) suggested that a 1-factor solution was the most appropriate for this data matrix.

Figure 3

Self Help: Personal Hygiene Construct: Histogram of Initial Eigenvalues for overall sample

Eigenvalue	Histogram
2.69	**********
0.39	******

Similarly, Table 26 shows that 88% of the variance can be explained by this one factor, which is a highly acceptable percentage of variance for one factor to account for.

Table 26

Self Help: Personal Hygiene Construct: Variance Explained by a 1-Factor Solution for overall sample

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		In data space	in factor space	
1	2.74	0.88	1.00	0.97

All the SMCs were above .25 (Table 27), and therefore indicated a substantial relationship among the items (Dixon, 1990). The communalities (Table 27) indicated that the items shared between 24% and 66% of the variance with the factor scores. In addition, three of the correlations indicate a low correlation and three indicate a moderate correlation (Guilford, 1965). All the individual Cronbach's Alpha values were above .70 suggesting that these items were reliable.

Table 27

Self Help: Personal Hygiene Construct: SMCs, Cronbach's Alpha and the Communality Values for overall sample

Item	SMC	Cronbach's Alpha	Communality
BIV.3	0.54	0.77	0.66
BIV.5	0.54	0.77	0.65
BIII.16	0.49	0.79	0.51
BIII.9	0.38	0.81	0.35
BIV.18	0.36	0.81	0.33
BIV.16	0.29	0.82	0.24

The sorted rotated factor loadings are presented in Table 28.

Table 28

Self Help: Personal Hygiene Construct: Sorted Rotated Factor Loadings and Cronbach's Alpha for overall sample

Item		Factor 1
BIV.3	Can wash and dry own hands and face, without any assistance	0.81
BIV.5	Can shampoo hair, with some assistance	0.81
BIII.16	Brushes own teeth, without assistance	0.72
BIII.9	Washes own hands and face, with some assistance	0.59
BIV.18	Baths or showers and dries self, without assistance	0.57
BIV.16	Can shampoo hair, without any assistance	0.50
Cronbach's Alpha		0.82

In considering the rotated factor loadings, presented in Table 28, it is clear that they were all above .30. Thus, all the items loaded saliently on this factor and share much in common with each other. The Cronbach's Alpha value for all the items was .82, which met the lower limit of r>.60 for exploratory research. Thus, the factor and the construct that is measures can be considered to be reliable. The researcher concluded that a simple, 1-factor solution had been derived. There is thus strong empirical evidence that the items identified as tapping Self Help: Personal Hygiene loaded together on one factor and thus tap the same construct.

6.2.4 Construct 4: Co-operation

The construct Co-operation is comprised of five items ranging from Year III to Year VIII. The correlation matrix is presented in Table 29 and revealed that 5 (50%) of the 10 correlations were above .30 and significant at the 0.05 level, which supports the factorability of the data matrix.

The strongest correlation found was between items BIV.19 (Can lay the table completely without help or supervision) and BIV.9 (Can lay a table completely with some supervision). Both these items measure exactly the same skills but at different levels of difficulty. The weakest correlation was between items BIII.1 (Puts toys away when encouraged to) and BIV.19, which requires the child to lay a table completely without supervision.

Table 29

Co-operation Construct: Correlation Matrix for overall sample

	BIV.19	BIII.17	BIV.19	BIII.3	BIII.1
BIV.19	1.00				
BIII.17	0.54	1.00			
BIV.19	0.59	0.34	1.00		
BIII.3	0.22	0.33	0.14	1.00	
BIII.1	0.08	0.12	0.05	0.13	1.00

The histogram of eigenvalues (Figure 4) suggested that a 1-factor solution was the most appropriate for this data matrix.

Figure 4

Co-operation Construct: Histogram of Initial Eigenvalues for overall sample

Eigenvalue	Histogram
1.51	**********
0.20	******

Similarly, Table 30 shows that 87% of the variance can be explained by this one factor.

Table 30

Co-operation Construct: Variance Explained by a 1-Factor Solution for overall sample

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		In data space	In factor space	
1	1.65	0.87	1.00	0.96

All the SMCs except for items BIII.3 (Assists with small household tasks on request) and BIII.1 (Puts away toys when encouraged to do so) were above .25 (Table 38). The communalities indicated that the items shared between 2% and 75% of the variance with the factor scores. In addition, two of the communalities indicated a slight correlation, two a moderate correlation and one a high correlation (Guilford, 1965). Although items BIII.3 and BIII.1 had low SMCs and low communalities, it made practical sense to include these two items when the factor analysis was performed.

Table 31

Co-operation Construct: SMCs, Cronbach's Alpha and the Communality Values for overall sample

Item	SMC	Cronbach's Alpha	Communality
BIV.9	0.47	0.48	0.75
BIII.17	0.34	0.50	0.41
BIV.19	0.35	0.55	0.37
BIII.3	0.12	0.62	0.11
BIII.1	0.02	0.69	0.02

Table 32 presents the sorted rotated factor loadings.

Table 32

Co-operation Construct: Sorted Rotated Factor Loadings and Cronbach's Alpha for overall sample

Item		Factor 1
BIV.9	Can lay a table completely, with some supervision	0.87
BIII.17	Can fetch item in a shop on request	0.64
BIV.19	Can lay a table completely, without help or supervision, on all ordinary occasions	0.61
BIII.3	Assists with small household tasks on request	0.33
BIII.1	Puts away toys when encouraged to do so	0.14
Cronbach's Alpha		0.63

In considering the rotated factor loadings, presented in Table 32, it is clear that they were all above .30, except for item BIII.1 (Puts away toys when encouraged to do so). Except for this item, the factor loadings of the other four items indicate that these items belong together. A possible reason that item BIII.1 was problematic includes the possibility that there was an anomaly in the sample. From a conceptual perspective, this item clearly assesses the same construct as the other items. Hence, it was decided to retain this item. However, it is recommended that further research be conducted on another sample to determine whether item BIII.1 shares sufficient in common with the other four items. The Cronbach's Alpha value for all the items was .63, which is above the lower limit of r>.60 for exploratory research. Thus, the factor that was derived was reliable.

The researcher concluded that a simple 1-factor structure had been derived. There is thus strong empirical evidence that all the items, except one, identified as tapping Co-operation in the facet analysis loaded together saliently on one factor, suggesting that they tap one construct.

6.2.5 Construct 5: Self Knowledge

The construct of Self Knowledge is comprised of eight items ranging from Year III to Year VIII. The correlation matrix, presented in Table 33, revealed that 17 (61%) of the 28 correlations were above .30 and significant at the 0.05 level, which supports the factorability of the data matrix.

The strongest correlation found was between items BIV.12 (Knows full address) and BIV.6 (Knows address). Both these items measure the same aspect but to different levels. Item BIV.12 requires more detail. The weakest correlation was between items BIII.2 (Gives first name on request) and BIV.20 (Knows birthday 2), which clearly involve self knowledge about different aspects.

Table 33

Self Knowledge Construct: Correlation Matrix for overall sample

	BIV.6	BIV.12	BIII.10	BIII.12	BIV.13	BIII.5	BIII.2	BIV.20
BIV.6	1.00							
BIV.12	0.68	1.00						
BIII.10	0.46	0.34	1.00					
BIII.12	0.43	0.32	0.55	1.00				
BIV.13	0.57	0.67	0.31	0.29	1.00			
BIII.5	0.30	0.21	0.49	0.52	0.19	1.00		
BIII.2	0.20	0.14	0.37	0.41	0.12	0.56	1.00	
BIV.20	0.27	0.36	0.13	0.13	0.43	0.08	0.05	1.00

The histogram of eigenvalues (Figure 5) suggested that up to two factors could be extracted, that is, two factors had eigenvalues above 1.

Figure 5

Self Knowledge Construct: Histogram of Initial Eigenvalues for overall sample

Eigenvalue	Histogram
2.95	**********
1.03	**********
0.11	*

While the eigenvalues suggested that a 2-factor solution might be appropriate, the scree test suggested that a 1-factor solution might be more appropriate. Consequently, the research explored both a 2- and a 1-factor solution to see which one made the most sense.

The factor analysis was thus run specifying a 2-factor solution. From a closer inspection of the rotated factor loadings, it was clear that items tended to

load together in terms of age groups. Items from year III (BIII.1, BIII.4, BIII.6) and year IV (BIII.9) loaded on Factor 1 and items from year V (BIII.14), VI (BIV.6) and year VIII (BIV.17 and BIV.20) loaded together on Factor 2. This trend was similar to findings of Kotras (2003), Barnard (2004) and Knoesen (2005) who sometimes found that a construct on the GMDS-ER subscales was split across two factors associated with younger and older age groups.

Next, the researcher explored a 1-factor solution. Table 34 shows that 74% of the variance can be explained by one factor, which is highly acceptable.

Table 34

Self Knowledge Construct: Variance Explained by a 1-Factor Solution for overall sample

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		In data space	In factor space	
1	2.89	0.74	1.00	0.95

All the SMCs except for item BIV.20 (Knows Birthday 2) were above .25 (Table 35). This may be due to an anomaly in the sample. The communalities indicated that the items shared between 12% and 57% of the variance with the factor scores. In addition communalities indicated slight to moderate correlations (Guilford, 1965). All the individual Cronbach's Alpha values were above .70 suggesting that these items were reliable.

Table 35

Self knowledge Construct: SMCs, Cronbach's Alpha and the Communality Values for overall sample

Item	SMC	Cronbach's Alpha	Communality
BIV.6	0.55	0.77	0.57
BIV.12	0.59	0.77	0.48
BIII.10	0.42	0.78	0.42
BIII.12	0.43	0.78	0.42
BIV.13	0.51	0.78	0.41
BIII.5	0.44	0.79	0.29
BIII.2	0.33	0.80	0.18
BIV.20	0.19	0.82	0.12

Table 36 provides the sorted rotated factor loadings.

Table 36

Self Knowledge Construct: Sorted Rotated Factor Loadings and Cronbach's Alpha for overall sample

Item		Factor 1
BIV.6	Knows address	0.75
BIV.12	Knows full address	0.69
BIII.10	Knows age	0.65
BIII.12	Gives family name	0.64
BIV.13	Knows birthday 1	0.64
BIII.5	Knows own sex	0.54
BIII.2	Gives first name	0.42
BIV.20	Knows birthday 2	0.35
Cronbach's Alpha		0.81

All the items loaded saliently (i.e., above .30) on the one factor. The Cronbach's Alpha value for the factor was .81, which was above the lower limit of r>.60 for exploratory research. Thus, the construct was reliable in terms of exploratory research.

The researcher concluded that a 1-Factor structure provided a simple solution. Furthermore, this suggests that the items identified in the facet analysis

as assessing Self Knowledge do indeed tap the same construct as they all loaded saliently on one factor.

6.2.6 Construct 6: Sociability: Peers

The construct of Sociability: Peers is comprised of three items ranging from Year III to Year VII. The correlation matrix, presented in Table 37, revealed that 2 of 3 (67%) correlations were above .30 and significant at the 0.05 level, which supports the factorability of the data matrix.

The strongest correlation found was between items BIV.11 (Has one special school friend) and BIV.1 (Has a special playmate). Both these items measure the same thing (close relationship with a specific individual), although item BIV.11 is more specific. The weakest correlation was between items BIII.6 (Plays well with other children) and BIV.11 (Has a special school friend). Item BIII.6 requires interaction with more than one individual (group skills) and item BIII.6 is specific to one individual.

Table 37

Sociability: Peers Construct: Correlation Matrix for overall sample

	BIV.1	BIV.11	BIII.6
BIV.1	1.00		
BIV.11	0.58	1.00	
BIII.6	0.37	0.22	1.00

The histogram of eigenvalues (Figure 6) suggested that a 1-factor solution was the most appropriate for this data matrix.

Figure 6

Sociability: Peers Construct: Histogram of Initial Eigenvalues for overall sample

Eigenvalue	Histogram
1.13	**********

Similarly, Table 38 shows that 99% of the variance can be explained by this one factor.

Table 38

Sociability: Peers Construct: Variance Explained by a 1-Factor Solution for overall sample

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		In data space	in factor space	
1	1.43	0.99	1.00	1.00

All the SMCs except for item BIII.6 (Plays well with other children) were above .25 (Table 39). This may be attributed to the fact that this item requires group interaction skills unlike the other items on the scale, which require skills on a more one to one basis. The communalities indicated that the items shared between 15% and 92% of the variance with the factor scores. In addition one of the communalities indicated a slight correlation, one a low correlation and one a high correlation (Guilford, 1965).

Table 39

Sociability: Peers Construct: SMCs, Cronbach's Alpha and the Communality Values for overall sample

Item	SMC	Cronbach's Alpha	Communality
BIV.1	0.40	0.36	0.92
BIV.11	0.34	0.54	0.36
BIII.6	0.14	0.73	0.15

The sorted rotated factor loadings are presented in Table 40.

Table 40

Sociability: Peers Construct: Sorted Rotated Factor Loadings and Cronbach's Alpha for overall sample

Item		Factor 1
BIV.1	Has a special playmate	0.96
BIV.11	Has one special school friend	0.60
BIII.6	Plays well with other children	0.38
Cronbach's Alpha		0.66

In considering the rotated factor loadings, presented in Table 40, it is clear that they were all salient in that they were above .30. The items share much in common with each other. The Cronbach's Alpha value for the factor was .66, which was above the lower limit of r>.60 required in exploratory research. Thus, the construct was reliable in terms of exploratory research.

The researcher thus concluded that a simple,1-factor structure was derived. Furthermore, there was strong empirical evidence to indicate that the items identified as tapping Sociability: Peers in the facet analysis loaded saliently together on one factor and are thus assessing the same construct.

In summary it can be concluded that the various factor analyses conducted resulted in strong empirical support being found for the six constructs identified through the facet analysis. Table 41, below provides the reader with an integrated overview of the Cronbach's Alpha values obtained for each of the six constructs.

Table 41

Cronbach's Alpha for the Six Constructs

Constructs	Cα
1. Self Help: Feeding	.68
2. Self Help: Dressing	.92
3. Self Help: Personal hygiene	.82
4. Self Knowledge	.81
5. Sociability: Peers	.66
6. Co-operation	.63

Cα≥ .60 = significant

As can be seen from Table 41, all six constructs have Cronbach's Alpha values that are significant, in that they are all above 0.60, as recommended by Hair et al., (1998). This suggests that the items identified as tapping each of the constructs for the facet analysis, were found to correlate with the total score for the construct. This indicates that the items for each of the six constructs were found to share a fair degree in common. Thus empirical support was established for the constructs identified during the facet analysis (Aim 1).

The next step was to explore construct equivalence across the gender and the three socio-economic groups. These results are presented in the next two sections.

6.3 RESULTS FOR THE EMPIRICAL VERIFICATION OF THE SIX CONSTRUCTS FOR BOYS AND GIRLS (AIM 3)

In accordance with the American Educational Research association (AERA, 1999) stipulations, the construct-related evidence was also provided for the gender groups to validate the comparability of the constructs. As with Aim 2, a common factor analysis with oblique (DQUART) rotation was conducted on the items of the six constructs for boys and girls separately. Thereafter, coefficients of congruence were calculated to compare the factor structures of boys and girls to establish whether the structures are in fact similar (equivalent) for the gender groups.

6.3.1 Construct 1: Self Help: Feeding

The correlation matrices are presented in Table 42 and 43. They revealed that 2 (67%) of the 3 correlations were above .30 and significant at the 0.05 level for both boys and girls.

Table 42

Self Help: Feeding Construct: Correlation Matrix for Boys

	BIII.4	BIV.2	BIV.8
BIII.4	1.00		
BIV.2	0.31	1.00	
BIV.8	0.25	0.66	1.00

Table 43

Self Help: Feeding Construct: Correlation Matrix for Girls

	BIII.4	BIV.2	BIV.8
BIII.4	1.00		
BIV.2	0.35	1.00	
BIV.8	0.25	0.65	1.00

Figures 7 and 8 indicate that a 1-factor solution was the most appropriate for both boys and girls.

Figure 7

Self Help: Feeding Construct: Histogram of Initial Eigenvalues for Boys

Eigenvalue	Histogram
1.25	**********

Figure 8

Self Help: Feeding Construct: Histogram of Initial Eigenvalues for Girls

Eigenvalue	Histogram
1.26	**********

Tables 44 and 45 show that 100% of the variance was explained by the 1-factor solutions for both boys and girls.

Table 44

Self Help: Feeding Construct: Variance Explained by a 1-Factor Solution for Boys

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		In data space	in factor space	
1	1.46	1.00	1.00	1.00

Table 45

Self Help: Feeding Construct: Variance Explained by a 1-Factor Solution for Girls

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	in factor space	
1	1.49	1.00	1.00	1.00

As was the case with the results for the overall sample, the SMC of item BIII.4 (Uses spoon and fork together, without help) was below .25 for boys and girls (Table 46).

Table 46

Self Help: Feeding Construct: SMCs, Cronbach's Alpha and the Communality Values for Boys and Girls

	Boys			Girls		
Item	SMC	Cronbach's Alpha	Communality	SMC	Cronbach's Alpha	Communality
BIII.4	0.10	0.80	0.12	0.12	0.79	0.14
BIV.2	0.46	0.40	0.80	0.46	0.40	0.87
BIV.8	0.44	0.47	0.55	0.43	0.52	0.49

According to Table 47, the factor loadings were all salient (i.e., above .30) across the gender groups. The 1-factor solutions thus seemed to yield an appropriate factor solution for boys and girls. The Cronbach's Alpha for boys and girls was .67 and .68 respectively, revealing an acceptable level of reliability (Cα > 0.60) for the Self Help: Feeding construct.

Table 47

Self Help: Feeding Construct: Rotated Factor Loadings and Cronbach's Alpha for Boys and Girls

Item		Boys	Girls
BIII.4	Uses spoon and fork together, without help	0.35	0.37
BVI.2	Can get a drink of water from the tap or bottle, without assistance	0.89	0.93
BVII.2	Eats without assistance	0.74	0.70
Cronbach's Alpha		0.67	0.68

The coefficients of congruence are presented in Table 48.

Table 48

Self Help: Feeding Construct: Coefficients of Congruence for Boys and Girls

	Boys	Girls
Boys	1.00	1.00
Girls	1.00	1.00

The coefficient of congruence reveals a perfect correlation when comparing the factor analysis results for boys and girls. This suggests that the same underlying construct (i.e., Self Help: Feeding) is being tapped for both boys and girls.

6.3.2 Construct 2: Self Help: Dressing

The correlation matrices revealed that 61 (78%) and 66 (85%) of the 78 correlations were above .30 and significant at the 0.05 level for boys and girls respectively. Figures 8 and 9 indicate that, based on the eigenvalues, a 2-factor solution was possible for both boys and girls. However, the first factor accounted for a very large percentage of the variance. When a 2-factor solution was explored, as was the case for the overall sample, it was found that the division of this construct into two factors was merely age-related (refer to Table 2, Appendix 8 for the factor loadings of the two age-related factors) and did not measure an

additional aspect of the Self Help: Dressing construct. Consequently, a one-factor solution was explored.

Figure 9

Self Help: Dressing Construct: Histogram of Initial Eigenvalues for Boys

Eigenvalue	Histogram
6.17	**********
1.95	**********
0.59	***
0.24	*

Figure 10

Self Help: Dressing Construct: Histogram of Initial Eigenvalues for Girls

Eigenvalue	Histogram
6.35	**********
1.74	**********
0.54	***
0.17	*

The variance explained by one factor (Tables 49 and 50) was 74 percent and 77 percent for boys and girls respectively, which is highly satisfactory.

Table 49

Self Help: Dressing Construct: Variance Explained by a 1-Factor Solution for Boys

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	In factor space	
1	6.01	0.74	1.00	0.97

Table 50

Self Help: Dressing Construct: Variance Explained by a 1-Factor Solution for Girls

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	In factor space	
1	6.21	0.77	1.00	0.97

As was the case for the overall sample, all the SMCs were above .25 (Table 51), for both boys and girls. All but one of the communalities (BIII.7) were above .25 and the Cronbach's Alpha values were .91 and above, which suggests a high degree of reliability.

Table 51

Self Help: Dressing Construct: SMCs, Cronbach's Alpha and the Communality Values for Boys and Girls

	Boys			Girls		
Item	SMC	Cronbach's Alpha	Communality	SMC	Cronbach's Alpha	Communality
BIII.7	0.50	0.92	0.23	0.50	0.92	0.24
BIII.8	0.53	0.91	0.38	0.49	0.92	0.33
BIII.11	0.63	0.91	0.39	0.60	0.92	0.38
BIII.13	0.60	0.91	0.48	0.47	0.92	0.40
BIII.14	0.68	0.91	0.58	0.71	0.91	0.61
BIII.15	0.62	0.91	0.58	0.70	0.91	0.63
BIII.18	0.58	0.91	0.58	0.62	0.91	0.61
BIV.4	0.57	0.91	0.56	0.50	0.91	0.52
BIV.7	0.62	0.91	0.55	0.64	0.91	0.63
BIV.10	0.62	0.91	0.54	0.54	0.91	0.51
BIV.14	0.77	0.91	0.43	0.73	0.91	0.52
BIV.15	0.85	0.91	0.38	0.87	0.92	0.43
BIV.17	0.79	0.91	0.35	0.87	0.92	0.42

Table 52 provides the sorted rotated factor loadings for boys and girls.

Table 52

Self Help: Dressing Construct: Sorted Rotated Factor Loadings and Cronbach's Alpha for Boys and Girls

Item		Boys	Girls
BIII.7	Can undo buttons	0.48	0.49
BIII.8	Can undress self	0.61	0.58
BIII.11	Can do up buttons	0.62	0.61
BIII.13	Can put on socks and shoes, unaided	0.69	0.63
BIII.14	Can dress and undress self	0.76	0.78
BIII.15	Manages topcoat, cardigan or raincoat unaided	0.76	0.79
BIII.18	Can fasten shoe buckles	0.76	0.78
B1V.4	Can choose own clothes	0.75	0.72
BIV.7	Can tie a single knot	0.74	0.80
BIV.10	Can dress and undress completely, without help	0.74	0.71
BIV.14	Can tie a bow-knot	0.66	0.72
BIV.17	Can tie a double bow-knot	0.59	0.65
BIV.15	Can tie own shoe-laces	0.61	0.65
Cronbach's Alpha		0.92	0.92

According to Table 52, the factor loadings were all salient and above .30 across the gender groups. The 1-factor solutions thus seemed to yield an appropriate factor solution for boys and girls. The Cronbach's Alpha for both boys and girls was .92 for this construct.

The coefficients of congruence presented in Table 53 show that a perfect correlation was obtained when comparing the factors for boys and girls. This suggests that the same underlying construct (i.e., Self Help: Dressing) is being tapped for both boys and girls.

Table 53

Self Help: Dressing Construct: Coefficients of Congruence for Boys and Girls

	Boys	Girls
Boys	1.00	1.00
Girls	1.00	1.00

6.3.3 Construct 3: Self Help: Personal Hygiene

The correlation matrices presented in Table 54 and 55 revealed that 13 (87%) and 11 (73%) of the 15 correlations were above .30 and significant at the .05 level for boys and girls respectively.

Table 54

Self Help: Personal Hygiene Construct: Correlation Matrix for Boys

	BIII.9	BIII.16	BIV.4	BIV.3	BIV.16	BIV.18
BIII.9	1.00					
BIII.16	0.59	1.00				
BIV.4	0.45	0.57	1.00			
BIV.3	0.46	0.57	0.67	1.00		
BIV.16	0.23	0.34	0.48	0.48	1.00	
BIV.18	0.27	0.39	0.46	0.54	0.55	1.00

Table 55

Self Help: Personal Hygiene Construct: Correlation Matrix for Girls

	BIII.9	BIII.16	BIV.4	BIV.3	BIV.16	BIV.18
BIII.9	1.00					
BIII.16	0.56	1.00				
BIV.4	0.46	0.60	1.00			
BIV.3	0.48	0.54	0.66	1.00		
BIV.16	0.16	0.22	0.34	0.31	1.00	
BIV.18	0.22	0.29	0.43	0.44	0.45	1.00

Figures 11 and 12 indicate that, according to the eigenvalues, a 1-factor solution was the most appropriate for both boys and girls.

Figure 11

Self Help: Personal Hygiene Construct: Histogram of Initial Eigenvalues for Boys

Eigenvalue	Histogram
2.86	**********
0.37	******

Figure 12

Self Help: Personal Hygiene Construct: Histogram of Initial Eigenvalues for Girls

Eigenvalue	Histogram
2.56	**********
0.38	******

Tables 56 and 57 show that 88% and 87% of the variance was explained by the 1-factor solutions for boys and girls respectively.

Table 56

Self Help: Personal Hygiene Construct: Variance Explained by a 1-Factor Solution for Boys

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		In data space	in factor space	
1	2.89	0.88	1.00	0.97

Table 57

Self Help: Personal Hygiene Construct: Variance Explained by a 1-Factor Solution for Girls

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	in factor space	
1	2.61	0.87	1.00	0.97

All the SMCs were above .25 (Table 58), except for item BIV.16 (Can shampoo hair without assistance) for girls. Item BIV.16 obtained an SMC value of 0.23, just 0.02 below the suggested 0.25 cut-point. All the communalities were above .25. Furthermore, the Cronbach's Alpha values ranged from 0.74 to 0.83, which is higher than the lower limit of 0.60 for exploratory research.

Table 58

Self Help: Personal Hygiene Construct: SMC's, Cronbach's Alpha and the Communality Values for Boys and Girls

	Boys			Girls		
Item	SMC	Cronbach's Alpha	Communality	SMC	Cronbach's Alpha	Communality
BIII.9	0.38	0.84	0.33	0.37	0.79	0.36
BIII.16	0.50	0.81	0.51	0.47	0.77	0.50
BIV.3	0.57	0.79	0.68	0.52	0.75	0.63
BIV.5	0.54	0.80	0.63	0.55	0.74	0.67
BIV.16	0.37	0.83	0.35	0.23	0.82	0.17
BIV.18	0.41	0.83	0.39	0.31	0.79	0.28

The sorted rotated factor loading for boys and girls are presented in Table 59.

Table 59

Self Help: Personal Hygiene Construct: Rotated Factor Loadings and Cronbach's Alpha for Boys and Girls

Item		Boys	Girls
BIII.9	Can shampoo hair, with some assistance	0.57	0.60
BIII.16	Can wash and dry own hands and face, without any assistance	0.72	0.71
BIV.3	Washes own hands and face, with some assistance	0.83	0.80
BIV.5	Brushes own teeth, without assistance	0.79	0.82
BIV.16	Baths or showers and dries self, without assistance	0.59	0.42
BIV.18	Can shampoo hair, without any assistance	0.63	0.53
Cronbach's Alpha		0.84	0.81

According to Table 59, the factor loadings were all salient and above .30 across the gender groups. The 1-factor solutions thus seemed to yield an appropriate factor solution for boys and girls. The Cronbach's Alpha for both boys and girls for the overall sample was .84 and .81 respectively, suggesting that the factor is reliable.

The coefficients of congruence presented in Table 60 show that a very high correlation was obtained when comparing the results for boys and girls. This

suggests that the same underlying construct (i.e., Self Help: Personal Hygiene) is being tapped for both boys and girls.

Table 60

Self Help: Personal Hygiene Construct: Coefficients of Congruence for Boys and Girls

	Boys	Girls
Boys	1.00	0.99
Girls	0.99	1.00

6.3.4 Construct 4: Co-operation

The correlation matrices revealed that 4 (40%) of the 10 correlations were above .30 and significant at the 0.05 level for both boys and girls respectively.

Table 61

Co-operation Construct: Correlation Matrix for Boys

	BIII.1	BIII.3	BIII.17	BIV.9	BIV.19
BIII.1	1.00				
BIII.3	-0.02	1.00			
BIII.17	0.11	0.33	1.00		
BIV.9	0.06	0.22	0.53	1.00	
BIV.19	0.03	0.13	0.31	0.56	1.00

Table 62

Co-operation Construct: Correlation Matrix for Girls

	BIII.1	BIII.3	BIII.17	BIV.9	BIV.19
BIII.1	1.00				
BIII.3	0.26	1.00			
BIII.17	0.14	0.34	1.00		
BIV.9	0.11	0.21	0.54	1.00	
BIV.19	0.07	0.14	0.36	0.60	1.00

Figures 16 and 17 indicate that a 1-factor solution was the most appropriate for both boys and girls.

Figure 13

Co-operation Construct: Histogram of Initial Eigenvalues for Boys

Eigenvalue	Histogram
1.44	**********
0.15	******

Figure 14

Co-operation Construct: Histogram of Initial Eigenvalues for Girls

Eigenvalue	Histogram
1.56	**********
0.31	******

Tables 63 and 64 show that 88% and 84% of the variance was explained by the 1-factor solutions for boys and girls respectively.

Table 63

Co-operation Construct: Variance Explained by a 1-Factor Solution for Boys

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	in factor space	
1	1.60	0.88	1.00	0.97

Table 64

Co-operation Construct: Variance Explained by a 1-Factor Solution for Girls

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	in factor space	
1	1.68	0.84	1.00	0.95

As was the case for the overall sample, the SMCs and communalities of items BIII.1 (Puts away toys when encouraged to do so) and BIII.3 (Assists with small household tasks), were below .25 for both boys and girls (Table 65). The Cronbach's Alpha values ranged from 0.41 to 0.70, which suggests that the reliability of some items may be suspect.

Table 65

Co-operation Construct: SMC's, Cronbach's Alpha and the Communality Values for Boys and Girls

	Boys			Girls		
Item	SMC	Cronbach's Alpha	Communality	SMC	Cronbach's Alpha	Communality
BIII.1	0.01	0.68	0.01	0.07	0.70	0.04
BIII.3	0.11	0.59	0.10	0.16	0.63	0.12
BIII.17	0.34	0.44	0.40	0.34	0.55	0.42
BIV.9	0.45	0.41	0.77	0.48	0.53	0.71
BIV.19	0.31	0.51	0.33	0.36	0.59	0.39

According to Table 66, the factor loadings of four of the items were salient and above. 30. However, the factor loadings for item BIII.1 were below .30 across the gender groups. This may be due to an anomaly in the sample. The 1-factor solution thus seemed to yield an appropriate factor solution for boys and girls. The Cronbach's Alpha for boys and girls was .59 and .66 respectively. The Cronbach's Alpha value for boys was slightly below (.01) the acceptable level of .60 for exploratory research.

Table 66

Co-operation Construct: Rotated Factor Loadings and Cronbach's Alpha for Boys and Girls

Item		Boys	Girls
BIII.1	Puts away toys when encouraged to do so	0.08	0.19
BIII.3	Assists with small household tasks on request	0.31	0.34
BIII.17	Can fetch item in a shop on request	0.63	0.65
BIV.9	Can lay a table completely, with some supervision	0.88	0.85
BIV.19	Can lay a table completely, without help or supervision, on all ordinary occasions	0.57	0.62
Cronbach's Alpha		0.59	0.66

The coefficients of congruence presented in Table 67 show that a very high correlation was obtained when comparing the results for boys and girls. This

suggests that the same underlying construct (Co-operation) is being tapped for both boys and girls.

Table 67

Co-operation Contruct: Coefficients of Congruence for Boys and Girls

	Boys	Girls
Boys	1.00	0.99
Girls	0.99	1.00

6.3.5 Construct 5: Self Knowledge

The correlation matrices presented in Table 68 and 69 revealed that 17 (61%) and 15 (54%) of the 28 correlations were above .30 and significant at the 0.05 level for both boys and girls.

Table 68

Self Knowledge Construct: Correlation Matrix for Boys

	BIII.2	BIII.5	BIII.12	BIII.10	BIV.6	BIV.12	BIV.13	BIV.20
BIII.2	1.00							
BIII.5	0.52	1.00						
BIII.12	0.38	0.50	1.00					
BIII.10	0.32	0.48	0.57	1.00				
BIV.6	0.20	0.30	0.44	0.46	1.00			
BIV.12	0.13	0.22	0.31	0.34	0.67	1.00		
BIV.13	0.12	0.19	0.29	0.32	0.56	0.68	1.00	
BIV.20	0.06	0.09	0.13	0.15	0.28	0.38	0.46	1.00

Table 69

Self Knowledge Construct: Correlation Matrix for Girls

	BIII.2	BIII.5	BIII.12	BIII.10	BIV.6	BIV.12	BIV.13	BIV.20
BIII.2	1.00							
BIII.5	0.60	1.00						
BIII.12	0.44	0.54	1.00					
BIII.10	0.43	0.50	0.53	1.00				
BIV.6	0.20	0.29	0.42	0.45	1.00			
BIV.12	0.14	0.20	0.32	0.32	0.62	1.00		
BIV.13	0.13	0.18	0.29	0.29	0.56	0.66	1.00	
BIV.20	0.05	0.07	0.12	0.12	0.26	0.35	0.40	1.00

Figures 15 and 16 indicate that, according to the eigenvalues, a 2-factor solution might have been appropriate for both boys and girls. However, as found for the overall sample, the scree test suggested that a 1-factor solution might be more appropriate. Two factor solutions were thus explored, namely, a 2-factor and a 1-factor solution.

Figure 15

Self Knowledge Construct: Histogram of Initial Eigenvalues for Boys

Eigenvalue	Histogram
2.94	**********
1.00	**********
0.14	*

Figure 16

Self Knowledge Construct: Histogram of Initial Eigenvalues for Girls

Eigenvalue	Histogram
2.94	**********
1.10	**********

When the 2-factor solution was run, it was noted that the division of this construct into two factors were merely age related and did not measure an additional aspect of Self Knowledge. Next, a one-factor solution was run.

Tables 70 and 71 show that 75% and 74% of the variance was explained by the 1-factor solutions for boys and girls respectively.

Table 70

Self Knowledge Construct: Variance Explained by a 1-Factor Solution for Boys

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	in factor space	
1	2.89	0.75	1.00	0.95

Table 71

Self Knowledge Construct: Variance Explained by a 1-Factor Solution for Girls

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	in factor space	
1	2.87	0.74	1.00	0.95

As was the case with the results for the overall sample, the SMC of item BVIII.8 (Knows Birthday II) was below .25 for both boys and girls (Table 72). Only one communality was below .25 (BVIII.8). The Cronbach's Alpha values ranged from .76 to .83, which is acceptable in exploratory research.

Table 72

Self Knowledge Construct: SMCs, Cronbach's Alpha and the Communality Values for Boys and Girls

	Boys			Girls		
Item	SMC	Cronbach's Alpha	Communality	SMC	Cronbach's Alpha	Communality
BIII.2	0.29	0.81	0.34	0.39	0.80	0.49
BIII.5	0.42	0.79	0.58	0.47	0.78	0.64
BIII.12	0.43	0.78	0.53	0.43	0.77	0.51
BIII.10	0.42	0.78	0.48	0.41	0.77	0.48
BIV.6	0.54	0.76	0.59	0.55	0.77	0.61
BIV.12	0.59	0.77	0.72	0.58	0.77	0.74
BIV.13	0.53	0.78	0.66	0.49	0.78	0.61
BIV.20	0.23	0.81	0.23	0.17	0.82	0.18

The sorted rotated factor loadings are presented in Table 73.

Table 73

Self Knowledge Construct: Sorted Rotated Factor Loadings and Cronbach's Alpha for Boys and Girls

Item		Boys	Girls
BIV.12	Knows full address	0.39	0.47
BIV.13	Knows birthday I	0.52	0.56
BIV.6	Knows address	0.63	0.66
BIV.20	Knows birthday 2	0.64	0.66
BIII.5	Knows own sex	0.76	0.74
BIII.12	Gives family name	0.71	0.67
BIII.2	Gives first name	0.66	0.61
BIII.10	Knows age	0.38	0.32
Cronbach's Alpha		0.81	0.81

According to Table 73, the factor loadings were all salient and above .30 across the gender groups for each factor. The 1-factor solutions thus yielded an appropriate factor solution for boys and girls. The Cronbach's Alpha for both boys and girls were acceptable and well above the suggested .6 for exploratory research.

The coefficients of congruence presented in Table 74 show that a perfect correlation was obtained when comparing the factors for boys and girls. This suggests that the same underlying construct (i.e., Self Knowledge) is being tapped for both boys and girls.

Table 74

Self Knowledge Construct: Coefficients of Congruence for Boys and Girls

	Boys	Girls
Boys	1.00	1.00
Girls	1.00	1.00

6.3.6 Construct 6: Sociability: Peers

The correlation matrices (Tables 75 and 76) revealed that 2 (67%) of the 3 correlations were above .30 and significant at the .05 level for both boys and girls.

Table 75

Sociability: Peers Construct: Correlation Matrix for Boys

	BIII.6	BIV.1	BIV.11
BIII.6	1.00		
BIV.1	0.38	1.00	
BIV.11	0.25	0.62	1.00

Table 76

Sociability: Peers Construct: Correlation Matrix for Girls

	BIII.6	BIV.1	BIV.11
BIII.6	1.00		
BIV.1	0.36	1.00	
BIV.11	0.19	0.54	1.00

Figures 17 and 18 indicate that a 1-factor solution was the most appropriate for both boys and girls.

Figure 17

Sociability: Peers Construct: Histogram of Initial Eigenvalues for Boys

Eigenvalue	Histogram
1.21	**********

Figure 18

Sociability: Peers Construct: Histogram of Initial Eigenvalues for Girls

Eigenvalue	Histogram
1.04	**********

Tables 77 and 78 show that 99% of the variance was explained by the 1-factor solutions for both boys and girls.

Table 77

Sociability: Peers Construct: Variance Explained by a 1-Factor Solution for Boys

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	in factor space	
1	1.48	0.99	1.00	1.00

Table 78

Sociability: Peers Construct: Variance Explained by a 1-Factor Solution for Girls

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	in factor space	
1	1.37	0.99	1.00	1.00

As was the case with the results for the overall sample, the SMC of item BIII.6 (Plays well with other children) was below .25 for both boys and girls (Table 79). This item's communality was also low. The SMCs and communalities of the other items were all above .25. Cronbach's Alphas varied from .32 to .76, suggesting that the reliability of these items may be suspect.

Table 79

Sociability: Peers Construct: SMCs, Cronbach's Alpha and the Communality Values for Boys and Girls

	Boys			Girls		
Item	SMC	Cronbach's Alpha	Communality	SMC	Cronbach's Alpha	Communality
BIII.6	0.15	0.76	0.16	0.12	0.71	0.13
BIV.1	0.44	0.40	0.91	0.36	0.32	0.92
BIV.11	0.38	0.55	0.41	0.30	0.52	0.32

According to Table 80, the factor loadings were all salient and above .30 across the gender groups. The 1-factor solutions thus yielded an appropriate factor solution for boys and girls. The Cronbach's Alpha value for boys and girls was 0.68 and .63 respectively, which are acceptable in exploratory research.

Table 80

Sociability: Peers Construct: Sorted Rotated Factor Loadings and Cronbach's Alpha for Boys and Girls

Item		Boys	Girls
BIII.6	Plays well with other children	0.39	0.36
BIV.1	Has a special playmate	0.96	0.96
BIV.11	Has one special school friend	0.64	0.56
Cronbach's Alpha		0.68	0.63

The coefficients of congruence presented in Table 81 show that a perfect correlation was obtained when comparing the factors for boys and girls. This suggests that the same underlying construct (i.e., Sociability: Peers) is being tapped for both boys and girls.

Table 81

Sociability: Peers Construct: Coefficients of Congruence for Boys and Girls

	Boys	Girls
Boys	1.00	1.00
Girls	1.00	1.00

Based on the results presented in this section, the researcher concluded that for all the six constructs consistent (equivalent) factor structures were found for boys and girls. The results revealed that regardless from which gender group the child is from the same construct is always being assessed. The results from the computation of coefficient of congruency strongly indicated that measurement invariance was established across gender groups. Therefore the differences on scores between groups reflect accurately the differences on the latent characteristics assessed by the factor. These results are consistent with the findings of Kotras (2003) for the Language Subscale, Barnard (2004) for the Practical Reasoning Subscale and Knoesen (2005) for the Locomotor Subscale. However, the clinician and researcher must remember that these findings do not imply that children from different gender groups perform equally well on the Revised Griffiths Personal-Social Subscale. Instead they imply that the subscale is measuring the same constructs for each child, regardless of his/her gender.

6.4 RESULTS FOR THE EMPIRICAL VERIFICATION OF THE SIX CONSTRUCTS ON THE UPPER, MIDDLE AND LOWER SES GROUPS (AIM 3)

During this stage, the construct equivalence of the Personal-Social constructs needed to be established for children from the three socio-economic groups, namely, upper, middle and lower. As with Aim 1 and 2, a common factor analysis with oblique rotation was conducted on the constructs for each of the socio-economic groups separately. Thereafter, coefficients of congruence were calculated to compare the factor loadings of the constructs for the groups to establish whether they were essentially similar (equivalent).

6.4.1 Construct 1: Self Help: Feeding

The correlation matrices revealed that 2 (67%) of the 3 correlations were above .30 for both the middle and upper SES groups, while 1 (33%) of the 3 correlations were above .30 for the lower SES group.

Table 82

Self Help: Feeding Construct: Correlation Matrix for Lower Socio-Economic Group

	BIII.4	BIV.2	BIV.8
BIII.4	1.00		
BIV.2	0.26	1.00	
BIV.8	0.20	0.67	1.00

Table 83

Self Help: Feeding Construct: Correlation Matrix for Middle Socio-Economic Group

	BIII.4	BIV.2	BIV.8
BIII.4	1.00		
BIV.2	0.35	1.00	
BIV.8	0.26	0.67	1.00

Table 84

Self Help: Feeding Construct: Correlation Matrix for Upper Socio-Economic Group

	BIII.4	BIV.2	BIV.8
BIII.4	1.00		
BIV.2	0.36	1.00	
BIV.8	0.29	0.64	1.00

Figures 19, 20 and 21 indicate that a 1-factor solution was the most appropriate for the lower, middle and upper SES groups.

Figure 19

Self Help: Feeding Construct: Histogram of Initial Eigenvalues for Lower Socio-Economic Group

Eigenvalue	Histogram
1.23	**********

Figure 20

Self Help: Feeding Construct: Histogram of Initial Eigenvalues for Middle Socio-Economic Group

Eigenvalue	Histogram
1.29	**********

Figure 21

Self Help: Feeding Construct: Histogram of Initial Eigenvalues for Upper Socio-Economic Group

Eigenvalue	Histogram
1.25	**********

Tables 85, 86 and 87 show that 100% of the variance explained by the 1-factor solutions for both the middle and upper SES groups, while 99% of the variance was explained by the 1-factor solution for the lower SES group.

Table 85

Self Help: Feeding Construct: Variance Explained by a 1-Factor Solution for Lower Socio-Economic Group

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	in factor space	
1	1.46	0.99	1.00	1.00

Table 86

Self Help: Feeding Construct: Variance Explained by a 1-Factor Solution for Middle Socio-Economic Group

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	in factor space	
1	1.52	1.00	1.00	1.00

Table 87

Self Help: Feeding Construct: Variance Explained by a 1-Factor Solution for Upper Socio-Economic Group

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	in factor space	
1	1.46	1.00	1.00	1.00

As was the case with the results for the overall sample and gender groups, the SMC and communality of item BIII.4 (Uses spoon and fork together, without any help) was below .25 for the lower, middle and upper SES groups (Table 88). All the other SMCs and communalities were above .25. The Cronbach's Alpha values ranged from .33 to .81, suggesting that some items are less reliable than others.

Table 88

Self Help: Feeding Construct: SMCs, Cronbach's Alpha and the Communality Values for Lower, Middle and Upper Socio-Economic Groups

	Lower			Middle			Upper		
Item	SMC	Cronbach's Alpha	Communality	SMC	Cronbach's Alpha	Communality	SMC	Cronbach's Alpha	Communality
BIII.4	0.07	0.81	0.08	0.12	0.80	0.13	0.13	0.78	0.16
BIV.2	0.47	0.33	0.84	0.48	0.41	0.88	0.44	0.45	0.77
BIV.8	0.46	0.42	0.54	0.45	0.52	0.51	0.41	0.52	0.52

According to Table 89, the factor loadings were all salient and above .30 for the middle and upper SES groups. However, for the lower SES group item BIII.4 was below .30. Nonetheless, the 1-factor solutions seemed to yield an appropriate factor solution for the lower, middle and upper SES groups. The Cronbach's Alpha was .65 for the lower SES group and .69 for both the middle and upper SES groups, which is an acceptable level of reliability in exploratory research.

Table 89

Self Help: Feeding Construct: Rotated Factor Loadings and Cronbach's Alpha for Lower, Middle and Upper Socio-Economic Groups

Item		Lower	Middle	Upper
BIII.4	Uses spoon and fork together, without help	0.28	0.37	0.40
BIV.2	Can get a drink of water from the tap or bottle, without assistance	0.91	0.94	0.88
BIV.8	Eats without assistance	0.74	0.71	0.72
Cronbach's Alpha		0.65	0.69	0.69

According to Table 90, the coefficients of congruence for the one factor per SES group were all very high (above .90), thus suggesting that a similar construct (i.e., Self Help: Feeding) is assessed across the three SES groups. Consequently, there is evidence to support the fact that there is construct equivalence across SES groups.

Table 90

Self Help: Feeding Construct: Coefficients of Congruence Lower, Middle and Upper Socio-Economic Groups

	Lower	Middle	Upper
Lower	1.00	1.00	0.99
Middle	1.00	1.00	1.00
Upper	0.99	1.00	1.00

6.4.2 Construct 2: Self Help: Dressing

The correlation matrices revealed that 61 (78%), 65 (83%) and 64 (82%) of the 78 correlations were above .30 and significant at the 0.05 level for the lower, middle and upper SES groups respectively.

Figures 22, 23 and 24 indicate that, based on the eigenvalues, a 2-factor solution might have been appropriate for the lower, middle and upper SES groups. However, the fact that the first factor accounted for such a large percentage of the variance as well as the scree test suggested that a 1-factor solution might be more appropriate. Consequently, both a 2-factor as well as a 1-factor solution were explored.

Figure 22

Self Help: Dressing Construct: Histogram of Initial Eigenvalues for Lower Socio-Economic Group

Eigenvalue	Histogram
5.96	**********
1.73	**********
0.61	***
0.27	*

Figure 23

Self Help: Dressing Construct: Histogram of Initial Eigenvalues for Middle Socio-Economic Group

Eigenvalue	Histogram
6.52	**********
1.86	**********
0.46	***
0.18	*

Figure 24

Self Help: Dressing Construct: Histogram of Initial Eigenvalues for Upper Socio-Economic Group

Eigenvalue	Histogram
6.37	**********
1.90	**********
0.64	***
0.22	*

As was found for the overall sample, and the gender groups, a 2-factor solution resulted in the division of the construct into two age-related factors.

When a 1-factor solution was explored, Tables 91, 92 and 93 reveal that 75%, 77% and 75% of the variance was explained by the 1-factor solutions for the lower, middle and upper SES groups respectively.

Table 91

Self Help: Dressing Construct: Variance Explained by a 1-Factor Solution for Lower Socio-Economic Group

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	in factor space	
1	5.82	0.75	1.00	0.97

Table 92

Self Help: Dressing Construct: Variance Explained by a 1-Factor Solution for Middle Socio-Economic Group

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	in factor space	
1	6.38	0.77	1.00	0.98

Table 93

Self Help: Dressing Construct: Variance Explained by a 1-Factor Solution for Upper Socio-Economic Group

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	in factor space	
1	6.22	0.75	1.00	0.97

As was the case for the overall sample and gender groups, all the SMC's and communalities were above .25 and the Cronbach's Alpha values were .90 and higher (Table 94), for the lower, middle and upper SES groups.

Table 94

Self Help: Dressing Construct: SMC's, Cronbach's Alpha and the Communality Values for Lower, Middle and Upper Socio-Economic Groups

	Lower			Middle			Upper		
Item	SMC	Cronbach's Alpha	Communality	SMC	Cronbach's Alpha	Communality	SMC	Cronbach's Alpha	Communality
BIII.7	0.50	0.91	0.32	0.46	0.92	0.38	0.58	0.92	0.41
BIII.11	0.59	0.91	0.51	0.63	0.92	0.60	0.65	0.92	0.59
BIII.13	0.48	0.90	0.51	0.56	0.92	0.55	0.59	0.91	0.64
BIII.8	0.44	0.91	0.48	0.56	0.92	0.57	0.54	0.92	0.56
BIII.14	0.64	0.90	0.64	0.73	0.91	0.78	0.68	0.91	0.67
BIII.18	0.63	0.90	0.61	0.59	0.92	0.58	0.63	0.91	0.58
BIII.15	0.59	0.90	0.59	0.68	0.92	0.70	0.68	0.91	0.68
BIV.9	0.67	0.90	0.64	0.60	0.92	0.59	0.65	0.91	0.60
BIV.4	0.48	0.90	0.48	0.58	0.92	0.56	0.54	0.91	0.52
BIV.14	0.74	0.90	0.80	0.77	0.92	0.81	0.71	0.91	0.76
BIV.17	0.80	0.90	0.73	0.86	0.92	0.83	0.85	0.92	0.78
BIV.15	0.83	0.90	0.79	0.88	0.92	0.86	0.86	0.92	0.81
BIV.10	0.57	0.90	0.55	0.56	0.92	0.55	0.61	0.91	0.62

The sorted rotated factor loadings are presented in Table 95.

Table 95

Self Help: Dressing Construct: Sorted Rotated Factor Loadings and Cronbach's Alpha for Lower, Middle and Upper Socio-Economic Groups

Item		Lower	Middle	Upper
BIII.7	Can undo buttons	0.42	0.50	0.50
BIII.8	Can undress self	0.52	0.64	0.60
BIII.11	Can do up buttons	0.54	0.66	0.62
BIII.13	Can put on socks and shoes, unaided	0.60	0.67	0.70
BIII.14	Can dress and undress self	0.73	0.80	0.77
BIII.15	Manages topcoat, cardigan or raincoat	0.73	0.80	0.78
BIII.18	Can fasten shoe buckles	0.79	0.77	0.77
BIV.4	Can choose own clothes	0.70	0.76	0.73
BIV.7	Can tie a single knot	0.79	0.77	0.78
BIV.10	Can dress and undress completely	0.74	0.72	0.72
BIV.14	Can tie a bow-knot	0.72	0.69	0.69
BIV.15	Can tie a double bow-knot	0.66	0.64	0.63
BIV.17	Can tie own shoe-laces	0.63	0.63	0.62
Cron`bach's Alpha		0.91	0.92	0.92

As can be seen in Table 95, all the factor loadings are salient (i.e., above .30) for all three the SES groups. This suggests that the items tap a common construct in each group. Furthermore, the Cronbach's Alpha values were all above .90, suggesting that the factor is reliable.

According to Table 96, the coefficients of congruence for the one factor per SES group were all very high (perfect) (above .90), thus suggesting that a similar construct (i.e., Self Help: Dressing) is assessed across the three SES groups.

Table 96

Self Help: Dressing Construct: Coefficients of Congruence for Lower, Middle and Upper Socio-Economic Groups

	Lower	Middle	Upper
Lower	1.00	1.00	1.00
Middle	1.00	1.00	1.00
Upper	1.00	1.00	1.00

6.4.3 Construct 3: Self Help: Personal Hygiene

The correlation matrices revealed that 12 (80%) of the 15 correlations were above .30 for the lower, middle and upper SES groups.

Table 97

Self Help: Personal Hygiene Construct: Correlation Matrix for Lower Socio-Economic Group

	BIII.9	BIII.16	BIV.5	BIV.3	BIV.16	BIV.18
BIII.9	1.00					
BIII.16	0.60	1.00				
BIV.5	0.50	0.65	1.00			
BIV.3	0.44	0.55	0.71	1.00		
BIV.16	0.19	0.28	0.36	0.39	1.00	
BIV.18	0.23	0.34	0.40	0.48	0.50	1.00

Table 98

Self Help: Personal Hygiene Construct: Correlation Matrix for Middle Socio-Economic Group

	BIII.9	BIII.16	BIV.5	BIV.3	BIV.16	BIV.18
BIII.9	1.00					
BIII.16	0.53	1.00				
BIV.5	0.43	0.56	1.00			
BIV.3	0.46	0.54	0.72	1.00		
BIV.16	0.18	0.27	0.41	0.38	1.00	
BIV.18	0.23	0.34	0.48	0.48	0.49	1.00

Table 99

Self Help Personal Hygiene Construct: Correlation Matrix for Upper Socio-Economic Group

	BIII.9	BIII.16	BIV.5	BIV.3	BIV.16	BIV.18
BIII.9	1.00					
BIII.16	0.64	1.00				
BIV.5	0.47	0.57	1.00			
BIV.3	0.53	0.58	0.58	1.00		
BIV.16	0.22	0.28	0.44	0.38	1.00	
BIV.18	0.26	0.33	0.44	0.50	0.50	1.00

Figures 25, 26 and 27 indicate that a 1-factor solution was the most appropriate for the lower, middle and upper SES groups.

Figure 25

Self Help: Personal Hygiene Construct: Histogram of Initial Eigenvalues for Lower Socio-Economic Group

Eigenvalue	Histogram
2.75	**********
0.43	******

Figure 26

Self Help: Personal Hygiene Construct: Histogram of Initial Eigenvalues for Middle Socio-Economic Group

Eigenvalue	Histogram
2.67	**********
0.35	******

Figure 27

Self Help: Personal Hygiene Construct: Histogram of Initial Eigenvalues for Upper Socio-Economic Group

Eigenvalue	Histogram
2.73	**********
0.43	******

Tables 100, 101 and 102 shows that 86%, 87% and 86% of the variance was explained by the 1-factor solutions for the lower, middle and upper SES groups respectively.

Table 100

Self Help: Personal Hygiene Construct: Variance Explained by a 1-Factor Solution for Lower Socio-Economic Group

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	in factor space	
1	2.78	0.86	1.00	0.97

Table 101

Self Help: Personal Hygiene Construct: Variance Explained by a 1-Factor Solution for Middle Socio-Economic Group

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	in factor space	
1	2.72	0.87	1.00	0.97

Table 102

Self Help: Personal Hygiene Construct: Variance Explained by a 1-Factor Solution for Upper Socio-Economic Group

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	in factor space	
1	2.77	0.86	1.00	0.97

As was the case for the overall sample and male group, all the SMC's were above .25 (Table 103), for the lower, middle and upper SES groups. All but one of the communalities were above .25 (BIV.16) and the Cronbach's Alpha values were all .77 and higher, which is acceptable in exploratory research.

Table 103

Self Help: Personal Hygiene Construct: SMCs, Cronbach's Alpha and the Communality Values for Lower, Middle and Upper Socio-Economic Groups

	Lower			Middle			Upper		
Item	SMC	Cronbach's Alpha	Communality	SMC	Cronbach's Alpha	Communality	SMC	Cronbach's Alpha	Communality
BIII.9	0.39	0.81	0.35	0.32	0.81	0.30	0.45	0.81	0.42
BIII.16	0.53	0.78	0.56	0.43	0.79	0.46	0.54	0.79	0.55
BIV.3	0.57	0.77	0.65	0.58	0.76	0.69	0.51	0.78	0.63
BIV.5	0.61	0.77	0.70	0.59	0.76	0.70	0.48	0.79	0.58
BIV.16	0.29	0.83	0.23	0.28	0.82	0.24	0.31	0.83	0.26
BIV.18	0.35	0.81	0.29	0.36	0.80	0.34	0.37	0.82	0.33

According to Table 104, the factor loadings were all salient and above .30 across the SES groups. The 1-factor solutions thus yielded an appropriate factor solution for the lower, middle and upper SES groups separately. The Cronbach's Alpha value for the lower, middle and upper SES groups was .83, .82 and .83 respectively, suggesting that the factor is reliable.

Table 104

Self Help: Personal Hygiene Construct: Hygiene Construct: Rotated Factor Loadings and Cronbach's Alpha for Lower, Middle and Upper Socio-Economic Groups

Item		Lower	Middle	Upper
BIII.9	Can shampoo hair, with some assistance	0.59	0.54	0.65
BIII.16	Can wash and dry own hands and face, without any assistance	0.75	0.68	0.74
BIV.3	Washes own hands and face, with some assistance	0.80	0.83	0.80
BIV.5	Brushes own teeth, without assistance	0.84	0.83	0.76
BIV.16	Baths or showers and dries self, without assistance	0.47	0.49	0.51
BIV.18	Can shampoo hair, without any assistance	0.54	0.58	0.58
Cronbach's Alpha		0.83	0.82	0.83

According to Table 105, the coefficients of congruence for the one factor per SES group were all very high (above .90), thus suggesting that a similar construct is assessed across the three SES groups.

Table 105

Self Help: Personal Hygiene Construct: Coefficients of Congruence Lower, Middle and Upper Socio-Economic Groups

	Lower	Middle	Upper
Lower	1.00	1.00	1.00
Middle	1.00	1.00	1.00
Upper	1.00	1.00	1.00

6.4.4 Construct 4: Co-operation

The correlation matrices revealed that 4 (40%) of the 10 correlations were above .30 for the lower, middle and upper SES groups.

Table 106

Co-operation Construct: Correlation Matrix for Lower Socio-Economic Group

	BIII.1	BIII.3	BIII.17	BIV.9	BIV.19
BIII.1	1.00				
BIII.3	0.09	1.00			
BIII.17	0.16	0.37	1.00		
BIV.9	0.09	0.23	0.53	1.00	
BIV.19	0.06	0.16	0.34	0.60	1.00

Table 107

Co-operation Construct: Correlation Matrix for Middle Socio-Economic Group

	BIII.1	BIII.3	BIII.17	BIV.9	BIV.19
BIII.1	1.00				
BIII.3	0.29	1.00			
BIII.17	0.11	0.31	1.00		
BIV.9	0.09	0.18	0.54	1.00	
BIV.19	0.06	0.12	0.35	0.61	1.00

Table 108

Co-operation Construct: Correlation Matrix for Upper Socio-Economic Group

	BIII.1	BIII.3	BIII.17	BIV.9	BIV.19
BIII.1	1.00				
BIII.3	-0.02	1.00			
BIII.17	0.11	0.34	1.00		
BIV.9	0.07	0.25	0.53	1.00	
BIV.19	0.04	0.15	0.32	0.55	1.00

Figures 28, 29 and 30 indicate that a 1-factor solution was the most appropriate for the lower, middle and upper SES groups.

Figure 28

Co-operation Construct: Histogram of Initial Eigenvalues for Lower Socio-Economic Group

Eigenvalue	Histogram
1.55	**********
0.21	******

Figure 29

Co-operation Construct: Histogram of Initial Eigenvalues for Middle Socio-Economic Group

Eigenvalue	Histogram
1.54	**********
0.35	******

Figure 30

Co-operation Construct: Histogram of Initial Eigenvalues for Upper Socio-Economic Group

Eigenvalue	Histogram
1.47	**********
0.13	*****

Tables 109, 110 and 111 shows that 87%, 83% and 88% of the variance was explained by the 1-factor solutions for the lower, middle and upper SES groups respectively.

Table 109

Co-operation Construct: Variance Explained by a 1-Factor Solution for Lower Socio-Economic Group

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	in factor space	
1	1.67	0.87	1.00	0.96

Table 110

Co-operation Construct: Variance Explained by a 1-Factor Solution for Middle Socio-Economic Group

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		In data space	in factor space	
1	1.67	0.83	1.00	0.95

Table 111

Co-operation Construct: Variance Explained by a 1-Factor Solution for Upper Socio-Economic Group

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		In data space	in factor space	
1	1.62	0.88	1.00	0.97

As was the case for the overall sample and gender groups, the SMC and communality of items BIII.1 and BIII.3, were below .25 for the lower, middle and upper SES groups. The Cronbach's Alpha values ranged from .39 to .70, suggesting that some items might be less reliable.

Table 112

Co-operation Construct: SMCs, Cronbach's Alpha and the Communality Values for Lower, Middle and Upper Socio-Economic Groups

	Lower			Middle			Upper		
Item	SMC	Cronbach's Alpha	Communality	SMC	Cronbach's Alpha	Communality	SMC	Cronbach's Alpha	Communality
BIII.1	0.28	0.70	0.02	0.08	0.68	0.03	0.02	0.69	0.01
BIII.3	0.14	0.63	0.12	0.16	0.62	0.09	0.13	0.60	0.12
BIII.17	0.36	0.51	0.43	0.34	0.54	0.40	0.34	0.45	0.42
BIV.9	0.48	0.50	0.71	0.49	0.51	0.76	0.45	0.43	0.74
BIV.19	0.36	0.57	0.37	0.37	0.57	0.39	0.31	0.52	0.33

According to Table 113, the factor loadings were all salient and above .30, except for item BIII.1 (Puts away toys when encouraged to) across the SES groups. The 1-factor solutions thus seemed to yield an appropriate factor solution

for the lower, middle and upper SES groups separately. The Cronbach's Alpha for the lower, middle and upper SES groups was .64, .64 and .60 respectively.

Table 113

Co-operation Construct: Rotated Factor Loadings and Cronbach's Alpha Lower, Middle and Upper Socio-Economic Groups

Item		Lower	Middle	Upper
BIII.1	Puts away toys when encouraged to do so	0.15	0.16	0.09
BIII.3	Assists with small household tasks on request	0.35	0.30	0.35
BIII.17	Can fetch item in a shop on request	0.66	0.63	0.65
BIV.9	Can lay a table completely, with some supervision	0.85	0.87	0.86
BIV.19	Can lay a table completely, without help or supervision, on all ordinary occasions	0.61	0.62	0.57
Cronbach's Alpha		0.64	0.64	0.60

According to Table 114, the coefficients of congruence for the one factor per SES group were all very high (above .90), thus suggesting that a similar construct (i.e., Co-operation) is assessed across the three SES groups.

Table 114

Co-operation Construct: Coefficients of Congruence for Lower, Middle and Upper Socio-Economic Groups

	Lower	Middle	Upper
Lower	1.00	1.00	1.00
Middle	1.00	1.00	1.00
Upper	1.00	1.00	1.00

6.4.5 Construct 5: Self Knowledge

The correlation matrices revealed that 15 (54%), 16 (57%) and 17 (61%) of the 28 correlations were above .30 for the lower, middle and upper SES groups respectively.

Table 115

Self Knowledge Construct: Correlation Matrix for Lower Socio-Economic Group

	BIII.2	BIII.5	BIII.12	BIII.10	BIV.6	BIV.12	BIV.13	BIV.20
BIII.2	1.00							
BIII.5	0.67	1.00						
BIII.12	0.41	0.46	1.00					
BIII.10	0.39	0.49	0.58	1.00				
BIV.6	0.19	0.29	0.36	0.50	1.00			
BIV.12	0.13	0.19	0.30	0.34	0.68	1.00		
BIV.13	0.11	0.17	0.28	0.29	0.55	0.61	1.00	
BIV.20	0.05	0.08	0.13	0.13	0.26	0.36	0.42	1.00

Table 116

Self Knowledge Construct: Correlation Matrix for Middle Socio-Economic Group

	BIII.2	BIII.5	BIII.12	BIII.10	BIV.6	BIV.12	BIV.13	BIV.20
BIII.2	1.00							
BIII.5	0.49	1.00						
BIII.12	0.42	0.59	1.00					
BIII.10	0.38	0.52	0.50	1.00				
BIV.6	0.21	0.32	0.47	0.42	1.00			
BIV.12	0.15	0.24	0.34	0.32	0.70	1.00		
BIV.13	0.13	0.21	0.29	0.29	0.54	0.67	1.00	
BIV.20	0.05	0.08	0.12	0.12	0.25	0.31	0.40	1.00

Table 117

Self Knowledge Construct: Correlation Matrix for Upper Socio-Economic Group

	BIII.2	BIII.5	BIII.12	BIII.10	BIV.6	BIV.12	BIV.13	BIV.20
BIII.2	1.00							
BIII.5	0.57	1.00						
BIII.12	0.40	0.46	1.00					
BIII.10	0.34	0.46	0.61	1.00				
BIV.6	0.18	0.28	0.44	0.48	1.00			
BIV.12	0.12	0.18	0.31	0.36	0.65	1.00		
BIV.13	0.12	0.17	0.29	0.35	0.61	0.72	1.00	
BIV.20	0.06	0.08	0.14	0.16	0.30	0.43	0.47	1.00

Figures 31, 32 and 33 indicate that a 2-factor solution might have been appropriate for the lower, middle and upper SES groups. However, the scree test suggested that a 1-factor solution might be more appropriate. Consequently, both a 2-factor and a 1-factor solution were explored.

Figure 31

Self Knowledge Construct: Histogram of Initial Eigenvalues for Lower Socio-Economic Group

Eigenvalue	Histogram
2.91	**********
1.12	**********
0.19	***

Figure 32

Self Knowledge Construct: Histogram of Initial Eigenvalues for Middle Socio-Economic Group

Eigenvalue	Histogram
2.95	**********
1.00	**********
0.98	**********

Figure 33

Self Knowledge Construct: Histogram of Initial Eigenvalues for Upper Socio-Economic Group

Eigenvalue	Histogram
3.02	**********
1.10	**********
0.18	***

In the 2-factor solution, as was found for the overall sample, and the gender groups, the division of this construct into two factors was merely age-related.

Next, a 1-factor solution was explored. Tables 118, 119 and 120 shows that 72%, 75% and 74% of the variance was explained by the 1-factor solutions for the lower, middle and upper SES groups.

Table 118

Self Knowledge Construct: Variance Explained by a 1-Factor Solution for Lower Socio-Economic Group

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		In data space	in factor space	
1	2.83	0.72	1.00	0.95

Table 119

Self Knowledge Construct: Variance Explained by a 1-Factor Solution for Middle Socio-Economic Group

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		In data space	in factor space	
1	2.89	0.75	1.00	0.95

Table 120

Self Knowledge Construct: Variance Explained by a 1-Factor Solution for Upper Socio-Economic Group

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		In data space	in factor space	
1	2.95	0.74	1.00	0.95

As was the case with the results for the overall sample and gender groups, the SMC of item BIV.20 (Knows Birthday 2) was below .25 for the lower, middle and upper SES groups (Table 121). The Cronbach's Alpha values were all above .60, which is acceptable in exploratory research.

Table 121

Self Knowledge Construct: SMCs, Cronbach's Alpha and the Communality Values for Lower, Middle and Upper Socio-Economic Groups

	Lower			Middle			Upper		
Item	SMC	Cronbach's Alpha	Communality	SMC	Cronbach's Alpha	Communality	SMC	Cronbach's Alpha	Communality
BIII.2	0.47	0.79	0.54	0.28	0.80	0.35	0.35	0.81	0.41
BIII.5	0.52	0.78	0.68	0.46	0.78	0.64	0.42	0.80	0.56
BIII.12	0.40	0.77	0.44	0.46	0.77	0.56	0.46	0.78	0.53
BIII.10	0.48	0.77	0.50	0.38	0.78	0.45	0.47	0.78	0.52
BIV.6	0.56	0.76	0.62	0.57	0.76	0.61	0.53	0.77	0.58
BIV.12	0.55	0.77	0.69	0.61	0.77	0.76	0.60	0.78	0.74
BIV.13	0.45	0.78	0.56	0.50	0.78	0.60	0.59	0.78	0.72
BIV.20	0.19	0.81	0.19	0.16	0.82	0.16	0.24	0.82	0.25

According to Table 122, the factor loadings were all salient and above .30 across the SES groups. The 1-factor solutions thus seemed to yield an appropriate factor solution for the lower, middle and upper SES groups separately. The Cronbach's Alpha value for the lower, middle and upper SES groups was .80, .80 and .81 respectively, suggesting that the factor is reliable.

Table 122

Self Knowledge Construct: Rotated Factor Loadings and Cronbach's Alpha for Lower, Middle and Upper Socio-Economic Groups

Item		Lower	Middle	Upper
BIII.2	Gives first name	0.46	0.43	0.39
BIII.5	Knows own sex	0.56	0.58	0.48
BIII.12	Knows age	0.69	0.62	0.67
BIII.10	Gives family name	0.63	0.67	0.63
BIV.6	Knows address	0.74	0.76	0.76
BIV.12	Knows full address	0.65	0.70	0.71
BIV.13	Knows birthday I	0.59	0.62	0.69
BIV.20	Knows birthday II	0.34	0.31	0.40
Cronbach's Alpha		0.80	0.80	0.81

According to Table 123, the coefficients of congruence for the one factor per SES group were all very high (above .90), thus suggesting that a similar construct is assessed across the three SES groups.

Table 123

Self Knowledge Construct: Coefficients of Congruence for Lower, Middle and Upper Socio-Economic Groups

	Lower	Middle	Upper
Lower	1.00	1.00	1.00
Middle	1.00	1.00	1.00
Upper	1.00	1.00	1.00

6.4.6 Construct 6: Sociability: Peers

The correlation matrices revealed that 2 (67%) of the 3 correlations were above .30 for the lower, middle and upper SES groups.

Table 124

Sociability: Peers: Correlation Matrix for Lower Socio-Economic Group

	BIII.6	BIV.1	BIV.11
BIII.6	1.00		
BIV.1	0.34	1.00	
BIV.11	0.21	0.60	1.00

Table 125

Sociability: Peers: Correlation Matrix for Middle Socio-Economic Group

	BIII.6	BIV.1	BIV.11
BIII.6	1.00		
BIV.1	0.36	1.00	
BIV.11	0.21	0.59	1.00

Table 126

Sociability: Peers: Correlation Matrix for Upper Socio-Economic Group

	BIII.6	BIV.1	BIV.11
BIII.6	1.00		
BIV.1	0.41	1.00	
BIV.11	0.24	0.55	1.00

Figures 34, 35 and 36 indicate that a 1-factor solution was the most appropriate for the lower, middle and upper SES groups.

Figure 34

Sociability: Peers: Histogram of Initial Eigenvalues for Lower Socio-Economic Group

Eigenvalue	Histogram
1.14	**********

Figure 35

Sociability: Peers: Histogram of Initial Eigenvalues for Middle Socio-Economic Group

Eigenvalue	Histogram
1.13	**********

Figure 36

Sociability: Peers: Histogram of Initial Eigenvalues for Upper Socio-Economic Group

Eigenvalue	Histogram
1.13	**********

Tables 127, 128 and 129 shows that 99% of the variance was explained by the 1-factor solutions for the lower, middle and upper SES groups.

Table 127

Sociability: Peers: Variance Explained by a 1-Factor Solution for Lower Socio-Economic Group

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	In factor space	
1	1.42	0.99	1.00	1.00

Table 128

Sociability: Peers: Variance Explained by a 1-Factor Solution for Middle Socio-Economic Group

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	In factor space	
1	1.42	0.99	1.00	1.00

Table 129

Sociability: Peers: Variance Explained by a 1-Factor Solution for Upper Socio-Economic Group

Factor	Variance Explained	Cumulative proportion of variance		Carmines Theta
		in data space	In factor space	
1	1.43	0.99	1.00	1.00

As was the case with the results for the overall sample and gender groups, the SMC and communality of item BIII.6 (Plays well with other children), was below .25 for the lower, middle and upper SES groups (Table 130). Cronbach's Alpha values also ranged from .35 and upwards, suggesting that some items might be less reliable.

Table 130

Sociability: Peers: SMCs, Cronbach's Alpha and the Communality Values for Lower, Middle and Upper Socio-Economic Groups

	Lower			Middle			Upper		
Item	SMC	Cronbach's Alpha	Communality	SMC	Cronbach's Alpha	Communality	SMC	Cronbach's Alpha	Communality
BIII.6	0.12	0.75	0.12	0.13	0.74	0.14	0.17	0.71	0.18
BIV.1	0.41	0.35	0.91	0.40	0.35	0.92	0.39	0.39	0.92
BIV.11	0.36	0.51	0.39	0.34	0.53	0.37	0.31	0.59	0.33

According to Table 131, the factor loadings were all salient and above .30 across the gender groups. The 1-factor solutions thus seemed to yield an appropriate factor solution for the lower, middle and upper SES groups separately. The Cronbach's Alpha for the lower, middle and upper SES groups was .65, .65 and .67 respectively.

Table 131

Sociability: Peers: Sorted Rotated Factor Loadings and Cronbach's Alpha for Lower, Middle and Upper Socio-Economic Groups

Item		Lower	Middle	Upper
BIII.6	Plays well with other children	0.35	0.37	0.43
BIV.1	Has a special playmate	0.95	0.96	0.96
BIV.11	Has one special school friend	0.62	0.61	0.58
Cronbach's Alpha		0.65	0.65	0.67

According to Table 132, the coefficients of congruence for the one factor per SES group were all very high (above .90), thus suggesting that a similar construct (i.e., Sociability: Peers) is assessed across the three SES groups.

Table 132

Sociability: Peers: Coefficients of Congruence for Lower, Middle and Upper Socio-Economic Groups

	Lower	Middle	Upper
Lower	1.00	1.00	1.00
Middle	1.00	1.00	1.00
Upper	1.00	1.00	1.00

From the numerous computations completed, it is evident that for all the six constructs, for all the SES groups, a consistent (equivalent) factor structure was found. Thus regardless from which SES group a child is from, the same construct is always being assessed on the Revised Extended Personal Social Subscale. These results are consistent with the findings of Kotras (2003) for the Language Subscale, Barnard (2005) for the Practical Reasoning Subscale, and Knoesen (2005) for the Locomotor Subscale. However, the clinician and researcher must remember that these findings do not imply that children from different SES groups perform equally well on the Revised Extended Personal-Social Subscale. Rather they imply that the subscale is measuring the same construct(s) for each child, regardless of their SES Group.

6.6 SUMMARY OF THE CHAPTER

Chapter 6 took the reader through a detailed account of the factor analytic results obtained. Strong empirical evidence was found that validated the constructs identified during the facet analysis for the sample as a whole as well as across gender and SES groups. The results of both the facet and factor analysis have important implications for the use of the Scales in clinical practice. These implications, together with the contributions and limitations of the current study will be outlined in the concluding chapter.

CHAPTER SEVEN

CONCLUSIONS AND RECOMMENDATIONS

7.1 INTRODUCTION

The recent revision and restandardisation of the Griffiths Mental Developmental Scales-Extended Revised (GMDS-ER) necessitated further investigation into its psychometric properties. This study aimed to contribute by conducting additional investigations into the construct validity of the Personal-Social Subscale of the GMDS-ER. The current chapter will draw the present study to a close by summarizing its major findings and contributions. This chapter will highlight the major findings gained from the study, contributions and, implication of the findings, the limitations of the study and recommendations for future research.

7.2 MAJOR LEARNINGS GAINED

The aim of this study was to provide evidence to support the validity of the Revised Personal-Social Subscale. The reader is referred to Chapter Five and Six for a more in-dept discussion of the qualitative and quantitative results. The major findings of the current study were as follows:

1. Six constructs were qualitatively identified and quantitatively verified providing evidence for the construct-related validity of the Personal-Social Subscale of the GMDS-ER. More specifically:

    a) On the recommendation of Kotras (2003) and Barnard (2004) facet analysis and literature control was used as the first step in determining the underlying structure of the Personal-Social Subscale. This enabled the identification of the underlying constructs of the Personal-Social Subscale. This process also provided evidence for the content-related validity of the Personal-Social Subscale, which further contributed

evidence towards its construct-related validity, given the inter-relatedness between these two lines of evidence.

b) The primary constructs underlying each unique item on the Personal-Social Subscale were identified through a process of synthesis and integration of the findings from a facet analysis conducted with a multidisciplinary panel of experts experienced in working with children and a literature control (Qualitative results). Six constructs were identified, Self Help: Dressing, Self Help: Personal Hygiene, Self Help: Feeding, Co-operation, Self Knowledge; and Sociability: Peers.

c) No empirical studies were conducted into the underlying structure of the original Griffiths Scales and thus previously, the clinician was only able to interpret the sub-quotient. Hence the identification of the constructs in the present study has both advanced the information on the underlying constructs of the GMDS-ER provided by Luiz et al. (2006a) and increased the validity, accuracy, and scope of interpretations that can be made of performance on the Personal-Social Subscale. Clinicians will now be able to locate the specific areas of strengths and weaknesses, which in turn will promote more accurate and detailed diagnoses and promote the early identification of personal-social delays. By means of illustration, should a child systematically fall out (i.e., perform poorly) on items grouped under a particular construct (such as Co-operation) within the broader personal-social domain, and then this area could be identified as a weakness. Similarly, should a child consistently pass items underlying a specific construct, this may indicate an area of relative strength. The identification of the child's specific area(s) of personal-social weakness will enable the clinician to delve deeper into the area(s) of delay, for example employing other assessment measures which may offer a more comprehensive assessment of that particular aspect of personal-social development. Developmental delays in children may also reflect the influence of

adverse environmental circumstances such as child battering, emotional abuse and malnutrition, which needs to be addressed and remediated (Grantham-McGregor, Powell & Schofield, 1979; Holt, 1974). Alternatively, appropriate, individually-tailored remediation programmes which specifically target the identified area of personal-social weakness could be developed and implemented to assist the child in reaching their full potential. This is particular important during early childhood as this period serves as the foundation of shaping and forming the personality as was highlighted by Erikson's Psychosocial Theory in Chapter 3. Strong personal-social skills will enable a child to be independent, self sufficient, confident, socially appropriate enabling the child to develop his full potential, hence producing an emotionally stable and fully functioning adult.

d) Unfortunately, although factor scores were derived for the constructs in the present study it will not be possible for clinicians to use these factors scores. This is primarily due to the fact that all of the Personal-Social Subscale items are needed to compute the factor scores. All the items of the scale are never administered to the child due to the developmental nature of the scales, in which items for each subscale are placed in a gradually increasing level of difficulty. The researcher is however, of the opinion and recommends that all clinicians qualitatively review a child's performance with respect to the constructs identified, so as to arrive at a picture of the child's performance across all the constructs (factors) assessed.

e) Construct equivalence has been established for the six underlying constructs of the Personal-Social Subscale for different socio-economic and gender groups. High coefficients of congruence between the groups for the factors confirmed that the constructs identified were equivalent for boys and girls, as well as children from upper, middle and lower socio-

economic groups. Hence comparisons between these subgroups can be made with confidence by clinicians using the scale. Similar findings were found by Kotras (2003) for the Language Scale, Barnard (2004) on the Practical Reasoning Scale and Knoesen (2005) on the Locomotor Scale.

The process of exploring construct equivalence for subgroups, as was recommended by various test evaluation guidelines, provided by the European Federation of Psychological Association (EFPA) (Bartram, September 2001), the American Psychological Association (Alderson, Clapham & Wall, 1996; APA, 1985; Bachman, 1990: Huysamen, 2002) and the AERA (1999), proved to be of great value in the current study, and is likely to continue being of value for future studies of this nature.

2. Most general intelligence/developmental assessment measures sample a broad array of intellectually challenging problems, but are usually inadequate in providing a measure of how well a person is functioning (Anselmo & Franz, 1995). The Personal-Social Subscale provides a fairly comprehensive measure of the most important aspects of personal-social development. The content coverage and construct representivity on the GMDS-ER per year group was fairly adequate in terms of the development of the child, with a good representation of the identified constructs within each year. However, slight areas of construct under-representation were found. An evaluation of the construct coverage of the revised Griffiths Personal-Social Subscale reveals that the construct *self help* is fairly well represented. However, of concern was the exclusion of toileting skills, which is considered to be an important self
help skill. Furthermore, aspects like *personal safety and avoiding danger* are not included. In today's times were crime and abuse is at its highest, it is important that children are aware of and demonstrate that it is unsafe
to accept rides, food and money from strangers.

Personal identity or knowledge of self was also fairly well represented on the scale as compared to other personal-social measures. With regards to assessing *prosocial behaviours or socially adaptive behaviours,* too little emphasis has been placed on assessing this construct on Subscale B. Items do not specifically focus on communicating basic needs, appropriate use of toys, or other co- coperative actions and play skills that are intended to benefit others. Stewart (2005) concluded that a growing sense of co-operation was under-represented and recommended that a universally known and relevant game such as snap, marbles or catches be included as an item, as this elicits a strong sense of co-operation. A skill that is important in socialization. Other areas not covered include an assessment of coping skills, ability to adapt to new situations, organizational skills and responsibility for the older child.

After reviewing other measures that focus specifically on personal-social skills it was noted that the following constructs were also extensively assessed on these measures: *communication* (VABS; Fairview Self Help Scale); *motor skills* (VABS, Fairview Self Help Scales); *social interaction* (Fairview Self Help Scales); *community daily living skills* (VABS); *Self direction,* including *independence, play activity, household tasks, time sense, number sense and reading* (Fairview Self Help Skills). Although some of these constructs were identified on the GMDS-ER Personal-Social Subscale, limited emphasis has been placed on them. However,some of these skills (e.g., motor skills; language) are more thoroughly assessed on the other five Subscales. It can hence be concluded that while the Personal-Social Subscale taps a range of important personal-social skills, it does not provide a comprehensive assessment of all aspects of personal-social functioning. Consequently, it should be used more as a screening measure and is best used with all the other five Subscales. Should significant personal-social problems be identified on it, a more comprehensive personal-social assessment measure like the VABS is recommended.

3. This study has provided extensive qualitative and quantitative evidence for the multidimensional structure underlying the Personal-Social Subscale of the GMDS-ER. Personal-Social development does not occur in isolation, and that all personal-social skills require a combination of the identified constructs together with internal and external factors and cannot be understood if its multidimensionality is ignored. The multidimensional nature of development was highlighted and elaborated on in Chapter 3. The six constructs identified as underlying the Personal-Social Subscale is thus aligned with the multidimensionality of personal-social development and emphasizes the importance and value of utilizing the constructs when interpreting a child's performance on the Personal-Social Subscale, rather than merely interpreting the overall performance. As a result of this multidimensionality, as evidenced in the current study as well as in Povey's (2002) study on the original Griffiths Scales, interpretations based solely on the overall performance will preclude a comprehensive evaluation of the child's developing personal-social skills. This in turn will not provide an accurate indication of the child's personal-social development. The multidimensional nature of development was also emphasized by Kotras (2003) for the Language Scale, Barnard (2004) for the Practical Reasoning Scale and Knoesen (2005) for the Locomotor Scale.

4. The use of both qualitative and quantitative data gathering techniques provided the researcher with insight into the value of including both approaches in a psychometric study, such as the current one. Struwig and Stead (2001) maintained that the advantage of using qualitative results and quantitative data together enables the researcher to present multiplicities of data in a coherent and functional way. For this study these techniques complement each other in eliciting and verifying the data obtained, and this contributed to the scope and richness of the study.

5. The application of a dynamic triangulation methodological process to explore the global and specific aims of the study proved to be an imperative alternative to a static predetermined methodological process in a study of this nature. The verification of the qualitative facet analysis by means of factor analysis enhanced the exploration of the construct validity of the Revised Personal-Social Subscale. The importance and value of developing a sound validity argument that integrates various strands of evidence, into a coherent account was evidenced in the present study.

   Multidisciplinary expertise obtained from the professionals working with children in various domains provided the researcher with opportunities to obtain varied expert opinions to gain insights into the constructs being tapped by the subscale. In addition, by triangulating this information with information and findings in the literature, proved to be an extremely valuable aspect of the study, in that it added to ensuring the trustworthiness of the overall results.

6. The dynamic nature of the study allowed the course of each new stage in the research process to be determined by the results from the preceding stage. This had the following advantages:

   a) Time and resources were not wasted unnecessarily on statistical analyses that would be meaningless (e.g., factor analysis per age group).
   b) The research team was consistently and closely involved in the interpretation of the results in order to reach decisions that would guide the next stage of the analysis.

It can therefore be concluded that this study provided evidence for the construct and content related validity of the newly restandardized Personal-

Social Subscale of the GMDS-ER, validating its use as a fairly comprehensive, and valid measure of personal-social development for children between three and age years of age.

7.3 LIMITATIONS OF THE STUDY

When reviewing the current study the following limitations were noted:

1. The first possible limitation to the study as identified by the research team, involves the dynamic nature of the approach adopted in exploring evidence to support the validity of the Personal-Social Subscale. It should be noted, however, that the researcher was aware from the onset that this working-model-type methodology would cause the exact replication of the study for the remaining five Subscales to be problematic. As replicability of the study was not the researcher's primary concern, the researcher acknowledges the fact that this working-model may be but one way of providing relevant validity related evidence for the Subscale.

2. The sample could have been enhanced if certain subject variables had been more equally distributed. That is, the sample would have been more balanced if an equal number of children per age group could have been achieved. However, all age groups met the recommended sample-to-variables-ratio of 5:1 for factor analysis (Floyd & Widaman, 1995). This limitation however, did not place direct restrictions on the statistical analysis of results in that factor analysis was not performed per age group. The researcher can however, only speculate about the possible negative impact the combination of differing sample sizes and the strong age grading of items had on the analyses.

3. All the items were not administered to every child in the sample, thus making it impossible to employ a more modern approach to item analysis through the construction of item characteristic curves (ICC) using Item Response Theory (IRT). The participant to item ratio together with the nature of the data (only

six items per year) further ruled out the possibility of conducting confirmatory factor analysis through Structural Equation Modeling (SEM) in order to verify (confirm) the fit of the construct model as a whole for the various subgroups.

7.4 RECOMMENDATIONS FOR FUTURE RESEARCH

The procedures employed in the current study, as well as the conclusions made have provided a foundation for the validation of the remaining subscales of the Revised Extended Griffiths Scales. It has also pioneered possible future validation studies in other countries. Specific recommendations related to each aim of the study as well as some recommendations will be provided below.

7.4.1 Recommendations related to Aim 1 (Facet Analysis)

1. It was on the recommendation of Kotras (2003) and Barnard (2003) that the study commenced with a facet analysis and not factor analysis to identify the underlying constructs of developmental measures where the items are arranged according to age as this does not provide valuable information. In the context of the broader study, it is recommended that each content domain be thoroughly researched and verified against existing literature and developmental theories before attempting to qualitatively identify and label underlying constructs.

2. The value of using professionals and experts in the process of facet analysis with the purpose of identifying the constructs cannot be overemphasized. The use of professionals in the facet analysis process assisted in determining construct under-representation and the construct-irrelevant variance. With reference to the Revised Extended Personal-Social Subscale, it became evident that there are no items that tap the child's ability to control his/her bladder control, which is an important developmental milestone. Also relationships with siblings and parents were not considered in sufficient detail. Other personal social behaviour such as ability to adapt to new situations,

coping skills, organizational skills, responsibility, avoiding danger, personal safety etc. were also not assessed.

The researcher thus recommends that the inclusion of experts, appropriate to the subscale under review, be involved in identifying aspects of the content domain for each of the remaining Revised Subscales. By obtaining information of this nature, clinicians will in turn benefit in terms of the comprehensiveness of the interpretations that can be made with respect to performance for that specific subscale. The clinician will thus be able to gain a global picture, for example, of the child's personal-social development, as well as a profile of their strengths and weaknesses in terms of more specific constructs. However, although clinicians will have a far more comprehensive picture of a child's performance, it is of importance to note that no one measure is all encompassing in nature. Therefore, it is the responsibility of the test developers (or refiners), to provide information to all test users on the limits of what a test measures. In addition, the provision of such information is regarded as being mandatory in the 1999 American Standards for educational and psychological testing (AERA, 1999).

7.4.2 Recommendations related to Aim 2

1. It is recommended that an essential step for future research is to gather and integrate information obtained from various sources (namely, literature on the subject or domain under review, previous research results from previous factor analytic studies, and information obtained from a facet analysis), so as to devise a construct-model. If empirically verified, such a construct-model can:

    a) 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.

b) Enable test developers to accurately define personal-social skills as assessed on the Revised Extended Personal Social Subscale.

c) Facilitate research that provides evidence of concurrent validity and other types of validity, for instance, correlating the Personal-Social Subscale of the Revised Extended Griffiths with other measures of personal-social development.

2. The researcher also found the invaluable importance of using a team approach to provide a platform for critical discussions before reaching consensus decisions and to ensure the trustworthiness of results. It is therefore recommended, that other studies on the remaining Revised Griffiths Subscales, also include professionals to increase the trustworthiness, comprehensiveness and critical stance of the final constructs.

7.4.3 Recommendations related to Aim 3 (Equivalence)

It is acknowledged that research of this nature should not stop once constructs have been identified, but that the facet analysis should be verified empirically, via factor analysis, per construct and also for various subgroups to explore construct equivalence for the subgroups. Due to previous research findings indicating potential differences among socio-economic subgroups (Allan, 1992; Hanson et al., 1985; Hanson & Aldridge Smith, 1987; Luiz et al., 2000; Munro, 1968) and due to the contradictory evidence regarding boys and girls (Allan, 1988; Bhamjee, 1991; Mothuloe, 1990) the current study only verified the equivalence of the constructs for these subgroups. It is recommended that future validity studies follow a similar process and also include the computation of coefficient of congruency to investigate construct equivalence for different subgroups. In addition, it is recommended that future studies also focus on other potential subgroups for example, cultural, or urban and rural groups. Should research show that different constructs are being tapped for specific subgroups,

then the researcher should examine the possibility of construct-irrelevant variance in the test (or subscale).

7.4.4 Additional Suggestions for Future Research

When reviewing the current study, the following additional suggestions for future research are made:

1. The focus of this study was on gathering evidence to support the construct-related validity of the Personal-Social Subscale. The qualitative and quantitative evidence presented in this study provides sufficient evidence for the construct-related validity of this Subscale. However as this study represents one of the first investigations into the underlying structure of this Subscale and given the developmental nature of the GMDS-ER, together with the limitation of only six items per year, exploratory common factor analysis was deemed most appropriate and thus employed. A significant limitation of the data was that not every item was administered to every child in the restandardisation sample and thus confirmatory factor analysis using structural equation modeling was not possible. However, bearing in mind the inherent limitations of the current data, it is recommended that future studies be conducted into the factorial validity of the Personal-Social Subscale by employing more stringent confirmatory techniques to confirm the six constructs proposed in this study, thus adding further evidence for its construct-related validity. Confirmatory factor analysis is generally more successful if preceded by exploratory factor analysis and thus this study represents an essential first step in determining the underlying structure of the Personal-Social Subscale before any additional investigations could be conducted.

2. There is much controversy and differing opinions regarding the most suitable technique to employ when determining the factorial invariance or construct equivalence of a factor structure across sample groups (Knoesen, 2005).

Although the coefficient of congruence utilized in the current study has traditionally been the most frequently recommended and used technique in determining factor pattern similarity, according to Reise, Waller and Comrey (2000), reliance on congruency coefficients has recognized problems. Floyd and Widamen (1995) regard it as a liberal test of factor similarity across samples and Paunonen (1997) maintain that it is easily influenced by changes in the data set such as the number of variables in the analysis and the number of high loading variables per factor. For this and other reasons, some researchers propose that factor replicability or invariance should be investigated using confirmatory factor analytic procedures (Alwin & Jackson, 1981; Byrne & Baron, 1994; Hoyle, 1991). Although this study has provided an acceptable, stringent test of factorial similarity and invariance providing convincing evidence for the equivalence of the constructs across the gender and SES groups, it is recommended that future studies confirm this factorial invariance using confirmatory factor analytic techniques.

3. Furthermore there is a need to conduct studies, which look at the other forms of validity like predictive and concurrent validity to further substantiate the validity argument of the GMDS-ER. For example with reference to predictive validity, which refers to a validation procedure that involves correlating scores on a test with scores on future performance or behaviour, the question raised could be: “Will a child who scores high on the Revised Personal-Social Subscale cope well emotionally at school?” It is important to remember that determining the validity of a measure is an ongoing process involving the accumulation of many lines of validity evidence to provide a sound scientific basis for proposed score interpretations.

4. The need to conduct studies on clinical samples, for example Autistic children, or children with Cerebral Palsy, Attention Deficit Disorder or learning problems. Research of this nature will allow clinicians to make more accurate interpretations of test results for special populations. In addition, future

research studies could include alternative, yet standardized administration instructions, for specific clinical samples.

The ARICD should invest time and effort in administering the Revised Extended Griffiths Scales to relevant clinical populations, as is already the case in South Africa. Studies are in progress using the Scales on various clinical samples, including, autistic children (Gowar, 2003), hearing impaired children (Baker, 2005), and HIV infected children (Sandison, 2005). These studies were elaborated on in Chapter 2. The only disadvantage is that the Scales have not yet been standardized in South Africa, thus making interpretations and comparisons with normal children more difficult. Such studies in the British Isles and Eire would allow for evidence of convergent and discriminant validity of the Scales to be assembled. Cut points could be established using the results of relevant clinical populations and profiles could be generated depicting the average performance of the various clinical samples, to guide clinicians to make more valid interpretations on the basis of the test results.

5. It is recommended that future studies investigate the inter-rater reliability of the Personal-Social Subscale as well as the remaining five Scales. According to the American Educational Research Association (AERA, 1999), when subjective judgment enters into test scoring, evidence should also be provided on inter-rater consistency in scoring (AERA, 1999). Although the administration and scoring instructions of the restandardised GMDS-ER were significantly improved reducing the chance of ambiguous instruction, inconsistent administrations and scoring, some of the items especially on the Personal-Social Subscale still rely heavily on the subjective judgment of the assessment practitioner. Thus investigations into the inter-rater reliability of the Personal-Social Subscale as well as the other five Subscales are necessary to determine the degree of examiner variance when administering and scoring the Scales. This in turn will make a valuable contribution in providing additional evidence to support the reliability of this Subscale and the

GMDS-ER in general. Future inter-rater reliability studies should be in accordance with the guidelines stipulated by the AERA (1999) which state that a clear distinction be made between the manner in which the data is gathered. More specifically, AERA (1999) stipulates that researchers must decide and explicitly sate whether the inter-reliability data gathered is based on:

a) Independent panels of raters scoring the same performances or products, or
b) A single panel scoring successive performances or new products, or
c) Independent panels scoring successive performances or new products.

7.5 CONCLUSION

This study has contributed to:

1. Expanding the validity-related and internal structure related evidence of the revised Personal-Social Subscale of the Griffiths Mental Development Scales-Extended Revised.

2. Highlighting the importance of employing a dynamic approach and integrating validity evidence from various sources when exploring construct validity.

3. The development and verification of six constructs for the Revised Extended Personal-Social Subscale. The use of these constructs has the potential to improve the validity and accuracy of clinical decisions made on the basis of the test results making remediation programmes more effective.

4. Providing a foundation for future validity studies for the Griffiths Subscales.

Having achieved the above, this study has provided evidence for the construct (and content) related validity of the newly revised and restandardised Personal-Social Subscale of the GMDS-ER, validating its use as a fairly comprehensive, and valid measure of personal-social development for children between Years III and VIII, especially if used with the other Subscales of the GMDS-ER and supplemented by additional specific measures of personal-social development where necessary.

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APPENDIX 1

PARENTAL INFORMATION LETTER AND CONSENT FORM

A.R.I.C.D

ASSOCIATION FOR RESEARCH IN INFANT AND CHILD DEVELOPMENT

Hon Secretary Dr Sarah Horrocks, 2 Tan yr Ysgol, Sychdyn, MOLD, Flinstshire, North Wales
CH7 6SR Tel 01352 753385
e mail sarah.horrocks@virgin.net

Date

Dear Parent/Gauardian

Re ……. (Child's name)
Date of birth: …….
Address ……
……
……..……..

British Isles Standardisation of the Griffiths Scales of Mental Development
I am writing to invite your co-operation to allow your son/daughter named above to take part in a research project to re-standardise the Griffiths Scales of Mental Mental Development. Before you decide it is important for you to understand why the research is being done and what it will involve. Please read the following information carefully and discuss it if you wish with friends and relatives. The Local Examiner of Local Co-ordinator (named at the bottom of the letter) would be very happy to discuss any queries that you may have if you want further information before making a decision. Your local Community Paediatrician is also aware of this research and would be happy to discuss it with you.

The Griffiths Scales have been widely used for many years to assess children's development. They are used by Paediatricians and Child Psychologists when children are referred because of developmental problems, to help identify areas where the child might need further help. The Griffiths Scales measure a child's development across six areas namely, locomotor, personal-social. Language,

eye developmental are levels are obtained. During the assessment children are asked to complete a number of age appropriate tasks such as building bricks, throwing a ball, drawing and naming pictures. Most children thoroughly enjoy the tasks.

The aim of the project is to re-standardise the Griffiths Scales for children ages 2-8 years to make the Scales more up to date for modern children. We believe that children now are more advanced than when the Scales were originally standardized in the early 1960s. If this is confirmed by the research, we will develop new scoring to take account of this. We also have updated some of the test materials with, for example modern pictures, and we want to test the success of the new items. We hope to test approximately 1000 children within the 2 to 8 year age group across the British Isles over the next six months and hope to be in a position to launch the new Scales early next year.

At this stage we have identified a random sample of children from the local Child Health Date-bases from which the children to be examined as part of this project will be selected. It is up to you to decide whether or not your child can take part. If you do decide to take part you are still free to withdraw at any time and without giving a reason. This will not affect the standard of care you receive.

We stress the fact that, should your child not be selected as part of this study, it is not an indication that there is thought to be a problem with your child's development and that it will be due to us ensuring that we have the correct numbers of children of each age, sex, social-economic status, language and cultural group from all over the British Isles. In this standardization we will only be testing children whose first language is English. However if English is not your first language and you wish further explanation about the study we will be pleased to obtain translators to discuss the project further with you.

If you are agreeable to your child participating in this project, and you child is selected to be examined, you will receive and appointment at a clinic local to you. Your travel expenses will be reimbursed. Your child will be required for approximately a 1½-2 hour appointment and will be seen by a Paediatrician or Psychologist who is very experienced in child development and in using the Griffiths Scales. Following the assessment you will of course receive feedback regarding your child's performance on the Giffiths Scales using the current scoring systems. We hope that you will find the test interesting and informative. The information we get from this study will certainly help us in using the Scales in the future to identify areas in which children with developmental problems need help. If any problems are identified, by chance, when your child is tested, then the Examiner will discuss with you how best your child can be helped and with your permission will make the appropriate referrals.

As already stated, children usually like performing all the tasks presented in the Scales and the attention given to them. However, if you have any cause for

complaint about how your child is approached or treated please contact the Principal Researcher, Dr Sarah Horrocks 01352 753385 (answer phone) who will listen to your concerns and decide with you any action that needs to be taken.

Once again we would like to stress that the final group of children selected to be examined in this study will be chosen to ensure that they provide a representative sample of children across the British Isles. Therefore, if you are agreeable to your child participating in this project but your child is not selected to be examined this does not in any way mean there is a problem with your child's development.

In order to help select a representative sample of children to be tested, we first need to obtain some background information on your child. This information and the assessment results will be used for research purposes only and all personal information will be treated as strictly confidential. Your Local Co-ordinator and Local Examiner will be the only people who will have your child's name and address- this information will not be disclosed to anyone else. Your child will not be identified in any report of publication to do with this study.

If you are in agreement with your child taking part in this project, we would be most grateful if you could complete the enclose Consent Form and Parental Questionnaire and return them in the enclosed stamped addressed envelope as soon as possible.
If you want to obtain further information about the study, the selection process, or anything else, please contact your Local Co-ordinator named below.

The Paediatrician or Psychologist testing your child is not being paid and actual fee for this work but necessary expenses will be reimbursed. The whole research project is funded by the Association for Research in Infant and Child Development who hold the copyright for the Griffitsh Scales.

The study has been reviewed by the Multicentre Research Ethics Committee and your local Ethics Committee.

If you do not wish your child to take part in this project, please indicate this on the Consent Form and you will not be contacted again. This information sheet is yours to keep for your future reference.

Thank you for taking the time to read this letter.

Yours faithfully
Name of Local Examiner.
Name of Local Co-ordinator

APPENDIX 2

Parental Questionnaire

Dear Parent / Guardian,

Please take time to complete this questionnaire. The following questions are applicable to children of a broad age range, therefore, we do not necessarily expect your child to be capable of all of the tasks listed below. We would appreciate a completely honest evaluation of your child's ability, and please do not worry if your child is not yet able to complete each of the activities.

Please rate yourself, from 1 to 10, in your relationship with your child (cross out the corresponding number):

1. Most of the time I think that I tend to be _____.

1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10

Under Protective	Cautious	Over Protective

2. Most of the time I tend to _____ my child's ability.

1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10

Under Rate		Over Rate

SECTION A

Child's Name: _____
Address: _____
Suburb: _____

Telephone number:

_____
Home Language: _____
Date of Birth: 19____/____/____
Date of testing: 19____/____/____

Gender:

M	F

School: _____
School Telephone No: _____
Father's / Guardian's occupation: _____

Father's / Guardian's educational level:

(Please tick the highest level achieved)

None	
Primary school	
Junior certificate	
Apprenticeship	
Matric	
Further training (not at university)	
University degree or diploma	

SECTION B

1. Birth History: Please describe anything unusual about the pregnancy or delivery:
   _____
   _____

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

2	Did you give birth to your child naturally?	Y / N
3	Was your child anoxic (i.e. did he/she lack oxygen at birth?	Y / N
4	Was your child born either prematurely or after more than 41 weeks of pregnancy? If yes, after how many weeks: _____weeks	Y / N
5	Is your child one of a twin?	Y / N
6	Were walking, talking, and toilet training normal? If no, please indicate the ages: Walking: _____months Talking: _____months Toilet training: _____months	Y / N
7	Was feeding development normal?	Y / N
8	Has your child ever had: (Please tick the appropriate blocks and as many as are applicable)	Y / N

Meningitis	Y / N
Encephalitis	Y / N
Convulsions (fits)	Y / N
Concussion	Y / N
Anemia	Y / N
A very high fever/ temperature	Y / N

	A head injury where he/she lost consciousness	Y / N
	An allergy	Y / N

9	Does your child complain of headaches?	**Y / N**
10	Is your child clumsy?	Y / N
11	Does your child have dizzy spells sometimes?	Y / N
12	Does your child have nightmares often?	Y / N
13	Sometimes, does your child fall deeply asleep even though it is not his / her bedtime?	Y / N
14	Does your child have temper tantrums regularly?	Y / N
15	Does your child wet the bed regularly?	Y / N
16	Does your child sometimes stare blankly into space?	Y / N
17	Does your child sometimes start to say something, blank out and forget what he/she was saying?	Y / N
18	Does anyone in your immediate family circle suffer from epilepsy?	**Y /**
19	Do you sometimes notice a muscle or group of muscles twitching in your child?	Y / N
20	Does your child sleep – walk?	**Y /**
21	Is your child on any kind of medication? If yes, for what? _____	Y / N
22	Does your child lie or steal?	Y / N
23	Does your child get on well with other children?	Y / N
24	If applicable, has your child's school history been normal?	Y / N
25	Is your child currently attending: (Please tick the appropriate block)	Y / N

No school	
Pre-school	
Primary school	
If your child is attending primary school, please list your child's school subjects and give the mark or symbol that he/she received for each one in the last examination:	

	SUBJECTS	MARKS/ SYMBOL

26	Does your child do poorly on certain school subjects? If so please list: _____	Y / N
27	Has the teacher complained that your child is very restless and struggles to concentrate in class?	Y / N
28	Does your child sometimes start crying for no apparent reason?	Y / N
29	Does your child:	
	Stutter	Y / N
	Faint frequently	Y / N
	Bits his/her nails excessively	Y / N
30	*Has your child ever had any childhood diseases?* (If yes, please list all childhood diseases and the ages at which they occurred)	Y / N

DISEASE	AG

SECTION C

Please tick the appropriate answer (T = True, F = False):

Helps with small household tasks	**Y / N**
Helps with routine tasks when requested	Y / N
Helps tidy a room	Y / N
Other tasks: _____	Y / N
Your child can bath or shower with minimal assistance	Y / N
Your child can clean own teeth	Y / N
Can your child wash own hands and face, but needs assistance with drying	Y / N
Can your child wash and dry own hands and face, but needs checking	Y / N
Can your child wash and dry own hands and face without assistance	Y / N
Your child does not bath self	Y / N
Your child bathes or showers, but needs some assistance	Y / N
Your child bathes or showers without assistance	Y / N
Your child bathes or showers, and dries self without assistance	Y / N

Your child is able to put on own shoes and socks with some assistance, e.g putting shoes on correct feet.	Y / N
Your child is able to put on own shoes and socks without assistance	Y / N
Your child can choose own clothes	Y / N
Your child can choose own clothes	Y / N
Your child can deliver a simple message	Y / N
Your child can deliver a fairly complex message	Y / N
Your child is able to go on instruction to get a specific item in a public area, e.g. go and get bread from the counter and bring it to mother	Y / N
Your child can go alone on errands to nearby shops, etc.	Y / N
Can your child make a small purchase in a shop with some assistance, e.g. checking the change	Y / N
Your child can make a small purchase in a shop without assistance	Y / N
Your child demonstrates an understanding that it is unsafe to accept rides, food or money from strangers	Y / N
Your child follows the rules in a simple game, but does need to be reminded	Y / N
Your child follows the rules in a simple game, without being reminded	Y / N
Can your child neaten (brush or comb) own hair in the morning	Y / N
Asks to use the toilet	Y / N
Has complete bladder control during the day, with a few accidents	Y / N
Has complete bladder control during the day	Y / N
Has complete bladder control during the day and night	Y / N
Your child can get a drink of water from the tap without assistance	Y / N
Your child can get a drink of water from the tap with some assistance	Y / N
Your child is able to eat without assistance	Y / N

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

APPENDIX 3

Personal Social Construct Evaluation Form

Shaheda Moosajee
Clinical Psychologist
BA (Phys Ed) (UDW); UHDE (UDW); MA(Clinical Psychology.)(UPE)
Pr No. 8643059
Suite 301, 3rd Floor, Mercantile Medical Centre, Durban Road, Korsten, P.E.
P.O.Box 4190, Korsten, Port Elizabeth, 6014
Tel/Fax: 041- 453 1313, Cell: 083 400 5825,

email: shahedam@telkomsa.net

……

2003-06-20

Dear Colleague

RE: RESEARCH RE-STANDARDIZATION OF THE GRIFFITHS SCALES OF MENTAL DEVELOPMENT

I am currently reading for my D. Phil (Psychology) dissertation. My study, which is conducted through the University of Port Elizabeth is looking at the re-standardization of the Griffiths scales of Mental Development.
This measure assesses the development of children from birth to 2 years on five scales, and 3 years to 8 years on six scales. The scales include the following areas of the child development: Locomotor, Personal social development, Speech and Hearing, Eye Hand co-ordination, Performance and Practical Reasoning.

One of the requirements of the study is to ensure the validity of the items being assessed. We have undertaken to do this by seeking the opinions of professionals working with children.

It would be highly appreciated if you could review the following items of
Scale B (Personal Social Subscale of the Griffiths) and give your opinion of:

- What construct is being assessed in terms of the child's development
  (Examples of constructs include: eating, dressing, social skills, independence, self care, co-operation etc.),
- To assess an approximate age at which this skill in your opinion should be achieved by the child, and
- To assess the relevance of this item in assessing the personal the social development of the child.

PTO…

SCALE B: PERSONAL SOCIAL

TEST ITEM CONSTRUCT(S) MEASURED

Gives first name on request……
- At table, uses spoon and fork together without help……
- Puts away toys when encouraged to do so ..……..
- Knows own sex……..
- Can undo buttons ……..……..
- Gives family name on request……
- Can do up buttons ……..……
- Can put on shoes and socks, unaided …….…….
- Knows age……..
- Plays well with other children……...
- Assists with small household tasks on request ……..……
- Can undress self……...
- Washes own hands and face with some assistance……..
- Gives address, house and street……
- Brushes own teeth (without assistance)……
- Can dress and undress self-(not difficult fastenings)……..
- Can fasten own shoe buckles……
- Manages jacket or raincoat unaided……
- Has a special play-mate……
- Can tie a simple knot……..
- Can fetch item in shop by request……
- Chooses own clothes……..
- Neaten own hair. (Brush and comb)……
- Knows full address(3) (House, street, and district)……..……..
- Can tie a bow-knot: one loop……
- Can get a drink of water from a tap……..
- Shoes: can tie own shoe-laces……..
- Can eat without assistance……
- Was and dry own hands and face without assistance……
- Can tie bow-knot: two loops……...
- Can dress and undress without help completely……
- Has one special school friend……
- Takes full responsibility for tidiness of hair……...
- Baths and showers and dries without assistance……
- Knows birthday – day and month. (2)……
- Can lay the table-with some supervision……
- Can lay the table without help or supervision……..
- Knows full date of birth (3), day month and year……

You input is highly appreciated and I thank you in anticipation for your co-operation. For any queries please do not hesitate to contact me. I may be contacted at 083 400 5825, Tel/fax 041-4531313(OH), Tel/fax 041-4571506 (AH) or at email: shahedam@telkomsa.net.

Regards

…… Completed by…….
Shaheda Moosajee Qualification……..
Years of experience……

PS: Forms can be posted or faxed back at your earliest convenience. Thank you.

APPENDIX 4
RIORDAN'S SES CLASSIFICATION SYSTEM

Table 1
Classification of Bradwinners Education

Breadwinners Education	Score
University attendance	7
Post-matric training (not university	6
Matric	5
Apprenticeship	4
Junior certificate	3
Primary school	2
None at all	1
No response	0

Table 2
Classification of Nreadwinners occupation

Breadwinners Occupation	Score
Top professional, excecutive, administrative and technical occupations	9
Professional, administrative and managerial workers	8
Independent commercial	7
Lower grade administrative, technical, clerical, with limited supervisory and administrative responsibility	6
Artisans and skilled workers with trade qualifications	5
Routine clerical and administrative workers, service and sales workers	4
Semi-skilled production and manual workers	3
Unskilled production and manual workers	2
Not economically active	1
No response	0

Table 3
Classification of Socio-Economic Status

	Lower	Middle	Upper
White	2-10	11-13	14-16