

**UTILITY OF KOPPITZ NORMS FOR THE BENDER-GESTALT  
TEST PERFORMANCE OF A GROUP OF SESOTHO-SPEAKING  
CHILDREN**

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## DECLARATION

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I declare that the article hereby submitted by me for the Masters of Science degree at the University of the Free State, is my own independent work and has not previously been submitted by me at another university/faculty. I furthermore, cede copyright of the article in favour of the University of the Free State.

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**Date**

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## **ABSTRACT**

The Bender-Gestalt Test (BGT) for visual-motor integration continues to be widely used in standard psychological and education assessments. It is further consistently rated as one of the most popular psychological tools. Recently, the utility of the Bender and more specifically the use of the original Koppitz norms in cross-cultural assessments has come into question. Moreover, little attempt appears to have been made to develop relevant South African norms for this instrument. The current study compares the Bender performance of a group of seven to nine-year-old Sesotho-speaking children (n=671) in the greater Mangaung region of the Free State, to the original 1974 Koppitz norms. The Bender performance of the Sesotho-speaking children compared poorly with the Koppitz norms for corresponding age groups. Contrary to available literature, socio-economic status was found to have no significant effect on the Bender performance of the sample. The results further emphasize that the sample's performance fails to improve with increasing age. Recommendations are made regarding possible avenues of future research.

### **Key terms**

Bender-Gestalt Test, Utility of Koppitz norms, Bender-Gestalt performance of Sesotho-speaking children, Neuropsychological assessment of Sesotho-speaking children, Cross-cultural assessment, Bender-Gestalt normative data, Effect of gender and socio-economic status.

## OPSOMMING

Die Bender-Gestalt Toets (BGT) vir visueel-motoriese intergrasie word steeds daaglik in standaard sielkundige en opvoedkundige assesserings gebruik. Dit word beskou as een van die mees populêre sielkundige instrumente. Die toepaslikheid van die BGT en meer spesifiek die gebruik van die oorspronklike norms in kruis-kulturele assessering word egter bevraagteken. Pogings om relevante norms vir die Suid-Afrikaanse populasies te ontwikkel, is baie beperk. Die huidige studie vergelyk die prestasie van 'n groep Sesothosprekende kinders (n=671) tussen die ouerdomme van sewe en nege jaar, met die oorspronklike 1974 Koppitz norms. Hierdie kinders is almal vanuit die Mangaung-distrik, in die Vrystaat, afkomstig. Die Sesothosprekende kinders se prestasie op die Bender was in vergelyking met die ooreenstemmende Koppitz normgroepe, baie laer. In teenstelling met die literatuur, is die prestasie van die huidige steekproef nie beduidend deur hul sosio-ekonomiese status beïnvloed nie. Die resultate beklemtoon verder dat die steekproef se prestasie nie met toename in ouderdom verbeter het nie. Voorstelle word in terme van moontlike areas vir verdere navorsing gemaak.

### **Sleutelwoorde**

Bender-Gestalt Toets, Toepaslikheid van Koppitz norms, Bender-Gestalt prestasie van Sesothosprekende kinders, Neuro-sielkundige assessering van Sesothosprekende kinders, Kruis-kulturele assessering, Bender-Gestalt normatiewe data, Effek van geslag en sosio-ekonomiese status.

## **1. LITERATURE REVIEW**

The Bender-Gestalt Test or Bender-Visual-Motor-Gestalt Test is a popular paper-and-pencil-drawing test that historically, has been widely used in the screening and assessment of neuropsychological impairment. The test aims at identifying defects in an individual's visio-constructive ability, which is considered a Gestalt function composed of biological imprints of sensory reception, perception and motor action (Ghassemzadeh, 1988). For more than six decades, this psychometric measure developed by Laretta Bender in 1938 to identify brain-injured adults and to detect signs of emotional disturbance, has been included as an integral part of psychological assessments of cognitive functioning (Lacks, 1984).

The Bender-Gestalt Test (BGT) consists of nine cards each displaying an abstract design. Bender (1938) adapted these stimulus designs from those originally used by Wertheimer in 1923 for his research on visual perception (Koppitz, 1975). Bender saw her test as being particularly relevant to the assessment of cognitive maturation and the diagnosis of organically based pathologies. When administering the test, the examiner presents the cards one at a time to the test-taker who is required to copy each design as accurately as possible. No time limits are imposed. Standard administration requires the designs to be copied on a blank unlined sheet of paper with an HB pencil (Bender, 1938). The individual's designs are then rated on their relative degree of accuracy and overall integration. The final product is a reflection of the original stimuli as modified by the test-taker's unique visual-motor ability.

The BGT's popularity can be partially attributed to its brief administration and scoring, as well as its cost effectiveness with regard to the test materials required. Moreover, a wide variety of quantitative and qualitative interpretation methods facilitate the flexible use of the BGT amongst a wide variety of clinical populations. The mainly non-verbal administration required by the BGT is said to make it a relatively non-threatening assessment tool and facilitates its use in cross-cultural assessments (Groth-Marnat, 2003; Viljoen, Levett, Tredoux & Anderson, 1994).

For many years, the BGT has been an integral part of most neuropsychological assessment batteries. It appears equally widely used by clinicians working with adults

as well as children (Bassa & Schlebusch, 1984; Lees-Haley, Smith, Williams & Dunn, 1996; Piotrowski, 1995; Rabin, Barr & Burton, 2005). Surveys in the United States of America indicate that the BGT continues to be ranked among the top ten assessment instruments of choice among psychologists (Lees-Haley *et. al.*, 1996). Despite this apparent popularity, some studies on the utility of the BGT have yielded ambiguous findings or fuelled criticism of the instrument (Chan, 2000; Goldstein & Britt, 1994; Groth-Marnat, 2003; Koppitz, 1975). Nonetheless, the BGT still consistently rates as one of the 25 most frequently used tests by specialty neuropsychologists in North America (Groth-Marnat 2003; Rabin, Barr & Burton, 2005). Furthermore, numerous South African surveys bear testament to the popularity of the BGT among local assessment practitioners (Bassa & Schlebusch, 1984).

The popularity of the BGT has historically been associated with its reputation as an instrument with a wide variety of applications amongst diverse clinical groups. However, for the first two decades following its inception, the BGT was applied almost exclusively to adult population groups to diagnose a variety of clinical disorders such as schizophrenia, aphasia and other neurological syndromes (Bender, 1938; Koppitz, 1975; Lacks, 1984). Despite its reported value as a specialty neuropsychological instrument, more recent opinion is that the BGT's actual value lies in its utilization as a brief and economical screening tool for neurological dysfunction (Groth-Marnat, 2003).

Disillusionment with the BGT as a definitive indicator of brain dysfunction among adults coincided with its increased popularity as a screening instrument in the assessment of childhood learning disabilities. Increased awareness of learning disabilities among school-going children during the 1960's and 1970's increased the need for an inexpensive, brief, easy-to-administer screening tool. The BGT appeared particularly well suited for this task (Gilger & Kaplan, 2001). It is presumed that the early detection of learning difficulties can aid in preventing future academic difficulties and free children from the problems frequently accompanying these obstacles. Thus, it was felt that the utility of the BGT and other measures of visual-motor ability may lie in the fact that such measures may form part of assessment procedures used in the screening of scholastic problems that may emerge during the early stages of a child's education. The BGT soon came to be viewed as a valuable

addition to assessment batteries for children. Its particular value resides in its ability to provide an indication of broad cognitive ability in children. The maturational relationship between age and BGT performance indicated its additional promise as a measure of cognitive development (Gilger & Kaplan, 2001; Groth-Marnat, 2003; Koppitz, 1975). More recently, the use of the BGT amongst children has become somewhat controversial. Taylor and Partenio (1984) found that IQ accounted for a significant amount of the BGT performance difference among the white, black and Hispanic ethnic groups. However, Goldstein and Britt (1994) argued that BGT scores show less significant correlation with scholastic achievement. In light of these and similar findings, Chan (2000) and Mitchell-Burns (2000) proposed that the BGT's diagnostic efficiency could be improved by alterations to the standard administration and scoring procedures for the instrument. Chan reported that BGT scores of primary school children in Hong Kong captured using a modified administration of the BGT along with a qualitative scoring system, correlated significantly with the children's scores on the standardized test of achievement. A comparable study by Mitchell-Burns showed that modified administration and scoring of the BGT resulted in a more accurate diagnosis of learning problems in children, than was the case with standard procedures.

Despite the reported efficacy of alternative approaches to the administration and scoring of the BGT, the more standardized methods seem to have prevailed (Chan, 2000; Koppitz, 1975; Mitchell-Burns, 2000). Of these, the Koppitz Developmental Scoring System appears most popular and is thus most frequently used (Groth-Marnat, 2003; Koppitz, 1975; Lacks, 1984). The goal of Koppitz' Developmental Scoring System is to provide the examiner with different ways of analyzing children's BGT performances by evaluating perceptual maturity, possible neurological impairment and emotional adjustment. Bender (1938) postulated that reproduction of the BGT designs depends on maturation, which is believed to be virtually completed by age 11. Consequently, the developmental scoring system is thought to be of particular utility with children under the age of eleven. This is partly due to this particular scoring system's tendency to lose discriminating power when applied to adolescents (Bolen, Hewett, Hall & Mitchell, 1992). The frequently noted tendency of BGT performance to plateau after 11 years of age tends to support the premise that

visual-motor integration should be almost fully developed by about age eleven (Koppitz, 1975; Shapiro & Simpson, 1995).

Most developmental measures of function or ability that yield a performance age, like the BGT, can only be meaningfully interpreted when a child's chronological age is taken into consideration. Koppitz developed age-related norms for the BGT in 1963. These norms were based on a sample of white American middle-class children from kindergarten to fifth grade. A realization of the effects of culture on BGT performance was reflected in her 1974 revision of these norms, which included minority groups such as African-Americans and Hispanics. Although attempts were made to rescale and extend Koppitz' norms for utilization amongst other population groups, these were mostly explorative studies and the norms developed by Koppitz in 1974 still remain the most preferred norms for use with children (Chan, 2000; Groth-Marnat, 2003; Koppitz, 1975; Lacks, 1984; Michelle-Burns, 2000; Shapiro & Simpson, 1995). It would thus seem that the most widely used BGT norms include data on a limited number of minority individuals and cannot reasonably be thought to offer reliable indications of cognitive or visual-motor integrative development some 30 years after their establishment.

The BGT, like many other psychological assessment tools developed and standardized in the matrix of Western culture, may not be applicable for use amongst individuals from other cultures (Nell, 2000). Initially it was assumed that non-verbal assessment tasks were more suited to cross-cultural assessments (Lezak, 1995). Consequently, drawing tests like the BGT and construction measures such as the Block Design subtest of the Wechsler Adult Intelligence Scale are widely used in the cross cultural context (Van der Merwe, 1998). However, more recent opinion holds that these tasks tap abilities that are heavily influenced by factors such as culture and educational background (Roselli & Ardila, 2003).

Numerous studies focusing on the applicability and use of the BGT amongst children have focused on the relationship between BGT performance and socio-cultural background. The effect of demographic variables such as intelligence, education and psychosocial factors on BGT performance has been widely documented (Goldstein & Britt, 1994; Karr, 1982; Koppitz, 1975; Parush, Sharoni, Hahn-Markowitz & Katz,

2000; Taylor & Partenio, 1984; Viljoen, 1992). Studies conducted on American children have indicated significantly better performances by white middle-class children than by their Native American and African-American counterparts, who were all from disadvantaged backgrounds. Considering the role cultural background might have on BGT performance, other American studies focused their investigations on specific ethnic groups. In one such study, similar BGT performance scores were reported for both advantaged and disadvantaged African-American kindergarten pupils (Koppitz, 1975). Similarly, when Taylor and Partenio (1984) explored BGT performance among the different ethnic groups in the United States, they found that the black group in their sample had twice the number of errors at age 11 than the white participants despite controlling for the effects of intelligence and socio-economic status. What the abovementioned studies indicate is the presence of unexplained factors that may be culture-related, for the discrepancies found in BGT scores among different ethnic groups.

Performance discrepancies become even more evident when BGT usage in non-western cultures is examined. This was highlighted by Parush *et. al.*, (2000), who claimed that cultural background played a significant role in overall BGT performance. Their study compared BGT performance of Bedouin children to that of mainstream Israeli children. The worse performance by the Bedouin children was attributed to their more rural environment, conservative Islamic background and limited access to education. The BGT scores of African children are no exception to the discrepancies evident in cross-cultural assessments. Results obtained in a study on Sierra Leone children revealed poorer performance for the investigated sample when compared to Koppitz' norms (Karr, 1982). Taking cultural influences into consideration, the researchers divided the sample into four bipolar groups, i.e. "village" and "modernized", "village" representing the rural areas and urban tribal and urban Creole representing the "modernized" areas. All groups were representative of four prominent subcultures in Sierra Leone in terms of the degree of modernization and western life. Of all the groups, the urban Creole performed better on the BGT than the rest of the sample. Although lower than the Koppitz sample, the authors believed that the varying degrees of modernization among the four subcultures contributed to the poorer performance evident in the groups' BGT scores resulting in maturational delays which were significantly more pronounced in the other three

groups than the urban Creole group (Karr, 1982). Despite such reported evidence and the misapplication of the BGT in cross-cultural assessments, what the previously mentioned studies and others by Ghassemzadeh (1988), Yousefi, Shahim, Razavieh, Mehryar, Hosseini and Alborzi, (1992) and Mazzeschi and Lis (1999) reveal, is a pattern of possible cognitive maturation reflected in Koppitz' findings which suggests that visual-motor ability is a cognitive entity represented by improved BGT performance with increases in chronological age.

Studies on the variability of BGT performance amongst South African children have also been reported in the literature (Saunders, 1974; Viljoen *et. al.*, 1994). One of the earliest reports (Saunders, 1974) indicated that coloured children performed worse than expected for the corresponding age on the 1963 Koppitz norms. However, distinct differences in BGT performance were also evident when the sample was divided according to language. Coloured children from an English-speaking background performed better than those from an Afrikaans-speaking background. Possible explanations for this phenomenon included differences in parental level of education, with the parents of the English-speaking children reporting higher levels of education. The English-speaking children also came from higher socio-economic backgrounds compared to their Afrikaans-speaking counterparts. Two decades later, a study conducted by Viljoen *et. al.*, (1994) on Zulu-speaking children in Kwa-Zulu Natal also revealed discrepancies in BGT performance between the group and Koppitz' norm sample, the Zulu-speaking group emerging as the poorer performers. One of the recommendations that followed from this study was the need to develop norms relevant to the South African context. Consequently, the authors published norms for the BGT performance of Zulu-speakers from age six to 18 years. It is interesting to note that the mean performance of the individuals in this norm group still compares negatively to the 1974 Koppitz norms. Moreover, South Africa's cultural and linguistic diversity means that norms such as these cannot be reliably generalized beyond a specified sector of the population.

The vast majority of research on the variability of BGT performance that has been reviewed thus far, strongly emphasizes the effect of socio-cultural and developmental variables. Socio-economic status and education appear to be most frequently implicated in explanations of poor BGT performance amongst North American

minority groups (Koppitz, 1975; Taylor & Partenio, 1984). Despite the limited research conducted on the cross-cultural validity of the BGT in the developing world, most studies have frequently cited low socio-economic status, poor access to education and cultural variables as being potentially responsible for reduced performance on the instrument (Karr, 1982; Parush *et. al.*, 2000). Studies conducted in South Africa yield similar trends to those found in other developing countries (Saunders, 1974; Viljoen *et. al.*, 1994). Access to quality education is viewed as impacting significantly on individuals' performances on measuring instruments in general, and the BGT in particular. The racial segregation policies adopted by the previous South African government contributed to current socio-economic inequalities that are widely accepted as influencing the performance of certain groups on psychological tests (Foxcroft, 2004; Viljoen *et. al.*, 1994). Such negative past socio-political climate in countries such as South Africa could possibly have yielded a long-term cross-generational effect due to a lack of access to proper educational resources. This kind of susceptibility might be largely responsible for the effects evident in the cross-cultural investigations reported thus far. The multicultural nature of South African society has historically resulted in the development of different norms for different cultural and language groups (Foxcroft, 2004; HPCSA, 2004; Van Eeden & Visser, 1992; Viljoen, 1992). While this may appear to some to be a logical solution to the challenges of psychological assessment in a multi-cultural society, it does smack of discrimination. However, seen in the context of the necessity to perform assessments in everyday clinical practice, no ideal solution exists. Until such time as socio-economic imbalances have been rectified, clinicians may best serve this purpose by the collection of a wide variety of normative data that is truly reflective of South African society (Foxcroft, 2004; Viljoen *et. al.*, 1994).

From the preceding literature review it becomes apparent that despite the lack of relevant norms and in the face of contradictory research, the BGT continues to form an integral part of many neuropsychological and educational assessments carried out on children in South Africa. Consequently, the application of outdated and seemingly irrelevant normative data appears to continue unabated in the assessment of South African children from wide-ranging social backgrounds. In light of the very obvious need, not only for the objective evaluation of the validity of the widely used Koppitz norms for the BGT, but also in an attempt to extend the existing normative data for

this instrument, this study aims to investigate the utility of the Koppitz norms for the Bender-Gestalt performance of a group of Sesotho-speaking children.

## **2. METHOD**

### ***2.1. Subjects***

A total of ten schools in the greater Mangaung area in the Free State province were chosen for the study. Located in an urban area, these schools use Sesotho as their medium of instruction. Permission was obtained from the Free State Department of Education to approach these schools to participate in the study. Nine schools eventually agreed to participate. It was decided to focus the study on children between the ages of seven and nine years. This was due to Bender (1938) and Koppitz (1975) identifying this age span as a period of rapid visual-motor integrative development. Moreover, Saunders (1974) and Koppitz (1975) state that children are most likely to be assessed with regard to various scholastic functions during this period. It was reasoned that seven to nine-year-olds would comprise the majority of the children in grade 2 to grade 4, at the selected schools. Consequently, letters were sent home with all children in the respective grades requesting their guardians to grant informed consent for the children to participate in the study. The guardians were also required to complete the accompanying biographical questionnaire and return it to the school along with a consent form. Consent was obtained for 671 seven to nine-year-old children to participate in the study. The frequency distribution of the final sample is depicted in Table 1.

**Table 1.** Frequency distribution of the investigated group based on gender and socio-economic status

Variable	Category	7 years		8 years		9 years		Total	
		N	%	N	%	N	%	N	%
Gender	Boys	126	46,8	114	51,1	77	43,0	317	47,2
	Girls	143	53,2	109	48,9	102	57,0	354	52,8
Total		269	40,1	223	33,2	179	26,7	671	100,0
Socio-economic Status	Low	77	50,3	62	54,9	66	70,2	205	56,9
	Average	56	36,6	37	32,7	21	22,3	114	31,7
	High	20	13,1	14	12,4	7	7,5	41	11,4
Total		153	42,5	113	31,4	94	26,1	360	100,0

It is apparent from Table 1, that gender was evenly distributed within the sample. The girls slightly outnumbered the boys with 53,2%, 48,9% and 57,0% for ages seven, eight and nine respectively. The boys comprised a total of 46,8%, 51,1% and 43,0% of the sample for the respective age groups. Not all parents who gave consent returned socio-economic status questionnaires. Thus, information on socio-economic status was available for only 57% of the sample. With regard to the 360 children for whom socio-economic information was available, 11,4 % were classified as having high socio-economic status, with 31,7 % having average socio-economic status and low socio-economic status being attributed to 56,9 % of the sample.

Despite the researcher's best efforts to increase the response rate, the general infrastructure and geographical layout of the region, as well as low levels of parental literacy is thought to have largely contributed to the poor response rate. More qualitative perusal of the socio-economic status questionnaires raises doubt regarding the cross-cultural validity of Riordans' (1978) scale within this particular sample. This appears primarily to be attributable to a poor fit between the questionnaire's occupational categories and the occupations reported by the respondents. The reported socio-economic status data should therefore be interpreted circumspectly.

## **2.2. Instruments**

1. A biographical questionnaire was distributed to parents to collect information regarding their education level and occupation in order to determine their socio-economic status. The respondents were then assigned to one of the three socio-economic status levels (i.e. low, average or high) according to the scale developed by Riordan (1978) (see Appendices B and C).
2. The *Bender-Gestalt Test for visual-motor integration* (Bender, 1938) was the primary instrument of investigation. Standardized on white American middle-class five to eleven-year-old children, the BGT has shown test-retest reliability of 0.53-0.90 for children in kindergarten to sixth grade (Koppitz, 1975). The BGT's construct validity is implied by a 0.65 correlation with the Developmental Test of Visual-Motor Integration.

## **2.3. Procedure**

Seven Sesotho-speaking post-graduate Psychology students from the University of the Free State assisted in the administration of the Bender-Gestalt test. All seven had experience in the administration of the Bender-Gestalt test and received further training in the standard administration method suggested by Koppitz (1975) prior to administering the BGT to the participants. The children were assessed in groups of 4 to 6 individuals, in accordance with the group-assessment method of the BGT as suggested by Koppitz (1975). The standard Bender-Gestalt designs reproduced to scale on A4 cards were used as stimuli for the assessment. All other aspects of the administration were conducted according to the standard method suggested by Koppitz. All instructions were given in Sesotho. Each child was provided with a blank unlined A4 sheet of paper and a pencil. Pencil erasures were available to the groups, but their use was discouraged as per the Koppitz administration method. Clear visibility of the designs was ensured for each child prior to commencing the test administration. The designs were displayed to the group, one at a time, until all subjects had completed their drawings.

Queries and requests by the participants that deviated from the standard procedure were dealt with according to the recommended Developmental Bender Administration System as proposed by Koppitz. Each protocol was independently scored by two research assistants according to the Koppitz Developmental Bender Scoring System,

with all scoring discrepancies between these raters being resolved by a third scorer. Since the Developmental Bender Scoring method is based on the number of errors made in copying the designs (a possibility of 30 errors), the total score yielded is a negative score. This score is based on recording imperfections instead of giving credit for accuracy in the reproduction of the Bender designs. The number of errors each participant made was then equated to a test-age using Koppitz' 1974 norms. Unlike the 1964 norms, the 1974 norm sample featured an attempt by Koppitz to include a cross-section of children from different backgrounds with the total sample comprising of 86 % white, 8,5 % African-American, 4,5 % Hispanics and 1 % Orientals.

### 3. RESULTS

In order to compare the Sesotho sample with the 1974 Koppitz norm group the *t*-test for independent groups was employed. Means and standard deviations are presented in Table 2, with an age breakdown.

**Table 2.** Means and standard deviations of the number of errors made for the Sesotho-speaking group and Koppitz' norm group

Age group	Sesotho		Koppitz*		<i>t</i>
	$\bar{X}$	<i>SD</i>	$\bar{X}$	<i>SD</i>	
7 years	6,6	2,5	5,8	3,3	1,786
8 years	8,6	3,2	4,2	2,5	10,864**
9 years	8,0	3,4	2,8	2,2	14,607**

\*\*  $p < 0,01$

*Note.* Koppitz\* refers to Koppitz' 1974 normative sample.

The results in Table 2 indicate that the Koppitz norm group's mean number of errors decreased with age. Conversely, the Sesotho-speaking sample's mean number of errors increases with age. A significant difference was found between the mean number of errors made of the two groups for eight and nine-year-olds. While it is evident that the Sesotho-speaking group obtained a higher mean number of errors than

the all-age-inclusive Koppitz sample, the difference in mean number of errors made by the seven-year-old group is not statistically significant.

In order to gain information regarding the rate of improvement for the two groups, slope estimates ( $b$ ) were calculated for the linear regression with age as the predictor and Bender-Gestalt performance scores as the criterion. This information is presented in Table 3.

**Table 3.** Comparison of slope coefficients in equations relating age to the Bender-Gestalt Test performance

	Sesotho sample	Koppitz' sample
$b$	0,007	-1,460
$t$	5,80**	
$s_b$	0,001	0,254
$r$	0,197	-0,958

\*\*  $p < 0,01$

The slope represents the rate of change – the steeper the slope the faster the improvement of performance with age.

For the BGT, the slope would be expected to be negative considering that a lower error score is indicative of better performance. A test for the equality of slope coefficients (Howell, 2002) was conducted and the results reported in Table 3. The Koppitz sample exhibited a negative slope (-1,46), which was much steeper than the Sesotho-speaking sample's slope of 0,007. From Table 3 it appears that the difference in slopes is significant at the 1 % level. It is also noticeable that the rate of improvement for the Koppitz sample appears to be greater (1,46 units per year), than that of the Sesotho-speaking group, which indicates worse performance with increase in age (0,007 units per year).

It is clear from the comparison of the slope coefficients that almost no improvement occurs from seven to nine years in the Sesotho-speaking sample, while the Koppitz norm group shows consistent improvement. This difference is also reflected in Table

2 where the mean number of errors made by the Sesotho-speaking group does not decrease with age, while a significant decline is apparent with respect to the Koppitz norm group.

Due to the extent to which the Sesotho-speaking sample's mean number of errors made differ from those of the original norm group, it was decided to investigate the possible role that gender and socio-economic status may have had on BGT performance of the Sesotho-speaking group. Firstly, the effect of gender was investigated. This information is provided in Table 4.

**Table 4.** Means and standard deviations of the number of errors made for the Sesotho-speaking boys and girls

Age group	Boys		Girls		<i>t</i>	<i>p</i>	<i>d</i>
	$\bar{X}$	<i>SD</i>	$\bar{X}$	<i>SD</i>			
7 years	6,5	2,6	6,7	2,5	-0,69	0,4932	
8 years	8,2	3,2	8,9	3,2	-1,83	0,0685	
9 years	6,9	3,1	8,8	3,5	-3,89	0,0001**	0,56

\*\*  $p < 0,01$

Table 4 suggests an initial increase in the number of errors made from the seven-year-olds to the eight-year-olds, but a slight decrease in the number of errors made between the eight and nine-year-olds. However, the nine-year-old boys' mean number of errors made still remains higher than the seven-year-old boys' mean number of errors made. With regard to the girls, there is also an increase in the mean number of errors made from age seven to eight. The mean number of errors made then appears to remain consistent for the nine-year-olds.

The *t*-test for independent groups was used to determine whether a significant difference exists in the mean number of errors made for each gender within the three age groups. The results in Table 4 indicate that a significant difference in the mean number of errors made for the nine-year-old boys and girls is apparent at the 1 % significance level. Thus, the nine-year-old girls display a significantly higher mean

number of errors made than the nine-year-old boys. The effect size of this result was also calculated and is indicated by Cohen's *d* (a value of 0,2 is indicative of a smaller effect, 0,5 of a medium effect and a value of 0,8 is indicative of a larger effect). The *d* value of 0,56 reported in Table 4 is thus for all practical purposes, an indication of a medium effect size. Secondly, the possible effect of socio-economic status (low, average, high) on BGT performance of the Sesotho-speaking sample was investigated. Complete socio-economic status data was available for only about half of the sample (n=360). Consequently, any findings pertaining to the effect of socio-economic status on the BGT in this norm group should be dealt with circumspectly. The potential effect of socio-economic status was also investigated per age group and the results of the analysis of variance (*F*-value) are reported in Table 5.

**Table 5.** Means and standard deviations with respect to the number of errors made for low, average and high socio-economic groups

Age group	Low		Average		High		<i>F</i>	<i>p</i>
	$\bar{X}$	<i>SD</i>	$\bar{X}$	<i>SD</i>	$\bar{X}$	<i>SD</i>		
7 years	6,7	2,6	6,2	2,2	7,1	2,6	1,08	0,3410
8 years	8,7	3,2	7,7	3,0	8,9	3,3	1,77	0,1722
9 years	8,0	3,4	7,9	3,6	7,7	3,1	0,04	0,9645

\*\*  $p < 0,01$

It is apparent from Table 5 that no significant difference exists between the three socio-economic groups when seen within the context of the three age groups (seven, eight and nine years), with regard to the mean number of errors made. However, it also appears that in the seven and eight-year-old groups, the average socio-economic group has the lowest mean number of errors made although this does not achieve any statistical significance. Conversely, amongst the nine-year-old group, those children of elevated socio-economic status made the least errors (not statistically significant). These results would suggest that socio-economic status did not affect the BGT performance of the Sesotho-speaking sample.

Moreover, the performance age (based on the number of errors made) of the Sesotho-speaking group on the Bender-Gestalt Test was compared to their chronological age. The set of comparisons for the seven-year-old group (two groups of 7-0 to 7-5 and 7-6 to 7-11) is depicted in Table 6. (Generally a six-month delay was regarded as acceptable during interpretation)

**Table 6.** Comparison of chronological age and performance age on the Bender-Gestalt Test for the seven-year-old Sesotho-speaking group

Performance age	Chronological age			
	7 - 0 to 7 - 5		7 - 6 to 7 - 11	
	N	%	N	%
4 - 0 to 4 - 11	2	1,2	0	0,0
5 - 0 to 5 - 5	12	7,3	2	1,9
5 - 6 to 5 - 11	29	17,7	16	15,2
6 - 0 to 6 - 5	27	16,5	14	13,3
6 - 6 to 6 - 11	23	14,0	13	12,4
7 - 0 to 7 - 5	17	10,4	16	15,2
7 - 6 to 7 - 11	25	15,2	11	10,5
8 - 0 to 8 - 5	17	10,4	18	17,1
8 - 6 to 8 - 11	7	4,3	12	11,4
9 - 0 to 9 - 11	4	2,4	1	1,0
10 - 0 to 10 - 11	1	0,6	1	1,0
11 - 0 to 11 - 11	0	0,0	1	1,0

For the 7-0 to 7-5-year-old group it appears that 40(24,4%) of the participants fall within the expected performance age (allowing for the six-month delay). A total of 54(32,9%) performed better than the levels indicated for their chronological age and 70(42,7%) performed below the levels expected for their chronological age. As indicated in Table 6, 27(25,7%) of the 7-6 to 7-11-year-old group performed within the expected range with 33(31,4%) performing better than the levels indicated for their chronological age. The number of children in this group performing below the level expected for their chronological age was 45(42,9 %).

The comparison of chronological age to performance age for the eight-year-old group (two groups of 8-0 to 8-5 and 8-6 to 8-11) is depicted in Table 7.

**Table 7.** Comparison of chronological age and performance age on the Bender-Gestalt Test for the eight-year-old Sesotho-speaking group

Performance age	Chronological age			
	8 - 0 to 8 - 5		8 - 6 to 8 - 11	
	N	%	N	%
4 - 0 to 4 - 5	1	0,9	1	0,9
4 - 6 to 4 - 11	6	5,3	4	3,6
5 - 0 to 5 - 5	30	26,5	26	23,6
5 - 6 to 5 - 11	26	23,0	15	13,6
6 - 0 to 6 - 5	13	11,5	13	11,8
6 - 6 to 6 - 11	11	9,7	11	10,0
7 - 0 to 7 - 5	13	11,5	13	11,8
7 - 6 to 7 - 11	6	5,3	13	11,8
8 - 0 to 8 - 5	4	3,5	6	5,5
8 - 6 to 8 - 11	2	1,8	7	6,4
9 - 0 to 9 - 11	1	0,9	1	0,9
10 - 0 to 10 - 11	0	0,0	0	0,0
11 - 0 to 11 - 11	0	0,0	0	0,0

The eight-year-old groups' performance given the expected increase in visual-motor ability with respect to age, compared poorly to the seven-year-old group. As indicated in Table 7, it appears that 10(8,8%) of the 8-0 to 8-5 year-old group and 13(11,8%) of the 8-6 to 8-11 year-old group fall within the expected performance age (allowing for a six-month delay). A total of 3(2,7%) of the 8-0 to 8-5 year-old group and only 1(0,9%) of the 8-6 to 8-11 year-old group performed better than expected for their chronological age. As further indicated in the table, an overall 100(88,5%) of the 8-0 to 8-5 year-old group and 96(87,3%) of the 8-6 to 8-11 year-old group performed more poorly than expected for their chronological age.

The comparison of chronological to performance age for the nine-year-old group (one group of 9-0 to 9-11) is depicted in Table 8.

**Table 8.** Comparison of chronological age and performance age on the Bender Gestalt Test for the nine-year-old Sesotho-speaking group

Performance age	Chronological age 9 – 0 to 9 - 11	
	N	%
4 – 0 to 4 – 5	3	1,7
4 – 6 to 4 - 11	8	4,5
5 – 0 to 5 – 5	32	17,9
5 – 6 to 5 – 11	35	19,6
6 – 0 to 6 – 5	18	10,1
6 – 6 to 6 – 11	21	11,7
7 – 0 to 7 – 5	21	11,7
7 – 6 to 7 – 11	12	6,7
8 – 0 to 8 – 5	13	7,3
8 – 6 to 8 – 11	8	4,5
9 – 0 to 9 – 11	6	3,3
10 – 0 to 10 – 11	1	0,5
11 – 0 to 11 – 11	1	0,5

According to Table 8, a total of 14 participants (7,8%) displayed performance ages equal to their chronological ages (allowing for a six-month developmental delay), while only 2(1,11%) performed better than expected for their chronological ages. The majority of this group totalling 163(91,1%) obtained performance scores below those expected for their chronological age.

In order to gain a clearer indication of the scoring criteria on the basis of which children incurred errors, the percentage of children making specific errors on each criteria was calculated. This information is reported in Table 9. However, only items for which 50% or more of the sample incurred errors are reported.

**Table 9.** Children’s percentages of specific errors/items incurred for the different age groups at a frequency of 50% or more

Scoring criteria	7-0 to 7-5	7-6 to 7-11	8-0 to 8-5	8-6 to 8-11	9-0 to 9-11
1a	67,1	61,0	61,1	46,4	54,8
3	61,0	52,4	45,1	41,8	36,3
6	0,6	1,9	69,9	63,6	62,6
9	0,0	1,9	72,6	67,3	60,3
14	57,9	56,2	51,3	45,5	43,6
18a	78,7	76,2	70,8	54,6	60,3
20	2,4	5,7	75,2	66,4	71,0
21b	3,7	4,8	80,5	78,2	65,4
22	61,6	51,4	54,9	44,6	40,8
23	53,7	47,6	38,1	34,6	33,0
24	84,8	77,1	59,3	58,2	51,4

The most frequent error made by the Sesotho-speaking participants was that of distortion. This error is scored on criteria 1a, 18a, 21b and 24, and is indicative of the child’s inability to reproduce the stimulus at an acceptable level of accuracy. This is evident in a child’s failure to indicate angles and by the substitution, omission or addition of angles. The second most frequently occurring error appears to have been that of integration. This is indicated by scoring criteria 3, 14 and 23. Integration is defined as difficulty in integrating parts of a figure i.e. failure to join two parts of a figure. However, Table 9 also indicates that these errors of distortion and lack of integration appear to decrease with age. In their studies Bender (1938), Koppitz (1975) and Lacks (1984) suggested that perseveration should be viewed as a sign of brain injury particularly in children above the age of eight. This error is scored when a child continues to draw a figure beyond the limits specified by the stimulus. Indicated by scoring criteria 6, 9 and 20, perseveration is the third most frequently occurring error in the Sesotho-speaking sample, especially amongst the eight and nine-year-olds. Rotation, which is scored on criteria 22, is scored as an error when a child’s reproduction of the stimulus is oriented in excess of 45° from the axis of the original

stimulus. Overall, this appears to be the least frequently occurring error of all the item criteria.

#### 4. DISCUSSION

The results of this study reflect a very different picture to the one seen in the original 1974 Koppitz norm group. The Sesotho-speaking group performed significantly worse than the Koppitz sample. What is also evident is a consistent lack of age-related or development-related improvement in the Sesotho-speaking groups' performance. On the contrary, the 9-year-old groups' performance was the worst of all the three age groups when compared to the Koppitz norms. What becomes clear from the reported findings is the presence of a different pattern of visual-motor integrative and cognitive development on the BGT to that reported by Bender (1938) and Koppitz (1975). Therefore, not only does the BGT performance of the Sesotho-speaking sample fail to follow the average age-related progression as suggested in the literature, but the relevance of the BGT as a developmental measure of visual-motor integration in this sample of Sesotho-speaking children also needs to be questioned. Furthermore, the extent to which the construct the BGT claims to measure is cross-culturally valid, particularly with regard to the Sesotho-speaking children, can be called to question.

The current study casts doubt on claims that one of the BGT's strengths lays in its utility as a cross-cultural screening and assessment tool. A portion of the literature reviewed suggests that the BGT taps certain universal non-verbal functions indicative of cognitive development and functioning amongst children. However, the poor performance of the Sesotho participants in this study in comparison to the original Koppitz norms, places question marks over these claims of universality. Furthermore, the failure of the participants to demonstrate any age or developmentally related improvement on the BGT challenges this assessment tool's utility as a measure of visual-motor or cognitive development within this specific group. It would thus seem that instead of proving to be universally applicable and culture fair, BGT performance might be affected by various demographic factors. Amongst the nine year-old group boys seem to have performed better than the girls, which suggest that gender may have influence on BGT performance of the Sesotho-speaking group. Statistically

socio-economic status seemed to have not influenced the BGT performance of the Sesotho-speaking group. However, it should be noted that while not statistically significant, the nine-year-old group from the low socio-economic group performed worst on the BGT. The researcher also noticed that the schools that participated in the study lacked many facilities. Consequently, inequalities in the level of education may account for the Sesotho-speaking children's poor performance to some degree. Nevertheless, what is apparent is that the performance of the Sesotho sample does not replicate the pattern of performance of the Koppitz sample and does not appear to be significantly influenced by factors commonly cited in the literature (e.g. socio-economic status, chronological age).

The current study strongly suggest that the Koppitz norms have limited utility in the interpretation of Sesotho-speaking children's performance on the BGT. This statement can be made with a fair degree of confidence as the large sample (n=671) allows for a reasonable degree of generalization within the Sesotho-speaking population aged between seven and nine years, within this particular geographical region. Continued use of the Koppitz norms would not accurately reflect these children's level of cognitive development and would result in a high rate of false positive diagnoses for cognitive and visual-motor difficulties. The resulting misappropriation of resources for intervention and remediation would continue to be a financial and human resources burden within the education milieu. Consequently, the continued use of the BGT as a primary screening and assessment tool amongst the Sesotho-speaking children should be discontinued. However, this is not to say that the instrument may not make a significant contribution within the context of more comprehensive neuropsychological assessments.

## **5. LIMITATIONS OF THE STUDY AND RECOMMENDATIONS FOR FUTURE RESEARCH**

In light of the preceding discussion, various limitations of this study need to be carefully considered. Firstly, the study was focused on a very narrow section of the population, within a very specific geographical area. Thus, although the relatively large sample facilitates generalization of the results within the target population, no

generalizations can be made to other cultural groups, age groups or individuals from other geographic locations. This situation is further complicated by South Africa's rich cultural diversity. It is logical to reason that if norms for BGT performance are not transferable from Western to African cultures, then similarly there can be no certainty that individuals from different African cultures will exhibit similar performances on the BGT either. These difficulties highlight the need for extensive well-constructed norming studies for existing instruments, or failing this, the necessity to develop more locally relevant measuring instruments.

A second limitation of the current study relates to the absence of measures for related areas of function. No attempt was made to control for variables such as intelligence, the validity of the BGT in comparison to other measures of visual-motor integration etc. However, as stated earlier the size of the sample was sufficiently representative of the target population. Therefore, the assumption can be confidently made that the BGT performance of the participants is normally distributed within the sample. Nonetheless, additional information would add to the analysis of the results and cast some light on the nature and relevance of the particular construct/s measured by the BGT amongst Sesotho-speaking children.

Thirdly, the method of allocating individuals to the different socio-economic levels proved to be poorly suited to the context of the study. The participants' parents could not reliably be divided into various socio-economic levels as their careers and qualifications did not effectively correlate with those suggested by Riordan (1978) for determining socio-economic status. Moreover, socio-economic data was only gathered for half of the sample, therefore conclusions reached regarding the role of socio-economic status in BGT performance need to be dealt with circumspectly.

Future research should thus focus on defining the validity of the construct/s measured by the BGT amongst Sesotho-speaking or other Southern African groups. This would enable the development of the most effective means of assessing this and other constructs within these specific cultural groups. Longitudinal studies may also add valuable information to the nature of the construct measured by the BGT, as well as its predictive utility and possible developmental application.

## 6. REFERENCES

- Bassa, F.M. & Schlebusch, L. (1984). Practice preferences of clinical psychologists in South Africa. *South African Journal of Psychology*, **14**, 118-123.
- Bender, L. (1938). *A Visual-motor Gestalt Test and its clinical use. Research monographs: no 3*. New York: American Orthopsychiatric Association.
- Bolen, L.M., Hewett, B.J., Hall, C.W. & Mitchell, C.C. (1992). Expanded Koppitz' Scoring System of the Bender-Gestalt Visual-Motor Test for adolescents: A Pilot study. *Psychology in the schools*, **29**, 113-115.
- Chan, P.W. (2000). Relationship of visual-motor development and academic performance in Hong Kong assessed on the Bender-Gestalt Test. *Perceptual Motor Skills*, **90**, 209-214.
- Foxcroft, C.D. (2004). Planning a psychological test in the multicultural South African context. *South African Journal of Industrial Psychology*, **30 (4)**, 8-15.
- Ghassemzadeh, H. (1988). A pilot study of the Bender-Gestalt Test in a sample of Iranian normal children. *Journal of Clinical Psychology*, **44(5)**, 787-792.
- Gilger, J.W. & Kaplan, B.J. (2001). Atypical Brain development: A conceptual framework for understanding developmental learning disabilities. *Developmental Neuropsychology*, **20 (2)**, 465-481.
- Goldstein, D.J. & Britt (jnr.), T.W. (1994). Visual-motor coordination and intelligence as predictors of reading, mathematics and written language ability. *Perceptual Motor Skills*. **78**, 819-823.
- Groth-Marnat, G. (2003). *Neuropsychological Assessment in Clinical Practice: A guide to test interpretation and integration*. Canada: John Wiley & Sons.

Howell, D.C. (2002). *Statistical methods for psychology* (5<sup>th</sup> ed). Johannesburg: Duxbury.

Karr, S.K. (1982). Bender-Gestalt performance of Sierra-Leone; West African children from four subcultures. *Perceptual and Motor Skills*, **55**, 123-127.

Koppitz, E.M. (1963). *The Bender-Gestalt Test for young children* (2<sup>nd</sup> ed.). New York: Grune & Stratton.

Koppitz, E.M. (1975). *The Bender-Gestalt Test for young children: II Research and Application, 1963-1973*. New York: Grune & Stratton.

Lacks, P. (1984). *Bender-Gestalt screening for brain dysfunction*. New York: John Wiley & Sons.

Lees-Haley, P.R., Smith, H.H., Williams, W.C. & Dunn, J.T. (1996). Forensic Neuropsychological Test Usage: An Empirical Survey. *Archives of Clinical Neuropsychological*, **11(1)**, 45-51.

Lezak, M. (1995). *Neuropsychological assessment* (3<sup>rd</sup> ed.). New York: Oxford University Press.

Mazzeschi, C. & Lis, A. (1999). The Bender-Gestalt Test: Koppitz' Developmental Scoring System administered to two samples of Italian preschool and primary school children. *Perceptual and Motor Skills*, **88**, 1235-1244.

Mitchelle-Burns, J. (2000). Performance in children with and without learning disabilities on Canter's Background Interference Procedure and Koppitz' Scoring System for the Bender test. *Perceptual and Motor Skills*, **90**, 875-882.

Nell, V. (2000). *Cross-cultural neuropsychological assessment: Theory and Practice*. London: Gaurende Erlbaum Associates.

Parush, S., Sharoni, C., Hahn-Markowitz, J. & Katz, N. (2000). Perceptual, motor and cognitive performance components of Bedouin children in Israel. *Occupational Therapy International*, **7** (4), 216-231.

Piotrowski, C. (1995). A review of the clinical and research use of the Bender-Gestalt Test. *Perceptual and Motor Skills*. **81**, 1272-1274.

Rabin, L.A., Barr, W.B. & Burton, L.A. (2005). Assessment practices of clinical neuropsychologists in the United States and Canada: A survey of INS, NAN and APA Division members. *Archives of Clinical Neuropsychology*. **20**, 33-65.

Riordan, Z.V.A. (1978). *Locus of control in South Africa: A cross-ethnic study*. Unpublished Doctoral Thesis: University of Port Elizabeth.

Roselli, M. & Ardila, A. (2003). The impact of culture and education on neuropsychological measurements a critical review. *Brain and Cognition*, **52**, 326-333.

Saunders, E.A. (1974). *Components of the Bender-Gestalt Performance in coloured children in relation to environment, teacher effectiveness and perceptual training*. Masters Thesis: University of the Witwatersrand, Johannesburg.

Shapiro, S.K. & Simpson, R.G. (1995). Koppitz' Scoring System as a measure of Bender-Gestalt performance in behaviorally and emotionally disturbed adolescents. *Journal of clinical Psychology*. **51**,1.

Taylor, R.L. & Partenio, I. (1984). Ethnic differences on the Bender-Gestalt: Relative effects of measured intelligence. *Journal of Consulting and Clinical Psychology*, **52** (5), 784-788.

Van der Merwe, C. (1998). *Die toepaslikheid van die blokontwerptegniek vir die meting van intelligensie by swart leerlinge*. Masters Thesis: University of the Free State.

Van Eeden, R. & Visser, D. (1992). The validity of the South African Individual Scale-Revised (SSAIS-R) for different population groups. *South African Journal of Psychology*, **22** (3), 163-174.

Viljoen, G. (1992). *Neuropsychological Assessment of Zulu-speaking children*. Masters Thesis: University of Cape Town.

Viljoen, G., Levett, A., Tredoux, C. & Anderson, S. (1994). Using the Bender-Gestalt in South Africa: Some normative data for Zulu-speaking children. *South African Journal of Psychology*, **24**(3), 145-150.

Yousefi, F., Shahim, S., Razavieh, A., Mehryar, H.A., Hosseini, A.A. & Alborzi, S. (1992). Some normative data on the Bender-Gestalt Test performance of Iranian children. *British Journal of Educational Psychology*, **62**, 410-416.

Regulation and Use of psychological tests. Retrieved September 2004, from <http://www.hpcs.co.za>.

## **APPENDICES**

**APPENDIX A (ENGLISH)**  
**LETTER TO PARENT/GUARDIAN**

Dear Parent/Guardian

**A study on the utility of the Bender Gestalt test**

We are conducting a study on the utility of the Bender-Gestalt Test to Sesotho-speaking children. We are especially interested in the use of this measure as a means of detecting learning problems amongst children. Very little research in this regard has been done in South Africa and almost none in the Free State. We therefore believe that the information obtained can add to our knowledge regarding the use of this measure and hopefully provide data for further advancement of the test.

Should you decide to allow your child to participate in the study, your information will be treated with the utmost confidentiality. If you are willing to permit your child to participate in the study, please sign this letter at the space provided below and complete the accompanying biographical questionnaire.

We will appreciate your co-operation and participation in this research.

You are more than welcome to contact us personally, should you need more information or clarity.

Sincerely

**Lerato Makhele**  
**Researcher**

**Dr Stephen Walker**  
**Supervisor**

.....  
**Parent/Guardian** : Choose the appropriate response (**Yes**, I agree/**No**, I disagree)

\_\_\_\_\_ (Please make your signature here)

**APPENDIX A (SESOTHO)**  
**LENGOLO LA MOTSWADI/MOHLOKOMEDI**

Motswadi/Mohlokomedi

**Thuto ka Bender-Gestalt Test**

Re etsa diteko tsa “Bender-Gestalt Test” baneng ba buang Sesotho. Sepheo sa rona ke ho sebedisa tsela ena, e le ho sheba hore na mathata a thuto a ho kae. Ha ho na diphuputso tse ileng tsa etswa mabapi le hona Afrika Borwa, ha ele Foreistata yona, ha e yo. Re kgolwa hore dintlha tseo di tla hlalishang ke diteko tsena, di tla re thusa.

Bana ba tla nkang sepha ditekong tsena tsa ho toroya, dikarabo tsa bona di tla bolokwa sephiring, ha hona motho e mong ya tla tseba ka tsona. Ha motswadi kapa mohlokomedi ana le maikemisetso a ho dumella ngwana ho nka karolo, o tlamehile ho tlatsa lengolo lena fatshe le foromo ya dipotso e tsamayang le lengolo lena, mme o dikgutlise le ngwana. Ke lebohela tshebedisano mmoho, le ho nka karolo ditekong tsena.

O na le hona ho ikopanya le rona ka sego kapa letsetsa mohala, ha o hloka thlaloso mabapi le diteko tsena.

Ka boikokobetso

**Lerato Makhele**

**Dr. Stephen Walker**

**Mmatlisise**

**Mohlokomedi**

.....

**Motswadi/Mohlokomedi:** Kgetha karabo ya hao (**Ee**, ke a dumela/**Tjhee**, ha ke dumele)\_\_\_\_\_ (Ka kopo saena lebitso la hao mona)

**APPENDIX B (ENGLISH)**

**BIOGRAPHICAL QUESTIONNAIRE FOR PARENT, GUARDIAN OR BREADWINNER**

1. Name of child: \_\_\_\_\_
2. Childs' date of birth: \_\_\_\_\_
3. Childs' gender: \_\_\_\_\_
4. Parent/guardians' name: \_\_\_\_\_
5. Parent/guardians' gender: \_\_\_\_\_
6. Who does the child live with? \_\_\_\_\_

**7. Level of Education of parent/guardian/breadwinner. Please indicate the highest level of education by making a circle on the appropriate response:**

None	1
Primary school (grade 7/ Standard 5 or lower)	2
Junior Certificate (Grade 10/ Standard 8)	3
Apprenticeship/Trade	4
Matric (Grade 12/ Standard 10)	5
Further training (University excluded)	6
University	7

**8. Classification of occupation of parent/guardian/breadwinner. Please indicate the type of job you do by making a circle on the appropriate response:**

<b>OCCUPATION CLASSIFICATION</b>	
<b>Top professional posts, executive head, administrative and technical occupations</b> , e.g. rector, professor, medical doctor, psychiatrist, advocate, engineer, chief technologist, company director, company manager, regional manager of company or government department.	9
<b>Professional, administrative and management</b> , e.g. lecturer, labour consultant, personnel manager, chemical analyst, prosecutor, priest, psychologist, architect, school principal, magistrate, teacher, social worker, scientist, company consultant, land owner.	8

<b>Independent or Commercial person</b> , e.g. estate agent, marketer, owner of hired vehicle, dealer, company representative, building contractor, graphic designer, consultant, sangoma, agricultural chemist, business owner, land owner.	7
<b>Lower-grade administrative, technical and clerical occupations with supervisory and administrative responsibilities</b> , e.g. shift supervisor, manager, farm supervisor/senior foreman, postal master, shift manager, pastor, restaurant, missionary, officer in the police or army, senior clerk, marketer	6
<b>Trade and trained worker with trade qualification</b> , e.g. qualified fitter and turner, cook, electrician, diesel mechanic, optometric technician, tradesman, carpenter, welder, builder, motor vehicle mechanic, duster, painter, builder, data typist, photo framing officer.	5
<b>Routine clerical and administrative worker, service and sales worker</b> , e.g. cashier, supervisor, foreman, sales person, traffic officer, telephonist, soldier, store assistant, construction worker, warden, shop assistant, police officer, typist, store supervisor.	4
<b>Half/Semi-skilled production and manual labour</b> , e.g. mason, miner, hairdresser, construction worker, dressmaker, driver of hired vehicle.	3
<b>Unskilled production and manual labour</b> , e.g. cleaner, butcher, cook, farm worker, baker, domestic worker, caretaker, road worker, waiter, petrol attendant, cashier, gardener, fabric worker, security guard, factory worker.	2
<b>Non-economic active or non-productive person</b> , e.g. unemployed, pensioner and police reserve.	1
<b>No response</b>	0

APPENDIX B (SESOTHO)

**FOROMO E TLATSWANG KE MOTSWADI/MOHLOKOMEDI**

1. Lebitso la ngwana: \_\_\_\_\_
2. Letsatsi la hae la tlhaho: \_\_\_\_\_
3. Ngwana; E motona kapa e motshehadi? \_\_\_\_\_
4. Lebitso la motswadi/mohlokomedi: \_\_\_\_\_
5. Motswadi/mohlokomedi: E motona kapa e motshehadi:  
\_\_\_\_\_
6. Ngwana o dula le mang? \_\_\_\_\_
7. Thuto e phahameng ya motswadi/mohlokomedi/motshwaredi: Bontsha thuto e phahameng ka ho etsa sedikadikwe khethong ya hao.

Ha eyo	1
Thuto ya poraemari (Grade 7/Sehlopha sa 5)	2
Thuto e phahameng (Grade 10/Sehlopha sa 8)	3
Mohwebi/mosebetsi wa matsoho	4
Grade 12 (Sehlopha sa 10)	5
Thuto e pejana (eseng Yunibesiti)	6
Yunibesiti	7

8. Tlhopiso ya mosebetsi wa motswadi/mohlokomedi/motshwaredi. Bontsha ka ho etsa sedikadikwe karabong ya hao.

Tlhopiso ya mosebetsi	
<b><u>Diporofeshene tse phahameng:</u></b> mohlala, Molaodi/Setho sa kgotla la phetiso/puso/botekheniki, Moreketoro, Moporofesa, Ngaka, Saekhatirisi, Mmueli, Moenjinerere, Hlooho ya tekhenology, Molaodi wa lebatowa wa khampani kapa lefapha la thuto.	9

<b>Porofeshene, Molaodi, Mmusisi:</b> mohlala, Moleketoro, Mohlokamedi wa mosebetsi, Mohlophisi wa meriana, Moahlodi, Moprsta, Saekhologisi, Setshwantsi, Mosuwehloho, Maseterata, Titjhere, Mosebeletsi wa setjaba, Boramahlale, Motherisi wa kgwebo, Monga naha.	<b>8</b>
<b>Barekisi ba ikemetseng:</b> mohlala, Morekisi, Monga makoloi a hiriswang, Mohwebi, Moemedi wa khampani, Mokontoraka wa kaho, Moradi wa dikerafa, Motherisi, Ngaka ya setso, Mokhemisi wa tsa temo, Rrakgwebo, Monga naha.	<b>7</b>
<b>Balaodi bo tlaase:</b> mohlala, Botekeniki, Botlelereke, Bohlokamedi bo nang le maikarabelo, Mohlokamedi wa ditjhifi, Molaodi, Mohlokamedi wa polasi/foromane e ka sehlohong, Raposo, Molaodi wa ditjhifi, Moruti, Resetorante, Morumuwa, Ofisiri wa sepolesa kapa sesole, Tlelereke e ka sehloohong, Morekisi.	<b>6</b>
<b>Kgwebo/mosebeletsi va rupelletsweng ka tsa kgwebo:</b> mohlala, Mophehi, Ramotlekase, Mokheniki wa dilori, Ngaka ya mahlo, Motekeniki, Rrakgwebo, Mmetli, Moweleti, Mohahi, Mokheniki wa dikoloi, Sehlaodi, Moferefi, Moforeimi wa dinepe, Mothapaiti wa tsebisi, Moofisiri.	<b>5</b>
<b>Tlelereke ya tlwaelo/bolaodi/tshebeletso/morekisi:</b> mohlala, Ramatlotlo, Mohlokamedi, Foromane, Morekisi, Molaola sephetepethe, Ramohala, Lesole, Mothusis wa setoro, Mosebetsi wa konteraka, Morekesetsi, Ofisiri ya lepolesa, Motlanyi, Mohlokamedi wa setoro	<b>4</b>
<b>Bokgoni ba dithlahiso le mosebetsi wa matsoho:</b> mohlala, Morafi, Mokuti, Mosebetsi wa konteraka, Seroki, Mokganni wa dikoloi tse hiriswang.	<b>3</b>
<b>Dithlahiso tsa bokgoni bo sa phethahalang le mosebetsi wa matsoho;</b> mohlala, Mohlwekisi, Raselaga, Mophehi, Mosebeletsi wa polasi, Mobaki, Mosebeletsi wa hae, Molebedi, Basebetsi ba tsela, Mofepi, Morekisi wa peterolo, Ramatlotlo, Mosebetsi wa serapa, Mosebetsi wa masela, Lepolesa polokeho, Mosebetsi wa faboriki.	<b>2</b>
<b>Batho ba sa sebetseng kapa ba safaneng ka ekonomi:</b> mohlala, Bapenshene, Ba sa sebetseng, Mapolesa a polokelotsietsi.	<b>1</b>



## APPENDIX C

### Classification of socio-economic status for three racial groups in South Africa (Riordan, 1978)

RACIAL GROUP	CLASSIFICATION OF SOCIO-ECONOMIC STATUS		
	Low	Average	High
Black	2-5	6-10	11-16
Coloured	2-6	7-10	11-16
White	2-10	11-13	14-16

