

**NON-SPEAKING CHILDREN IN SCHOOLS FOR
CHILDREN WITH MENTAL HANDICAPS IN THE
PRETORIA AREA: A SURVEY OF
COMMUNICATION AND RELATED PROBLEMS**

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"Aan Hom wat deur ons werk, magtig is om oneindig meer te doen as wat ons bid of dink, aan Hom kom die eer toe..."

Efesiërs 3:20-21

SUMMARY

The prevalence of non-speaking children in special education is internationally estimated to be 3,5-6%. To date very little demographic data is available for non-speaking children with regard to the prevalence, interaction needs and abilities. This is reflected in the lack of adequate planning for integration into society, economical self-sufficiency and full participation in the ordinary social life of the community.

In South Africa statistical information for this population is practically non-existent. Available information is based on the medical model in which different etiologies are emphasized, often with little or no reference as to how the disability influences the functional communication of the individual in society. It is against this background that the present study proposed to investigate the prevalence of severe communication pathology in all registered schools for children with mental handicaps in the Pretoria area, in order to assess the current need for AAC intervention within these contexts.

The present study is demographic in nature. Two questionnaires were developed and were completed by classroom teachers in conjunction with fieldworkers. All children in registered schools for children with mental handicaps between the ages of 3 - 12 years were included. The applicability of the questionnaires was tested by means of a pilot study prior to the main study. The first questionnaire was used to collect personal data from the 55 teachers who were included in the study. The second one was used to obtain information on the 412 children by discussing their abilities in all the different skill areas (cognitive, motor, sensory, communication and social), functional reading, writing and mathematical abilities. In addition, the children's exposure to therapy (speech, occupational and physiotherapy) was described.

Results indicate that the non-speaking children in schools for children with mental handicaps in the Pretoria area constitute a large population (38,3%) with heterogeneous characteristics and abilities. Furthermore it was noted that the non-speaking children received considerably less therapy than the speaking children regardless of the fact that these children need intensive, specialized therapy and AAC services. It also shows that professionals (teachers and therapists) need knowledge and skill training in AAC strategies.

This study was the first step in determining the prevalence and characteristics of non-speaking children in schools for children with mental handicaps in the Pretoria area. Information obtained from this survey can therefore be used as a basis from which to project and plan service delivery to this underserved population.

OPSOMMING

Die prevalensie van nie-sprekende kinders in spesiale onderrig word internasionaal op 3,5-6% geraam. Tot op hede is baie min demografiese data vir nie-sprekende kinders met betrekking tot die prevalensie, interaksie behoeftes en vaardighede beskikbaar. Dit word gereflekteer in die gebrek aan voldoende beplanning rakende integrasie in die samelewing, ekonomiese selfvervulling en volledige deelname aan die gewone sosiale gemeenskapslewe.

In Suid-Afrika bestaan statistiese inligting rakende hierdie populasie feitlik nie. Beskikbare inligting is op die mediese model gebaseer, waarin verskillende etiologieë beklemtoon word, dikwels met min of geen verwysing na die invloed van die gestremdheid op die funksionele kommunikasie van die individu in die samelewing nie. Dit is teen hierdie agtergrond dat die huidige studie gepoog het om die prevalensie van erge kommunikasiepatologie in geregistreerde skole vir verstandelik gestremde kinders in die Pretoria area te ondersoek om sodoende die behoefte aan AAK intervensie in hierdie konteks te peil.

Die huidige studie is demografies van aard. Twee vraelyste is ontwikkel wat deur onderwyseresse voltooi is in samewerking met veldwerkers. Alle kinders in geregistreerde skole vir verstandelik gestremde kinders tussen die ouderdomme 3 - 12 jaar is ingesluit. Die toepaslikheid van die vraelyste is deur middel van 'n loodsstudie getoets voor die aanvang van die hoofstudie. Die eerste vraelys is gebruik om persoonlike data van die 55 onderwyseresse wat in die studie ingesluit is, in te win. Die tweede vraelys se doel was om inligting in te win rakende die 412 kinders, deur die beskrywing van hulle vaardighede in al die verskillende vaardigheidsareas (kognisie, motoriek, sensories, kommunikatief en sosiaal), funksionele lees, skryf en wiskundige vermoëns. In samehang hiermee is die kinders se blootstelling aan terapie, (spraak-, arbeids- en fisioterapie) ook beskryf.

Resultate het aangetoon dat die nie-sprekende kinders in skole vir verstandelik gestremde kinders in die Pretoria area bestaan uit 'n groot populasie (38,5%) met heterogene eienskappe en vaardighede. Voorts is bevind dat die nie-sprekende kinders aansienlik minder terapie as die sprekende kinders ontvang het, hoewel hulle intensiewe, gespesialiseerde AAK intervensie benodig. Daar is ook bevind dat professionele persone (onderwysers en terapeute) kennis rakende AAK strategieë sowel as opleiding in hanteeringsvaardighede benodig.

Hierdie studie was die eerste stap in die bepaling van die prevalensie en eienskappe van nie-sprekende kinders in skole vir verstandelik gestremde kinders in die Pretoria area. Inligting wat deur hierdie studie verkry is sal gevolglik die basis vorm waarvandaan toekomstige dienslewering aan hierdie populasie wat tans beperkte diens ontvang, geprojekteer en beplan kan word.

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CHAPTER 1

CHILDREN WITH SEVERELY LIMITED VERBAL ABILITY IN SPECIAL SCHOOLS IN THE PRETORIA AREA: A DEMOGRAPHIC SURVEY

1.1 INTRODUCTION

The need for descriptive information on the abilities and problems of non-speaking people has been stressed by many intervention agencies internationally, as this information is essential in providing a basis for effective service delivery. This information is not only important because it provides an indication of the prevalence of particular problems amongst a specific group of people, but also because it facilitates understanding into the needs and service delivery necessary to address their problems.

The needs of the non-speaking population have gained significant interest over the last decade due to an increasing awareness of individual human rights and the movement towards social inclusion of people. Deinstitutionalisation has been a major social movement during the last decade with the inevitable emphasis on structures and systems necessary for supporting the movement towards social integration (Peck, 1991:5).

The ability to speak is essential to conversation and to the expression of basic needs, just as the ability to read and write are critical educational and vocational tools. Consequently severely handicapped children are not only likely to be isolated socially, but may also be deprived of appropriate education and later employment. Instruction in AAC strategies can greatly enhance their ability to communicate and subsequently improve their chances of leading independent and more rewarding lives (Blackstone, 1988:1).

Although some demographic studies have been conducted in South Africa (Cornielje *et al.*, 1993:26), none of them specifically referred to the non-speaking population. Data reflecting their interaction needs and abilities are therefore limited, which is further noted in a general lack of understanding of the problems experienced by non-speaking people.

This lack of understanding into the needs and abilities of non-speaking people often results in low expectations and a general underestimation of their abilities. Significant others often anticipate their needs and wants which results in underachievement (Light *et al.*, 1992:865).

Another aspect relating to the lack of demographic data is the limited available services in areas of crucial importance such as prenatal prevention, early intervention, education and habilitation, preparation for an adult life of social and economic competence and intervention programmes for severely disabled people (Calculator & Bedrosian, 1988:10).

The need for the identification of this group of people is further accentuated by their vulnerability to social exclusion and limited service delivery due to their inability to speak. Institutionalization of these people has been common practice in South Africa as a result of attitudes and exclusion policies in society. In addition, very little time has been given to the education of non-speaking children, leading towards an increasingly large disabled population that is, to a large extent, dependent on the state for survival and support.

From this discussion it is clear that descriptive studies of particular populations (such as the non-speaking population) are of vital importance as a baseline for planning effective intervention and the development of service delivery models. It is against this background that the present study aimed to investigate the prevalence of non-speaking children in schools for children with mental handicaps and to discuss their characteristics in order to assess the present need for AAC intervention within these contexts.

1.2 OUTLINE OF THE CHAPTERS

Chapter 1 provides the motivation for the study and an outline of the chapters as well as a definition of the key terms used.

In Chapter 2 the severely handicapped population is described with specific reference to the non-speaking population. Attention is given to problems with defining this population and the various etiologies that could lead to non-speech. It also includes an overview of the changing orientation towards the severely handicapped population, in particular the non-speaking population, and the effect of these changes on service delivery.

The concept "*demography*", is the focus of Chapter 3 and the importance and implications of demographic surveys are discussed. This chapter further explores previous demographic surveys regarding the non-speaking population and emphasizes the research challenges in less developed countries. Both the development of the survey instrument (the two questionnaires) and fieldworkers who were used in the present survey, are discussed.

The methodology is set out in Chapter 4. This includes a description of the aims and objectives, the research design, pilot study, description of the schools, children, teachers and fieldworkers, material and equipment used in the study, the data collection procedures, data recording procedures and finally, the data analysis and statistical procedures.

Chapter 5 presents an overview of the results obtained. Emphasis is placed on results relating to communication and related abilities, general behaviour and characteristics as well as service delivery provided to the severely handicapped population. This is followed by a comparison between the speaking and non-speaking population. Finally a profile of the non-speaking population is presented.

This is followed by the integration and discussion of the results which is the focus of Chapter 6. Key issues relating to the identification of the non-speaking population, their communication abilities, functional reading, writing and mathematical abilities and service delivery are emphasized.

In Chapter 7 the conclusions and implications of the study are presented, together with a critical evaluation of the study and recommendations for future research.

1.3 DEFINITION OF TERMS

The following most frequently used key terms need some clarification :

- **Demography**

Demography is the statistical and mathematical study of the size, composition and spatial distribution of human population and of changes over time in these aspects through the operation of the five processes of fertility, mortality, marriage, migration and social mobility (Pollard *et al.*, 1981:13). However, for the purpose of this study, demography will be used in a broader sense and will refer to descriptive data that was gathered from a large population in a specific geographical area. Although this study is therefore broader than is usual, it was decided to use the term "*demography*" as the descriptive data are those of a population and not of individual members (Yaukey, 1985:14).

- **Prevalence**

Prevalence can be defined as the number of times a certain variable occurs, or exists in a given population (Pollard *et al.*, 1981:17). Information yielded from this survey can thus be viewed as prevalence data.

- **Non-speaking**

For the purpose of this study it was decided to use the term "*non-speaking*" although numerous other terms exist, including speechless, non-oral, non-vocal, non-verbal and aphonic. It was decided to use this term as it was easily understood by teachers and thus not open to misinterpretations. Furthermore, this term was quantified and defined as "*Children who speak fewer than 15 intelligible words*" (Burd *et al.*, 1988:373). Therefore these non-speaking children are those who may benefit from AAC - those for whom gestural, speech or written communication is temporarily or permanently inadequate to meet all their communication needs. For these individuals, hearing impairment is not the primary cause of the communication impairment. Although some individuals may be able to produce a limited amount of speech, it is inadequate for their varied communication needs (ASHA, 1991:10).

- **Mentally handicapped**

In the literature a vast number of terms and definitions which attempt to describe this population exists. Furthermore, certain terms e.g. "*retardation*" has been met with much protest as this is seen as a stigma which affects the children's self image. Consequently, the term "*mental handicap*" will be used as this refers to the societal disadvantage resulting from the mental impairment and subsequent communication disability (Blackstone, 1986:9). In cases where the term "*severely mentally handicapped*" is used, it refers to children with an IQ of 55 and lower as discussed in Section 2.4.1.

- **Severely handicapped people**

In the present study this term refers to the severity of the disability and/or may reflect on the range of the disability (i.e. the different areas of involvement which results in the

social and environmental handicap experienced by the individual. This implies that all severely handicapped people are not necessarily mentally handicapped. Non-speech is one aspect of the term "*severely handicapped*" as this is an aspect which causes and maintains a severe social handicap. Consequently, all non-speaking children can be regarded as severely handicapped due to the severity of the communication disability and its impact on general functioning.

- **Functional reading, writing and mathematical ability**

For the purpose of this study, functional reading, writing and mathematical abilities refer to those skills necessary for the individual's meaningful participation in society. Functional skills focus on the use of these skills in social contexts, rather than the teaching of these skills for academic purposes. Therefore, these functional skills are important as they not only create opportunities for communication but also for social inclusion.

- **Receptive language ability**

This aspect refers to an individual's comprehension of language. It includes spoken and written language, as well as aspects such as cause-effect and sequence details (Owens, 1991:228). As receptive language is always dependent on semantic context, complexity, context and function "*normal for chronological age*" was given as the norm when teachers had to rate this ability.

- **Etiology**

Although "*etiology*" usually refers to the medical study of the causes of diseases, it will be used in a broader sense in this study. Etiology will refer to different impairments that would affect an individual's functioning in all the different skill areas, e.g. mental or

physical handicaps, deafness, blindness, autism etc.

- **More developed country**

This term refers to the so called "*First World Countries*" or "*Developed Countries*" (Oosthuizen, 1994). It was decided to use the term "*More Developed Country*" in this survey, as this indicates that these countries have not reached their ceiling of development and that further development is possible.

- **Less developed country**

The term "*Less Developed Country*" was used rather than "*Third World Country*" or "*Undeveloped Country*", as a country such as South Africa has both First World and Third World elements. This term thus indicates that although there is some development further development is necessary (Oosthuizen, 1994).

1.4 ABBREVIATIONS

The following abbreviations are frequently used throughout the study, and therefore need clarification :

- **AAC** Augmentative and Alternative Communication
- **SHP** Severely Handicapped People
- **SHC** Severely Handicapped Children
- **SLP** Speech Language Pathologist
- **CP** Cerebral Palsy
- **ADL** Activities of Daily Living

CHAPTER 2

SEVERELY HANDICAPPED CHILDREN : AN OVERVIEW

2.1 INTRODUCTION

This chapter aims to define the concept "*severely handicapped*" as well as the current trends in this field. Problems with the classification of severe handicaps and the importance thereof are then discussed. This is followed by a description of different etiologies associated with non-speech in children. Finally problems with determining severity ratings are explored.

2.2 DEFINING THE CONCEPT

2.2.1 Current trends in the definition of severe handicaps

"*Severely handicapped*" as a basis of classification has characteristics which pose serious problems for the epidemiologist (Cooper, 1981:13). This population brings to mind a vast number of images, ranging from a Down's Syndrome to a spastic quadriplegic person. These images are all relevant, as are many others. Severely handicapped people (SHP) have in common only their degree of dependence on services and support (Sailor & Guess, 1983:1). This brings us to the question of whether these diverse characteristics form an identifiable category.

One approach in defining this population was to identify and define their characteristics, e.g. "*A severely handicapped child is one who because of the intensity of physical, mental or emotional problems, or a combination of such problems, needs educational, social,*

psychological and medical services beyond those which have been offered by traditional regular and special educational programmes, in order to maximize his full potential for useful and meaningful participation in society and for self-fulfilment. Such children include those classified as seriously emotionally disturbed (schizophrenic and autistic), profoundly and severely mentally retarded, and those with two or more serious handicapping conditions such as the mentally retarded deaf, and the mentally retarded blind."

US Department of Education (in Sailor & Guess, 1983:5). From this it is clear that the different areas of involvement are an integral part of defining SHP.

However, defining the population in terms of areas of involvement and their specific characteristics such as previously mentioned, proves in practice to be nearly impossible. Sailor and Guess (1983:5) emphasize the heterogeneity by stating that terminology such as *"must be categorized by"* versus *"may be categorized by"* becomes necessary, which leads to an increase in false-negative identification errors as the *"must"* increases, whilst the false positive errors increase with an increase in the *"may"*.

Consequently another approach in defining the severely handicapped population has been to include most disabled people in the *"all others"* category to comprise a population known as severely handicapped. According to this classification, a deaf child can be grouped together with a profoundly mentally handicapped child (Sailor & Guess, 1983:5).

Apart from focusing only on the different areas of involvement (i.e. the range of disability) which could lead to severe handicaps, the severity of the disability should also be taken into consideration. This is necessary due to the fact that these two factors result in the social and environmental handicaps experienced by the individual. Severe disabilities e.g. a severe communication disability such as non-speech, would also lead to a severe handicap due to the impact thereof on general functioning, causing a social handicap.

Most of the above definitions focused on the individual's deficiencies. In contrast, Marc Gold's definition places the onus of responsibility on society to advocate for SHP in order to ensure their quality of life. He further addressed the *"competency / deviancy hypothesis"*: *"The more competence an individual has, the more deviance will be tolerated in that person by others"* Gold (in Falvey, 1989:2). This hypothesis can thus be used to summarize society's acceptance and to assist parents, professionals and community members to make a qualitative difference for SHP.

Related to this, a more current approach based upon the identification of educational needs that reflect the major sensory, motor or cognitive disorders of these children has developed. These disabilities, whether singly or in combination, require special instructional adaptations and approaches to enable better interaction of the children with their environment (Sailor & Guess, 1983:22).

For the purpose of this study severely handicapped will refer to the severity of the disability and/or may reflect on the range of the disability (i.e. the areas of involvement) which results in the social and environmental handicaps experienced by the individual (See Chapter 1, Section 1.3). Relating to the areas of involvement, it seems to imply that not all SHP are necessarily mentally handicapped. In addition, non-speech is one aspect that forms part of the SHP due to the severe social handicap it causes. Consequently, all non-speaking children can be regarded as severely handicapped due to the severity of the communication disability and its impact on general functioning although not all SHP can be regarded as non-speaking.

To clarify the various approaches in describing SHP, the definitions found in the *International Classification of Impairments, Disabilities and Handicaps (ICIDH)* and used by the World Health Organization (WHO), will briefly be discussed in Table 2.1.

Table 2.1 : International classification of impairments, disabilities and handicaps

TERM	DESCRIPTION
Impairment	Any loss or abnormality of psychological, physiological or anatomical structure or function. Refers to dysfunction of the body and is concerned with individual functions of the parts of the body (Cornielje <i>et al.</i> , 1993:26). Consequently, impairment represents disturbances at the organ level.
Disability	Any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal (Rasmussen <i>et al.</i> , 1993:276). Characterizes the inabilities and is concerned with compound or integrated activities expected of a person or of the body as a whole, such as represented by tasks, skills and behaviour (Cornielje <i>et al.</i> , 1993:26). Thus disability reflects the consequences of impairment in terms of functional performance and activity by a person; a disturbance at the level of the person.
Handicap	A disadvantage experienced by a person, resulting from an impairment or a disability that limits or prevents the fulfilment of a role that is normal (depending on age, sex, social and cultural factors for that individual) (Cornielje <i>et al.</i> , 1993:23). Is a broad concept representing the social and environmental result of impairments and/or disabilities for the child, the family and society (Rasmussen <i>et al.</i> , 1993:276). Thus it represents the interaction and adaptation regarding cultural, social, economic and environmental consequences for the person.

The first two categories are the least controversial as they resemble a hierarchical taxonomic structure. Impairment can be seen as the threshold phenomenon for any particular category; all that is involved is judging whether the impairment is present or not (WHO, 1980:14). Disability, on the other hand, reflects failure in accomplishments, in such a way that gradation of performance is to be anticipated and provision has to be made for recording the degree of the disability, and also for planning future services.

Handicap is a more problematic classification as it is not classified according to an individual or his/her attributes, but rather according to the circumstances in which disabled people tend to find themselves (WHO, 1980:14). Handicap is also restricted to key social roles that have been regarded as the most important dimensions of a disadvantageous experience, (orientation, physical independence, mobility, occupation, social integration and economic self-sufficiency. A gradation of circumstances is possible for each of these dimensions. In agreement with the WHO, Thorburn *et al.* (1992:123) stated that the attitudes, institutions and cultural beliefs of a community are involved, which results in a situation in which a disabled person may be seriously handicapped in one environment and lead an almost normal life in another.

In this study the term "*impairment*" was not used, as no formal evaluations were made, and records on formal diagnosis of all the children were not available. Although the aim was to look at handicap, as this would give an indication of the social and environmental results of the impairments and/or disabilities, it was not possible. This was due to factors such as the limited information available, so that the research process had to start at the disability level. This was achieved as the consequences of the impairments in terms of functional activity, as rated by teachers, were obtained.

Another reason for the widespread use of the WHO's definition of "*disability*" is that it

can easily be recognized by the non-professional. In fact, it could be said that a disability can be so termed only if it can be easily recognized (Thorburn *et al.*, 1992:122). Consequently the term "*disability*" was also used for the purpose of this study. Since the concepts of handicap and disability are different, complete agreement is not to be expected between perceptions of a child's handicap and the child's overall disability according to medical classification (Rasmussen *et al.*, 1993:276). This also influences the perception about the severity of the condition, which will be discussed later in this chapter.

2.2.2 Problems with classifications

Objectives differ appreciably between professions which makes it difficult to compare data. The heterogeneity is exaggerated by the fact that in this context most professions are mainly concerned with assessment and its associated individual orientated data, without much standardization of procedures. This was due to the fact that in South Africa, SHP have been viewed in terms of the medical model which focuses on medical diagnosis. The important social issues such as inclusion and integration of SHP into society has only recently started receiving attention. Furthermore, the a lack of appropriate concepts with transprofessional currency has led to communication difficulties, a problem compounded by the ambiguity and confusion in terminology (WHO, 1980:16). The present study does not presume to resolve all the above- mentioned difficulties but it explores some means of overcoming certain problems. It seeks to contribute to the uniformity in broad concepts and terminology by indicating ways in which individual attributes may be grouped together in order to simplify, to encourage standardization, which is good for record-keeping and to improve ways of comparing data.

2.3 DIFFERENT ETIOLOGIES CAUSING SEVERE HANDICAPS

As discussed in Chapter 1, Section 1.3, etiologies in this context do not only refer to the causes of impairments, but rather to the different areas of involvement which could lead to severe handicaps. Thus, in order to describe the characteristics and prevalence of non-speaking children, knowledge of the types of handicaps are necessary before adequate service delivery can be planned. With respect to descriptive characteristics, severely handicapped individuals are typically more dissimilar than similar (Ronski & Sevcik, 1988:83). It is also important to note that more than one impairment can occur simultaneously and in varying degrees (Calculator & Bedrosian, 1988:19). In these cases the individual will be referred to as multiply handicapped. Some of the major etiologies that will lead to severe handicaps will be discussed briefly.

2.3.1 Mental handicap

As mental impairment is the condition most frequently associated with non-speaking children, it will be discussed first. The WHO's definition of mental retardation is well-known "...*(it) is especially characterized by subnormality of intelligence and is of a nature or degree that requires or is susceptible to medical treatment or other special care or training of the patient*" WHO (in Cooper, 1981:3).

When intellectual functioning decreases for the first time after the age of 18 years (e.g. following a motor car accident), it is no longer referred to as "*mental retardation*" but as "*dementia*" (American Psychiatric Association, 1987:29). For the purpose of this study, only children younger than 18 years were included, consequently this aspect will receive no further attention.

The South African classification of mental handicap is described in Table 2.2 (Year of Disabled Persons Report, 1986:6).

Table 2.2 : South African classification of mental handicap

HANDICAP	DESCRIPTION
Intellectually handicapped child	Due to a mental deficiency, the child is unable to derive full benefit from ordinary education/training. Excludes severe mental handicap.
Intellectually severely handicapped child	Due to the severe nature of the mental deficiency, the child is unable to benefit fully from general or specialized education/training.
Untrainable child	Due to the child's social functioning and behaviour in everyday situations, he/she is dependent on special care.

The most commonly used classification system through which categories for retardation are set, are based on Intelligence Quotients (IQ's). According to Hogg & Sebba (1986:3) they are as follows :

Category	IQ range
Mild	50-55 to approx 70
Moderate	35-40 to 50-55
Severe	20-25 to 35-40
Profound	Below 20 or 25

Classification systems were used to determine the type of special education needed (Cooper, 1981:16). The performance of a student is related to that of his peers, and educational placement and service provision is decided upon accordingly (Falvey, 1989:10). It must be realized that there are many shortcomings in the use of IQ scores. In an attempt to overcome this, Hogg *et al.*, (1986:3) proposed an alternative derived from developmental scales rather than IQ scores. The term "*profound retardation*" is applied to children whose mental age is less than, or equal to, one quarter of their chronological age. Other functional definitions describe the profoundly mentally handicapped population as children who are usually not toilet-trained, display severe behaviour problems, are non-verbal, delayed in self-help, social and motor skill development, and may suffer from severe physical or sensory impairments (Hogg & Sebba 1986:4). Children with severe mental retardation are presumed to suffer from some degree of cerebral dysfunction, resulting in visual impairment (Hertz & Rosenberg, 1992:120). A further way of defining profound retardation is based on the number of services they receive. The National Development Team set up by the British Government described the profoundly retarded population as children requiring some form of long-term residential care with high staff ratios.

Although there are a vast number of syndromes which may all result in mental handicaps, Down Syndrome constitutes probably the most easily recognized group with developmental disabilities, and forms a unique group within the mentally handicapped population. It is, however important to note that this group spans a large range of intellectual abilities (Young, 1985:696). Furthermore, prevalence projections indicated a rate of 1,32 per 1000 live births in 1990 (Huether, 1987:108). In South Africa it has a high prevalence, as according to the Department of Health, in 1982 one out of every 600 babies born had Down Syndrome (Louw, 1989:275). Due to the high prevalence and fact that the term "*Down Syndrome*" is well-known, it was decided to include this as an example of mental

handicap.

Another aspect relating to mental handicap is that of acquired mental handicap. There are a number of aspects that could lead to acquired mental handicap in children, namely closed head injury (CHI), infectious diseases and stroke. CHI is considered as an injury in which the primary mechanism of injury is a blunt blow to the head, associated with acceleration / deceleration forces. This is compatible with depressed skull fracture and penetration of the brain by bone fragments. The primary injury is thus not focal (Ylvisaker & Szekeres, 1986:474). The different lesions due to CHI will be briefly discussed in Table 2.3.

Table 2.3 : Lesions due to closed head injury

PRIMARY IMPACT	CAUSES	SYMPTOMS & EFFECTS
Laceration	Result of penetration of brain by an object.	Determined by nature and localization of injury. Variety of effects: temporary or permanent.
Concussion	Result of blow to the head.	May lead to temporary disruption of blood flow. Mild concussion usually lasts a few hours or days, and in severe cases symptoms last a few weeks. Recovery is usually spontaneous and complete (Bodemeyer <i>et al.</i> , 1989:24).
Contusion	Result of hard blow to the head which causes the brain to hit against the skull.	Symptoms more severe than concussion. May result in loss of consciousness for hours, days or weeks.

However, CHI patients present with a great diversity of impairments due to the combination of pathophysiological mechanisms, the nature and severity of the injury, pretraumatic intelligence, educational and vocational levels, age, personality and support systems. Therefore, as CHI is not a neat diagnostic category from the behavioural or pathophysiological point of view, children are often not classified as such, which results in teachers being unaware of this category. Consequently, CHI was not included as a separate category.

Another aspect relating to acquired mental handicaps is infectious diseases. These diseases, especially syphilis, encephalitis and meningitis can lead to mental retardation. This may be due to direct impairment of the central nervous system by certain micro-organisms, or to secondary factors, e.g. a very high body temperature, disturbed water balance, oxygen shortage and other homeostatic disturbances (Louw, 1989:64). As encephalitis and meningitis are the two most common infectious diseases in children, they will be discussed briefly in Table 2.4.

Table 2.4 : Two major infectious diseases in children

DISEASE	CAUSES	RESULTS
Encephalitis	Viral infection or complication of bacterial meningitis, or septicaemia. May also be result of influenza, rubella or other infections.	Seizures are common and prognosis varies from no side effects to severe mental retardation (Bodemeyer <i>et al.</i> , 1989:247).
Meningitis	Acute bacterial, viral or fungal infection of the meninges surrounding the brain and spinal cord.	May lead to mental retardation (Bodemeyer <i>et al.</i> , 1989:247).

As medical diseases such as the above-mentioned two are not always known to the classroom teacher, it was not included as a separate category in the study.

Finally, stroke is also related to acquired mental handicap. Stroke can be defined as a sudden diminution or loss of neurologic function caused by rupture or the obstruction of an artery of the brain, thus a disorder of the human cerebral circulation (Milikan, McDowell & Easton, 1987:3). Stroke often results in different symptoms, which will be briefly discussed in Table 2.5.

Table 2.5 : Symptoms resulting from stroke

SYMPTOMS	DESCRIPTION OF SYMPTOMS
Cognitive symptoms	Decreased memory skills, deterioration of intellectual functioning, defective judgement, decreased abstract thinking potential.
Perceptual- motor symptoms	Severe physical symptoms may occur, e.g. muscle impairment or even paralysis.
Visual defects	In some cases blindness may occur (Bodemeyer <i>et al.</i> , 1989:235). Symptoms of agnosia may also occur.
Communication problems	Different kinds of aphasia as well as apraxia.
Emotional disturbances	A wide range including apathy, euphoria, depression, irritation and impulsivity.

This great variety of symptoms may be temporary and reversible or permanent; relatively mild or severe with a total inability to perform various tasks (Bodemeyer *et al.*,

1989:236). The clinical manifestation of the stroke will also be affected by personality, intelligence, upbringing, emotional status and age. Postnatal stroke may occur due to infection, e.g. meningitis or ventriculitis (Cogher *et al.*, 1992:11). However, stroke in children is rare, therefore it was not included in the study as a separate category.

For the purpose of this study, a differentiation between congenital and acquired mental handicap was not made. This was due to the limited available background information of the children, which resulted in teachers not always being aware of the cause of the mental handicap as well as the low prevalence of acquired mental handicaps in children.

Finally, prevalence data is discussed. The prevalence of profound retardation is difficult to establish as figures vary with the type of definition adopted. Fryers (in Hogg & Sebba, 1986:6) concluded from his own and other studies that the prevalence rate is a little less than 1 per 1000 in the school age population. The severely mentally retarded group comprises 1,0 - 2,0% of the mental retarded population, with a male:female sex ratio of 1,5:1 (American Psychiatric Association, 1987:33). In South Africa the prevalence rate is reported to be 30 per 1000 for intellectually handicapped people comprising 25 per 1000 with mild, 4 per 1000 with severe and 1 per 1000 with a profound mental handicap (Year of Disabled Persons Report, 1986:16). No data is given in the South African survey for the moderately mentally handicapped population. Other studies have, however found the moderate to severely mentally handicapped people to represent 13% of the total mentally handicapped population, whereas the lower severe and profound range represents 4% of the total population (Grover, 1990:162). It is further estimated that 70% of the severely mentally handicapped population have more than one handicap (Golly, Freedman, Wyngaarden & Kurtz, 1978:26).

2.3.2 Physical handicap

As the severity of a physical handicap often results in a child being classified as severely handicapped, this aspect warrants further discussion. The physically handicapped person is an individual born with a physical impairment or who has a physical limitation such as an anatomical loss of major extremities, paralysis, physiological disorders or any other condition affecting important body systems, due to illness, injury, accident or age. Thus there is limited mobility as well as limitation of one or more of major life activities. This physical condition is irreversible and will probably continue indefinitely (Year of Disabled Persons Report, 1986:5).

The causes and manifestations of the two major categories of physical impairment, *cerebral palsy* and *spina bifida*, are so different that it is rare in the literature even to find them mentioned in the same context (Hogg & Sebba, 1986:127). Another congenital condition may be the result of drugs, e.g. thalidomide taken by the mother during pregnancy. However, physical impairments are not only due to congenital factors, but may also result from temporary and imposed immobility as in the case of plaster casts, traction, splints and other restraint procedures, but for the purpose of this study, these temporary impairments were not taken into account. The diversity of physical handicaps is compounded by the nature of the underlying causes, as well as variations within these conditions.

As CP is the most common medical diagnosis for children with multiple disabilities it often results in non-speech (Dunn, 1991:47). Furthermore, it forms a major part of congenital physical impairment and therefore requires further discussion. The role of brain dysfunction as the cause of abnormal motor function differentiates CP from motor problems caused by spinal lesions (e.g. poliomyelitis and spina bifida) and paralysis

associated with spinal cord injuries (McDonald, 1987:2). As these impairments usually do not lead to non-speech they will not be discussed further.

CP refers to a group of conditions which share the features of a persistent central motor impairment which is pathologically non-progressive (Cogher *et al.*, 1992:3). CP is therefore a disorder of movement and posture due to brain pathology. This brain pathology could have occurred in the pre-, peri-, or immediate post-natal period, but without an injury to the limbs as such (Murphy, Marková, Moodie, Scott & Boa, 1993:3).

When looking at CP, muscle tone is usually a good indicator of the type of CP, namely, spasticity, athetosis, rigidity, ataxia hypotonia, hypertonia, dystonia and mixed types (Cogher *et al.*, 1992:8 ; Sailor & Guess, 1983:19). Furthermore, topography, which refers to the number and location of limbs involved are important. The topography as revealed in CP is hemiplegia, paraplegia, quadriplegia and diplegia (Cogher *et al.*, 1992:10). Topography of involvement is important for planning an intervention programme and the eventual level of independence. A paraplegic person can often handle most activities of daily living (ADL) and only requires assistance in ambulation. On the other hand, a quadriplegic person may remain dependent on others, because poor control of the upper limbs precludes the development of self-help skills (McDonald, 1987:7).

However, differentiations between type of CP and topography were not made in the questionnaire, and therefore these aspects will not be discussed further. It was decided not to include them in order not to make the questionnaire too long, and due to the limited available medical information on the children.

The list of problems associated with CP is long, and will be discussed briefly in Table 2.6.

Table 2.6 : Problems associated with cerebral palsy

ASSOCIATED PROBLEMS	DESCRIPTION
Intellectual impairment	Difficult to determine if deficits in adaptive behaviour are due to motor or intellectual impairment. Distribution of IQ differs from that of normal population. Close relationship between incidence of IQ impairment and severity and topography of motor dysfunction exists (McDonald, 1987:8).
Sensory impairment	All sensory modalities are vulnerable. Visual problems (e.g. oculomotor, refractive errors & central processing problems) occur and strabismus are common (Hertz & Rosenberg, 1992:115). Risk for sensory-neural, as well as conductive hearing losses due to poor alignment of auditory meatus and poor oropharyngeal motor control exists. Proprioception, kinaesthesia and vestibular motion are diminished or disordered (McDonald, 1987:8).
Communication impairment	Moderate and severe CP risk never developing effective, competent communication. Intelligible speech production impossible in some severe cases, and AAC strategies prove to be the only alternative (McDonald, 1987:8).
Social-emotional complications	Often deprives children of interpersonal relationships & achievements that contribute to social-emotional achievement. Difficult bonding with mother as feeding problems exist. Dependence on others interferes with development of positive self-concept, and failure in ADL activities (e.g. dressing, feeding & toileting) result in low self esteem. Often become passive recipients of care, making little attempt to function at the highest level permitted by their handicap (McDonald, 1987:8).
Educational problems	Problems with attention, memory & perception interfere with learning. Poor motivation and sensory problems interfere with acquisition of knowledge and skills. Degree of motor handicap influences handling of educational material, e.g. pens & books. Additional IQ impairments further complicate the educational process (McDonald, 1987:9).
Seizure disorders	Many CP children experience some form of seizure, as both are the result of brain dysfunction (McDonald, 1987:9).
Physical disabilities	Orthopaedic problems are not the result of CP, but abnormal muscle tone may cause restricted joint motion in upper and lower extremities, as well as spinal deformities. One of the most common orthopaedic problems is dislocation of both hips (McDonald, 1987:9).

Apart from the above-mentioned problems associated with CP any physical disability will influence all areas of development. These areas include emotional development due to the influence of the disability on the mother-child interaction, sensory development, fine and gross motor development, language and communication development, cognitive development as well as perceptual development.

On the one hand, physical handicaps are caused by congenital factors such as CP, and on the other hand acquired physical handicaps are caused by traumatic incidents leading to aspects such as CHI. However, in this section only surgically related traumas will be discussed. If a cancerous laryngeal tumour is found, an overall medical-surgical programme is initiated. The type of medical treatment depends on the site and extent of the tumour. Currently the total surgical removal of the larynx is still the most common treatment for cancer of the larynx. A total laryngectomy produces complete loss of voice as well as other physiological and psychological changes. A growing body of people have laryngeal cancer, and the male:female ratio is 5:1 (Boone & McFarlane, 1988:236). However, as this is not a common problem amongst children, it was not included as a separate category on the questionnaire. A category for "*other*" was included, where this could be indicated had it been present.

A stoma will also lead to a complete loss of voice, but as this is a temporary situation, it was not included.

Finally, prevalence data is discussed. In South Africa, the prevalence of physically handicapped people is reported to be 16,3 per 1000 (Year of Disabled Persons Report,

1986:17). When looking at prevalence data specifically related to CP, variations are reported. These variations can broadly be reduced to three main origins (Cogher *et al.*, 1992:8):

- Variability of definition.
- Methodology used, e.g. analysis of service usage, or population study or cohort follow-up.
- Improved neonatal care which has led to an increasing prevalence during the past ten years.

However, in spite of methodological variations, most surveys report a prevalence in the order of 2 per 1000 Stanley and Alberman (in Cogher *et al.*, 1992:8). Orelove and Sobsey (1992:3) confirmed these figures in reporting that CP comprises 0,35% of the total population. The prevalence of CP amongst school aged children is reported to be 2,2 per 1000 (Barabas, Matthews & Zumoff, 1992:983). Compared with other impairments (deafness, blindness, epilepsy etc.) CP was found to be most limiting to the children's activities. In South Africa, the prevalence is reported to be 2,5 per 1000 (Year of Disabled Persons Report, 1986:15).

2.3.3 Sensory handicaps

Estimates of the number of severely handicapped children who have impaired hearing and vision are notoriously inconsistent and inaccurate, which is a result of the different definitions used for various disabilities, as well as the difference in sampling procedures (Sobsey & Wolf-Schein, 1991:119).

2.3.3.1 Visual impairment

Definitions regarding visual impairments vary from study to study and a variety of terminology is used including "*visual handicap*", "*visual impairment*", "*blindness*" "*partial sight*", "*visual acuity*" and many more (Hogg & Sebba, 1986:10). Partial sightedness involves substantially defective vision, that implies vision of 20/70 - 20/200 after correction, whilst an individual is considered "*legally blind*" when his visual acuity is 20/200 or worse (this is 10 times poorer than that of a person with unimpaired vision) but persons categorized as blind usually have some light perception (Sobsey & Wolf-Schein, 1991:121). A person may also be classified as "*legally blind*" when his visual field is restricted to being less than 20 degrees. Defects in the anatomy of the eye (the cornea, iris, retina, lens or optic pathways) may also result in visual impairment. However, there has recently been a move to a more functional definition e.g. whether the child is reported to have some difficulty in seeing with glasses as prescribed, or great difficulty in seeing without glasses (Hogg & Sebba, 1986:10).

In addition to the above, specific impairments are linked to specific types of visual problems. Myopia and strabismus are higher among people with Down's Syndrome, and visual abnormalities comprise 78% of severely handicapped, cerebral palsied children (Hogg & Sebba, 1986:11).

The impact of visual handicap on the development of a child obviously increases with the severity of the impairment. Problems associated with the visual impairment are discussed in Table 2.7.

Table 2.7 : Problems associated with visual impairment

ASSOCIATED PROBLEMS	DESCRIPTION
Gross motor problems	Blind children do not elevate their bodies when laid prone, pull to standing or walk alone even when permitted by neuromuscular development (Hogg & Sebba, 1986:90). Early intervention is needed to construct a "picture" of the world.
Fine motor problems	Restricted from exploring the world, thus reaching for objects & bringing hands together in midline, develop later than normal. Pincer grip develops in sighted & visually impaired children at 10 months, but the grip is somewhat awkward and uncertain in the latter (Hogg & Sebba, 1986:91).
Intellectual problems	Assimilation and accommodation, two important cognitive functions, do not develop in equilibrium as visually impaired children do not fully experience the relation of objects to themselves. Thus, although these children have the intellectual ability necessary for the integration of external facts, he/she is deprived of the means sighted peers have to aid the adjustment to reality (Hogg & Sebba, 1986:94).
Communication problems	Both receptive and expressive language are delayed, being greater in the former. Babbling, turntaking and use of gestures to obtain adult attention, develop at same age as sighted peers. Ability to initiate interaction, joint attention and naming of objects are, however, often restricted (Hogg & Sebba, 1986:94).
Problems with mother-child interactions	Interaction is characterized by sustained eye contact, turntaking & facial expressions, of which vision is an important part. Pre-linguistic communication, e.g. responding to parent's face, smiles etc. is often impaired (Hogg & Sebba, 1986:101). Extent to which parents use non-visual communication systems and alternative ways of getting the child's attention and involvement is crucial.
Self reference & identity problems	The personal pronoun, "I", develops later in visually impaired children, and some never acquire it. This problem, reflected in language & with consequences for personality development will compound the child's problems in understanding the physical world (Hogg & Sebba, 1986:101).
Behaviour problems	Most surveys agree that behaviour problems occur more in blind & visually impaired children than in the sighted population. Visually impaired children behave in certain ways in an attempt to create bodily sensations, which strongly represents self-stimulatory activities performed by profoundly retarded children. They include body rocking, hand waving in front of face, eye rubbing & poking, head turning & rolling (Hogg & Sebba, 1986:103).

Finally, prevalence data is discussed. In South Africa the prevalence of visual impairment is reported to be 3,63 per 1000 (Year of Disabled Persons Report, 1986:15). The prevalence of visual impairments in mentally handicapped people is difficult to assess, as problems arise in using standard visual assessment procedures. It is reported that 2,7% of retarded, institutionalized people in Sweden are visually impaired, being 15 times more than in the general population, whilst another Swedish study reported that 10% of severely handicapped children were visually impaired (Hogg & Sebba, 1986:11). From the above it is clear that handicapped people are especially susceptible to visual problems, and as the severity of the handicap increases, the more are the difficulties associated with the assessment of their vision.

2.3.3.2 Auditory impairment

Auditory impairment has been defined as a generic term, indicating loss of hearing from slight to profound as indicated by examination of the ear, audiological testing, and functional use of hearing (Hogg & Sebba, 1986:8). Due to the vague definitions and the negative connotations attached to the terms "*deaf*" and "*hard of hearing*", the term "*auditory impairment*" is preferred. Furthermore, this term generally includes sub-classifications of "*deaf*" and "*hard of hearing*".

The most common definitions used in the literature define "*deaf*" as "*A person who is unable to use his sense of hearing as the primary mode by which he communicates with his world*", and "*hard of hearing*" as "*A person who, although he has a hearing defect, may still use his sense of hearing as the primary mode of communication*" (Year of

Disabled Persons Report, 1986:3).

The scale of auditory impairment used by ASHA is as follows (Yantis, 1985:164) :

Average Threshold	Description
-10dB to 15dB	Normal hearing
16dB to 25dB	Slight hearing loss
26dB to 40dB	Mild hearing loss
41dB to 55dB	Moderate hearing loss
56dB to 70dB	Moderate to severe hearing loss
71dB to 90dB	Severe hearing loss
91dB plus	Profound hearing loss

The degree of hearing loss is not directly related to the classification of the child for educational purposes. The evaluation for educational needs is usually more functional.

Much of what had been noted concerning the consequences of visual impairment also applies to auditory impairment. However, all the different aspects concerning auditory impairment are shown in Table 2.8.

Table 2.8 : Problems associated with auditory impairments

ASSOCIATED PROBLEMS	DESCRIPTION
Cognitive problems	Often an auditory impairment is diagnosed late, and thus the child is deprived of effective experiences with objects and the sound-making quality of objects. This limits motivation for exploration of the environment, hence cognitive development is restricted.
Communication problems	This is the core of handicapping consequences in auditory impaired children. Vocalization prior to babbling exists, but decreases after 5 months. Depending on the degree and nature of the hearing loss, it must be assumed that one aspect of verbal language is lost from the earliest months. Milestones in acquiring vocabulary is slow and onset of syntax is not associated with a dramatic increase in vocabulary. Gestures used for communication functions develop naturally in deaf children and compare favourably to the acquisition of spoken words in hearing peers. Similarly, signing matures (with respect to configuration, placement & movement) which also compares favourably with the production of speech sounds. Deaf children with few communication skills appear less happy, enjoy mother-child interaction less, are less compliant and less creative than either deaf peers with additional communication skills or hearing peers (Hogg & Sebba, 1986:117).
Problems with mother-child interactions	Parent-child interaction and parental perceptions are disrupted due to the impairment, which leads to a different style of parenting. Parents tend to overprotect these children (which contributes to social immaturity), and do not permit them to perform the self-help activities of which they are capable. However, these observations are generalizations that are modified by the degree of impairment and of parental attitudes (Hogg & Sebba, 1986:117).
Behaviour problems	It is reported that 15,4% of auditory impaired children have behaviour problems in contrast to 6,6% in the non-impaired population (Hogg & Sebba, 1986:121). Children with other handicaps in addition to their auditory handicap, had higher percentages of emotional/behavioural problems.

Regarding prevalence, formal tests are usually used to determine it. This might have caused prevalence to be higher for profoundly mentally handicapped people, as they had not had any formal tests done. Due to this factor prevalence figures vary considerably. Furthermore, a relation between the degree of mental handicap and the prevalence of auditory impairment was observed by researchers who noted that with increasing levels of mental handicap, there is an increasing evidence of auditory impairment (Hogg & Sebba, 1986:10).

Gustavson (in Hogg & Sebba, 1986:9) reported that 5% of severely mentally handicapped children have an auditory impairment, but Lloyd (in Hogg & Sebba, 1986:9) reported figures of 20-30%. These studies, however, excluded mild and moderate mental handicap. In South Africa the prevalence of hearing impairment is reported to be 35 per 1000 (Year of Disabled Persons Report, 1986:17).

2.3.3.3 Deaf-Blind children

For the individual with only one sensory impairment, the ability to compensate usually depends on increased dependence on the unimpaired sense and if this is also impaired, alternatives are greatly reduced (Sobsey & Wolf-Schein, 1991:125). Thus, due to the specific characteristics of deaf-blind children, this category will shortly be described. It is important to note that the problems experienced by deaf-blind children can be compounded even further if motor and cognitive abilities are also impaired.

The consequences of this impairment are vast. Many of these children have serious emotional and/or behavioural problems - stereotypic, self-abusive, auto-erotic and ritualistic perseverative behaviours are common. They often also engage in a high degree of self-stimulation, and the function of the self-stimulation, such as eye gouging and screaming appears to be attempts to intensify visual and auditory input (Sobsey & Wolf-

Schein, 1991:126). Unfortunately these behaviours are often socially unacceptable as well as self-injurious. This handicap also impedes the development of language and speech and therefore social interaction and the pursuance of formal education. Other consequences for deaf-blind children are poor self-awareness and body concept, lack of attending skills and limited play skills, that have to be taught (Sobsey & Wolf-Schein, 1991:147).

Regarding prevalence, the deaf-blind population is small; only 6,1% of the total multiply handicapped population (Fredericks & Baldwin, 1987:3). More than 90% of this multiply impaired group can be categorized as either blind/severely hearing impaired or severely hearing impaired/severely vision impaired (Fredericks & Baldwin, 1987:3). It would appear that 93,8% of this population have either residual hearing or residual sight, that would facilitate the intervention process.

2.3.3.4 Conclusions regarding sensory handicaps

In a study done by Hogg and Sebba (1986:9) it was found that 3% of children in special classes had both visual and auditory handicaps in addition to their retardation and a further 8% had visual, auditory and physical impairments. According to the Annual Survey of Hearing Impaired Children and Youth, 30,2% of the students with hearing impairments had additional handicapping conditions, with 9,5% having two or more additional disabilities (Sobsey & Wolf-Schein, 1991:119). However, they acknowledge that these two groups are under-represented, as mainstreamed children were not included.

Regardless of which estimates are eventually validated, it is clear that sensory impairments are more frequent in children with multiple handicaps (Sobsey & Wolf-Schein, 1991:121). It can also be said that with an increased level of mental handicap there is also an increase in sensory impairments (Hogg & Sebba, 1986:9).

2.3.4 Emotional disturbance

Regarding emotional disturbances in children, two etiologies are most common, namely autism and childhood psychosis. They will briefly be discussed.

2.3.4.1 Autism

Severe emotional disturbance, primarily autism, is also associated with childhood language disorders. Autism comes from the Greek word "*autos*" meaning "*self*" (Brimer & Murphy, 1988:45). The majority of cases exhibit abnormalities before the age of 30 months, which forms a clinically recognizable syndrome (Year of Disabled Persons Report, 1986:7). A minority of cases, however, seem to develop normally before the onset of autism (Brimer & Murphy, 1988:45). Autism is characterized by 3 broad groups, namely profound and general failure to develop social relationships due to withdrawn and introverted behaviour; language retardation with impaired comprehension, echolalia and pronominal reversal and lastly ritualistic compulsive features and the absence of delusions, hallucinations and schizophrenic thought disturbances (Lahey, 1988:74).

Disturbances of perception (a failure of adequate interpretation of sensory input), is exhibited in hypo-active and hyperactive behaviour. The majority of autistic children function at an intellectually subnormal level (Brimer & Murphy, 1988:46). However, one-third to one-fourth of autistic children have IQ's in the normal range, yet they share behaviours with those in lower ranges.

Disturbances in relating both to people (e.g. poor eye contact, limpness or stiffness when cuddled, aversion to physical contact, no emotional or social responsiveness and inappropriate use of non-verbal communication) and objects (e.g. hand flicking, twirling

or spinning of toys) are present in autistic children. This socially abnormal behaviour is further characterized by the absence of social interaction and emotional adequacy, which is usually accompanied by the inability to form specific bonds (Year of Disabled Persons Report, 1986:7). In addition, speech and language are also disturbed and some of the most common phenomena are muteness, difficulties with yes-no productions and difficulties with the concept "I" and "you". Thus the abnormal quality of language development as well as its limited social use is characteristic.

Autistic children not only have well-developed stereotyped behaviours (e.g. spinning of objects, finger movements etc.), but they also lack significant relationships with others, including their parents. Lovaas (in Sailor & Guess, 1983:16) formulated the hypothesis that because of the characteristics of autistic children - called *stimulus overselectivity* - they cannot consistently respond to a mix of stimuli from several sensory modalities. Thus these children tend to depend on one of the three stimuli (visual, auditory **and** tactile) (Sailor & Guess, 1983:16). Other studies have shown a relationship between IQ and stimulus overselectivity - thus the lower the child's IQ, the less the environment becomes functional in controlling his behaviour (Sailor & Guess, 1983:16).

The prevalence rate of autism is low amongst the general public, ranging from 2 to 5 per 10 000 children with a male:female ratio of approximately 4:1 (Lahey, 1988:74). In contrast to this, the prevalence of autism among siblings of autistic children is 2 per 100, much greater than that of the entire population (Lahey, 1988:74). In South Africa the prevalence rate corresponds well with that of international findings, and is reported to be 0,2 per 1000 (Year of Disabled Persons Report, 1986:21). Although the prevalence of autism is low, it is an identifiable but unique and difficult problem which was included in this survey as a separate category.

2.3.4.2 Childhood psychosis

This term is used to describe children whose relationship with their environment is disturbed and they have often been subcategorized by age of onset (psychosis that begins in adolescence is similar to *adult schizophrenia*, psychosis that becomes evident between 30 months and 5 years of age is referred to as *childhood schizophrenia* and psychosis that becomes apparent before 30 months of age is referred to as *infantile autism* (Lahey, 1988:73). Factors that differ between childhood schizophrenia and autism is *sex ratio* (autism has greater incidence for males), *social class of parents* (higher for autistic children), *family history of psychosis* (greater in families of schizophrenic children), *intelligence* (lower for autistic children) and the *course of the problem* (schizophrenic symptoms tend to become more severe with time, whilst autistic symptoms tend to lessen over time) (Lahey, 1988:74). For the purpose of this study, this etiology was not included.

2.3.5 Seizure disorders

Epilepsy is not a specific disease, it is a group of symptoms characterized by recurrent, sudden, transient and intense disturbances in the activity of the central nervous system (Orelove & Sobsey, 1992:195). The term "*epilepsy*" is often limited to unprovoked seizures which are not secondary to a known primary diagnosis whilst "*seizure disorders*" is a broader category that includes both primary and secondary seizure symptoms. However, due to the fact that the term "*epilepsy*" is more known to teachers, it was decided to include that term instead of "*seizure disorders*" although it implicated the broader category of seizure disorders. Other seizures caused by high body temperatures (fever convulsions), alcohol or drug withdrawal were excluded for the purpose of this study.

Severely multiply handicapped children frequently have epileptic seizures, including petit mal and grand mal as well as other types characterized by projectile vomiting and involuntary defecation and urination (Sailor & Guess, 1983:19). Causes of epilepsy are also potential causes of cerebral palsy and mental retardation.

Seizures are commonly described by their symptoms as the International Classification System provides little information regarding seizures. These descriptions only represent a prototype, and real seizures vary in duration, severity and symptoms, but often they approximate the symptoms of a specific category, so they can be classified (Orelove & Sobsey, 1992:198). The main types of seizures are described in Table 2.9 :

Table 2.9 : Different types of seizures

SEIZURE	CHARACTERISTICS
Grand mal seizure <i>Tonic clonic seizure</i>	Experiences an aura and immediately loses consciousness at the onset. During this tonic phase, breathing does not occur. Followed by the clonic (shaking) phase. Entire seizure lasts more than 5 minutes.
Petit mal seizure	Generalized absence or minor motor seizures. Loses consciousness for a brief time (5-30 seconds) and typically stares into space without moving.
Psychomotor seizure <i>Partial complex seizure</i> or <i>Temporal lobe seizure</i>	May exhibit a change in behaviour prior to the onset. Odour, tastes, colours or signs may be vividly imagined and automatisms (e.g. lip smacking) might be performed.
Jacksonian seizure <i>Partial simple motor seizure</i>	Involuntary movement begins in a part of the body (usually toe or finger) and gradually proceeds up the extremity.
Sensory evoked seizure	Environmental stimuli trigger the seizure. Only seen in 5-6% of persons with epilepsy.
Pseudoseizure	A good imitation, and may also occur in SHP.

Statistics vary greatly regarding prevalence, depending on the particular diagnostic criteria used for inclusion. In general, the prevalence of epilepsy in the USA ranges from 0,5% to 2,0% (Orelove & Sobsey, 1992:195). The prevalence of cerebral palsy and epilepsy increases with more marked intellectual impairment (Hogg & Sebba, 1986:7). Keats (in Orelove & Sobsey, 1992:195) suggested that about 35% of CP children will develop seizures. Spooner & Dykes (in Orelove & Sobsey, 1992:195) reports that as many as 31% of multiply impaired people have had seizures.

2.3.6 Other

There are certain "*other*" etiologies which may influence non-speaking children's functioning and these aspects will be briefly discussed. Due to the fact that these aspects influence functioning it might have a direct result on how severe a child's disability is perceived. Although multiple handicaps do not represent an etiology as such, the different combinations of etiologies which may result in a child being classified as "*multiply handicapped*" will shortly be described.

2.3.6.1 Communicable disease

"*Communicable disease*" is a general term that includes all the illnesses that can be transmitted directly or indirectly from person to person and are caused by viruses, bacteria or parasites (Orelove & Sobsey, 1992:188). Communicable disease is of particular importance to people with multiple impairments. Firstly, this population is particularly likely to contract these diseases, and secondly, once infected, these individuals are likely to suffer more severe symptoms and appear to be ill longer than non-impaired people. The most common communicable diseases found in children with multiple handicaps include AIDS, Hepatitis A, Hepatitis B, scabies, pediculosis (lice), common colds and influenza

(Orelove & Sobsey, 1992:190).

The ICD (International Classification of Diseases) is based on the model that an etiology (sickness) leads to a pathology due to the fact that the individual is unable to function in the manner usually expected of him and this manifests in the diagnosis of a specific disease. The ICD model can thus be presented as :

Etiology -> Pathology -> Manifestations of disease

Sickness interferes with the individual's ability to perform those functions and obligations that are expected of him and thus he is unable to sustain his social role and customary relationship with others (WHO, 1980:10). However, this model makes no provision for important implications connected with the disease such as ability and degree of disability. Alternatively, in the ICIDH, the consequences of the disease may be presented as :

Disease -> Impairment -> Disability -> Handicap

This sequence of events expresses the cause-and-effect relationships of *disease or disorder* (which includes a damaging factor), with progression to *impairment* (where the problem is exteriorized), *disability* (where it is objectified) and *handicap* (where it is socialized) (Thorburn *et al.*, 1992:123).

2.3.6.2 Behaviour problems

Behaviour is the most difficult variable to examine and for which to establish validity in SHP (Tustin, Kent, Haskell & Bond, 1991:287). Recently behaviour has been viewed in terms of a functional definition where a severe behaviour disorder may be defined by a

standard of community acceptability as *"behaviour of such intensity, frequency or duration that the physical safety of the person or others is placed in serious jeopardy or behaviour that is likely to seriously limit or deny access to and use of ordinary community facilities"* (Tustin *et al.*, 1991:297). These behavioural problems include aggression, self-abuse, tantrums and destruction of property.

The prevalence data reflecting behaviour problems ranges from 13-36% depending on the particular measure used (Tustin *et al.*, 1991:297). However it increases proportionately with the degree of mental retardation and the degree of impairment in a child's overall functioning (Burke, 1990:75). In the literature it is reported that 13% of people with an intellectual disability have a behaviour disorder (Tustin *et al.*, 1991:287). A study conducted by Tustin (1991:297) reported that 32% of clients received behaviour controlling medication, which correlated with Lipman's (in Tustin *et al.*, 1991:297) finding that 39% used major tranquilizers.

2.3.6.3 Multiple handicaps

Multiple handicap can be defined as one or more handicaps which may include any combination of mental, physical, auditory or visual disabilities (Hogg & Sebba, 1986:15). The heterogeneity of disabilities experienced by these people imply that they suffer from diverse problems each with numerous characteristics. Thus there is no sense in defining this population by means of symptoms or behaviours as they are not all present in one child (Sailor & Guess, 1983:8). The majority of multiple handicaps are caused by CP (Orelove & Sobsey, 1992:3). Approximately 22% of mentally handicapped children have an additional impairment, and 5% have four additional impairments (Year of Disabled Persons Report, 1987:16).

2.4 SEVERITY

AS discussed earlier in this chapter, SHP are defined not only in terms of the areas of involvement (See Section 2.3) but also in terms of the severity of the handicap. Therefore the concept "*severity*" is discussed in detail.

The ERIC thesaurus defines severity in terms of both individual functioning and a need for additional services. Thus a disability is considered severe if the disability makes functioning and achievement unusually difficult so that rehabilitation services must go beyond those usually provided by regular or special education programmes (Tustin *et al.*, 1991:287). According to the WHO the level of handicap depends on the type and severity of the impairment in conjunction with medical-social factors (WHO, 1980:20). The social effect of the handicap is seen in the fact that a very severe condition will have an adverse effect on the individual and/or others, whilst the medical effect is usually characterized by a poorer response to intervention and has an unfavourable outcome.

Assessing children with multiple handicaps is often difficult e.g. when testing visual acuity in young children with serious motor disabilities it is required of the child to name, recognize or pick out or point to a picture. These children often do not have understandable speech, and spasticity can make it difficult to point accurately. Many are also intellectually impaired and have difficulty in understanding what is required of them for standard acuity tests (Hertz & Rosenberg, 1992:115).

Motor disability is slightly easier to judge regarding severity, e.g. mildly motor disabled (able to walk with support) and severely motor disabled (only able to lie down, or to sit only if strapped to a chair) (Hertz & Rosenberg, 1992:116). Lorber's five graded motor disability classification is often used (Rasmussen *et al.*, 1993: 277):

Lorber's five-graded motor disability classification

- No or mild disability
- Moderate disability, walks without help
- Severe physical disability and/or renal impairment, normal intelligence
- Severe physical disability and moderate mental retardation
- Severe physical disability and profound mental retardation

However, when looking at CP in particular, and not at physical impairment as a broad category, the American Academy for Cerebral Palsy defines severity in terms of functional capacity (McDonald, 1987:7).

- Class I : No practical limitation of activity
- Class II : Slight to moderate limitation of activity
- Class III : Moderate to great limitation of activity
- Class IV : No useful physical activity possible

But this classification is limited by the subjective meanings of "*slight*" and "*moderate*" and thus Rusk (in McDonald, 1987:7) proposed a functional classification based on competence in carrying out activities for daily living (ADL), including communication:

- Mild* : Adequate ADL self-help skills, ambulates without appliances, has no speech problem and needs no treatment.
- Moderate* : ADL self-help skills are inadequate, and special appliances for ambulation are needed. Speech may be defective and various types of treatment are necessary.
- Severe* : Even with treatment and the use of adaptive appliances, the prognosis for developing ADL self-help skills, ambulation and functional speech is poor.

When looking at the above-mentioned classifications, it was felt that a classification of motor disability alone was insufficient, and thus Lorber's classification was expanded by Lagergren to include an overall disability (Rasmussen *et al.*, 1993:278), as seen in Table 2.10:

Table 2.10 : Lagergren's classification of overall disability

MILD	MODERATE	SEVERE
Slight motor disability, normal intellectual capacity (IQ approximately 70 or more), no more than one additional slight disability, independence with respect to ADL.	Neither mild nor severe disability.	Severe motor disability and/or severe mental retardation (IQ approximately below 50) and/or more severe additional disabilities and/or complete dependence with respect to ADL.

Disability and handicap are two different concepts, as discussed earlier in Table 2.1. But although there are fundamental differences between these two concepts, they are linked together. In Lorber's classification certain disabilities which are important for perceptions of the handicap are not taken into account. In contrast to this, Lagergren's classification takes all types of disabilities into account.

Criteria for measuring severity are set in two categories, namely *objectively measurable levels* of functioning such as decibel loss, intelligence levels and visual acuity, and *observations of behaviour* (presumably for lack of anything better) as in motor and speech impairment. However, measured levels of impairment do not necessarily correspond with severity levels as measured by behavioural observations of function, e.g. a hearing

impaired person may communicate better than one with a smaller decibel loss (Thorburn *et al.*, 1992:123).

In order to measure severity, information must be obtained on aspects such as IQ and amount and intensity of instruction needed. However, certain children seem to be "*untestable*" with traditional tests, especially those who are very young (3 years and younger), those with no language or very limited communication skills and those with severe delays in other areas (Lord & Schopler, 1989:483). Comparatively few tests provide well standardized and validated norms for children with both the relevant cognitive levels and chronological age. It can therefore be seen that SHP are difficult to test on these objective tests, making this measurement of severity inadequate for SHP.

Another way of scoring severity is by looking at frequency on a six point scale: 0=never and 5=continuously or 0=none and 5=severe/intense (van Tret *et al.*, 1990:62). However, this manner of scoring severity is also problematic as no information is obtained on the quality of the behaviour.

Finally, improvements in the medical management of paediatrics, have enabled children who in the past would have died, to survive (Richardson *et al.*, 1985:476). With the improved survival rate, the severity of some of the conditions has become worse. Medical conditions (e.g. chronic heart disease) are often measured on a 5 point Likert scale ranging from no or insignificant to severe. However, due to social factors, not all types of disabilities can be scored in this way.

One major problem in comparing statistics on disabilities and handicaps is the lack of consistency in terminology both in more and less developed countries. In less developed countries the difficulty of trying to quantify disability as a health problem is further

compounded by the unsuitability of various instruments for assessing disability and handicaps that are used in more developed countries, and also by the scarcity of professionals to carry out research (Thorburn *et al.*, 1992:122). Obtaining information about disabilities has therefore been difficult, time- consuming and costly, with the result that little importance has been given to this matter in health programmes.

2.5 SUMMARY

The purpose of this chapter was to define and explore the term "*severely handicapped*" in terms of both the range of involvement (etiology) and its severity. An attempt was also made to clarify the differences in terminology for the purpose of this study.

CHAPTER 3

NON-SPEAKING PEOPLE : TRENDS IN DEMOGRAPHIC SURVEYS

3.1 INTRODUCTION

In the previous chapter the concept "*severely handicapped people*" (SHP) was explored and non-speaking people, as a part of SHP, were discussed. Although not all SHP are non-speaking, the focus of this study is on non-speaking people. This chapter will focus on the term "*demography*" and demographic surveys which have already been done in both more and less developed countries. Problems encountered in these surveys, as well as valuable principles that can be applied in the proposed survey will be highlighted. The relevance of conducting a demographic survey related to non-speaking people in South Africa will be clarified and problems related to demographic surveys will also be discussed.

3.2 WHAT IS DEMOGRAPHY ?

Literally translated from Greek, the term "*demography*" means "*description of the people*" (Pollard, Yusuf & Pollard, 1981:1). According to the United Nations Multilingual Demographic Dictionary, "*Demography*" is the "*scientific study of human populations, primarily with respect to their size, their structure (composition) and their development (change)*". In this definition "population" refers to the number of people resident in some specified geographic area (Yaukey, 1985:1).

In all human groupings, e.g. the SHP population, there is always room for demographic observation and analysis (Pressat, 1972:6). Governments and private enterprises need to consider demographic information for short- and long-term planning.

3.3 IMPORTANCE AND IMPLICATIONS OF DEMOGRAPHIC SURVEYS

Demographic surveys are valuable for a number of reasons, depending to a large extent on the aims of the specific survey. Firstly, demographic surveys are important to both

clinical and research professionals for recommending change in public policies and encouraging increased advocacy (Huer, 1991:231). These factors are crucial to the social integration of SHP into society, which will in turn lead to the SHP leading a more independent life, and becoming less of a financial burden on society.

Secondly, demographic surveys are important for forming data bases from which trends in enrolment in service delivery programmes and future needs of AAC users can be projected (Huer, 1991:231). When looking specifically at data concerning the prevalence of severe communication impairment (non-speech) and the needs of the people affected, demographic data is fundamental in the planning of service provision, and for the training of SLP's and others involved in caring for SHP (Murphy *et al.*, 1993:2). Thus the number of demographic surveys need to be increased within the professional literature since the data is so important for planning and providing sustainable service delivery.

Finally, demographic data can be used to lobby for funding. This funding can be related to the provision of additional services or for the expansion of existing services. Demographic data will thus help the SHP to become increasingly visible and to build an awareness of the diverse needs of people with severe communication impairments, which in turn will influence advocacy (Bloomberg & Johnson, 1990:58).

3.4 RESEARCH CHALLENGES IN LESS DEVELOPED COUNTRIES

It is clear from Chapter 2, Section 2.2.1 that non-speaking children form a part of SHP, although not all SHP are non-speaking. In reviewing the literature, it was found that very few international and no local publications have attempted to identify the diverse nature of the non-speaking population. Although information concerning the incidence and prevalence of communication problems with non-speaking children is available for more developed countries, it is not known how many people could be helped by an AAC system (Murphy *et al.*, 1993:2). For less developed countries however, information regarding the incidence and prevalence of non-speaking children is not available. It is therefore necessary to start with the identification of the non-speaking population in less developed countries before aspects of service delivery can be addressed.

Specific problems related to the methodology of demographic surveys in less developed countries will first be identified and discussed, followed by a discussion of particular problems related to the severely handicapped population.

3.4.1 Problems related to methodology in less developed countries

In the less developed world there is a significant capacity for health research, with various researchers working on different projects, but they are hampered by various constraints. In less developed countries approximately 60-90% of all health research expenditures is for clinical, biomedical and laboratory research so that researchers attempting other research projects experience problems with funding (Evans, 1990:45). This has led to little research being done on demography with specific populations and even less with the severely handicapped population. Evans (1990:46) also suggests that country-specific research has been neglected in most of the less developed countries. This trend can also be seen in South Africa, and consequently no information on the non-speaking population in South Africa is available.

A problem facing less developed countries is the scarcity of professionals to carry out research. This could be due to personal constraints, as well as to constraints in the work and macro environments in which researchers in less developed countries have to function. This has led to demographic surveys being seen as a difficult, costly and time-consuming exercise, resulting in little attention being given to disability in health programmes. Research on disability will also influence government policies regarding education. Research of this nature is therefore often not funded by government agencies as it has definite financial implications.

Various research problems, synonymous with less developed countries, are present in the South African context. The constraints facing researchers in less developed countries can be divided into three categories (Evans, 1990:47) :

Firstly, constraints due to personal factors, which include aspects such as intellectual isolation which is due to the fact that researchers in less developed countries often do not have extended contact with other researchers. Salaries are often low in comparison to

salaries for private clinical work, in industries or in administration, which also has financial implications. As research is often not a high priority in less developed countries, researchers have few career options and limited opportunities for promotion. Because the available funding is limited, research choices are often restricted. These factors also contribute to the lack of demographic surveys with specific populations within the South African context.

Another factor that greatly influences research in less developed countries is the working environment of researchers. They often lack or have poor access to international information on previous surveys. Furthermore they often experience difficulties with inadequate support staff such as fieldworkers and research assistants. This leads to unstable budgetary support which causes financial constraints. As a result of the work related constraints, research quality tends to be marginal, which limits confidence in the usefulness of the research findings.

Finally, certain factors in the macro environment (the less developed country as a whole) have led to the emigration of some of the best researchers to more secure situations abroad. Factors related to the macro environment include the lack of a scientific culture within less developed countries, which in turn leads to a lack of demand for research. As public awareness of the value of research findings is low, research has little public support. Often a bureaucratic inflexibility regarding research findings exists, as these findings may have financial implications, e.g. in the case of service delivery. Lastly, due to political instability, some geographical areas have a very high violence rate which often makes these areas inaccessible to research.

It can therefore be concluded that due to the above-mentioned factors, conducting research in a less developed country is a challenging task.

3.4.2 Problems related to SHP in less developed countries

Apart from the reasons already mentioned regarding research in less developed countries, the researcher confronted with the severely handicapped population faces a variety of problems. Firstly, the complexity of problems experienced by SHP, and in particular non-speaking people, makes an appropriate description of their abilities as discussed in Chapter

2, Section 2.2.1 difficult. This inevitably leads to misdiagnosis of some of these SHC as various problems exist in the assessment of their functioning in all the different skill areas. As a result, these children are often placed in inappropriate institutions.

This factor is closely linked to the second problem facing researchers dealing with SHP, namely the definition of SHP. The different related factors were discussed in detail in Chapter 2, Section 2.2.1.

Thirdly, research problems are encountered with the identification of the SHP within the general population. The primary unifying factor is their lack of visibility in the general community (Bloomberg *et al.*, 1990:58). This is particularly true in the South African context, where certain SHC are hidden from society. Consequently, children found in schools can be seen as the more advantaged children.

Apart from the problems with regard to defining the term "*severely handicapped*" and identification of this population, differences are also present in fundamental aspects such as biographical background, etiologies, age range, abilities and functioning in all the different skill areas (Bloomberg *et al.*, 1990:58). The above-mentioned aspects related to SHP have led to an even greater heterogeneity within the population.

All these research problems, related to both demographic surveys in less developed countries and the SHP with special reference to the non-speech population, have further implications.

Research has been fragmented due to the fact that the demographic data for this population is not collected by government agencies. This has made the projection of the number of SHP, and in particular non-speaking children, very difficult which, in turn, has influenced the projected number of SHP in need of service delivery.

Various authors, e.g. Bloomberg *et al.* (1990:50), Murphy *et al.* (1993:2) and Coon *et al.* (1992:12) all stressed the important role of demographic studies in planning intervention. Australian literature estimated that 5000 non-speaking individuals were present in the total population of approximately 4 million people. In South Africa, it is estimated that 4% of the population would be a reliable indication of the number of people who are, to some

extent, intellectually handicapped (Year of Disabled Persons Report, 1986:7). Traditionally SLP's in South Africa did not offer services to SHP, but providing communication intervention for SHP through the use of AAC systems has become more prominent since the seventies.

In South Africa statistical information on the SHP is limited (Year of Disabled Persons Report, 1986:2). The existing information on this population places great emphasis on the different etiological categories, often with little or no reference to whether these categories influence communication and thus the functioning of the individual in society. Furthermore, the reports on the Year of Disabled Persons did not have exclusive categories, implying that a disabled person could be counted more than once (Year of Disabled Persons Report, 1986:16).

3.5 DEMOGRAPHIC SURVEYS WITH REFERENCE TO NON-SPEECH : MORE AND LESS DEVELOPED COUNTRIES

It was necessary to first review the literature in order to understand which demographic surveys had already been done and to highlight the different orientations (aims), methods and findings. Thus, in order to provide a background and a basis from which to plan the proposed survey a logical starting point was the discussion of existing research with severely handicapped people. It was also necessary to determine the number of people who could benefit from future intervention to facilitate both communication and literacy. Six international demographic surveys on the non-speech population in more developed countries are discussed in the following tables. No surveys on the non-speaking population in less developed countries were found, and therefore the one international demographic survey in a less developed country and one South African survey which are included, were carried out on the disabled population in general. The surveys are referred to in terms of the demographic areas in which they were conducted. Attention is given to the aims, objectives, methodology, research findings and future research implications.

3.5.1 Aims

In order to understand the purpose of the different surveys under discussion, the aims of these surveys are presented in Table 3.1.

Table 3.1 : Aims of the different surveys

AIMS OF THE DIFFERENT SURVEYS	
AUSTRALIA <i>Bloomberg et al.</i> 1990	To provide demographic data on the size and characteristics of the non-speaking population as well as on the programmes in which non-speaking individuals were involved. It was postulated that this data could provide the evidence required to lobby government departments for a change (improvement) in the provision of services to non-speaking individuals.
GERMANY <i>Coon et al.</i> 1992	To collect information regarding the educational situation of speech impaired people in order to assess the current quality of service delivery being offered.
AMERICA <i>Huer</i> 1991	To collect demographic data reflecting the use of AAC techniques by university students with disabilities related to communication impairment, and enrolled in American university programmes during 1988-1989. Another aim of this study was the identification of professional services available to university students.
NORTH DAKOTA <i>Burd et al.</i> 1988	To provide descriptive data on non-verbal children in North Dakota.
SCOTLAND <i>Murphy et al.</i> 1993	To provide demographic information on children and adults with cerebral palsy in Scotland using some kind of AAC system, to determine the number and types of AAC systems used and to identify the communication abilities of the user and the situations in which AAC systems are employed.
WASHINGTON <i>Matas et al.</i> 1985	To provide demographic data and needs assessment data that are necessary to provide further evidence of the need to increase the quality and quantity of services to non-speaking individuals.
JAMAICA <i>Thorburn et al.</i> 1992	To develop low cost methods for detecting children with disabilities in the community and for measuring the impact of disability on families.
SOUTH AFRICA <i>Cornielje et al.</i> 1993	To obtain baseline data on the prevalence of disability in a poor urban area in South Africa and to guide the development of a community-based rehabilitation (CBR) programme.

The above-mentioned surveys conducted in more developed countries (Australia, Germany, America and Scotland) all had specific aims. They aimed at providing demographic data regarding the non-speaking population in a specific geographical area. In less developed countries, however, the aims were broader. The research need in these countries was for the identification of general disability which is necessary before a more specific population (e.g. the non-speaking population) can be targeted.

All the surveys performed in more developed countries also had a secondary aim related to service delivery. Currently SLP's are receiving a growing number of external requests for consultancy in order to advise on the implementation of intervention programmes and to offer courses in the development of communication skills for SHP. Emphasis is placed on the use of various AAC techniques suitable for SHP (Bloomberg *et al.*, 1990:51). As the South African context changes and people become more aware of the communication needs of SHP, the demands on SLP's will also increase as experienced elsewhere in the world.

Researchers have realized that a gap exists between SHP who could benefit from speech pathology services and the number of SLP's trained in AAC techniques (Bloomberg *et al.*, 1990:58 & Coon *et al.*, 1992:10). SLP's receive minimal information regarding AAC at undergraduate level, and thus a limited number of SLP's are able to assess, manage and consult SHP and the professionals involved with them.

3.5.2 Objectives

For more clarity on issues involved in demographic surveys, the specific objectives each survey set out to accomplish are presented in Table 3.2.

Table 3.2 : Objectives of the different surveys

OBJECTIVES OF THE DIFFERENT STUDIES		
AUSTRALIA	S	1. Determine the size and characteristics of the non-speaking population. 2. Establish programmes in which non-speaking individuals are involved.
GERMANY	G	1. Determine the total number of people with speech impairment in West Berlin and the number of educational institutions servicing them. 2. Determine the ratio of students with speech impairment to those without, training of professionals, information on AAC available to professionals, as well as their desire for more information and support in the AAC field. 3. Creation of a communicative needs and abilities profile.
AMERICA	S	1. Identify types of disabilities related to communication impairment reported on university campuses in 1988. 2. Determine age of university students reporting disabilities. 3. Describe professional services available to disabled university students. 4. Tally the number of university students in general receiving SLP services. 5. Summarize AAC techniques used for communicating on university campuses.
NORTH DAKOTA	S	1. Determine the prevalence of non-speaking children in North Dakota. 2. Describe the change in frequency of non-speaking children older than 17-years. 3. Describe the characteristics of non-speaking children with respect to IQ, sensory functioning, AAC systems, associated behaviours, educational placement and the extent of services provided to them. 4. Determine the major etiological factors related to the lack of development of spoken language.
SCOTLAND	S	1. Obtain demographic data on people with CP using some kind of AAC system. 2. Establish number and types of AAC systems used. 3. Identify communication abilities of the user and situations in which AAC systems are employed.
WASHINGTON	S	1. Determine size and characteristics of school-aged non-speaking children. 2. Determine assessment and intervention needs of non-speaking children. 3. Determine staff and district needs related to service delivery. 4. Determine similarities and differences of non-speaking children and their intervention needs across urban and rural areas.
JAMAICA	G	1. Test the ease of use of the IESCD by community workers of a set of definitions for 6 disabilities derived from the CBR manual. 2. Develop and test a set of criteria for severity of disability based on the ICIDH impairment severity criteria. 3. Test a classification of handicaps proposed in the questionnaire.
SOUTH AFRICA	G	1. Determine disability rates in Alexandra. 2. Determine factors associated with disability. 3. Start with development of a CBR programme.

Legend : *S=Specific data ; G=General Data*
IESCD=International Epidemiological Study of Childhood Disability ;
ICIDH=International Classification of Impairments, Disabilities and Handicaps

Although the objectives of the surveys varied, determining the size of the non-speaking population (AAC users) and establishing the number and type of available educational programmes dominated the surveys in more developed countries. In less developed countries, such as Jamaica and South Africa, the objectives of the surveys were, however, different to those of more developed countries. They aimed at finding low cost methods for detecting children with disabilities in the community and thus focused on identification. It can therefore be seen that more developed countries rely on population specific demographic data (e.g. non-speaking, CP, school-age children) whereas research objectives are more general in less developed countries. Although Germany is viewed as a more developed country this survey also gathered general demographic data, due to the fact that at the time the research was conducted, there had been no SLP specializing in the AAC field. Therefore it had previously not been necessary to identify the non-speaking population and consequently the needs of the non-speaking population were not addressed. Information from the above-mentioned surveys indicated that when an intervention programme for severely handicapped people is planned, the planning process always starts with the gathering of general information.

3.5.3 Methodology

As methodological procedures have a great influence on the results, it is important to determine the methodology used by previous researchers and the advantages and disadvantages of the surveys. The methodology used in the various surveys under discussion is presented in Table 3.3.

Table 3.3 : Methodology of the different surveys

METHODOLOGY OF THE DIFFERENT SURVEYS								
DESCRIPTIVE PARAMETERS	AUSTRALIA	GERMANY	AMERICA	NORTH DAKOTA	SCOTLAND	WASHINGTON	JAMAICA	SOUTH AFRICA
Length of survey	Length unknown. During 1986	October 1990 - October 1992	Fall semester 1988	4 month period during 1987	June 1991-April 1992	March 1981 & April 1981	1980	1992
Description of sample size	Non-speaking population of Victoria, Australia	All people with speech impairment in West Berlin	Colleges listed in "A guide to colleges for Mobility Impaired Students"	All non-speech children, and all service providers in N-Dakota	All people with CP in Scotland	Non-speaking children from 12 rural and 3 urban counties in special education	2-9yr old children	All inhabitants of Alexandra & peripheral squatter camps
Pilot study	Yes - revised terminology	No	This was a pilot study	No	Yes	Yes - changed questions for urban study	No	No
Definition used to describe sample population	Someone for whom speech is temporarily or permanently inadequate to meet all his/her communication needs. Excludes deaf people	People who cannot speak at all or whose speech is so impaired that it cannot be understood by strangers	Someone who cannot speak, or when he does, is easily misunderstood, or who needs adapted writing technology due to severe physical impairment	Someone who speaks 15 or fewer intelligible words. Thus speech is so limited for these school children that it precludes functional oral communication	Someone who uses aided system(s) (low and high technology) to assist spoken communication	Someone with a severe speech problem due to physical, neuro-muscular, cognitive or emotional deficits, (not primary deafness) and who cannot use speech independently as primary means of communication	Various - depending on questions in questionnaire	Various - depending on questions in questionnaire. Used WHO guidelines
Categories used for data collection	1. Type & place of residence 2. Etiology & level of intellectual ability 3. Daily educational/employment programmes 4. Educational options : available & enrolled in 5. Language(s) understood	<i>Questionnaire 1</i> Total # of speech impaired people & available educational institutions <i>Questionnaire 2</i> Educational situation in classes in these institutions <i>Questionnaire 3</i> Creating a profile on communicative needs & abilities	1. Age 2. Available professional services 3. Etiology 4. Number needing adapted computer access for writing 5. Number receiving SLP & AAC services 6. Type & methods for written & spoken communication by AAC users	1. Background information 2. Grade levels and academic levels 3. Type of educational placement & related services 4. Verbal skills 5. AAC skills 6. Adaptive behaviour and behaviour difficulties 7. Sensory functioning 8. Etiology and other diagnosis	1. Demographic information 2. Day & residential placement 3. Type(s) of AAC systems used 4. Situations in which systems were used 5. Additional information on the nature of the AAC user's communication	1. Introduction & definitions 2. Classroom population (number of students, age, etiology) 3. Student concerns (primary education mode, potential to use AAC, assessment needs) 4. Teacher concerns (amount of AAC training, areas where need more information)	10 questions to identify 6 disabilities 1. Motor Function 2. Cognition 3. Vision 4. Hearing 5. Speech 6. Fits	Interview schedule with 2 parts: Initial (prevalence) & Follow up 1. Fits 2. Learning disabilities 3. Hearing 4. Speech 5. Cleft lip & palate 6. Vision 7. Mental 8. Motor
Who completed the questionnaire	SLP, or else senior person in the facility	1 - Principal or director 2 - Professional involved 3 - Professional involved	Unknown- but cover letter was sent to director of each facility	Unknown- person in facility	SLP, social workers, educational psychologists, teachers and voluntary staff	Special education teachers in rural areas & SLP's in urban areas	Community workers (CW's)	Senior member of household with help from community worker
Final comments	Due to extent of survey, had to rely on skills of respondents for questionnaire completion	Visited some institutions and completed questionnaires in conjunction with professionals	Used university students, not school age children as in other surveys	Institutions who did not reply within 2 months were twice contacted by post, then by phone and then visited	Only obtained information on CP	Conducted two surveys. Worked both urban and rural areas. Used teachers as informants	Used CW's who completed the 10 point questionnaire	If disability was reported in screening, specific disability interview with appropriate tests were done

Legend : CW=Community Worker

In the more developed countries studies were institution-based, but in the less developed countries a door-to-door survey was conducted. General comments based on methodological issues in these surveys will now be discussed.

Due to the size of demographic surveys, researchers have to rely on the skill and cooperation of respondents completing the questionnaires, thus it is of critical importance to test the ease and accuracy with which the questionnaire can be completed. In order to equip the researcher with a reliable questionnaire, it has to be tested by means of a pilot study (Leedy, 1989:143). Consequently many of the above surveys first undertook a pilot study in order to ensure that the questionnaires were completed correctly and that the appropriate information was obtained. The pilot study thus enabled the researchers to assess the terminology of the questionnaire in order to identify questions that were difficult to understand, as well as questions which did not ask exactly what the researcher sought to determine. Certain items that needed clarification were highlighted, after which the questionnaire was edited.

All of the more developed countries made use of mailed questionnaires which were completed by someone in the facility (ranging from the principal to teachers to therapists). However, in the less developed countries (South Africa and Jamaica) trained CW's were used to complete the questionnaires in order to identify the disabled people in the community. The fact that CW's were used in less developed countries might be due to the fact that literacy is a problem there, so that respondents may have been unable to complete the questionnaire by themselves. When using CW's, researchers have to ensure that their training is applicable and effective so that the data obtained is reliable.

Even after conducting a pilot study, some of the terminology was still problematic. Different attempts were made to overcome this, e.g. by providing examples with the medical terminology. In surveys conducted in less developed countries terminology from the CBR manual was simplified, and CW's received training in the identification of the

various handicaps. Defining the non-speaking population proved to be equally troublesome, until the North Dakota survey defined it as "*people with 15 or fewer intelligible words*" (Burd *et al.*, 1988:373). Although this definition is not the final word on the issue, it is a useful tool in defining the non-speaking population. Using such a definition will also enable other researchers to repeat the survey.

Various other problems were encountered in defining the target population regarding inclusion and exclusion criteria. These problems included factors such as deciding whether to include or exclude the deaf population (Burd *et al.*, 1988:372). Age range was another factor which warranted consideration, as pre-school children, school-age children, students and adults all have different communication needs. Both the German and Australian studies also experienced problems with people exposed to other languages (Coon *et al.*, 1992:3; Bloomberg *et al.*, 1990:51). In the German study this was handled by excluding children whose mother-tongue was not German. When looking at etiology, categories for "*unknown*" and "*other*" were included. As discussed in Chapter 2, Section 2.4 the defining and measurement of severity is also problematic.

Double counting is a problem in survey research that has to be excluded. This was achieved by giving unique identification data for each individual by combining name code, sex and birth date. All the surveys in the more developed countries took precautions to avoid double counting. As the surveys in the less developed countries were home-based, implying that each child was counted in his home and not at a certain facility, double counting was not a factor.

3.5.4 Results

Results reported in the surveys under discussion provided valuable information in the planning of the proposed survey. Thus it is of great importance to list the most significant results of each survey. These results are presented in Table 3.4.

Table 3.4 : Results from the various surveys

RESULTS OF THE DIFFERENT SURVEYS								
DESCRIPTIVE PARAMETERS	AUSTRALIA	GERMANY	AMERICA	N-DAKOTA	SCOTLAND	WASHINGTON	JAMAICA	SOUTH AFRICA
Response rate	85%	I=100%, II=60% III= 53%	65%	Unknown	78,7%	70% rural 80% urban	100%	Over 80%
Prevalence (P) / Incidence (I)	(I): 0,12% of total population	(I): 0,35% of school population	Unknown for total population	(P): 2,4% of special schools and 0,15% of total population	Unknown for total population	(P) : 0,3 - 0,6% of total school & 3,5 - 6% of special schools	Unknown for total population	(I) : 85 per 1000 for total population
Male / Female ratio	M 57,8% : F 41,5%	M 61,6% : F 38,4%	Unknown	M 57% : F 43%	M 61,1% : F 38,9%	Unknown	Unknown	M 85 per 1000 : F 89 per 1000
Major etiologies	Unknown = 38,0% Stroke = 16,0% CP = 13,8% Genetic = 8,8% Development delay = 5,6% Autism = 4,1% Progressive neuro = 4,1% Trauma = 3,2% Tumour = 1,7%	MR = 68,6% Physical = 36,8% Psychological = 14,2% Visual = 12,2% Learning = 9,5% Auditory = 8,8% Autism = 7,8%	Unknown	MR = 76,3% CP = 38,7% Seizures = 26,9% Deaf = 20,1% Blind = 8,6% Degenerative illness = 3,2% Closed head injury = 2,2%	Study only performed on CP	1'st number is rural, 2'nd is urban Multiply handicapped = 47% & 24% Severe MR = 14% & 31% Mild MR = 28% & 18% Physical = 4% & 6% Severe developmental 1% & 15% Behaviour = 1% & 5%	Unknown	Visual = 27 per 1 000 Motor = 15 per 1 000 Hearing = 13 per 1 000 Speech = 10 per 1 000 Learning = 9 per 1 000 Fits = 7 per 1 000 MR = 5 per 1 000 Severe motor = 5 per 1 000
Major concerns	Rely on respondents' integrity and understanding to supply correct information	Interpretation of definitions rely on respondents. Did not evaluate rural areas	Problems in completing questionnaire. Explicit separation between deaf & hard of hearing is needed	Lack of sophisticated diagnostic formulations in school records, resulting in lack of monitoring ongoing course of a condition (e.g. rubella)	AAC systems are relatively "new" and consequently unknown	Distinctions between multiply handicapped and severe mental retardation is difficult, therefore likelihood of overlapping exists	Training of personnel for completing questionnaires will require training in the different areas covered	Definitions used for "learning" & "mental" disabilities do not have precise criteria, could lead to under-reporting

Table 3.4 / continued

Table 3.4 / continued

RESULTS OF THE DIFFERENT SURVEYS								
DESCRIPTIVE PARAMETERS	AUSTRALIA	GERMANY	AMERICA	N-DAKOTA	SCOTLAND	WASHINGTON	JAMAICA	SOUTH AFRICA
Service provision	32,1% of population not involved in any educational programme. Most had wide range of activities of daily living (ADL) programmes (23%)	No SLP's specializing in AAC according to Coon <i>et al.</i> , 1992:12). SLP's are medically and not socially orientated	50% of schools indicated that fewer than 7 students received SLP. Multiple professional services are available	Unexpectedly low rates of crucial SLP (59%) and OT (49%). Without intensive therapy, probability of AAC gains are small	Only 5% in mainstream education. Few SLP's specialize in AAC field	Significant difference between rural & urban. For both localities at least 15% or more non-speaking children who met minimal criteria were not using AAC systems	In planning services at community level, it may be more useful to know handicaps than disabilities	Needs of disabled people extend beyond services offered by any one profession
Final comments	Teachers and care givers require basic AAC information	Information and training in AAC is needed	Lack of standardized classifications exists. Must investigate models for interdisciplinary AAC service delivery	Great need for increased services. Definition used (less than 15 words) may provide precise definition on non-speaking population	Training of SLP's needed at undergraduate & postgraduate level	Need for in-service training, college courses, additional staff, specialized equipment & further research to improve quality of service delivery	Simplicity of questions, ease of recording, scoring and coding recommends it for use by people with limited training	Use of CW's for data collection was effective and successful.

Legend : MR=Mental Retardation

Although the results of the different surveys varied, only results related to issues important to the proposed survey will be discussed. These issues are prevalence, etiology, service provision and problem areas.

3.5.4.1 Prevalence

In cases where the incidence of the total population was studied, Australian (0,12%) and North Dakota (0,15%) results correlate. The German survey found the incidence to be 0,35% of the school population. This correlates with results from the Washington survey which stated that 0,3% of the urban and 0,6% of the rural total school's enrolment was non-speaking. However, when looking at the children in special education it was found that 3,6% children of the urban and 6% of the rural special schools were non-speaking. It can thus be seen that the prevalence of non-speaking in rural areas is higher than in urban areas, and that prevalence is higher in special schools than in normal schools. Amongst younger children the North Dakota survey showed a strong decrease (almost half) in prevalence of non-speech after three years of schooling. However, the factors responsible for this decrease is unclear (Burd *et al.*, 1988:377). This data also suggests that significant changes in oral communication in this population is unlikely after 7 years of age, and thus emphasis on early AAC intervention should be a high priority.

All the surveys reported that more males than females have severe communication problems. In Scotland the incidence of people with CP who use an AAC system is higher for males (61,1%) than for females (38,9%) (Murphy *et al.*, 1993:8). These results correspond closely to findings of Coon *et al.* (1992:6) in the German study who found 61,6% males and 38,4% females in West Berlin with speech impairments. However, in the South African survey, which only reported on general ability, the incidence was higher for females (89 per 1000) than for males (85 per 1000).

3.5.4.2 Etiology

All the surveys that focused on the school age population (Germany, Washington and North Dakota) found mental retardation to be the major etiology of non-speaking children in special schools. In Chapter 2, Section 2.2.1 issues relating to the problems experienced

with defining and categorizing "*severely handicapped people*" were explored. Therefore, as the prevalence of SHP, and non-speaking people in particular, are so high in special education, it is important to identify techniques and systems that will maximize the communication skills and the evaluation of this population. At present it remains a significant challenge to every clinician to estimate the cognitive and developmental functioning of non-speaking children.

Problems with defining mental handicap are not unique in the less developed countries. Even in Australia (Victoria), a more developed country, no formalized system for categorizing and assessing cognitive ability exists (Bloomberg *et al.*, 1990:52). It is important to note that accurate cognitive functioning could be affected by a number of factors, including environmental deprivation, the presence of a severe communication impairment (non-speech) and inappropriate assessment tools.

The German survey reported that the majority of non-speaking individuals had more than one impairment, and were thus multiply handicapped. More than two thirds had mental handicaps and more than one third had physical handicaps. In the Washington survey it was found that 47% of children in special education were multiply handicapped, compared with 24% in urban schools. It is therefore important to note that the percentage of multiply handicapped children was almost double in rural areas. This also correlated with the findings that the prevalence of non-speech is higher in rural areas.

3.5.4.3 Service provision

A general agreement between the various surveys exists regarding the need for increased service provision to the non-speaking population. Many of these surveys reported a limited integration of non-speaking people into mainstream education (e.g. Australia = 0,29%, Scotland = 5%) (Bloomberg *et al.*, 1990:58 ; Murphy *et al.*, 1993:25). In the Washington survey it was stated that at least 15% or more of the children who met the minimal criteria for AAC were not using AAC systems/devices (Matas *et al.*, 1985:24). This figure was calculated by taking both the rural and urban areas into consideration. The percentage in the rural areas was much higher than in the urban areas.

However, service provision does not only imply services to the SHP, but also to various professionals (e.g. teachers and therapists etc.) as well as other significant others (e.g. parents, other family members etc.). Mainstream teachers in the more developed countries expressed a need for training regarding the non-speaking population, as they had received minimal or no instruction in the development of training programmes for non-speaking children during their training (Matas *et al.*, 1985:50; Coon *et al.*, 1992:12). Currently, teachers in special education receive no formal training regarding the non-speaking population, and mainstream teachers receive even less training in this area.

In more developed countries, such as Scotland and Australia, a great need for the training of professionals in AAC was identified, as few SLP's specialize in this field. This need is evident at both undergraduate and postgraduate levels (Murphy *et al.*, 1993:25). This data was confirmed by the American survey which found a strong need for the development of models for interdisciplinary service delivery in the SLP profession (AAC in particular). SLP students therefore have to work with professionals from other disciplines in order to develop a more holistic approach to AAC. In addition, undergraduate students need to be trained with appropriate practicum experiences (Huer, 1991:234).

A similar problem with service delivery existed in Germany. It was found that only a small minority of professionals reported on service delivery to SHP and that very little information on AAC was available. Only one fifth of professionals in service institutions had information on the use and availability of communication aids. They found that 4 out of 5 respondents desired more information on AAC (Coon *et al.*, 1992:11). In Germany there are no SLP's specializing in AAC nor an AAC resource centre nor any official academic training for professionals using AAC (Coon *et al.*, 1992:12). Thus the problem of training AAC trainers still has to be resolved.

If problems regarding service delivery are encountered in more developed countries, it will be even more so in a less developed country such as South Africa, although service delivery was not investigated in the surveys discussed for the less developed countries.

3.5.4.4 Concluding remarks : Specific problems encountered in demographic surveys

Different problems related to demographic surveys have already been discussed earlier in this chapter, in Section 3.4.1. Attention will now be given to the specific problems researchers encountered in the surveys under discussion. It is necessary for the researcher to be sensitive regarding the expected problems in an attempt to restrict their effect to the minimum. As previously mentioned one of the major problems encountered was that of defining the population, as it is difficult to appropriately describe the abilities of the SHP. This implies that the SHP, and in particular the non-speaking group, is a complex, heterogeneous population as they do not form an easily identifiable group regarding abilities and functioning. The standardization of the classification of disabilities across age span was also necessary. Guidelines for defining mental handicap proved to be a major problem in all the surveys. The distinction between multiply handicapped and severely cognitively handicapped, proved equally difficult (Matas *et al.*, 1985:20).

Determining whether to include or exclude certain categories, e.g. the deaf population, was troublesome and had great methodological implications. Problems related to determining prevalence rates were experienced, due to the fact that some surveys were home-based, and others institution-based. Another problem encountered with the survey method of completing questionnaires was that researchers had to rely on the respondents' understanding of the definition and their integrity in supplying accurate information. When using community workers, as in both the surveys done in less developed countries, the training of these CW's are essential. It was necessary to evaluate their training in order to ensure that they had a solid knowledge base from which to complete the questionnaire.

3.6 DEVELOPMENT AND DESCRIPTION OF THE SURVEY INSTRUMENT (QUESTIONNAIRES) USED IN THIS STUDY

Relevance is the key concept when designing a questionnaire, and considerable thought was channelled into the development of the content. Two questionnaires were developed and their content was partly determined by the theory from which the survey originated as discussed earlier in this chapter, and partly by the research objective as discussed in

Chapter 4, Section 4.2.

Both the questionnaires designed for this survey can be described as socio-graphic as the aim was to obtain descriptive data that could be categorized and according to which the determination of frequency scores could be done (Steenekamp, 1984:6).

Both questionnaires were completed by fieldworkers who acted as interviewers in conjunction with classroom teachers. *Questionnaire I* covered aspects such as qualifications, years of experience and specialized training of teachers, whilst *Questionnaire II* covered background information as well as aspects on the communication and related abilities of the children in their classes.

3.6.1 Practical considerations

A number of practical considerations had to be kept in mind during the development of both questionnaires. These considerations included the format, instructions and rating scale of the questionnaire.

3.6.1.1 Format

Regarding the questionnaire format, all questions included were spread out and uncluttered, so that questions would not accidentally be missed or cause confusion. Furthermore, no abbreviations that could be misinterpreted were included. Boxes with adequate space were used for indicating the respondents' answers, which helped fieldworkers to see where to indicate the teachers' preferred choice.

3.6.1.2 Instructions

Although the questionnaires were administered by the fieldworkers who acted as interviewers, the instructions were clear, and certain introductory comments were made. Instructions had to be made very clear, e.g. in cases where only one answer was requested "*Mark the primary reason*" as opposed to cases where more than one answer was required "*Mark all the relevant aspects*". In the multiple-part matrix, (e.g. the questions on

abilities) respondents were instructed to mark one answer per row, and not one per column. The questionnaires also made use of precoding where the numbers used on the questionnaires were identical to the numbers in the coding.

3.6.1.3 Rating scale

The questionnaires mostly made use of a five point Likert differential sliding scale. A rating of 1 mostly indicated *"very poor to almost no functioning"*, whilst a rating of 5 mostly indicated *"normal functioning for chronological age"*. In order to heighten the reliability, fieldworkers received a written description for every scale point, which they had to discuss with the teachers before completing the questionnaires. See Appendix D for the notes the fieldworkers received on the rating scales.

3.6.2 Reliability

Reliability is a matter of whether a particular technique, applied repeatedly to the same object would yield the same result each time (Babbie, 1992:129). The problem of reliability is a basic one in social science measurement and researchers have developed a number of techniques in dealing with it (Babbie, 1992:130).

The use of fieldworkers as interviewers affected the reliability of the study. Literature has noted that different interviewers get different answers from respondents as a result of their own attitudes and demeanour (Babbie, 1992:130). In order to limit this tendency, the fieldworkers were chosen from a homogeneous group, being final year communication pathology students who all had the same basic training, approximately the same interviewing skills and a special interest in SHP. The fieldworkers are discussed in more detail in Section 3.7.

Questions included in the survey also affected reliability. In order to increase reliability it was important to ensure that all questions were well formulated and relevant (Babbie, 1992:131). There is also the risk that some questions rely too strongly on the subjective judgement of the respondents which also influences reliability (Leedy, 1989:28). Care was taken to avoid any of these pitfalls, and in order to increase reliability even further, a pilot

study was conducted in which the questionnaire was tested.

Reliability was further accounted for by taking certain factors into account. Only questions to which the respondents were likely to know the answers were asked. The pilot study gave a good indication of which questions were appropriate, and with which ones the teachers experienced difficulties because they did not know the answers, e.g. the question on the parent's occupation. As a further precaution, cross-referenced questions were used, which involved that the same question was to be asked more than once in a slightly different way, e.g. the ability to speak single words was controlled with the ability to speak short sentences. Researcher-Worker reliability was increased as one coder (namely the researcher) was used to code all the information. Previous studies indicated that reliability was influenced by the effectiveness of the fieldworkers' training. The researcher controlled the fieldworkers in order to ensure that personal bias did not influence the data. The research needed to be flexible in order to accommodate other factors, e.g. environmental factors (e.g. the accessibility of the area and political climate) and personal factors (e.g. teachers were not at school at certain times).

3.6.3 Validity

Validity refers to the extent to which an empirical measurement adequately reflects the real meaning of the concept under consideration, thus the extent to which the questionnaire measures what it is supposed to measure (Babbie, 1992:132). There are numerous yardsticks for determining validity : face validity, criterion related validity, content validity and construct validity. *Face validity* is based on the researcher's subjective judgement of whether the instrument is measuring what it is supposed to measure whilst *content validity* refers to the content of the questionnaire, and how representative the sample is when generalizations need to be made. In this survey the face and content validity is high as the questions that were included in the questionnaires were based on previous questionnaires that had already been used in other similar documented surveys. The different skill areas which were tested in the questionnaire were based on the literature in which they were well-documented. *Construct validity* (a construct is any concept that cannot be directly observed or isolated) was addressed as fieldworkers (interviewers) were used to facilitate the completion of the questionnaires and to provide teachers with the opportunity for

additional explanations when questions were not understood. In order to heighten the *internal validity* (the freedom from bias in forming conclusions in view of the data) of the questionnaire, cross reference questions were included (Leedy, 1989:27). The fact that certain trends had already been observed in other similar surveys increased the *external validity*, but as this survey is the first of it's kind in South Africa, similar surveys are needed to increase the validity even further.

3.6.4 Type of questions

In the development of a questionnaire, consideration must be given to the questions included in the survey. This refers to the content of the questions as well as the format and rating scales (See Section 3.6.1 for a discussion) of the questions. Close-ended questions were mostly used, as they provide a greater uniformity of responses and are more easily processed, as answers can be transferred directly into a computer format. However, the major shortcoming of this format lies in the researcher's structuring of responses. In order to overcome this the relevant answers to a given question were relatively clear, and the response categories provided were exhaustive (included all the possible responses that could be expected). This was ensured by adding a category labelled "*Other : Please specify*".

In cases where it was necessary, questions had a "*don't know*" category. High frequencies on this category might indicate either that the respondent did not have the necessary knowledge to answer this question, or that the respondent was so well informed that he was unable to decide (Steenekamp, 1984:8). If there was a great number of "*don't know's*" the fieldworkers gently probed the respondents for position during face-to-face contact (Guy, Edgley, Arafat & Allen, 1987:245).

Questionnaire items should be clear and unambiguous (Babbie, 1992:148). In an attempt to achieve this, a pilot study was conducted. The questionnaire also aimed at including only precise questions so that the fieldworkers and respondents could read all items quickly, understand it's intent, and select or provide an answer without much difficulty. Double-barrelled questions were excluded. Respondents should be competent to answer the questions, and in order to achieve this, teachers were asked to complete the

questionnaires in conjunction with the fieldworkers, as teachers are good raters of the abilities of the children in their classes (Skuy, Westaway, Makaula & Perold, 1988:46). Furthermore, the research was conducted in September, near the end of the year, in order to provide as much time as possible for the teachers to get to know the children well so that they could provide reliable answers.

With questions regarding abilities, matrix questions were used as they use space efficiently and are faster to complete (Babbie, 1992:155). Fieldworkers were, however, cautioned not to obtain a response set which implied that the answers started to form patterns and teachers did not carefully select the appropriate answer. Biased items and terms were avoided. Literature found that people who are interviewed in a face-to-face situation tend to answer through a filter of what will make them look good. That is called the social desirability of questions and answers (Babbie, 1992:151). In order to combat this as far as possible, the fieldworkers explained to the teachers before commencing that there were no correct or incorrect answers. Questions were also selected not to embarrass the respondents or make them feel stupid or irresponsible, etc. Negative items and terms were also avoided as they could confuse respondents.

3.7 THE USE OF FIELDWORKERS IN THE STUDY

Fieldworkers acted as interviewers during this study. The main factor to be taken into account when using interviewers is that their presence should not affect a respondent's perception of a question or of the answer given. The interviewers thus had to be a neutral medium through which questions and answers could be given, which increased reliability. As the fieldworkers' appearance and demeanour could affect the results, they were cautioned to dress appropriately for the different contexts in which questionnaires were completed. Fieldworkers also had to be pleasant, communicate a genuine interest in getting to know the respondent and be relaxed and friendly without being too casual.

The fact that interviewers were used for completing the questionnaires had certain advantages. Firstly, interviewed surveys have a much higher response rate than mailed questionnaires. In the case of both these questionnaires the response rate was 100%. Interviewed questionnaires increased the completion rate (Babbie, 1992:269). This was

an important consideration as each teacher had to complete a questionnaire for each child in her class who met the set criteria, and thus time was of great importance. Literature has found that respondents (in this case the teachers) are more reluctant to turn down an interviewer than throwing away a mailed questionnaire (Babbie, 1992:270). The presence of interviewers generally decreases the number of "*don't knows*" and in this study the minimizing of such responses was important. In certain cases, interviewers were also asked to probe for answers, e.g. with questions regarding etiology. Probes were formulated in such a way as to reduce bias as far as possible. Finally, interviewers were a safeguard against confusing items, e.g. if respondents clearly misunderstood the intent of a question, or indicated that they did not understand, the interviewer clarified matters and thereby obtained relevant responses so that all questionnaires were complete.

There were two major aspects of control in this study regarding the fieldworkers in an attempt to increase reliability. Firstly training of the fieldworkers (interviewers) and secondly supervising them after they began with their work. Training was important, as they needed to be familiar with the questionnaire (Babbie, 1992:271). That ensured that the questionnaire did not take unnecessary time and become generally unpleasing. Fieldworkers were trained to read the questions aloud, without stumbling over questions and phrases. Fieldworkers were also cautioned to follow the wording of the questionnaire exactly, and not to give their own interpretation of the questions, as changes could lead to different answers.

3.8 MAIN IMPLICATIONS OF DEMOGRAPHIC SURVEYS IN THE SOUTH AFRICAN CONTEXT

South Africa is a unique country, with unique needs. Although it is viewed as a less developed country with various subcultures and language groups, it also has elements of the more developed world. Therefore, no previous survey is totally applicable to this situation. Various adaptations were needed in order to fit both the more and less developed sides of this country.

The "ASHA position statement", (ASHA, 1992) is very clear regarding equal opportunities for everyone where it states that : "*All persons, regardless of the extent or severity of their disabilities have a basic right to affect, through communication, the conditions of their own*

existence. Beyond this general right, persons with severe disabilities should also have the right to active treatment and intervention efforts to enable people with severe disabilities to communicate messages in whatever modes and as effectively and efficiently as their specific abilities will allow."

In the South African context, describing the SHP in the special school context would be a logical starting point in describing their needs. However, as already mentioned, a limited number of SHP have access to special schools, particularly with regard to profoundly handicapped children. In some cultures and religious orientations, SHP are sometimes hidden from society. An institution-based survey will thus not give a clear reflection of the non-speaking children, but only of the number of non-speaking children who already attend special schools.

Due to the diverse subcultures and language groups, a South African survey would have to address all the different groupings. Geographic areas will also have to cover both rural and urban settings in order to be a true reflection of the population. Due to the fact that teachers in special schools have had little formal training regarding severely handicapped children, and received limited information regarding the communication of SHP, and in particular non-speaking children, fieldworkers who acted as interviewers had to facilitate the completion of the questionnaires, instead of using mailed questionnaires. In addition, a pilot study was of great importance in order to test the accuracy of the terminology in the questionnaire.

3.9 SUMMARY

The purpose of this chapter was to provide an overview of the principles and problems related to demographic surveys in both more and less developed countries. This was followed by a discussion of various surveys that had already been done in the field of SHP and in particular of non-speaking people, in terms of the aims, objectives, methodology and results. Basic considerations in the development of questionnaires were also provided followed by a discussion on the different aspects related to the use of fieldworkers as interviewers in surveys. The chapter concluded with a brief discussion on the main implications of demographic surveys in the South African context.

CHAPTER 4

RESEARCH METHODOLOGY

4.1 INTRODUCTION

This study forms part of a major research project conducted by the HSRC and the CAAC on the needs of SHP (with specific reference to non-speaking people) in the Pretoria area (Alant, 1995). The focus of the present study is specifically on the communication and related problems experienced by children aged 3 to 12, in schools for children with mental handicaps, as perceived by their classroom teachers. Emphasis is placed on the non-speaking children as a group within this population in order to investigate their behaviour profile.

In this chapter the research methodology used in the study is discussed. Firstly, the aims and objectives of the study are identified, followed by a discussion of the research design. The pilot study is then presented in terms of results and recommendations. Finally, a description of the subjects, data collection procedures, data analysis and data processing used in the main study follows.

4.2 AIM AND OBJECTIVES

4.2.1 Aim

The primary aim of this study is to describe the communication and related behaviours of children as perceived by their classroom teachers in order to assess the need for communication intervention (with special reference to AAC) within this context. These children were enrolled in all the registered schools for children with mental handicaps in the Pretoria area.

4.2.2 Objectives

The objectives of this study were to :

- describe the communication and related behaviours of children in schools for children with mental handicaps in the Pretoria area.
- describe the teachers of these children in terms of biographic information and educational level.
- describe the functional reading, writing and mathematical abilities of the children in schools for children with mental handicaps in the Pretoria area.
- describe the service delivery (therapy) currently available to the children.
- identify the non-speaking children as a group within this population in order to investigate their behaviour profile.

4.3 RESEARCH DESIGN

4.3.1 Research design

An analytical survey design was appropriate for this study as the acquired data was quantitative in nature and needed statistical assistance to extract their meaning. For the purpose of the study the following definition was used : *"a survey is the collection of information about a selected number of characteristics of a great number of cases at a given time within circumscribed boundaries"* (Groenewald, 1986:55).

This survey was a preliminary investigation into the communication and related problems of children currently enrolled in schools for children with mental handicaps. This was achieved within a specific geographical area, namely Pretoria. Special emphasis was placed on the non-speaking children as a group within this population. By determining a communication behaviour profile of these children, within a specific geographic area, it will be possible to develop some hypotheses for other geographic areas. This will lead to the development of a basic model for AAC service delivery. The survey research design has already proved to be very appropriate in the development of profiles and has been widely used as a basic indicator for service delivery in the AAC field (Huer, 1991:231; Matas *et al.*, 1985:17).

The survey design is characterized by a number of factors, the first being the use of statistical groups which are independent of settings (Guy *et al.*, 1987:220). This implies that different schools which all met the set criteria could be used in order to obtain accurate and reliable data. Secondly, the survey is strong on representativeness, as all

schools who met the set criteria were included. Results obtained from this survey will lead to the formulation of hypotheses for the rest of South African schools for children with mental handicaps.

Finally, as surveys are usually descriptive or explanatory in nature, this survey aimed at describing communication and related problems experienced by children in schools for children with mental handicaps. Apart from descriptive data being meaningful, this design also opens opportunities for creating profiles of the population, for drawing relationships between various variables, and for correlating certain factors. There is very little information available on SHP in South Africa, so that a survey of this nature can offer a description of this population which inevitably leads to a better understanding of these children. By describing the characteristics of the population, a model for AAC service delivery can be developed.

Although survey research has its strengths, as has already been discussed, its weaknesses cannot be denied. This survey used two questionnaires and thus problems usually encountered with questionnaires, as discussed in Chapter 3, Section 3.6, had to be taken into account. Other weaknesses included the fact that the results relied on the teacher's integrity to provide accurate and reliable data. Their motivation and abilities were factors that varied considerably, as their biographical details and educational levels were heterogeneous. See Chapter 3, Section 3.6.2 and 3.6.3 respectively for a complete discussion on reliability and validity measures that were taken.

4.3.2 Research phases

The research consisted of the following phases which followed a linear course :

- Development of a survey instrument which consisted of 2 questionnaires. See Section 4.5.4.3 for a discussion on the development and description of the survey instrument.
- Conducting of a pilot study to pretest the survey instrument. The information yielded by the pilot study necessitated certain revisions. See Section 4.4 for a complete discussion of the pilot study.

- Identification of all the special schools for children with mental handicaps in the Pretoria area (See Appendix A for a list of the schools included). Establishment of personal contact with the schools and explanation of the aims of the study. Setting dates and times for fieldwork. See Section 4.5.5 for a discussion of the data collection procedures.
- Training of the fieldworkers as interviewers in order to complete the questionnaires efficiently in conjunction with the classroom teachers. See Section 4.5.3.2 for a description of the training of the fieldworkers.
- Conducting of fieldwork: The data collection procedure will be discussed in detail in Section 4.5.5. Briefly, the fieldwork entailed that fieldworkers were placed at the schools with which earlier arrangements had been made. They were introduced to the teachers by the principal after which both questionnaires were completed in conjunction with the teachers. See Table 4.6 for the dates on which data was collected.
- The researcher coded the raw data in the predesigned blocks on the questionnaires in order to make the data computer accessible. After the results had been computerized, statistical procedures were carried out. This was followed by an interpretation of the data, after which the relevance of the study was highlighted.

4.4 PILOT STUDY

4.4.1 Objectives

The objectives of the pilot study were to evaluate and test the applicability of the questionnaire in terms of the :

- understandability of terminology
- presence of any ambiguous or misleading questions
- availability of information required to the teacher
- complexity of the instructions
- ease of coding
- time required for completion

- strategies intended regarding the analysis of data

4.4.2 School selected for pilot study

One school for children with mental handicaps that does not fall into the geographic area of research (Pretoria area) was selected as it met all the other criteria specified for the main survey. This school is registered with the Department of Education and Training and classified as a school for children with mental handicaps. The children included in the survey also met all the specified criteria for the main survey and were all between the ages of 3-12 years.

4.4.3 Procedures

The same steps as outlined for the main study were followed. Fieldworkers completed both Questionnaire I and Questionnaire II in conjunction with the classroom teachers.

4.4.4 Objectives, results and recommendations

The objectives, results and recommendations made after completion of the pilot study are given in Table 4.1.

Table 4.1 : Objectives, results and recommendations following the pilot study

OBJECTIVES	MATERIAL & EQUIPMENT	PROCEDURES	RESULTS	RECOMMENDATIONS
1. To evaluate understanding of the terminology used in the questionnaire	Questionnaire I Questionnaire II	Fieldworkers completed the questionnaires in conjunction with the teachers. Discussions	During discussions, teachers commented on difficult terminology, e.g. cognitive functioning, but after discussion it was cleared. Additional options had to be included with some questions, e.g. epilepsy, who the child lives with, type and amount of therapy.	Give examples to explain the terminology e.g. <i>"cognitive functioning"</i> is <i>"How well does the child think?"</i> See Appendix B, Questions 13 & 14. Include more options. See Appendix B, Questions 9, 18 & 23.
2. To test for ambiguous and misleading questions	Questionnaire I Questionnaire II	Fieldworkers completed questionnaires in conjunction with the teachers. Discussions	Problematic questions were identified, e.g. <i>"Who does the child live with?"</i> as it was not clear that place of residence was referred to.	Clearer description of questions should be given in order not to be misleading. Change specific questions for better understanding. See Appendix B, Questions 9, 19.
3. To test if all the information required by the questionnaire was available to the teacher	Questionnaire I Questionnaire II	Fieldworkers completed questionnaires in conjunction with the teachers. Discussions	All questions included gave valuable information but the question on the child's socio-economic status proved to be difficult as teachers did not know what the occupations of the child's parents were.	The questions on socio-economic status were omitted from the questionnaire. See Appendix B, Questions 10 & 11.
4. To determine if instructions were clear	Questionnaire I Questionnaire II	Fieldworkers completed questionnaires in conjunction with the teachers. Discussions	Instructions were clear. No problems were found with marking more than one option if only one option was requested. No questions were left unanswered due to unclear instructions, but teachers found questions with a 6 point scale difficult.	Instructions were not altered. Questions with a 6 point scale were altered to a 5 point scale for easier completion. See Appendix B, Questions 19, 20, 21 & 22.
5. To evaluate the coding of the questionnaire	Questionnaire I Questionnaire II	The researcher coded both questionnaires according to the given data definitions	Problems were encountered with coding in cases where provision had not been made for double digit scores, e.g. home language.	The encoding form needed revision in order to be applicable for double digit scores in appropriate cases.
6. To test the length of time required to complete the questionnaire	Questionnaire I Questionnaire II	Fieldworkers completed questionnaires in conjunction with teachers	Initially teachers needed up to 20 minutes to complete the questionnaires, but after the third questionnaire, approximately 12 minutes were needed.	With clearer definitions on some of the terminology, the length of time needed to complete the questionnaires was greatly reduced. Some options, e.g. language were placed alphabetically in order to reduce time needed to search for the option. See Appendix B, Questions 5 & 6.
7. To test the intended analysis of the data	Questionnaire I Questionnaire II	Data was processed and then analyzed.	It was found that some variables had to be grouped together in order to reduce the number of <i>"missing variables"</i> .	The data definitions had to be clear for the grouping of variables.

4.4.5 Summary

After the completion of the pilot study, minor modifications to the survey instrument (questionnaires) were needed. The results obtained indicated that the procedure was acceptable and that the fieldworkers were effective in obtaining the data.

4.5 MAIN STUDY

Criteria that were set for inclusion in the survey will now be discussed.

4.5.1 Criteria for selection of schools and children

4.5.1.1 Selection criteria for schools included in the survey

i. Geographical area of research

The research was conducted in the Pretoria area (Pretoria Central, Eersterust, Laudium, Atteridgeville, Soshanguve and Mamelodi) as it is the primary working context for the Centre for Augmentative and Alternative Communication (CAAC).

ii. Registered schools

All schools registered with one of the following Departments prior to 1995 : the Department of Education and Training, the Department of Education and Culture and the Department of Mental Health, which also met the other criteria, were included.

iii. Schools for children with mental handicaps

All schools for children with mental handicaps (including autistic children) in the above-mentioned geographical area were included, which brought the total number of schools to 10. This means that children with various areas of involvement (etiologies) found within these schools were included. Schools for children with mental handicaps form the primary area of work with AAC as the candidacy for AAC is very high within these contexts (Matas *et al.*, 1985:17). This selection means that schools for the deaf and schools for the

blind were excluded as they were traditionally not the main area of focus when using AAC strategies (Coon *et al.*, 1992:3; Bloomberg *et al.*, 1990:51). (See Appendix A for a list of schools included in the survey).

iv. Entrance criteria in schools for children with mental handicaps

The following criteria are used by the Department of Education and Culture (1993:45) for the inclusion of children in schools for children with mental handicaps.

Severely handicapped children are children :

- with an IQ of between 30 and 60
- who have reached a ceiling of performance in other schools or in other special schools
- with an IQ higher than 60 but who have reached a ceiling of performance in general education and who will not benefit further and who thus require special education
- who have the motor abilities to perform self-help tasks and are able to participate in special education
- who have the ability to communicate when they are admitted or who have the latent ability to be able to communicate after intervention in order to be able to make needs known and to be able to understand and carry out requests
- who are preferably not older than 12 when admitted for the first time
- who do not have a diagnosed psychiatric impairment

4.5.1.2 Selection criteria for children included in the survey

i. Chronological age

All children of school-going age, from pre-school to primary school were included, which means that their chronological ages were between 3,0 - 12,11 years. It was decided to include children of these age groups as this is the critical period for learning communication and social skills, as well as the period in which functional reading, writing and mathematical skills develop (Stewart, 1987:91).

ii. Mental age

Although the use of mental age would have been appropriate and valuable, mental age scores were not available to all teachers as tests had not been conducted on all children, so for the purpose of this survey it was decided to use chronological age. However, in an attempt to form an idea of the child's cognitive functioning, a descriptive category on the teacher's rating of the child's cognitive ability was set.

iii. Children must attend school

All children whose names appeared on a class list of the particular school were included. This meant that even if a child was absent on the day the questionnaires were completed, or had been absent for a long time, but still appeared on the class list, he or she would still be included.

4.5.2 Descriptive information on schools, teachers and children

In order to understand the context in which the survey was conducted, a brief description of the schools, teachers and children is given.

4.5.2.1 Description of schools

A total of 10 schools met all the set criteria for inclusion in the survey. More detailed information on these schools is presented in Table 4.2.

Table 4.2 : Description of schools included in the study

#	Area	# of pupils	# of teachers	# of class aids	# of speech therapists	# of OT's	# of physio therapists	# of social workers	# of psycholo-gists	# of nurses	# of hostels	Predominant language of instruction	Date founded
1	Pretoria Central	T 115 I 53	T 12 I 6	12	2	2	3	1	0	1	0	Afrikaans	January 1975
2	Pretoria Central	T 18 I 11	T 3 I 3	2	0	0	1 twice a week	0	0	0	0	Afrikaans	January 1989
3	Eersterust	T 47 I 23	T 5 I 4	2	1 twice a week	1 once a week	1 physio assistant	once a month	once a year	once a month	0	Afrikaans	October 1988
4	Pretoria Central	T 30 I 15	T 3 I 2	4	1 once a week	1 once a week	1 once a week	1 volunteer	0	0	0	Afrikaans	April 1980
5	Soshanguve	T 110 I 25	T 6 I 3	2	0	1	0	0	1 once a week	0	0	Northern Sotho	January 1989
6	Pretoria Central	T 336 I 25	T 34 I 16	10	0	1	0	0	0	1	3	Afrikaans	January 1969
7	Laudium	T 57 I 35	T 5 I 4	7	1	1	0	use Dept of Mental Health	once a week (privately funded)	0	0	English	March 1987
8	Mamelodi	T 78 I 17	T 4 I 3	3	0	0	0	once a month	0	1	0	Northern Sotho	Novem-ber
9	Pretoria Central	T 60 I 39	T 12 I 10	6	1	1	0	0	1	1	1	Afrikaans & English	October 1976
10	Atteridge-ville	T 120 I 25	T 11 I 4	4	0	0	0	0	0	1	0	Northern Sotho	June 1981

Legend : *T* = Total number at school ; *I* = Number included in survey

In Table 4.2 it can be seen that there was a broad variation in the schools. Some schools had a large number of pupils (School No 6), whilst others had relatively few (School No 2). In some of the schools most children were included (School no 2, whilst in other schools not even a quarter were included (School No 5). In some of the schools the number of teachers who were included corresponded well with the total number of teachers at the school (Schools No 3, 4, 8 and 9) although the number of children who were included did not correspond well with the number of children in the school. Some schools also had sufficient assistance from therapists (Schools No 1 and 9) whilst others had no therapists (Schools No 8 and 10). Only one school had the assistance of a psychologist. All the schools had class aids to assist the teachers. Of the 10 schools included only 2 had hostels (Schools No 6 and 9), and these two schools were in the same area.

4.5.2.2 Description of teachers

i. The use of teachers as informants

In the school context the teachers seemed to be the most appropriate people for rating the abilities of children in their classes. This is due to the fact that they spend extended time with the children, are present in the classroom throughout the day, have opportunities to observe large numbers of children and through observation gain an overall perspective of the expected range of behaviours (Skuy *et al.*, 1988:46). This enables teachers to have the best idea of the children's functioning as they are the people who are aware of the children's background, needs and problems. It was also noted in the literature that teacher ratings are accurate, parsimonious and valuable (Skuy *et al.*, 1988:46). Furthermore, the research was carried out late in the year (September) in order to give the teachers as much time as possible for observing the children's abilities. A minority of the teachers were not professionally trained, (implying either a special degree or a special diploma/certificate), but had only received in-service training. Therefore, "*teachers*" were defined for the purpose of this survey as "*the adults primarily responsible for the carrying out of the daily training programme or for the caring of the children in their classes*" (Wium, 1994:5-7).

The total number of teachers included in the survey was 55. More detailed information on the teachers' biographic background and educational levels is presented in Figure 4.1 - Figure 4.3.

ii. Gender

In this survey, 98,2% of the teachers were female, and only 1,8% (being one teacher) male.

iii. Highest educational qualification

Figure 4.1 describes the highest educational qualifications of the teachers. It is important to note that results only refer to qualifications that had already been obtained, and not studies in which teachers were currently enrolled.

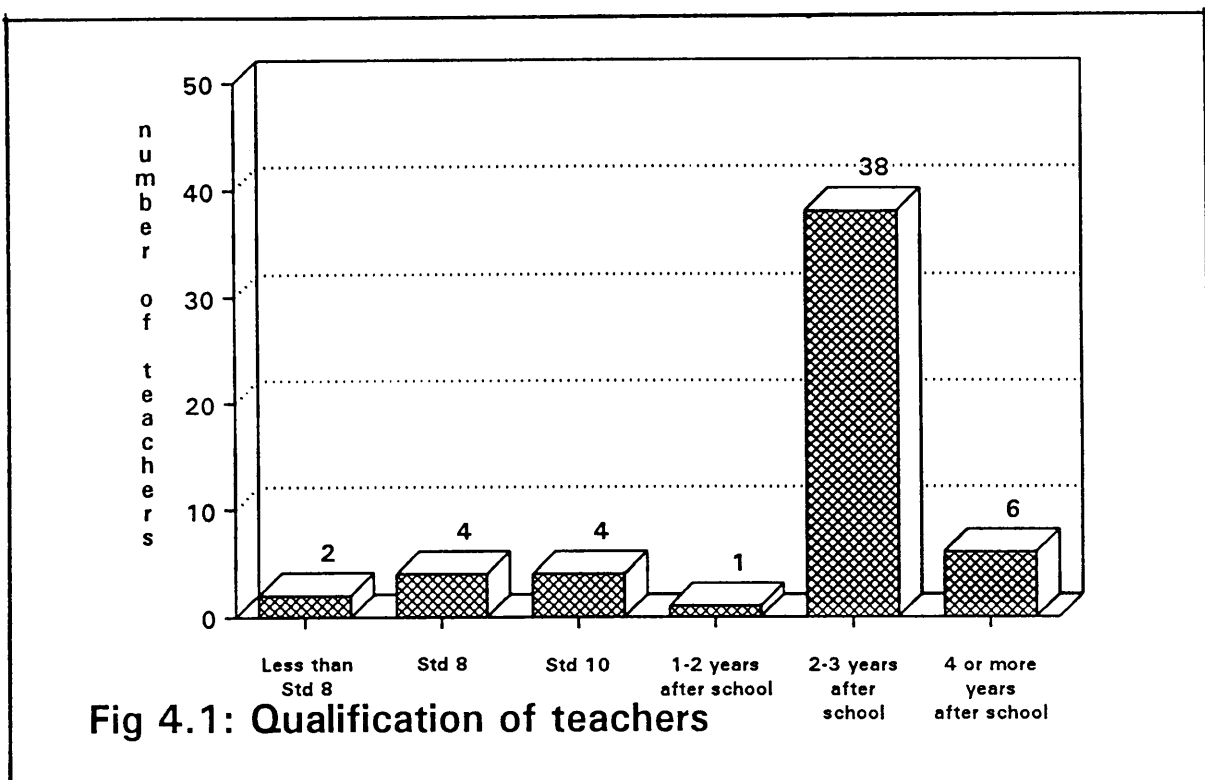


Figure 4.1 clearly indicates that the majority of the 55 teachers had training after school, comprising 38 who had 2-3 years of training after school, followed by 6 with 4 years or more training after school. It is, however, important to note that 10 teachers had no post-matric (Std 10) qualifications.

iv. Years of experience with SHC

Figure 4.2 describes how much experience teachers had with SHC. This includes all experience, and not only that obtained at the specific school at which the teacher was then employed.

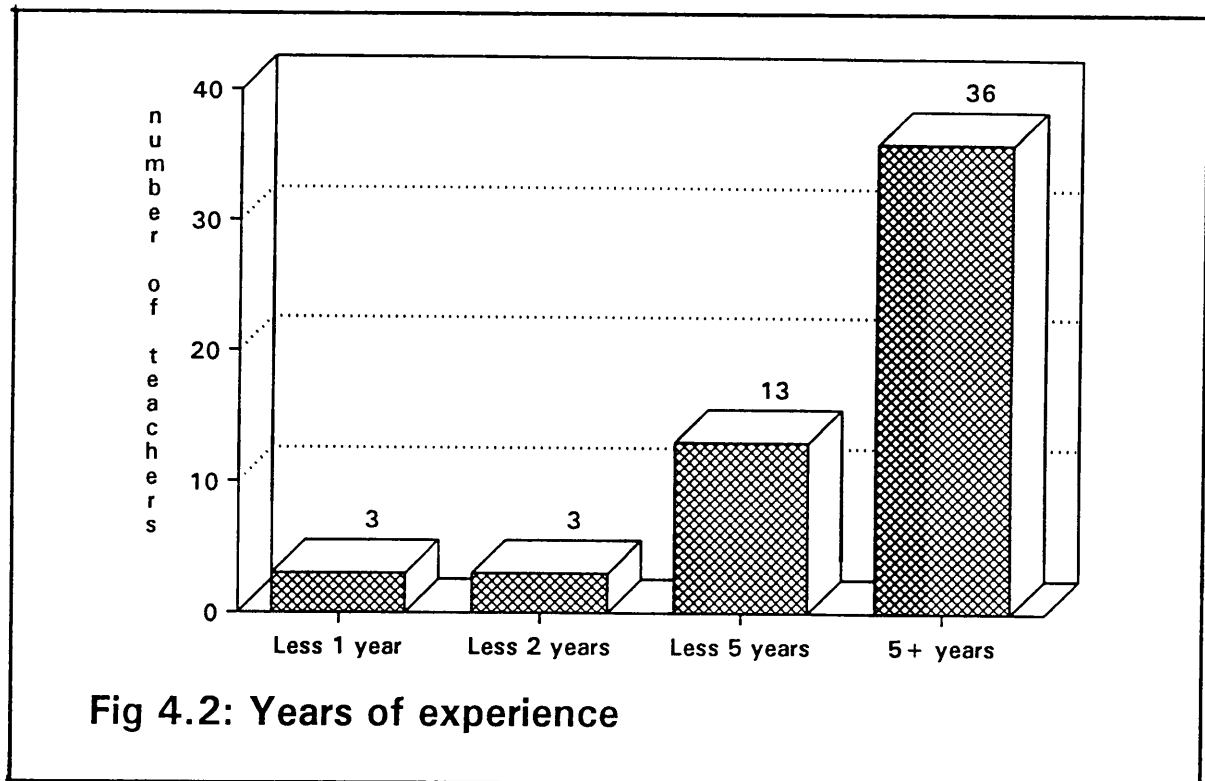


Figure 4.2 indicates that by far the majority of teachers had more than five years of teaching experience (36) followed by 13 teachers with two to five years of experience. There was no difference between teachers who had less than 1 year and less than 2 years experience.

v. Specialized training

Figure 4.3 describes the special training teachers received in the handling of SHC.

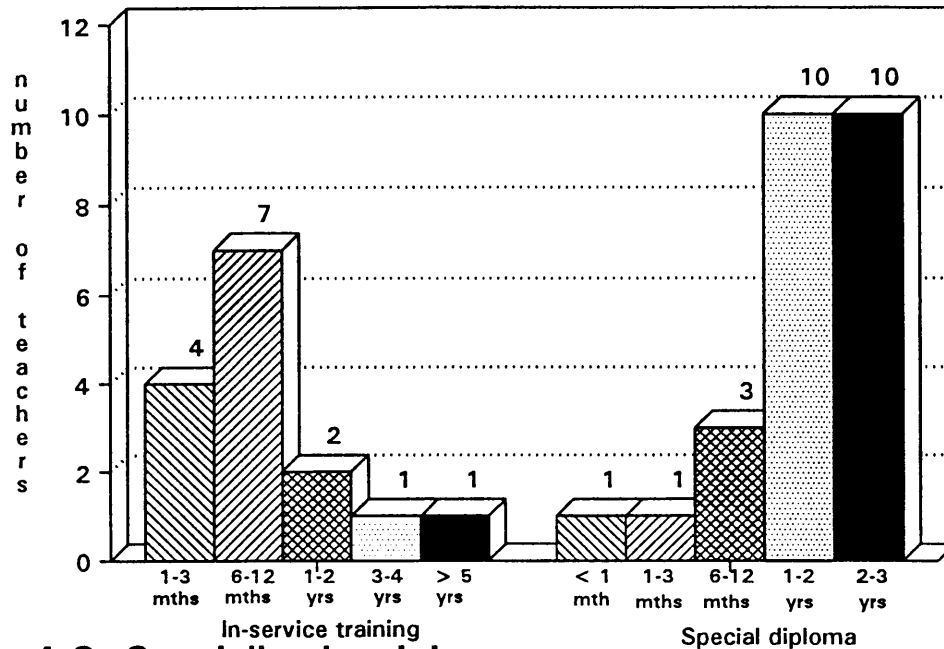


Fig 4.3: Specialised training

Results indicated that 63,6% of the teachers reported that they had special training, whilst 36,4% did not. In Figure 4.3 it can be seen that of the 55 teachers included in the survey, 15 had in-service training, and 25 had special diplomas. Of the 15 teachers who had in-service training, 73,3% had less than 1 year. Of the 25 teachers who had special diplomas, 10 had a diploma of less than 2 years and 10 had a diploma of less than 3 years.

vi. Summary

It can be seen that by far the majority of teachers were female. Although 81,81% of the teachers had some kind of post-matric training, 18,18% had school training only, varying from less than Std 8 to Std 10. Of the teachers who had post- matric training, the majority had 2-3 years of training, and none had 5 years or more. However, by far the majority of the 55 teachers had more than 5 years of experience (36).

4.5.2.3 Description of children

A total of 412 children met all the set criteria and were therefore included in the survey, but 559 were excluded, due to age. More detailed information on all the children who met the selection criteria and were thus included in the survey, are presented graphically in Figures 4.4 - Figure 4.7.

i. Age and gender

Figure 4.4 describes the age and gender of all the SHC in the survey who met the selection criteria, being 3,0 years - 12,11 years. The age range was therefore only representative of the children falling within these boundaries. For the purpose of displaying data, ages were rounded off to the nearest age taking the months into consideration, a child of 6 years 6 months and older thus became 7 years old.

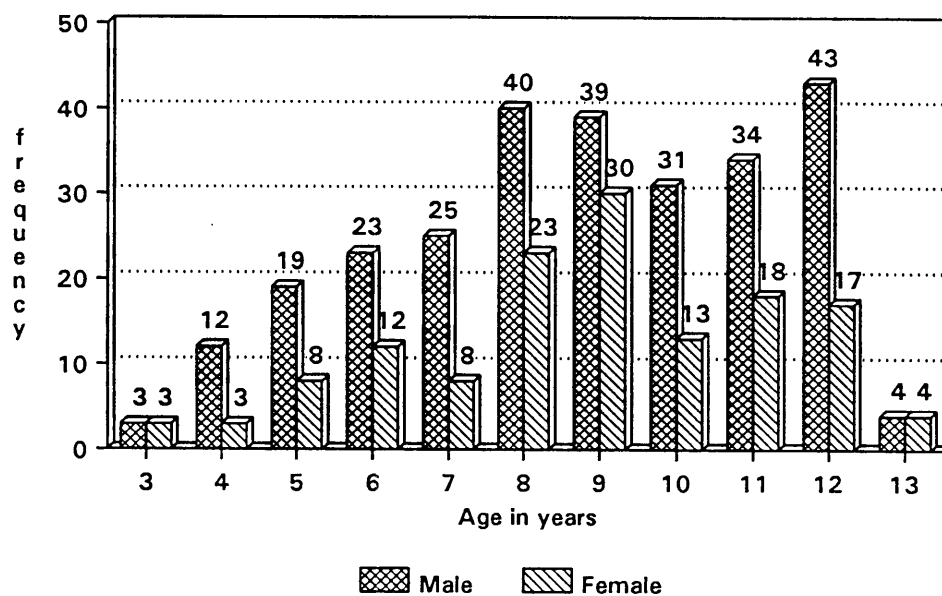


Fig 4.4: Age and gender

Most of the children were found to be 9 years old (69 of the 412 children included in the survey), followed closely by the 8 year olds (63), and thirdly the 12 year olds (60). The children younger than 6 years comprised the minority group with only six 3 year olds, fifteen 4 year olds and 27 five year olds. There were also some 13 year olds (8), which was due to the fact that all the 12 years 6 months and older children were rounded off to 13 years. Consequently, this figure is not a true reflection of the 13 year olds in special education.

Figure 4.4 also describes the gender of the SHC children across the different age groups. Of the total population included in the survey there were significantly more boys (66,3%) than girls (33,7%). This correlates with other international surveys namely Coon *et al.* (1992:6) who reported 61,6% boys and 38,4% girls and Bloomberg *et al.* (1990:54) who reported 57,8% boys and 41,4% girls. This tendency can, however, be seen across all age groups with a certain fluctuation, but in the youngest (3 year olds) and oldest groups (13 year olds) there were equal numbers of boys and girls.

ii. Home language and language of tuition

Figure 4.5 describes the home language and language of tuition of the SHC. Note that only the dominant home language was asked in cases where children were exposed to more than one language.

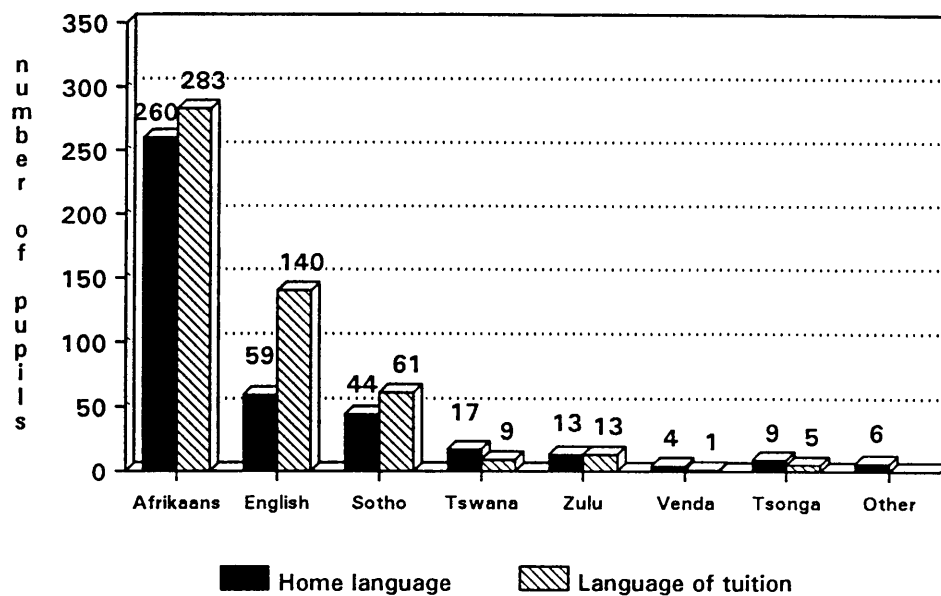


Fig 4.5: Languages

The majority of children were Afrikaans-speaking (63%). This correlates with the fact that mainly Afrikaans schools were included. The "Other" category included Tsonga (2,2%), Venda (1%), Portuguese (0,5%), Cantonese (0,5%), Ndebele (0,2%), and German (0,2%).

Figure 4.5 also describes the language(s) in which the SHC are educated. Other than in the case of home language, children often received tuition in more than one language. This was done regardless of the fact that these children already had a language delay. Although 63% of the children were Afrikaans mother tongue speakers, 68,7% were instructed in Afrikaans, 26,7% in English and 11,6% in Sotho. 81,1% of the children received tuition in only one language (not necessarily their mother tongue), 15% in 2 languages and 3,9% in 3 or more languages.

iii. Place of residence during school term

Figure 4.6 describes the different places where the SHC resided during the school term.

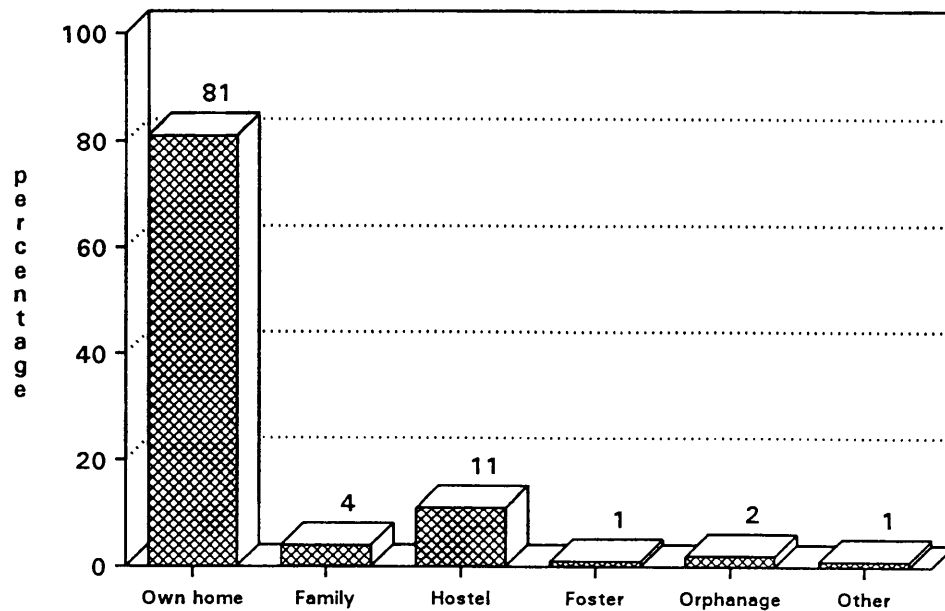


Fig 4.6: Residence during school

It is clear from Figure 4.6 that the majority of children lived at home (81%), with hostel residence in the second place (11%). 4% of the children lived in extended family homes and 2% in orphanages. The "Other" places of residence were as follows : one child boarded with the mother at a stranger's house, and one child's residence was unknown.

iv. Primary caregivers

Figure 4.7 refers to the specific caregivers of the SHC in the home environment. In this case "caregiver" was the person who cared for the child physically and not only financially.

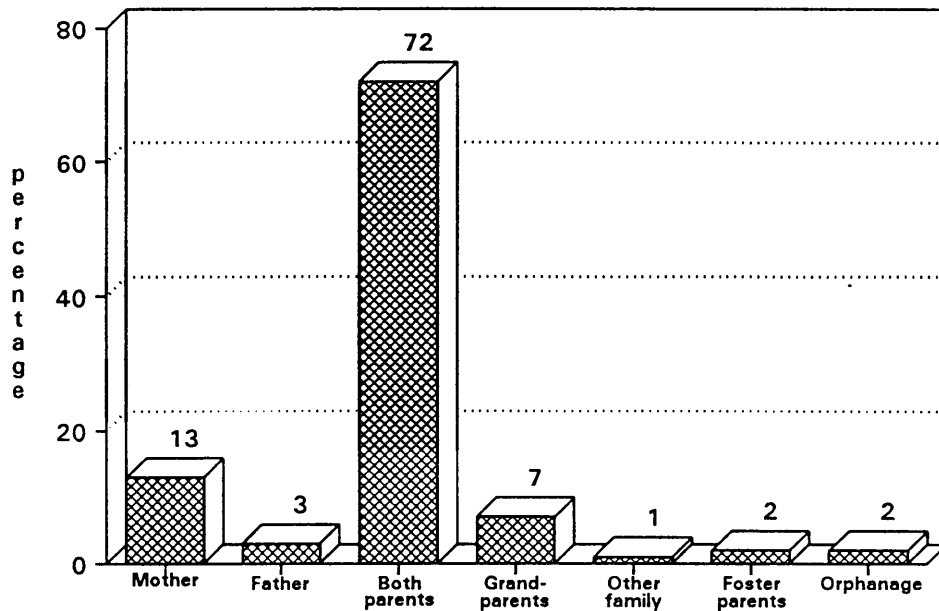


Fig 4.7: Primary caregiver

In Figure 4.7 it can be seen that by far the majority of children were cared for by both parents (72%), with 13% of children receiving care from the mother only and 3% from the father only whilst 7% of the SHC were cared for by their grandparents. Of the total number of children included in the survey 2% were cared for by caregivers in orphanages, and 2% by foster parents. The remaining 1% were cared for by other family members, including uncles and aunts.

v. Summary

From the above-mentioned data it is clear that the majority of children were 9 years old, and mainly boys. The majority's home language was Afrikaans, and that was also the language in which the majority received tuition. Furthermore, most of the children lived at home and received care from both parents.

4.5.3 Fieldworkers used in the study

4.5.3.1 Description of fieldworkers

Five final year communication pathology students were selected as fieldworkers. These students were selected as they had basic interviewing skills due to the nature of their training (Gouws, 1993:68). Interviewing skills were a pre-requisite for fieldwork, as they had to complete the questionnaires in conjunction with the teachers. All the fieldworkers were female and all of them had a special interest in SHC. It was decided to use these students as fieldworkers as they were already acquainted with communication and related problems experienced by SHC. They were thus ideally suited to answer questions relating to the questionnaires, but despite their prior knowledge, they still needed training.

4.5.3.2 Training of fieldworkers

Although the fieldworkers had basic interviewing skills as discussed in the previous section, they required further training in order to be able to complete the questionnaire effectively and accurately. According to Babbie (1992:273) interviewers should be trained in a group rather than individually, as was the case with this research. Training began with a discussion on the aims and objectives of the research. A brief discussion of general guidelines and interviewing procedures followed, as well as specifications to accompany each of the two questionnaires (See Appendix C and Appendix D for *"Notes to the fieldworkers"*). The whole group then went through the questionnaire together, question by question according to the specifications. They did not move to the next question until all questions had been resolved. This was followed by a video of a demonstration interview and a discussion. Interviewers were paired and practised interviews on each other. Roles were then reversed and the exercise repeated. Once this was done, the group discussed their experiences. The final stage involved some "real" interviews, where interviews were performed under similar conditions to those they would encounter, but excluding respondents who were included in the sample. After completing five questionnaires, the fieldworkers handed them back to the researcher who checked the data, looked for any evidence of misunderstanding, and discussed the questionnaires with the fieldworkers individually, as well as in the group.

4.5.4 Material and equipment to be used in the main study

An outline of both the equipment and material used in the main study for the training of fieldworkers and also for the collection and analysis of the data are discussed.

4.5.4.1 Equipment

The equipment used in the training of the fieldworkers were as follows :

- Overhead projector
- Transparencies
- Sony Video Camera
- BASF Video Cassettes
- Sony Video Recorder
- Sony TV Monitor

4.5.4.2 Survey material

The following items were used in the survey for the training of fieldworkers and the collection of data :

i. Survey material related to the training of fieldworkers

Fieldworkers required training in order to equip them with the necessary knowledge and skills in order to complete the questionnaires effectively. Therefore training consisted of knowledge training as well as training in practical aspects that needed consideration in completing the questionnaires.

- Fieldworkers were presented with *"Notes to the fieldworkers in completing Questionnaire I"* (Appendix C).
- *"Notes to the fieldworkers in completing Questionnaire II"* (Appendix D) was also given to each fieldworker. It was expected of them to always have these notes with them in case of any uncertainty with the questions. The notes also contained information about the rating scales as discussed in Chapter 3, Section 3.6.1.3. The *"Notes"* were thus used as a reference guide.

- Two video cases were used in the training of the fieldworkers. They were exposed to one video recording of Questionnaire I, and one video recording of Questionnaire II. This video showed role-play between the researcher and a teacher. The answers provided by the teacher covered a wide variety of problems that might be encountered by the fieldworkers.

ii. Survey material related to data collection

Apart from the stationary, two questionnaires were used in the data collection process, namely :

- *Questionnaire I* : Teacher questionnaire to collect personal data from each teacher (See Appendix E for the English version and Appendix F for the Afrikaans version). (See Section 4.5.4.3 nr i for a detailed discussion on this questionnaire).
- *Questionnaire II* : Questionnaire to evaluate the communication skills of the SHC (See Appendix G for the English version and Appendix H for the Afrikaans version). (See Section 4.5.4.3 nr ii for a detailed discussion of this questionnaire).

4.5.4.3 Development and description of the survey instrument (questionnaire)

Basic considerations that had to be taken into account in the development of questionnaires, with emphasis on reliability and validity was discussed in Chapter 3, Section 3.6.2 and 3.6.3 respectively. This section will therefore specifically focus on the two questionnaires used in this survey.

i. Questionnaire I

This is a short two page questionnaire which had to be completed by the fieldworker in conjunction with the teacher. The questionnaire aimed at obtaining all the necessary data in as short a time as possible, as the length of a questionnaire is a very important uncontrollable variable that needs consideration. It has been reported in the literature that too long questionnaires have a demoralizing effect on the persons completing them (Steenekamp, 1984:4). The questionnaire aimed at reducing the length of time needed for completion by mainly using close-ended questions with a number of options. The focus of this questionnaire was mainly on relevant biographic background information regarding the teacher.

Table 4.3 : The development of Questionnaire I

#	AREA		REASON FOR INCLUSION OF QUESTION	ADDITIONAL INFORMATION
1	<i>Identifying data</i> name of school name of class number of children in class gender of teacher		Determine which school is being discussed, the gender of the teachers, the percentage of male vs female teachers in special schools and also the teacher : child ratio	It was decided to start the questionnaire by asking impersonal questions. The question on the gender of the teacher was a forced choice, but the other questions on the identifying data were all close-ended questions with different categories
2	<i>Qualification</i> highest educational qualification obtained		Determine if teachers had special training in working with SHC. In surveys discussed in Chapter 3, Section 3.5.4.3, teachers expressed a desire for more information and training in AAC skills to enable better service delivery to this population (Burd <i>et al.</i> , 1988:378; Coon <i>et al.</i> , 1992:12)	This was an open-ended question that was later categorized. As a number of teachers had no post-matric qualifications, the first category was Std 8-10
3	<i>Experience</i> less than 1 year less than 2 years less 5 than years more than 5 years		This variable had to be included in order to discuss the average number of years of experience of the teachers	This was a close-ended question, in which teachers only had to mark the category into which they fell. This type of question increased their participation as it offered no threat
4	<i>Special training regarding SHC</i> yes no	<i>Nature of special training</i> in-service training special diploma/ certificate special degree	This variable had to be included in order to determine the nature of the teacher's training, including the type and length of training. This only referred to training already done, and not to training currently enrolled in	A filter question was used (yes,no), as special training was not applicable to all teachers, so only those who had had special training completed it (Steenekamp, 1984:18)
5	<i>Amount of time spent on training different skill areas :</i> no time little time fair amount of time most of the time all the time	<i>Skill areas refer to:</i> free play self-help communication reading writing perception physical training	South Africa has a bad track record regarding the reading and writing skills of SHC (Alant, 1993:3). This might be due to the fact that teachers have little or no exposure to systems like Blissymbolics that have been used internationally to facilitate these skills. These skill areas also had to be included in order to determine what the main classroom activities are, as traditionally emphasis was not placed on the teaching of functional reading, writing and mathematical skills. However, this information was not analyzed in this study, but was discussed in the HSRC study (Alant, 1995)	This was a close-ended question, as it usually increases the involvement of the respondents (Steenekamp, 1984:20). The advantage of this type of question is that it does not demand so much of the memory skills of the teachers. Careful consideration was given to the wording and in order to make it clear, definite and impartial, examples were also given. The major disadvantage was that the categories could not typically contain all the possible responses, and thus teachers may sometimes have been forced to fit answers, sometimes incorrectly, into the predesigned categories
6	<i>Additional assistance</i> class aid : not formally trained trained teaching assistant occupational therapist or OT assistant speech therapist volunteers		This variable needed to be included in order to determine what additional assistance the teacher had. The number of hours per day the teacher was assisted was also evaluated. This variable further looked at the professional services and support structures available to the teacher. This was also correlated with a question in Questionnaire II, in which the type of therapy the child receives was determined. This was an important question, as the study emphasized therapy exposure of the SHC	A close-ended question was used

ii. Questionnaire II

Questions included in Questionnaire II were based on relevant previous studies as discussed in Chapter 3, Section 3.5 and important areas of involvement (etiological categories) as discussed in Chapter 2, Section 2.3. In compiling this questionnaire, the teachers' field of experience was taken into account in order to ensure that all the terminology and concepts were known to them (Steenekamp, 1984:4). If, however, problems with terminology occurred, the fieldworker explained it and made sure that there was no confusion. Most of the questions included in this questionnaire were also close-ended with a number of options in order to reduce the time needed for completion. As a teacher had to complete a questionnaire for each child in her class, the time factor was very important. Certain countercheck questions were included in the survey to check for consistency, e.g. the ability to speak words was correlated with the ability to speak sentences. In the typing of the questionnaire special attention was paid to the spacing of the questions, in order not to give a cramped impression, and to facilitate reading. Boxes for recording responses were included with all the close-ended questions, so that the fieldworkers knew where to put the answers.

The important areas covered in Questionnaire II, as well as the reasons for including these questions are presented in Table 4.5.

Table 4.4 : The development of Questionnaire II

#	AREA		REASON FOR INCLUSION OF QUESTION	ADDITIONAL INFORMATION
1	<i>Identifying data</i> gender birth date age		Gender was asked in order to determine male : female ratio and to correlate this with previous surveys. Birth date and age were correlated with each other as a means of control	For gender a close-ended question was used, where it was only necessary to mark the appropriate option with a cross, in order to reduce the time and facilitate completion of the question
2	<i>Language</i> home language educational language		To determine the number of non-speaking children with a multilingual background and to determine whether these children received schooling in their mother tongue, and how many of them were exposed to second and third languages, although they had a problem in their mother tongue (Coon <i>et al.</i> , 1992:3; Bloomberg <i>et al.</i> , 1990:51 ; Burd <i>et al.</i> , 1988:373)	A close-ended question was used to determine the language. Not all 11 official languages of South Africa were included but only the most dominant languages in the research area. However, a category for "Other" was included in order not to exclude any language
3	<i>Residence in term time</i> own home family home hostel at school	<i>Caregiver at home</i> mother father both parents grandmother grandfather both grandparents	Residential status was defined as "the place where the person lives for the majority of the time" (Bloomberg <i>et al.</i> , 1990:52). This would determine where the majority of the children live during the term time (that is while attending school), and would thus give an idea of how many of these children were placed in institutions. It was also asked with whom the child lived when at home in order to determine whether he/she lived in the nucleus family (mother, father or both parents) or whether he/she lived within the extended family (grandmother, grandfather or both grandparents)	In order to heighten the ease with which this question could be completed, a close-ended question with categories was used. A category for "Other" was included, in order to avoid an incorrect answer by forcing an answer to be fitted into one of the predesigned categories
4	<i>Possible etiology</i> mental handicap cerebral palsy (CP) deaf blind autism epilepsy (fits) other		Categories set by the Department of National Health and Population Development, were used (Year of Disabled Persons Report, 1986:17). However, only the categories that usually result in non-speech or limited speech abilities in children were used, e.g. mental retardation, CP, deafness and autism (Bloomberg <i>et al.</i> , 1990:55). Two other categories, epilepsy and blindness were also included, as they often form part of the multiply handicapped population. Thus these etiologies focus on congenital problems. It was also necessary to determine the number of children with more than one disability	Answers had to be fitted into predesigned categories, in order to make answers more uniform, and to make instructions easier so that teachers would know what was expected of them. However, examples were given to clarify any possible uncertainty regarding the categories, e.g. "mental retardation e.g. Down Syndrome" or "CP e.g. spasticity". A category for "Other" was included for the cases in which the teachers felt that their answers could not be fitted into one of the predesigned categories. Although the question referred to the primary etiology, more than one reason could be given, and then all the relevant options could be marked
5	<i>Severity regarding areas of functioning</i> <i>Severity</i> almost no function poor function some function reasonable function normal function <i>Areas of functioning</i> cognitive, motor, sensory (visual & auditory), communication, social		As severity is one aspect closely linked with the classification of a handicapped child as "severely handicapped" this aspect was included as it sought to determine the teacher's perception of the severity of the problems	This question was presented in table form in order to make the completion easier. A 5 point Likert scale was used, with 1 as almost no functioning and 5 as normal functioning for chronological age. When completing this question, the fieldworker always had to start the question at normal, e.g. hearing ability - "Is the child's hearing normal for his age ?" and then progressively move to the category for "almost no hearing ability"
6a	<i>Associated problems</i> behaviour problems		Severely handicapped children often demonstrate bizarre and inappropriate behaviour (Orelove & Sobsey, 1992:3). In order to determine the presence and severity of behavioural problems, a question on the behaviour of these children was included	Regarding behaviour problems, a question was included on the severity of the problems on a 4 point Likert scale. Severity was measured in terms of the frequency of occurrence. Examples of what is understood by behaviour problems were also given

Table 4.5 / Continued

Table 4.4 / Continued

#	AREA	REASON FOR INCLUSION OF QUESTION	ADDITIONAL INFORMATION
6b	<i>Associated problems</i> epilepsy (fits)	It is common for the SHC to suffer from epilepsy, which is in itself a handicapping condition due to the physiological and behavioural side effects, so this question had to be included (Orelove & Sobsey, 1992:2). The influence of epilepsy on the child's ability to learn in the classroom context also had to be considered	The questions regarding epilepsy started with a yes/no question, followed by a yes/no question on whether the epilepsy was currently controlled by medication. Differentiation was made between Petit Mal and Grand Mal and children who had both types
7	<i>Communication skills</i> receptive language expressive language communication means	Receptive language abilities were scored on a 5 point Likert scale that ranged from a child who understands very limited instructions to a child who understands everything. Expressive language was scored in terms of the number of intelligible words the child was able to produce. If the child was unable to produce 15 or more words intelligibly, he/she was classified as nonverbal (Burd <i>et al.</i> , 1988:373). A question was also included on the type of sentences the child speaks, ranging from no sentences to all sentences for chronological age. Communication modes included verbal, gestures, facial expressions, sign language, pointing to pictures, objects and symbols, writing and/or typing, yes/no indication and vocalization. A question on the frequency with which the teacher understood the child's communication attempts was also included	Regarding expressive language skills, two questions were asked - one on how many single words the child could say, and one on the sentences the child used. These two questions were also cross-correlated to determine which children spoke less than 15 words but spoke sentences. All communication functions were presented in a close-ended format, but once again an "Other" category was included in order not to force answers into predefined categories. The question on the child's receptive language ability was scored on a 5 point Likert scale, with 1 indicating "understands very little, almost nothing" and 5 indicating "understands normal instructions for chronological age". The question on how well the teachers understood the child's communication attempts were also scored on a 5 point Likert scale
8	<i>Reading skills</i> no interest in books interest in books and likes handling them sight vocabulary of more than 30 words reads easy sentences, but not age appropriate adequate reading skills for age	Children who grow up in a literate society are surrounded with written language irrespective of ethnic groups or the socio-economic level of the family (Edmiaston, 1988:30). Even SHC come into contact with print through product labels, store and road signs, newspapers books etc. although the types of "literacy activities" may vastly differ. Literacy skills (reading, writing) is no less relevant to individuals who may never become conventionally literate (Kopenhaver & Yoder, 1993:1)	A 5 point Likert scale was used, with 1 indicating no reading skills, "no interest in books" and 5 indicating "normal reading skills for chronological age". This question was adapted from Hoffman (1990:90)
9	<i>Writing skills</i> no interest in writing or only scribbles makes letters & letter-like shapes makes letters & tries to write words writes most things, but not age appropriate adequate writing skills for age	Young children become written language users before their writing looks representational (Edmiaston, 1988:33). This is a trend which should not be overlooked. As in oral language, written language reflects a movement from global to more differentiated concepts of print. In physically handicapped cases, the first two questions would not be appropriate. Another question regarding ways of producing a written output, e.g. through a computer or typewriter would have to be included	A 5 point Likert scale was used, with 1 indicating no writing abilities "no interest in writing or only scribbles" to 5, indicating normal writing skills for age. The range of the scale was kept constant throughout the questionnaire in order to lessen any possible confusion
10	<i>Mathematical skills</i> can not count or only counts without number concept number concept up to 5 knows concept more / less up to 5 able to do simple maths, but not age appropriate adequate maths skills for chronological age	To determine the level of functional mathematical skills e.g. only counting, or addition etc. of the SHC	A 5 point Likert scale was used, with 1 indicating almost no function to 5 indicating normal skills for chronological age
11	<i>Therapy received</i> speech therapy occupational therapy physiotherapy remedial teacher	The services provided to SHC have been very limited (Huer, 1991:231). This question was included in order to determine what access the children had to various special services. A question on whether this therapy was individual or group therapy as well as the number of hours the child received therapy per week was also included	A filter question was used (yes,no), as not all SHC received therapy and so teachers had to specify what therapy was received in applicable cases (Steenekamp, 1984:18)

4.5.5 Data collection procedures

4.5.5.1 Specific considerations

Certain specific considerations had to be taken into account during the collection of data in order to assure reliability. These included that :

- i. all fieldworkers received the same training and thus had the same knowledge regarding the questionnaires. This was done in an attempt to minimize the fieldworkers' personal interpretation of the questionnaires, and to ensure that they all had the same understanding of what was expected of them, and also to clarify any problems resulting from terminology (Babbie, 1992:269).
- ii. each teacher was assisted individually by a fieldworker whilst completing the questionnaires in order to clarify any possible difficulties. As a precaution (to minimize the Hawthorne effect), fieldworkers explained to the teachers that there were no correct or incorrect answers (Babbie, 1992:130).
- iii. all fieldworkers had to be courteous, and teachers were kindly asked for their cooperation after the aim of the survey had been explained. A commanding attitude of *"it-is-your-duty-to-answer-the-questions"* was not acceptable. It was found that all the teachers were kind and very willing to cooperate.
- iv. in order to make the questionnaires more user friendly, teachers received the questionnaires in either Afrikaans or English, according to their preference.
- v. the amount of information and the degree of difficulty demanded close concentration from the teachers. Teachers also had to complete one questionnaire for each child in her class, making data collection a time-consuming process. It was therefore attempted to keep the questionnaire as short as possible, and to use close-ended questions without sacrificing the quality of the information needed.

4.5.5.2 Procedure

- i. Permission to perform this study was obtained from the local authorities.
- ii. Telephone contact was made with a senior person in each school in order to explain the rationale and the importance of the study. An appointment with the principal was then made.
- iii. During this appointment the aim of the study was again explained and a date and time at which the specific school could be visited to perform the study was decided on. The principal also indicated the number of children who met the set criteria, as well as the number of teachers teaching these classes. This indicated the number of questionnaires which would be needed.
- iv. A formal letter was then sent to the school to confirm the date and time. These letters also stressed the importance of the study, and thanked the principal for his cooperation (See Appendix I for an example).
- v. As previously discussed in detail, five fieldworkers were trained by the researcher to complete the questionnaire effectively and efficiently.
- vi. Fieldworkers were placed individually at schools, except in the case of one very large school where two fieldworkers were present.
- vii. Fieldworkers met the researcher early in the morning and she drove them to the specific schools. Schools in the same vicinity were done on the same day.
- viii. Fieldworkers were left at the school with which earlier arrangements had been made. After the researcher had introduced the fieldworkers to the principal, both the principal and the researcher accompanied the fieldworker to the classroom. There they were introduced to the teacher to whom the aim of the survey was explained. Fieldworkers then started completing both questionnaires in conjunction with the

teachers : Questionnaire I relating to the teacher's experience and training with teaching SHC and Questionnaire II relating to the functioning of the SHC. All children on the teacher's class list were included, although some of them might have been absent on that day. As fieldworkers had face-to-face contact with teachers whilst completing the questionnaires, they clarified questions that seemed confusing or open to misinterpretation, in order not to lose data.

- ix. The fieldworkers and teachers completed the questionnaires in the classroom, during which time the class aid attended to the class.
- x. After the researcher had introduced the fieldworkers, she left the school to attend to the other fieldworkers. Fieldworkers remained at the school until all the questionnaires had been completed, but in cases where schools were large, a follow-up appointment was made. If a specific teacher was absent, the fieldworker made a follow-up appointment with the principal on the teacher's behalf. When the researcher fetched the fieldworkers any problems that had arisen were addressed.
- xi. Fieldworkers handed the questionnaires back to the researcher, who started encoding them.
- xii. The encoded data was then keyed into the computer which started the statistical analysis. This was followed by an interpretation of the results.

The dates at which the fieldwork was done, are presented in Table 4.6.

Table 4.5 : Information regarding fieldwork and fieldworkers

#	Geographic area	Appointment	Field-worker #	# of Questionnaires	Dates of Fieldwork
1	Pretoria central	08/9/94 at 12h00	1	6 x Questionnaire I 53 x Questionnaire II	Thursday 15 & 22 September 8h10
2	Pretoria central	29/8/94 at 10h30	2	3 x Questionnaire I 11 x Questionnaire II	Wednesday 7 September 8h15
3	Eersterust	05/9/94 at 10h00	3	4 x Questionnaire I 23 x Questionnaire II	Thursday 15 September 8h15
4	Pretoria central	01/9/94 at 11h00	3	2 x Questionnaire I 15 x Questionnaire II	Wednesday 7 September 10h45
5	Soshanguve	12/9/94 at 09h00	4	3 x Questionnaire I 25 x Questionnaire II	Thursday 15 & 22 September 8h30
6	Pretoria central	01/9/94 at 14h15	5 & 2	16 x Questionnaire I 169 x Questionnaire II	Thursday 8 & 15 September 8h30
7	Laudium	29/8/94 at 09h00	1	4 x Questionnaire I 35 x Questionnaire II	Thursday 1 & 8 September 9h00
8	Mamelodi	29/8/94 at 08h00	4	3 x Questionnaire I 17 x Questionnaire II	Thursday 1 September 8h30
9	Pretoria central	29/8/94 at 11h30	3	10 x Questionnaire I 39 x Questionnaire II	Thursday 8 & 15 September 8h15
10	Atteridgeville	05/9/94 at 08h00	4	4 x Questionnaire I 25 x Questionnaire II	Thursday 8 & 15 September 9h00

4.5.6 Data analysis and statistical procedures

All the data was documented on the questionnaires. A predesigned column marked "*For official use*" was placed on the right-hand side of the questionnaire for encoding the raw data. This was encoded by the researcher according to the data definitions. Subsequently data was computerized for statistical analysis with the SAS and BMDP programs. The data was then analyzed using a variety of statistical procedures. This included:

4.5.6.1 Descriptive statistics

- Discrete frequency distribution counts were calculated for all the variables on Questionnaires I and II, which implied that all variable values were listed, and counted each time the value occurred (Guy *et al.*, 1987:311).
- Percentages of the different variables were determined and compared.

- Mean scores and standard deviations (STD) were calculated in the applicable cases. Thus, if only a two-point rating scale was used (e.g. *Does the child have behaviour problems? Yes/No*) this was not done. The STD and mean scores were included to provide information on the spread in distribution, and were always discussed as a union (SAS, 1990).

4.5.6.2 Logistic regression procedures

- Logistic regression techniques were applied to the data to determine which variable(s) were the best indicators on how well the teachers understood the children's communication attempts. Logistic regression procedures were applied because the dependent variables were ordered in classes ranging from 1 to 5, and therefore ordinary regression procedures were not applicable.

4.5.6.3 Correlation coefficients

- Correlation coefficients were calculated to determine the strength of the relationship(s) between variables (e.g. how understandable teachers rated the children's communication attempts with means of communication). For cases where both variables were on a ordered scale (1-5) the **Spearman Rank Correlation Coefficient** was calculated. Other cases with one or both variables diatomic, the **Kendall Tau b Coefficient of Concordance** was applied (e.g. communication desire with how understandable teachers rated the children's communication attempts) (SAS, 1990).

4.5.6.4 Frequency tables

- Two-way frequency tables were investigated to determine dependence with the aid of the chi-square test. In cases where these tables indicated significant dependency, results were further investigated by means of the loglinear model (e.g. reading, writing and mathematical abilities with cognitive functioning).

The results were displayed with bar graphs, histograms, frequency polygons and cumulative frequency graphs.

4.6 SUMMARY

This chapter described the methodology of the study. It included the aim of the study, and the objectives necessary to meet the aim. A description of the pilot study which indicated problem areas and deficiencies followed. Criteria for selection, descriptive information, material and equipment with respect to the main study followed. Finally, data collection, recording and analysis were discussed.

CHAPTER 5

RESULTS

5.1 INTRODUCTION

The results as described in this chapter will follow the objectives in Chapter 4, Section 4.2.2. Three major components in the description of the results are important. Firstly the communication, general abilities and behaviour, as well as therapy exposure of the SHC will be described. This is followed by a comparison between the speaking and the non-speaking group and finally, a profile of the non-speaking population is included.

5.2 RESPONSE RATE

As fieldworkers completed a questionnaire in conjunction with the teacher for every child that met the set criteria in her class, the response rate was 100%. In cases where the teacher was not present when the fieldwork was conducted, the specific teacher was revisited. The total number of teachers included in the survey was 55, and the total number of children who met all the set criteria was 412.

5.3 COMMUNICATION, GENERAL ABILITIES AND BEHAVIOUR

5.3.1 Communication

5.3.1.1 Communication desire

Teachers were asked whether the SHC in their classrooms indicated a desire to communicate or not. Results in Figure 5.1 clearly indicate that 93,9% (94%) of all children included in the survey had a desire to communicate, whilst 6,1% (6%) had no desire to communicate.

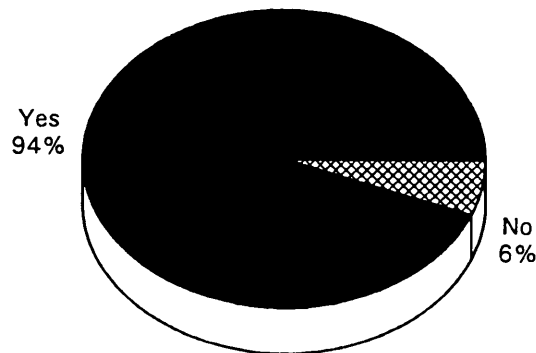


Fig 5.1: Desire to communicate

When performing the Kendall Tau b Coefficient of Concordance procedure, a value of -0,26753 was found. This negative value indicated that communication desire had a negative concordance with how understandable teachers rated the children's communication attempts. Thus, if children had no desire to communicate, teachers were unable to understand them.

5.3.1.2 Receptive language ability

Teachers were asked to rate the children's ability to understand instructions in order to obtain information about their receptive language abilities.

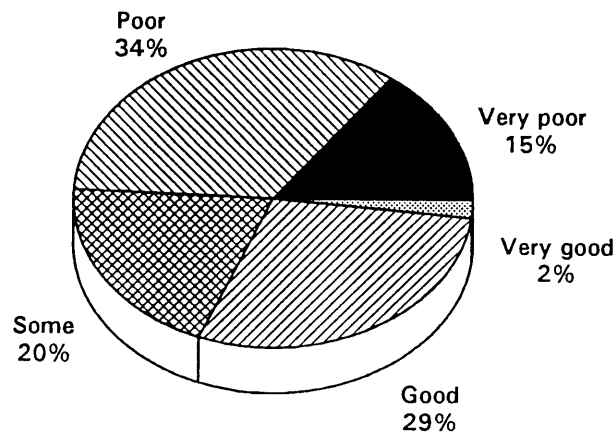


Fig 5.2: Receptive language ability

It can be seen in Figure 5.2 that teachers rated 15,0% of the children as understanding almost nothing (very poor receptive language abilities), 34,2% (34%) as understanding a few easy instructions (poor ability), 19,9% (20%) as sometimes understanding more difficult instructions (some ability), 28,9% (29%) as understanding most instructions, but not age appropriate (good) and 1,9% (2%) as having adequate understanding of instructions for chronological age (very good).

When performing a proc frequency procedure, a positive correlation was found between receptive language ability and cognitive functioning (See Table 5.1). Thus, the better the cognitive functioning, the better the receptive language ability. The same procedure was used for data relating to receptive language ability and communication ability which indicated a positive correlation. Thus, the better the children's receptive language, the better their communication ability. This tendency was observed in communication with both adults and peers. It should, however, be noted that the correlation between receptive language and communication is not as strong as the correlation between receptive language and cognitive functioning. As the proc frequency procedure indicated a correlation between these variables, the strength of the correlation was then tested by means of the Spearman Correlation Coefficient. Results from the Spearman Correlation Coefficient are set out in Table 5.1.

Table 5.1: Correlation between receptive language and cognitive ability and communication with adults and peers

Variable	Spearman Correlation Coefficient	p-Value
Cognitive ability	0,61437	* 0,0001
Communication with adults	0,54936	* 0,0001
Communication with peers	0,57397	* 0,0001

The 99% confidence level was taken as indicative of a significant association between the variables. All the values marked with an asterisk (*) are therefore indicative of a strong significance between the different variables. Thus results indicate that when Spearman's Correlation Coefficient with these variables was established, it was found that cognitive ability and communication (with both adults and peers) was significantly high. The mean and STD for this variable is presented in Table 5.2.

5.3.1.3 Expressive language ability

Expressive language refers to whether the children in the survey could be regarded as speaking or not, their ability to speak sentences as well as to the other means of communication they used. Each of these aspects will now be discussed.

i. Non-speaking children

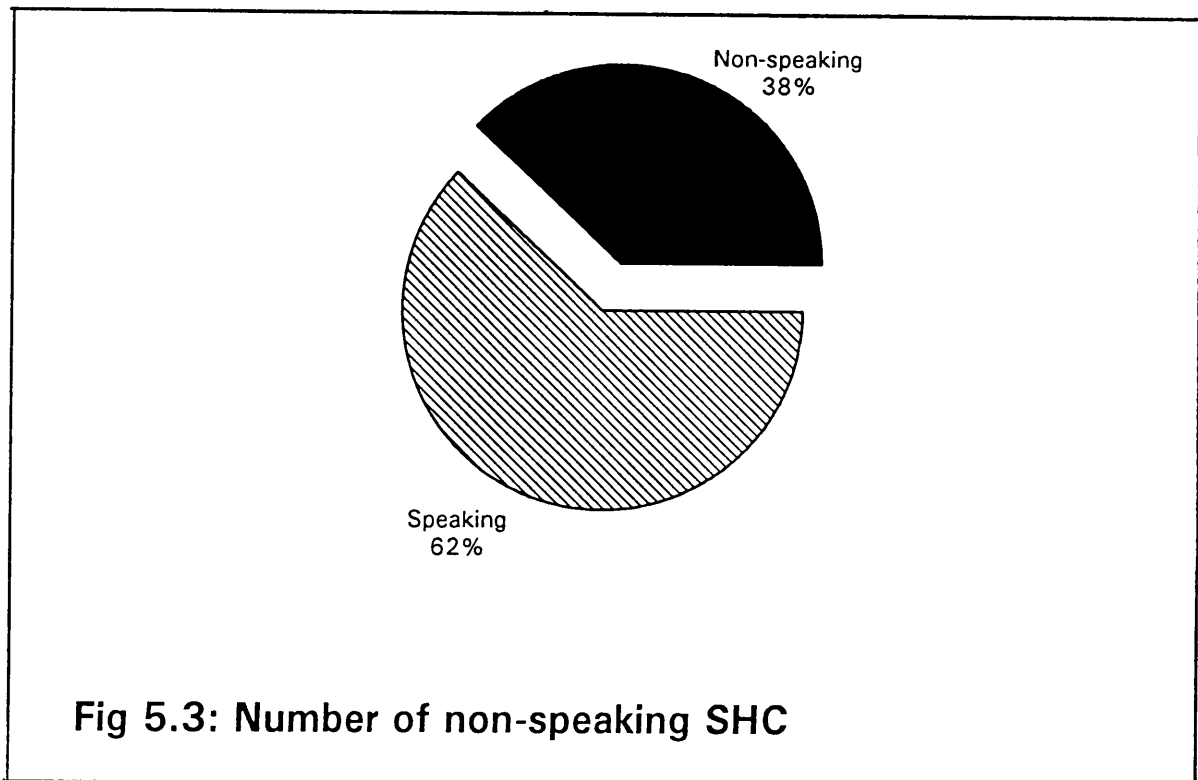


Figure 5.3 indicates that 38,3% (38%) of the children were able to speak 15 or less understandable words, and can thus be described as "*non-speaking*" whilst 61,7% (62%) were able to speak more than 15 words. The non-speaking group will be discussed in more detail later in this chapter.

ii. Coherent language

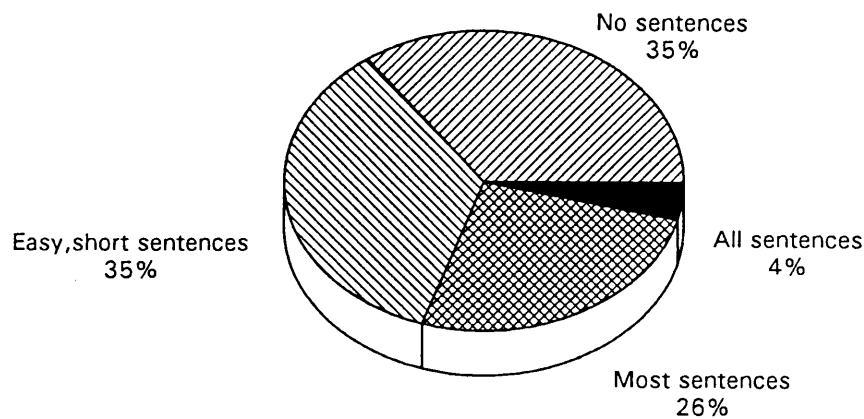


Fig 5.4: Types of sentences spoken by SH

In Figure 5.4 it can be seen that 35,4% (35%) of the children were not able to speak sentences, 35% were able to speak easy short sentences, 25,8% (26%) were able to speak most sentences, whilst 4,2% (4%) were able to speak all sentences appropriate for chronological age. From this it can be assumed that some of the children who are able to speak less than 15 words are combining these words to form easy short sentences, as only 35,4% (35%) were not able to speak sentences, whereas 38,3% (38%) could only speak less than 15 words. This might be possible in the case of younger children who are still in the process of acquiring language.

Although age was taken into account when performing a proc frequency test on the data referring to non-speech and the ability to speak sentences, the same tendency prevailed in all the age groups. Results indicated that when a child speaks less than 15 words, no sentences are spoken. The mean and STD for this variable is shown in Table 5.2.

iii. Means of communication

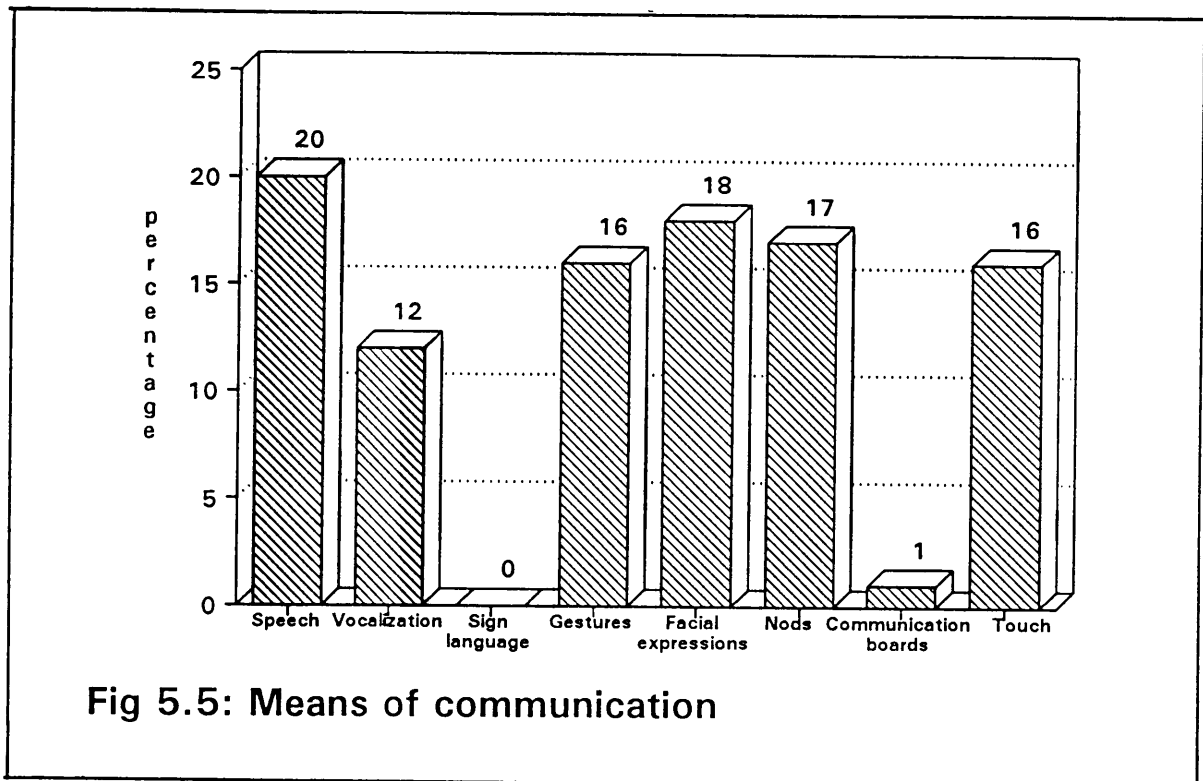


Figure 5.5 shows that 20% of the SHC use speech as a means of communication, followed by facial expressions (18%), head nodding to indicate yes/no (17%), natural gestures (16%) and touching (16%). None of the children used typing or writing. One child used biting as a primary means of communication. Sign language was used in very few cases (0,2% which was rounded off to 0%) which may be due to the fact that the children who were included in the survey were not primarily deaf or hearing impaired. Low technology AAC systems (object, picture or symbol communication boards) were used in a few cases, 0,6% (which was rounded off to 1%).

When performing the Kendall Tau b Coefficient of Concordance procedure it was found that understandable speech (0,49894), head nodding (0,11268), facial expressions (0,10710) and touching (0,09131) all had a positive value. Thus, all the above-mentioned means of communication had a positive concordance with how understandable the teachers rated the children's means of communication. This implied that the more of the above-mentioned means of communication means were used, the better the teachers understood the communication attempts.

5.3.1.4 Understandability of communication attempts

Teachers were asked to rate how understandable they found the children. This put the children in the most favourable position for the observation of this skill, as the teacher is a familiar listener, and a familiar listener often rates this ability higher than a listener who is not familiar with the person.

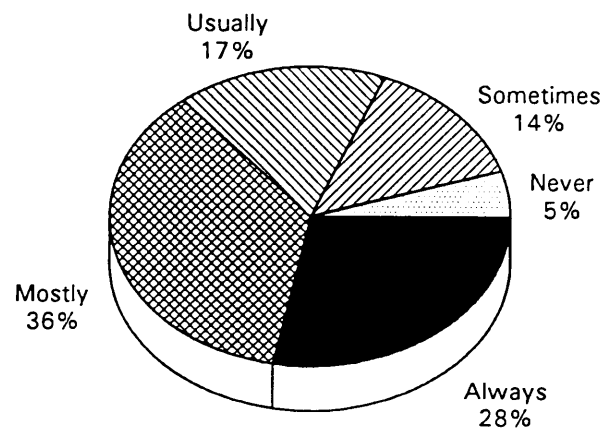


Fig 5.6: Frequency of understanding SHC

From Figure 5.6 it is clear that teachers never understood 4,7% (5%) of the children's way of communicating, 13,6% (14%) sometimes, 17,2% (17%) usually, 36,3% (36%) mostly and 28,2% (28%) always. Thus in 35,5% (36%) of the cases teachers understood the children's communication attempts less than usually. This correlates with the number of non-speaking children. When performing a logistic regression procedure, understandable speech had a p-Value of 0,0001 which is smaller than the p-Value of 0,05 on the 95% confidence level. None of the other means of communication listed on the questionnaire had a smaller p-Value than the 0,05 which is necessary to indicate significance. This seems to suggest that understandable speech was the best indicator of how well the child is understood by the teacher. The mean score and STD for this

variable is shown in Table 5.2.

5.3.1.5 Descriptive statistics on communication behaviour

Table 5.2 describes the different mean scores, standard deviations and range (minimum and maximum) for the data reflecting communication behaviour.

Table 5.2: Descriptive statistics on communication behaviour (N=412)

Variable	Mean score	Standard Deviation (STD)	Range
Receptive language	2,7	1,1	1-5
Ability to speak sentences	2,0	0,8	1-4
Understandability of communication attempts	3,8	1,0	1-5

From Table 5.2 it is clear that there was a broad variation within the values related to receptive language and understandability of communication which indicates a heterogeneous group of children when referring to these abilities. However, when looking at the ability to speak sentences, the group was more homogeneous, indicating that in this case the variation was not so great.

5.3.2 General abilities and behaviours

5.3.2.1 General abilities

Table 5.3 describes all the different abilities of the SHC who were included in the survey. These abilities were scored for all the different skill areas, namely cognitive, motor, sensory, communication and social abilities.

Table 5.3: Abilities of SHC included in the survey

	1	2	3	4	5
ABILITIES	Very poor to almost no function	Poor function	Some function	Reasonable function	Normal function for chronological age
Cognitive ability	16,7%	30,8%	31,8%	20,1%	0,5%
Gross motor ability	10,0%	23,3%	26,0%	28,9%	11,9%
Fine motor ability	16,3%	31,1%	26,7%	20,1%	5,8%
Visual ability	5,3%	7,5%	20,6%	21,4%	45,1%
Hearing ability	1,9%	4,6%	17,0%	25,0%	51,5%
Communication ability : adults	12,6%	17,5%	28,2%	35,9%	5,8%
Communication ability : peers	13,8%	17,5%	25,7%	35,7%	7,3%
Social ability	13,1%	20,9%	24,5%	29,6%	11,9%

From Table 5.3 certain trends can be observed. The highest percentage is found at the 3 rating, "*some function*", for both cognitive ability (31,8%) and gross motor ability (26,0%) with a 2 rating, "*poor function*", also very high for these two variables (respectively 30,8% and 23,3%). Fine motor ability proved to have the highest percentage at "*poor functioning*", slightly more than at "*some functioning*". Thus it can be said that results for cognitive and motor (gross and fine) abilities have similar tendencies. Communication (both for interaction with adults and peers) and social abilities show a steady increase from "*very poor*" to "*reasonable*" with a peak at the latter. For the category "*normal functioning for chronological age*" there is, however, a sharp decline. Communication abilities with both adults and peers were rated as reasonable at 35,9% and 35,7% respectively. This correlates with the children's social abilities which were also rated as reasonable (29,6%).

Sensory skills for the SHC included in the survey were mostly regarded as normal for chronological age (visual ability is 45,1% and hearing ability is 51,5%). With both of

these sensory variables a steady increase in abilities can be seen, with "very poor functioning" rating very low (5,3% and 1,9% respectively). This could, however, be expected as schools for sensory handicapped children were excluded. The different means and STD's for these variables are shown in Table 5.4.

5.3.2.2 Reading ability

Figure 5.7 shows the reading abilities of the SHC included in the survey.

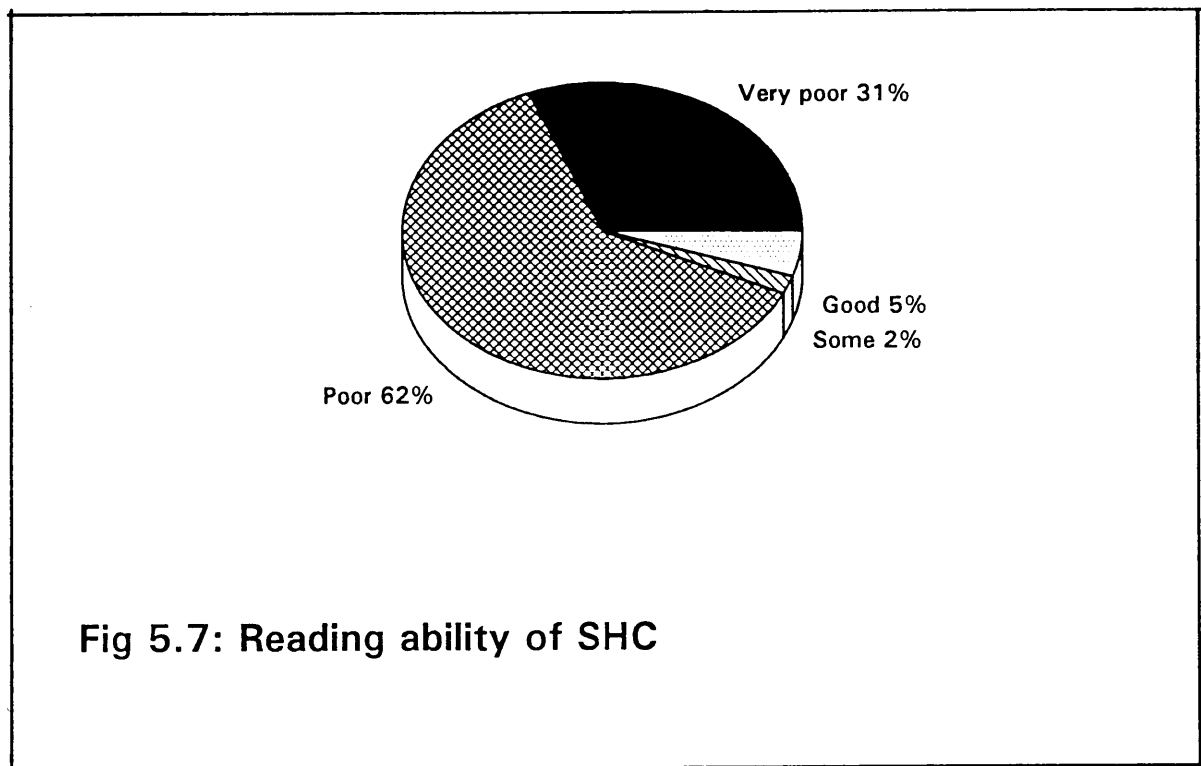


Figure 5.7 indicates that the highest percentage of children (62%) were regarded by their teachers as showing an interest in books, and enjoyment in handling books, but without any reading skills, reflecting poor reading ability. It is also clear that 30,6% (31%) of the children showed no interest in books, resulting in very poor reading skills, although teachers spent time on training reading skills. In this survey 2,3% (2%) of children were found to have a sight vocabulary of more than 30 words, which reflects some ability, and 5,1% (5%) read easy sentences, but not appropriate for age, reflecting good reading ability. See Table 5.4 for means and STD values.

5.3.2.3 Writing ability

Figure 5.8 shows the writing abilities of the SHC included in the survey as perceived by their teachers.

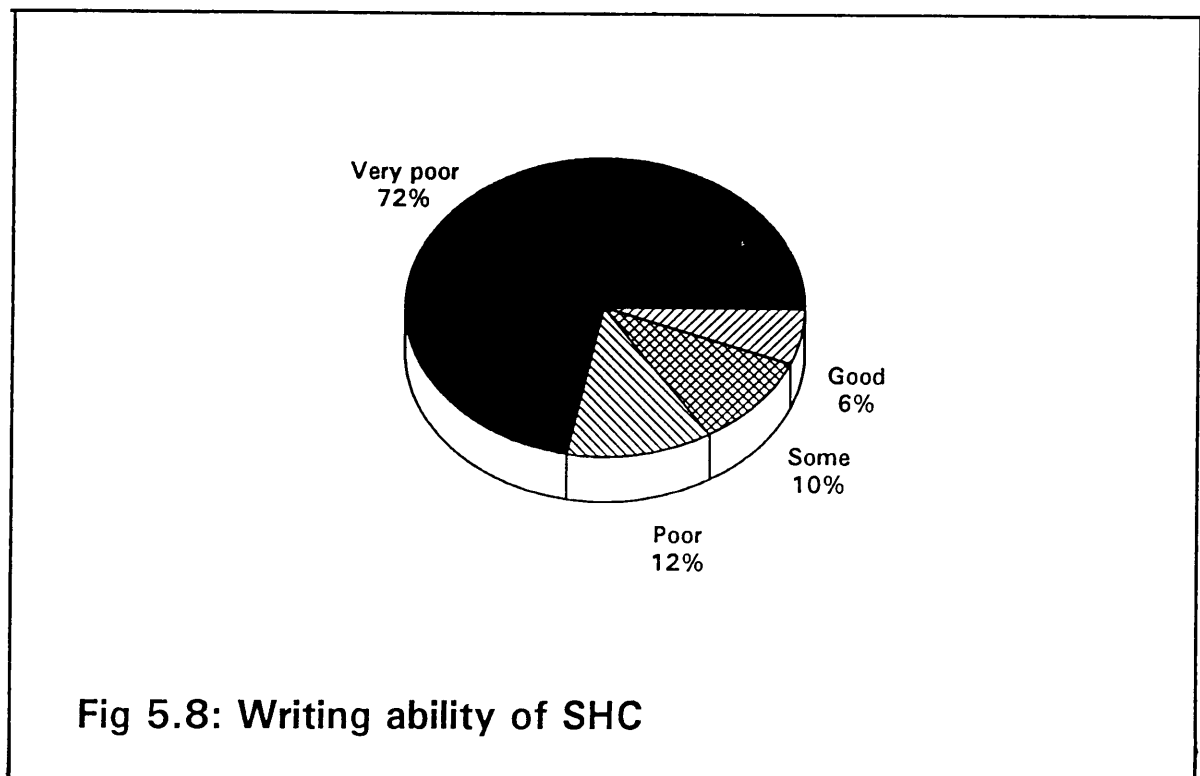


Figure 5.8 shows that the majority of children, 72,4% (72%), had no interest in writing or were only able to scribble, i.e. very poor writing ability, followed by 11,5% (12%) who could make letters and letter-like shapes, i.e. poor writing ability, 9,7% (10%) tried to make letters and tried to write words, i.e. some ability, whilst 6,1% (6%) could write most things, but not age appropriate, indicating a good writing ability. See Table 5.4 for means and STD values.

5.3.2.4 Mathematical ability

Figure 5.9 shows the SHC's mathematical abilities as perceived by their teachers.

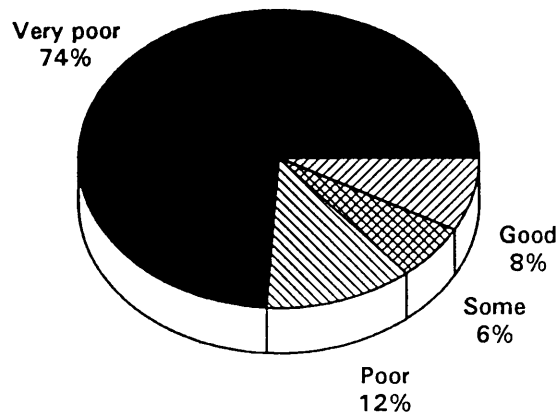


Fig 5.9: Mathematical ability of SHC

Figure 5.9 shows the mathematical abilities of the SHC. As with writing abilities, the majority of children (74%) were unable to count or able to count without any number concept i.e. parrot-like, indicating very poor mathematical ability. This is followed by 11,5% (12%) who had a number concept up to five, i.e. poor mathematical ability, 6,0% (6%) knew the concept more/less (a prerequisite for addition and subtraction), i.e. some mathematical ability whilst 7,5% (8%) could do easy maths, but not age appropriate, i.e. good mathematical ability. When performing a proc frequency procedure it was found that cognitive functioning is not a good indicator of mathematical skills. See Table 5.4 for means and STD values.

5.3.2.5 Behaviour problems

Figure 5.10 shows the number of SHC who were described by their teachers as having behaviour problems.

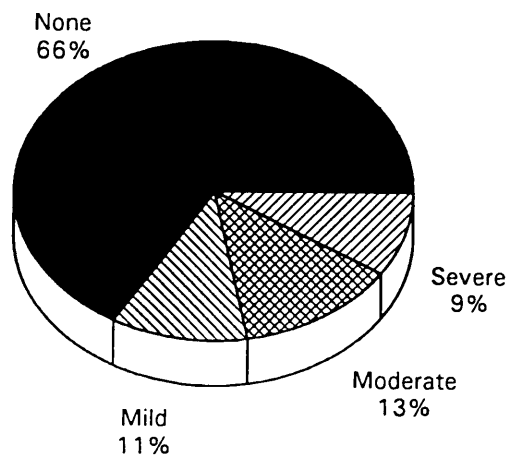


Fig 5.10: Type of behaviour problems

Teachers regarded 65,8% (66%) of the SHC as having no behaviour problems, whilst 34,2% of the children did have behaviour problems. Of this 34,2%, the majority had moderate problems (13%), followed by mild problems (11%) and finally severe problems 9%. The means and STD for this variable is described in Table 5.4.

5.3.2.6 Epilepsy

Figure 5.11 shows the number of children in the survey who had epilepsy, as well as the type of epilepsy experienced.

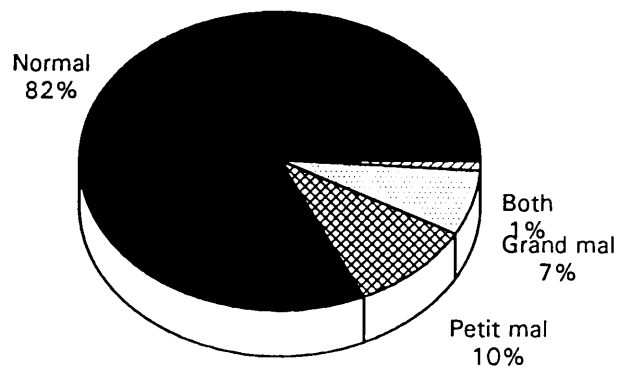


Fig 5.11: Type of epilepsy

Figure 5.11 clearly shows that 81,6% (82%) of the SHC included in the survey had no epilepsy. However, of the 18,4% (18%) who did have epilepsy, 10% had petit mal, 7% grand mal and 1% had a combination. From the 18,4% who suffered from epilepsy, 94,7% received medication and 5,3% did not.

5.3.2.7 Descriptive statistics on general abilities and behaviours

Table 5.4 describes the mean scores, standard deviation, and range (minimum and maximum) for the above-mentioned data.

Table 5.4: Descriptive statistics on general abilities and behaviours (N=412)

Variable	Mean score	Standard Deviation (STD)	Range
Cognitive abilities	2,6	1,0	1-5
Gross motor abilities	3,1	1,2	1-5
Fine motor abilities	2,7	1,1	1-5
Visual abilities	3,9	1,2	1-5
Hearing abilities	4,2	1,0	1-5
Communication abilities : adults	3,0	1,1	1-5
Communication abilities : peers	3,1	1,2	1-5
Social abilities	3,1	1,2	1-5
Reading abilities	1,8	0,7	1-5
Writing abilities	1,5	0,9	1-5
Mathematical abilities	1,5	0,9	1-5
Type of behaviour problems	1,7	1,0	1-5

In Table 5.4 it can be seen that there was a broad variation in the skills of the children included in the survey, indicating a heterogeneous population. However, when looking at reading, writing and mathematical abilities the group was more homogeneous, indicating that there was not a broad variation in the children's abilities. Thus, although aspects such as cognitive abilities and abilities on the other skill areas varied, reading, writing and mathematical abilities did not vary as much.

5.4 THERAPY

Figure 5.12 shows the number of children who received speech, occupational and/or physiotherapy and whether this therapy was given on an individual or on a group basis. Of the total population included in the survey, 66,2% of the children received some form of therapy, whilst 33,8% received none. Note that the number of children in Figure 5.12 do not add up to 412 due to the fact that some children received more than one kind of therapy.

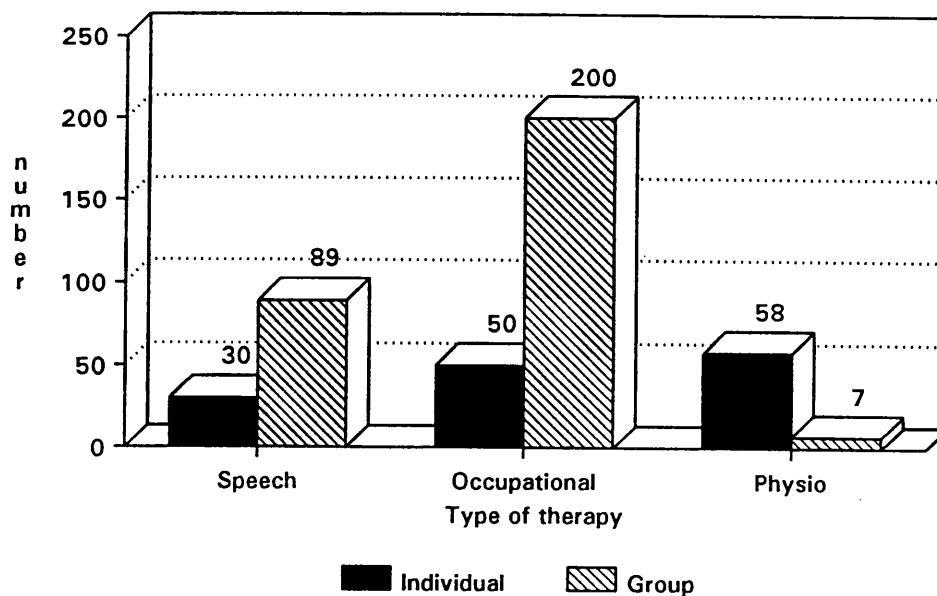


Fig 5.12: SHC receiving therapy

From the total of 412 children included in the survey, 119 received speech therapy, 250 received occupational therapy, 65 received physiotherapy, and none of them received remedial teaching. Therapy varied from less than half an hour per week to more than 5 hours per week. Figure 5.12 also shows that the majority of children received speech and occupational therapy in groups (89 group versus 30 individual for speech therapy, and 200 group versus 50 individual for occupational therapy). With physiotherapy, however, the opposite was found (58 individual versus 7 group). When doing descriptive statistics for this variable, the mean was 1,3 and the STD 0,4. The small STD indicated that there was not a broad variation in the therapy the SHC received.

A Proc frequency test was administered to results reflecting therapy exposure. Results are shown in Table 5.5.

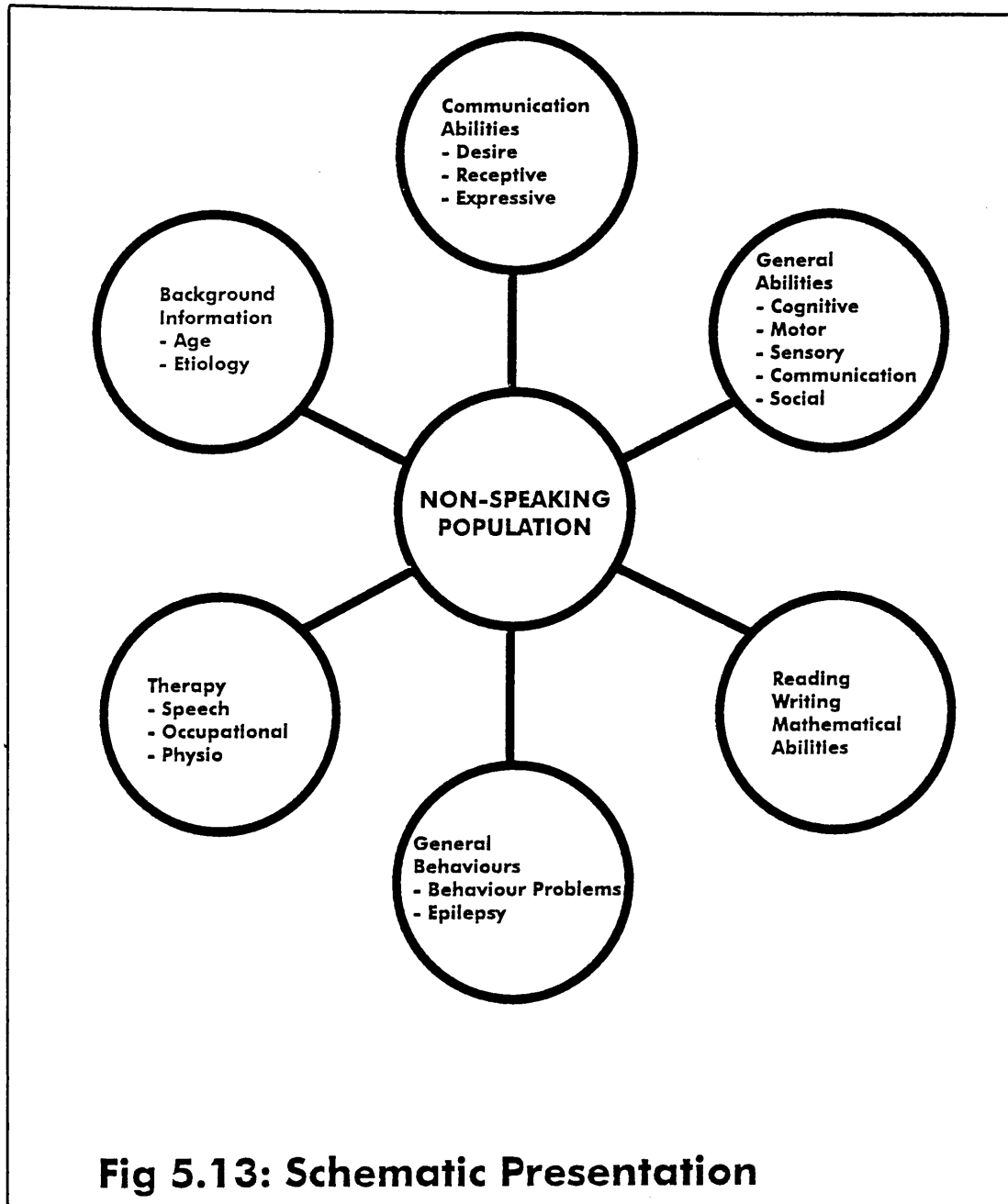
Table 5.5: Proc frequency results regarding exposure to therapy

THERAPY	Occupational therapy	Speech therapy
Less than 1 hour per week	84,65%	65,08%
More than 1 hour per week	15, 35%	34,92%
Total % receiving therapy	88, 93%	85,71%

Results showed that of the 88,9% who received occupational therapy, 84,7% received occupational therapy for one hour or less per week, whilst 15,3% received more than one hour of therapy per week. Results relating to speech therapy indicate that 85,7% of SHC received speech therapy. Of these, 65,1% received therapy for one hour or less per week, and 34,9% for more than one hour per week.

5.5 COMPARING THE SPEAKING AND NON-SPEAKING GROUP WITHIN THE SEVERELY HANDICAPPED POPULATION

A comparison between the speaking and non-speaking groups of the severely handicapped children who were included in the survey will now be made. The results will be discussed on the basis of the schematic presentation in Figure 5.13.



5.5.1 Background information

5.5.1.1 Etiology

Figure 5.14 differentiates between the etiologies of the speaking and non-speaking children.

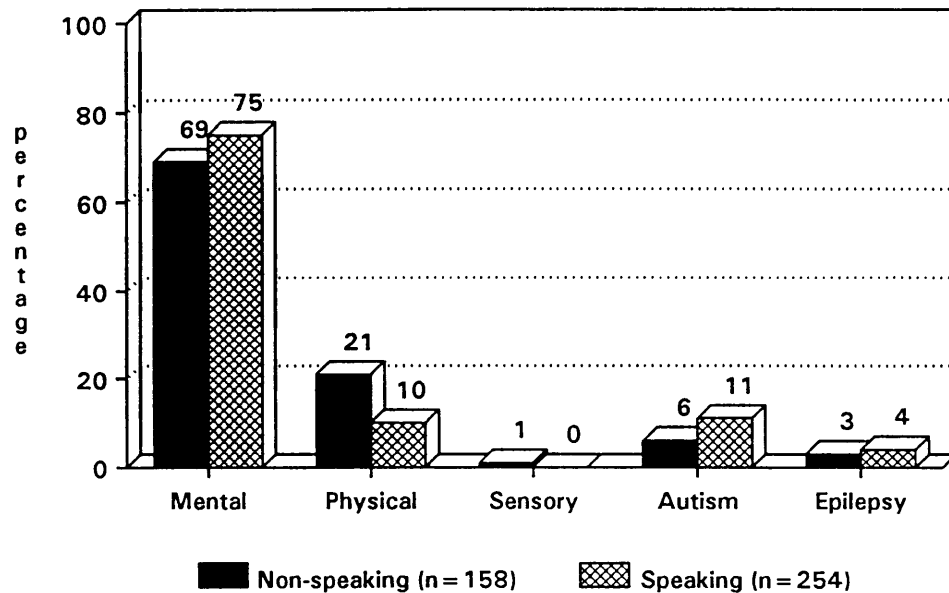


Fig 5.14: Etiologies of the groups

Figure 5.14 shows the etiologies of the non-speaking and speaking children. This figure shows that when looking at the mentally handicapped group which accounted for 72,5% of the children, 69% spoke less than 15 words and 75% spoke more than 15 words. This pattern was also present in the autistic group (9,25% of the total population) where 6% spoke less than 15 words and 11% more than 15 words. However, in the physically handicapped group 21% spoke less than 15 words whilst 10% spoke more than 15 words. In the epileptic group figures were similar for the speaking and non-speaking group, 4 and 3 respectively. Categories for deaf, blind and emotional problems were not presented separately as they represented such a small proportion of the total population. The one blind and one deaf child were grouped together under "*sensory problems*" and the two children with emotional problems were grouped with the autistic group. It is, however, important to note that both children in the "*sensory problems*" group were multiply handicapped, displaying both a sensory and cognitive impairment.

5.5.1.2 Age

The line-graph in Figure 5.15 differentiates between the ages of the speaking and non-speaking children.

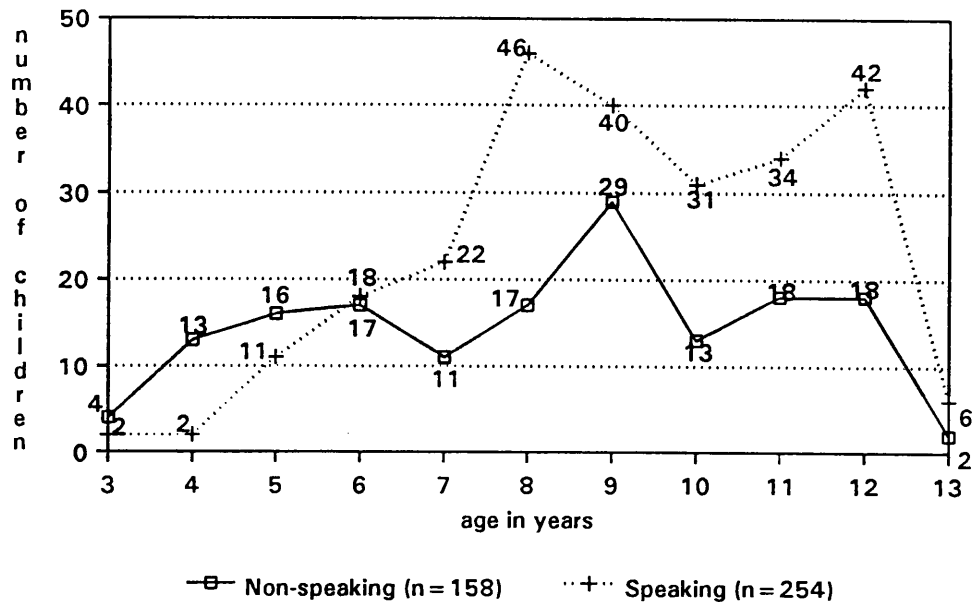


Fig 5.15: Ages of the groups

When looking at the ages of the speaking and non-speaking children as shown in Figure 5.15 it is clear that before the age of 6 the majority of children are non-speaking, but when the children become older, the number of speaking children is higher. At 6 years, the number of speaking and non-speaking children were almost even. The number of speaking children peaked at 8 years, whilst the number of non-speaking children peaked at 9 years. The number of 13 year olds is very low. This is due to the fact that the children who were older than 12 years and 6 months, were rounded off to 13 years (See Chapter 4, Section 4.5.2.3(i)).

5.5.2 Communication

5.5.2.1 Communication desire

Figure 5.16 differentiates the communication desire of the speaking and non-speaking children.

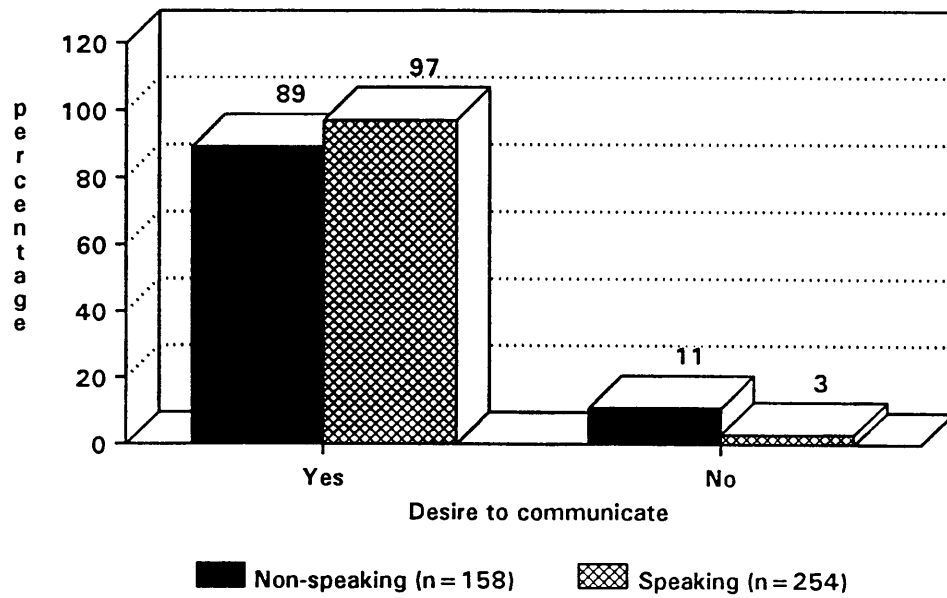


Fig 5.16: Communication desire of groups

It is clear from Figure 5.16 that 89% of the non-speaking children had a desire to communicate, compared to the 97% of the speaking group. Thus the majority of children who had no desire to communicate were non-speaking (11%).

5.5.2.2 Receptive language ability

In Figure 5.17 a differentiation between the receptive language ability of the speaking and non-speaking children is made.

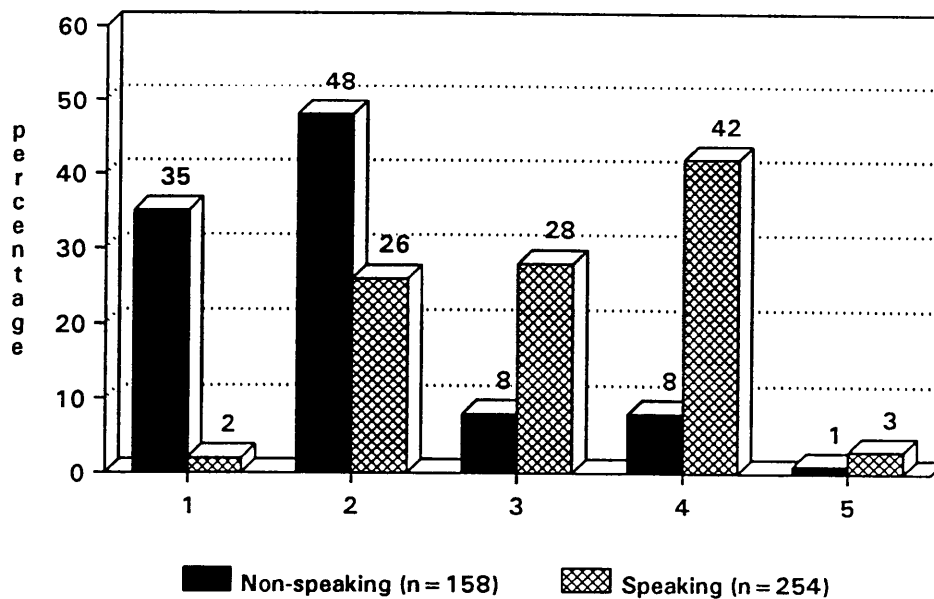


Fig 5.17: Receptive language of groups

Figure 5.17 clearly shows that the majority of non-speaking children's receptive language ability was rated as poor (2 on the 5 point scale), whilst the majority of speaking children's receptive ability was rated as good (4 on the 5 point scale). The speaking children's ability indicated a steady growth in ability ranging from very poor to good, whilst the non-speaking group showed a decline. *"Normal for chronological age"* (5 on the rating scale) had a very low frequency.

5.5.2.3 Expressive language ability

i. Non-speaking children

As previously indicated in Figure 5.3, 38,3% of the total population was non-speaking. This implies that 158 of the 412 children spoke less than 15 words.

ii. Coherent language

Figure 5.18 differentiates between the speaking and non-speaking children's ability to speak sentences.

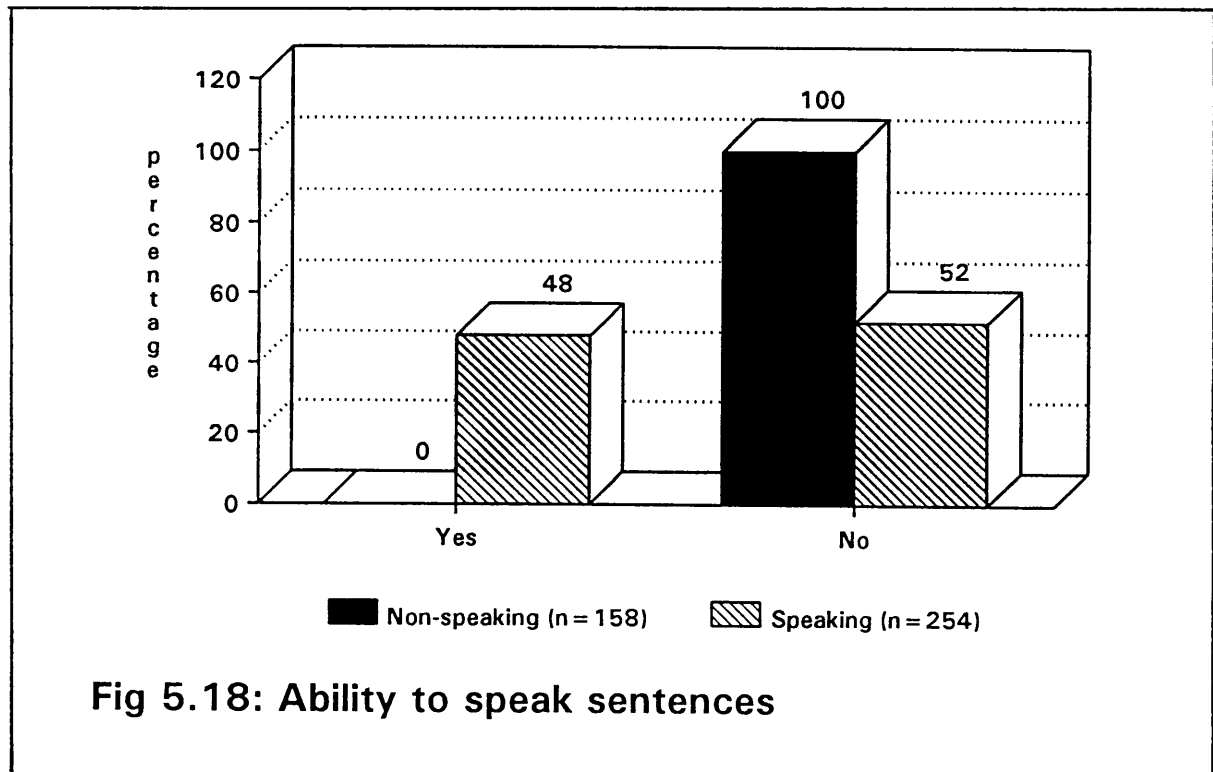


Figure 5.18 shows that none of the non-speaking children were able to speak sentences. However, when looking at the speaking group, it was found that almost half spoke sentences (48%) whilst the other half (52%) did not.

iii. Means of communication

Figure 5.19 differentiates between the means of communication used by the speaking and non-speaking children.

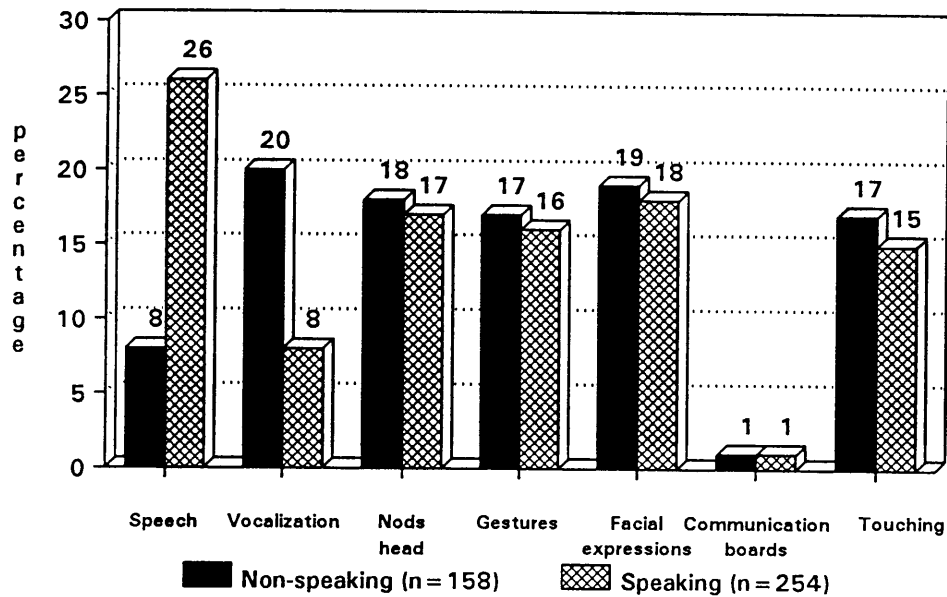
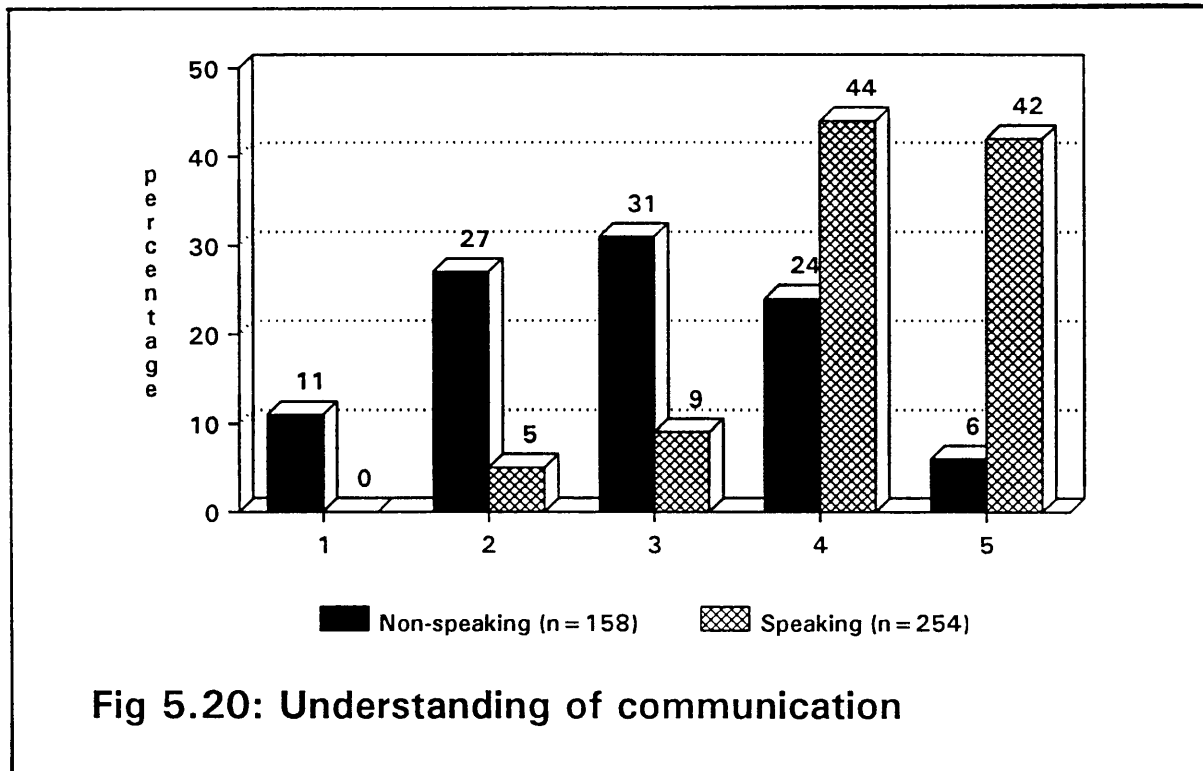


Fig 5.19: Means of communication

Figure 5.19 shows that the means of communication most frequently used was understandable speech. However, the non-speaking group mostly used vocalizations. The biggest variations in means of communication between these two groups are thus found with understandable speech (for the speaking group) and vocalizations (for the non-speaking group). Regarding all other means of communication, the frequency between the different groups is very similar, ranging from 15 - 19%. The use of AAC systems is very low. When the use of sign language was rounded off, it comprised less than 1% of the total population, with communication boards being used equally between the speaking and non-speaking population, 1%.

5.5.2.4 Understandability of communication

Figure 5.20 differentiates between how understandable the teachers found the speaking and non-speaking children's communication attempts. A rating scale of 1-5 was used, ranging from 1 indicating that communication is never understood to 5 indicating that communication is always understood.

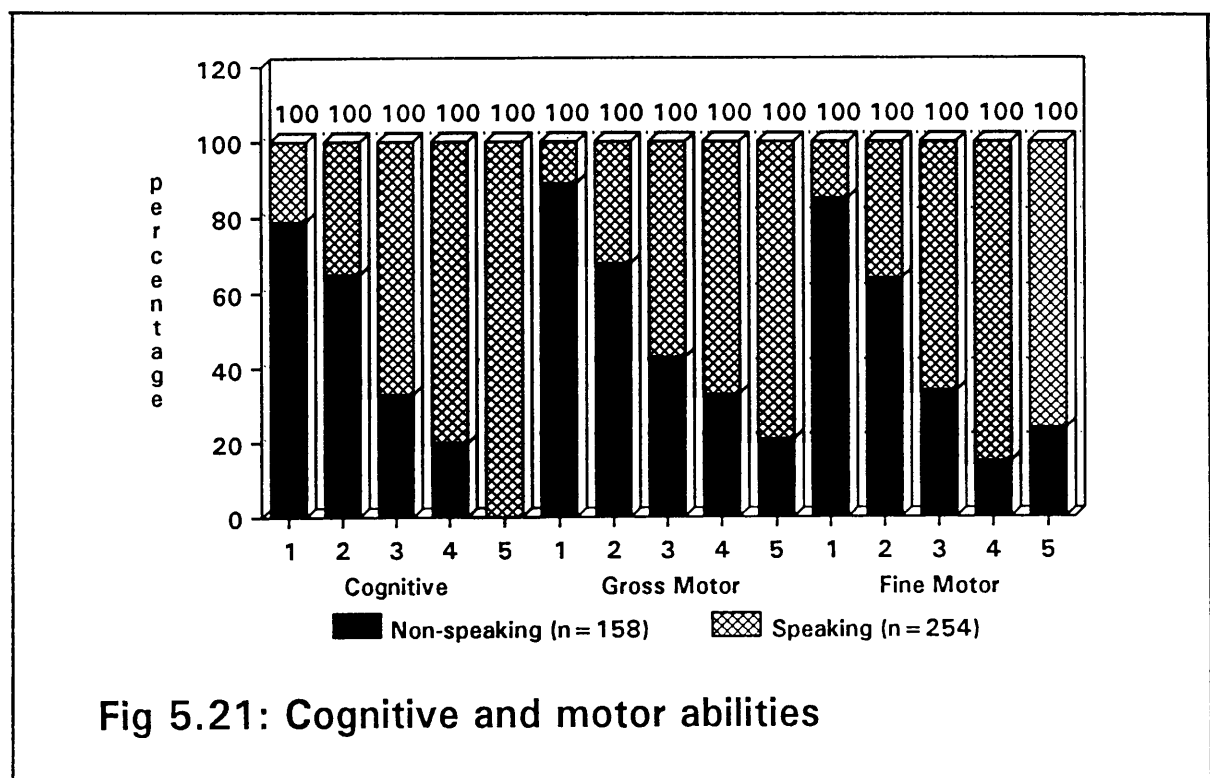


It is clear from Figure 5.20 that speech is a good indicator of the understandability of communication attempts. When communication was rated as mostly or always understandable (rating of 4 and 5 respectively), by far the majority of the children were in the speaking group. On the other hand, when communication was rated as never, sometimes or usually understandable (1, 2 and 3 respectively), the majority of children were non-speaking. It can also be seen that there was not one speaking child included in the survey whose communication was never understood.

5.5.3 Abilities

5.5.3.1 General abilities

The general abilities of the children are displayed in Figures 5.21 to 5.23. In all of the following figures related to abilities (Figure 5.21 - Figure 5.34) a rating scale of 1 to 5 was used. A 1 is indicative of very poor to almost no functioning, 2 of poor functioning, 3 of some functioning, 4 of reasonable functioning and a 5 of normal functioning for chronological age.



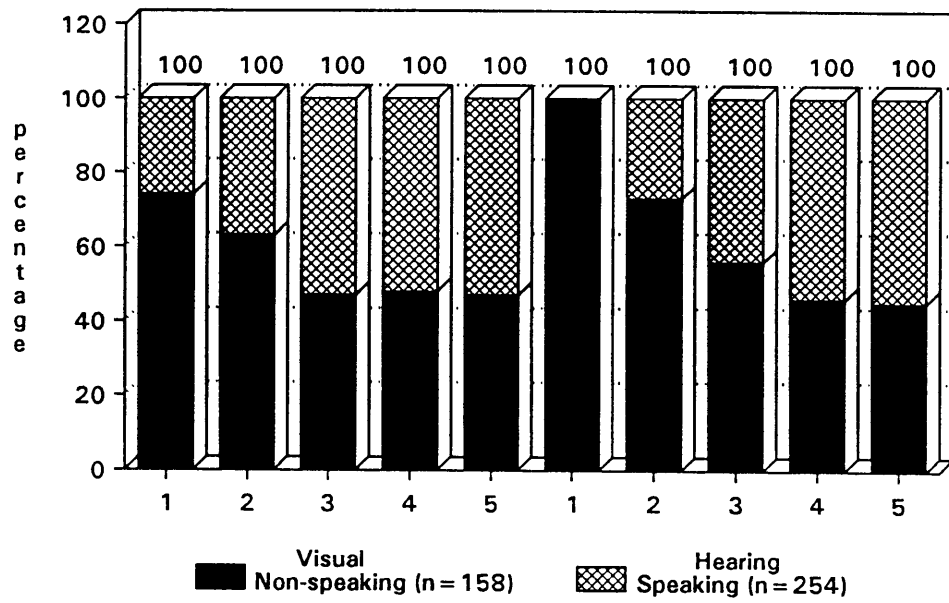


Fig 5.22: Sensory ability

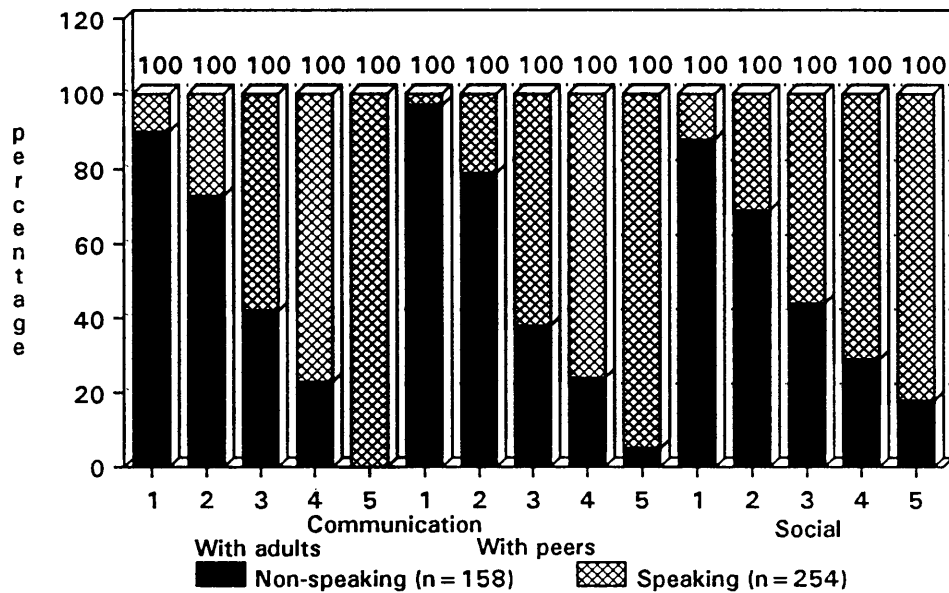


Fig 5.23: Communication and social

It is clear from the above figures that certain tendencies prevailed in all the different skill areas. Percentages displayed on the figures were calculated to be proportionally correct. It is clear that when functioning was very poor, the frequency of non-speaking children was very high, and this tendency showed a marked decline as speech ability increased. This trend, however, is not as strong regarding the sensory abilities of the children. Consequently, all the skill areas will now be discussed in more detail.

i. Cognitive ability

In Figure 5.24 a differentiation is made between the cognitive ability of the speaking and non-speaking children.

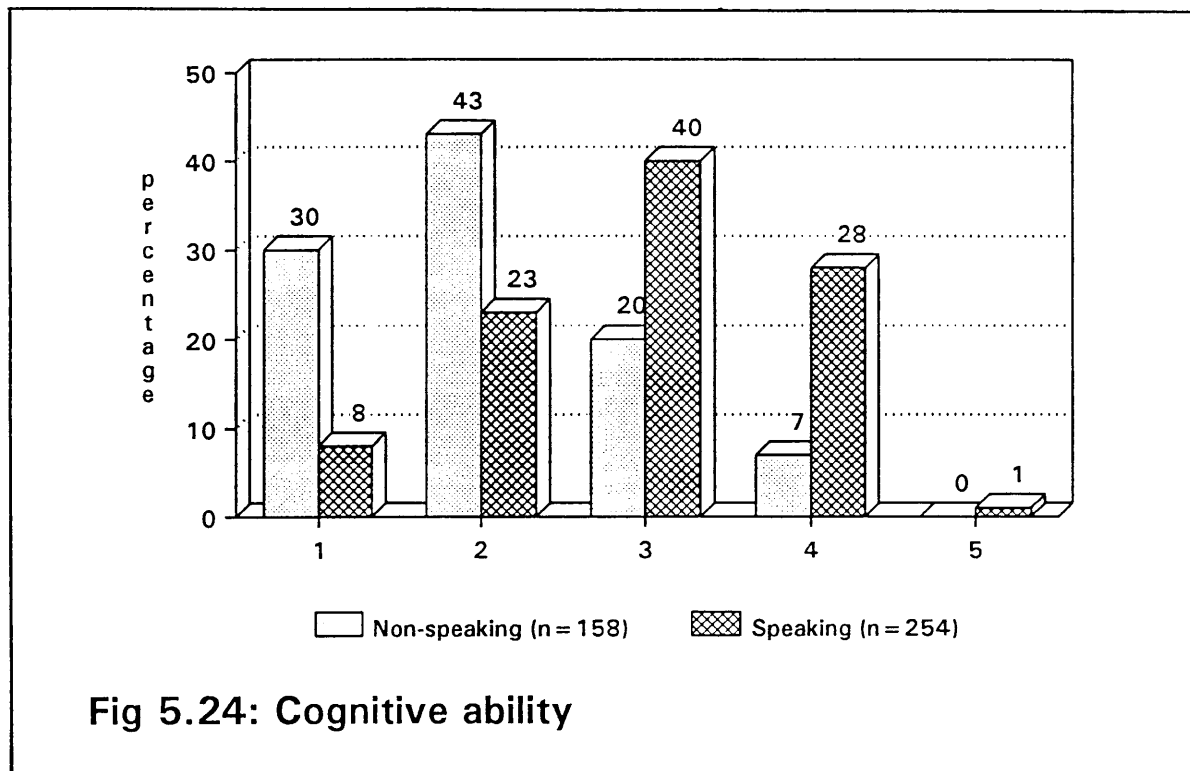


Figure 5.24 clearly shows that the majority of non-speaking children's cognitive ability was rated as poor, whilst the majority of speaking children's communication functioning was rated as having some function. Thus, the majority of non-speaking children represent

the very poor and poor functioning, whilst the majority of speaking children represent the top margin of the scale, being some or reasonable functioning.

ii. Gross motor ability

Figure 5.25 differentiates between the gross motor ability of the speaking and non-speaking children.

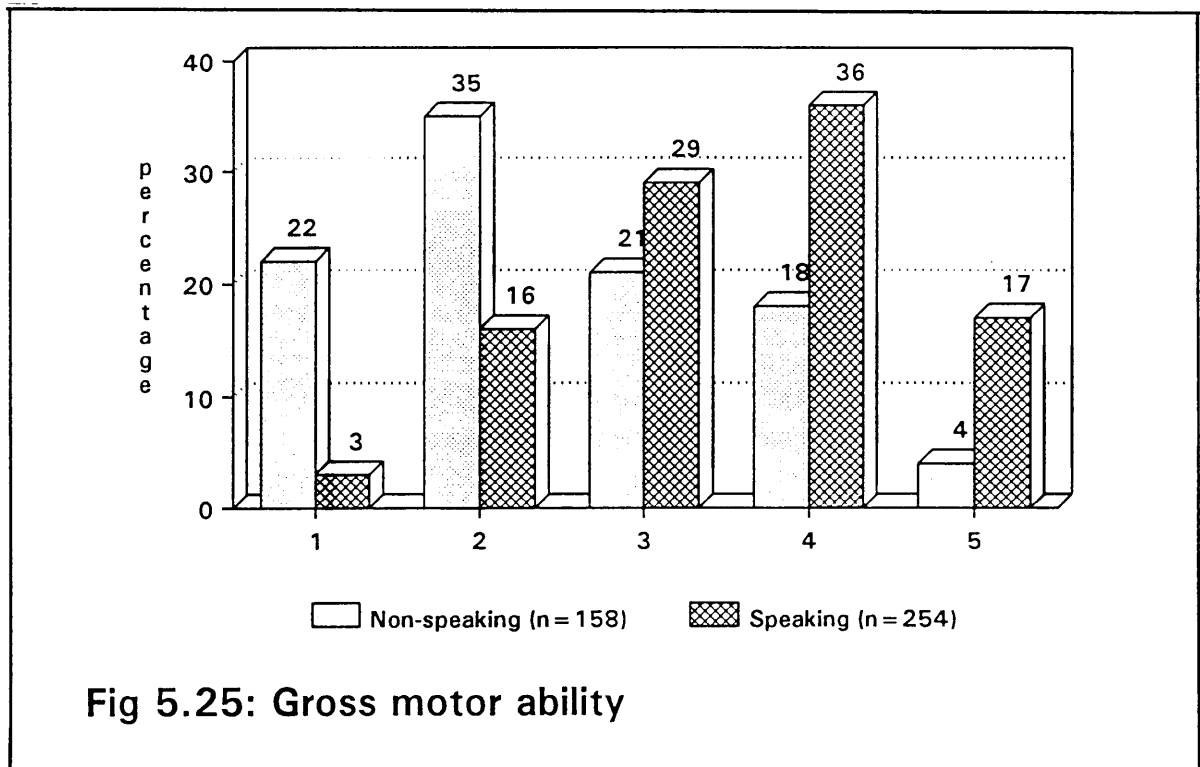
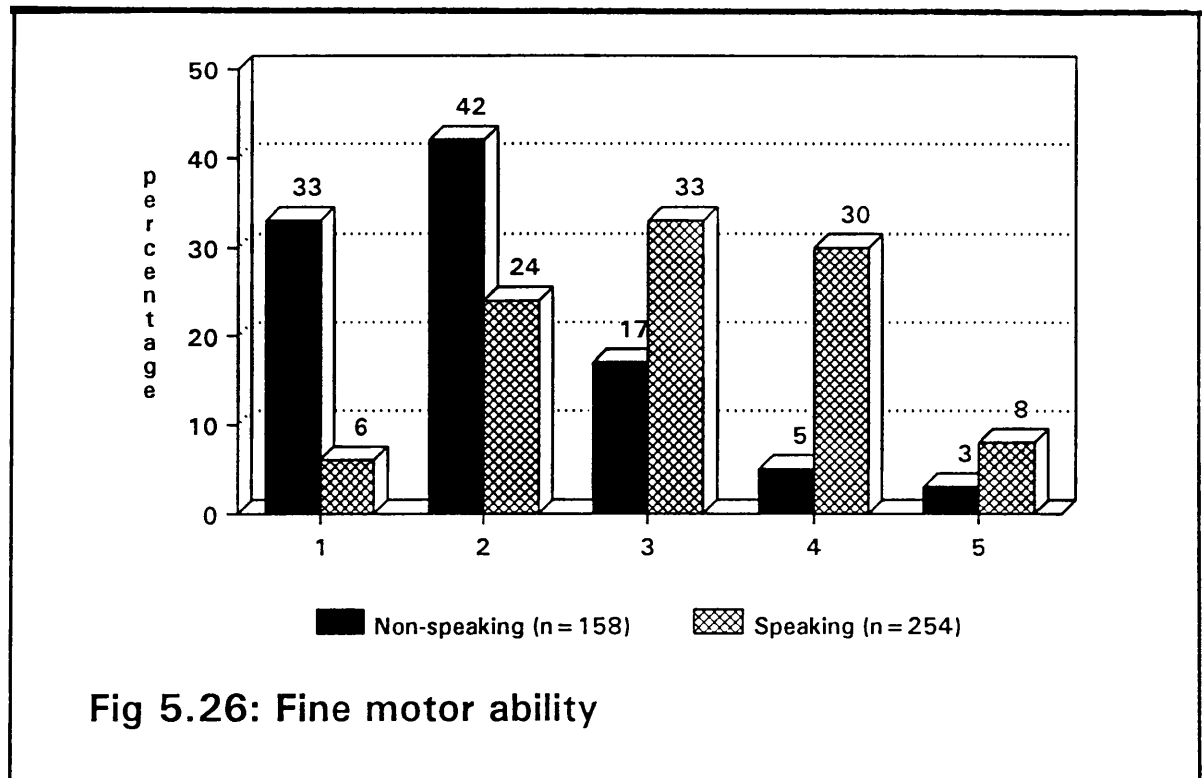


Figure 5.25 shows that as with cognitive ability, the majority of non-speaking children's gross motor functioning was rated as poor, whilst the majority of speaking children's ability was rated as reasonable. Functioning thus increased for the speaking children and decreased for the non-speaking children. The "*normal for chronological age*" group showed a low frequency for both the speaking and non-speaking groups of children.

iii. Fine motor ability

Figure 5.26 differentiates between the fine motor ability of the speaking and non-speaking children.



In Figure 5.26 it can be seen that fine motor ability shows the same tendency as gross motor functioning, except that the majority of speaking children's abilities were rated as having some functioning.

iv. Sensory ability

Figures 5.27 and 5.28 differentiate between the sensory abilities of the speaking and non-speaking children. The first graph presents visual ability and the latter auditory ability.

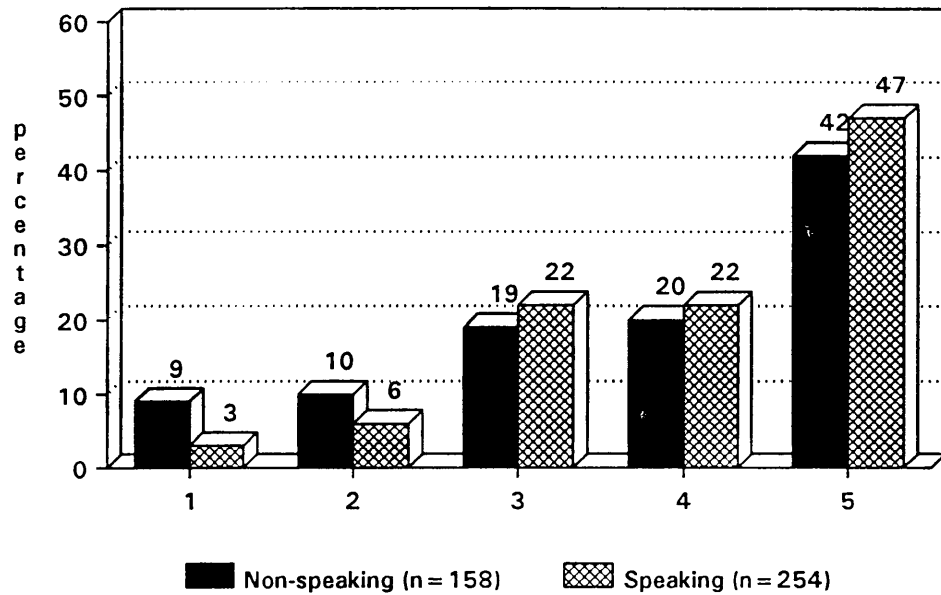


Fig 5.27: Visual ability

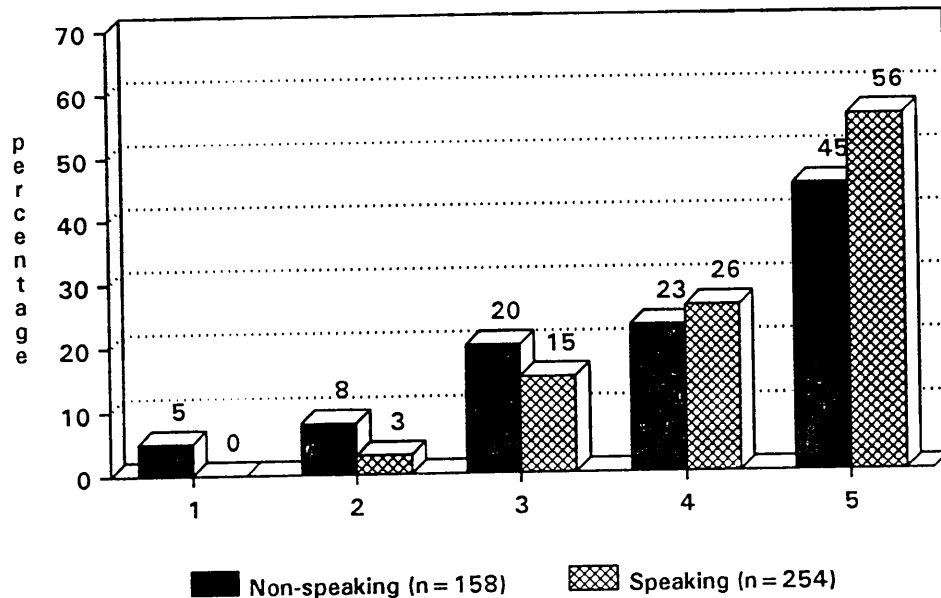
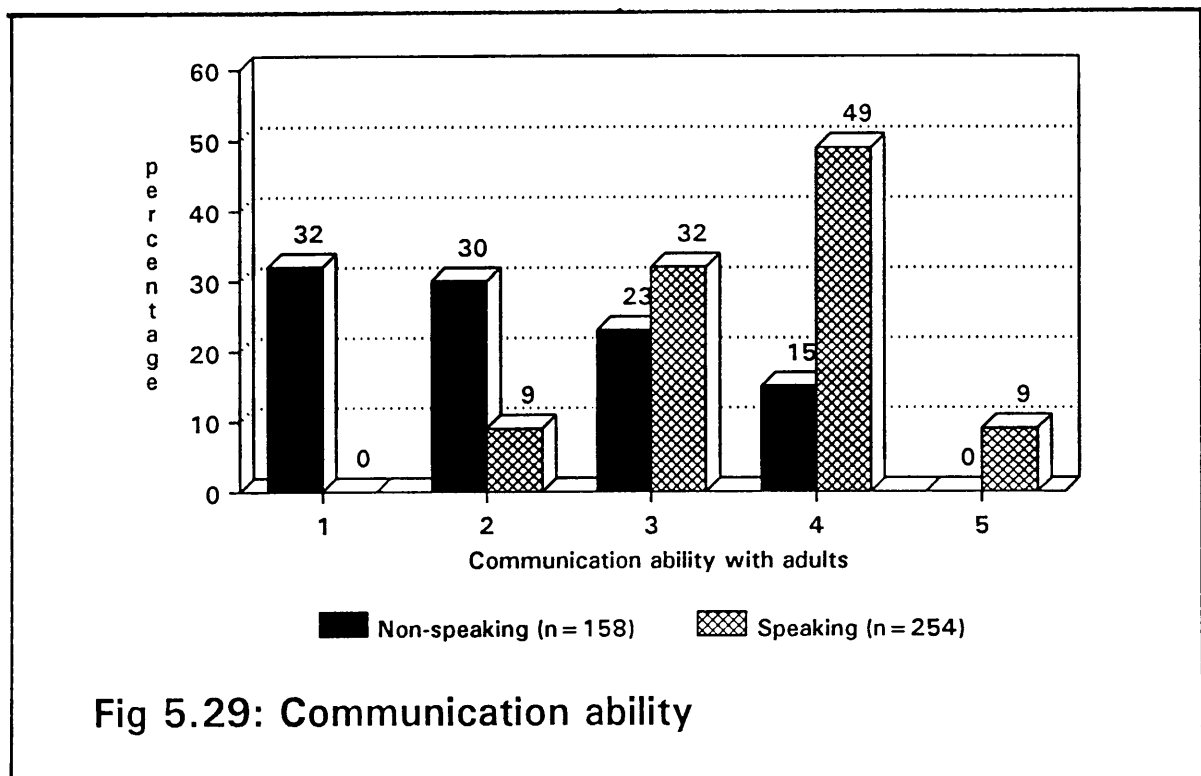


Fig 5.28: Hearing ability

The same trends can be observed in Figure 5.27 showing *visual ability* and in Figure 5.28 where *hearing ability* is shown. The frequencies for both the speaking and non-speaking groups of children are close together and both have an upward curve. The frequencies for very poor and poor ability are low in all instances, and the majority of children had normal sensory functioning for chronological age.

v. Communication ability

Figures 5.29 and 5.30 differentiate between the communication ability of the speaking and non-speaking children. Figure 5.29 refers to communication with adults and Figure 5.30 to communication with peers.



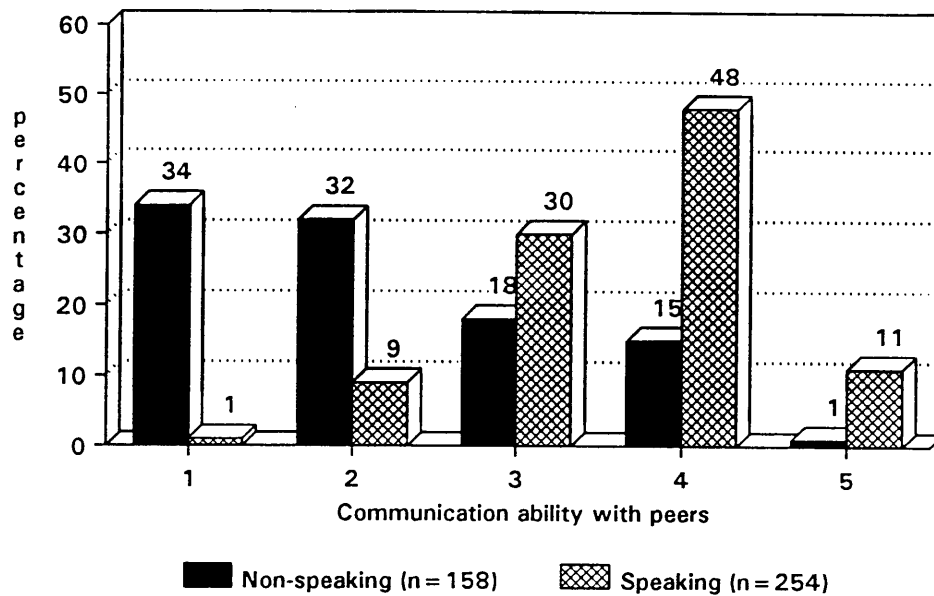


Fig 5.30: Communication ability

Figure 5.29 and Figure 5.30 are very similar. The majority of non-speaking children's communication abilities are rated as very poor to poor, with a decline to reasonable functioning. Compared to this, the speaking children's communication ability increased from very poor to reasonable functioning. Regarding normal for chronological age functioning, there was a decline in both groups.

v. Social ability

Figure 5.31 differentiates between the social ability of the speaking and non-speaking children.

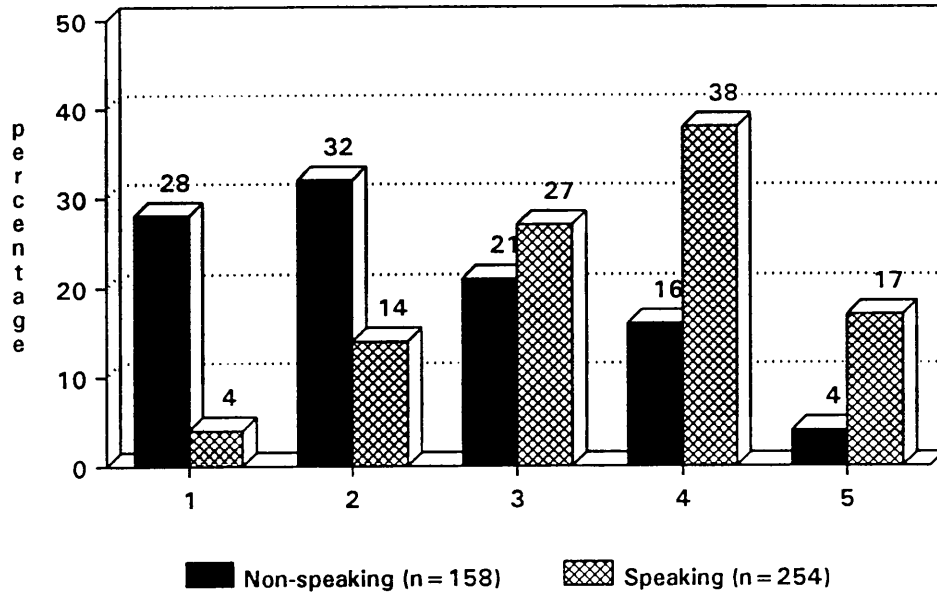


Fig 5.31: Social ability

From Figure 5.31 it is clear that as social ability increases, the number of non-speaking children decreases, whilst the number of speaking children increases. However, in the last group, indicative of normal functioning for chronological age, the number again decreases for both groups.

5.5.3.2 Reading ability

In Figure 5.32 a differentiation is made between the reading ability of the speaking and non-speaking children.

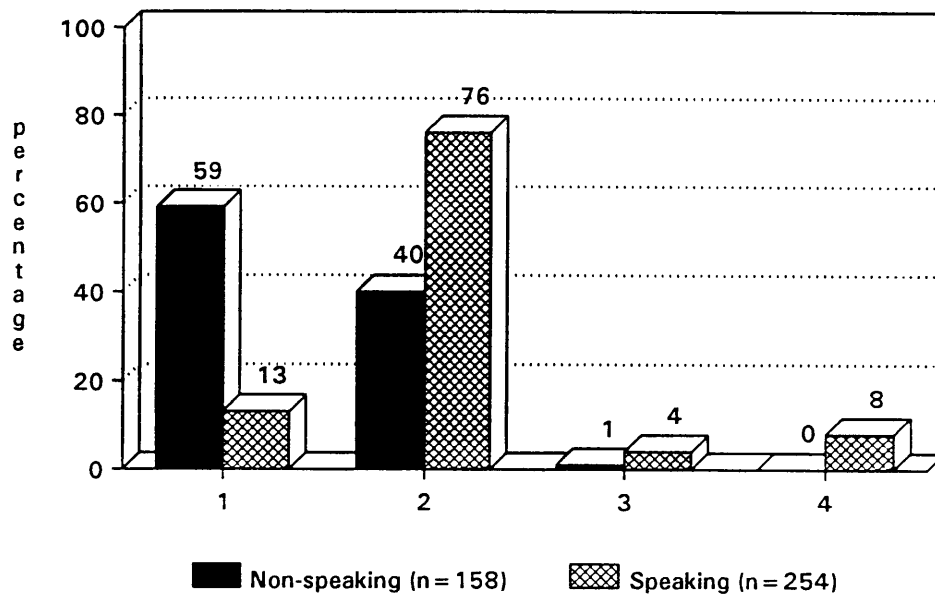


Fig 5.32: Reading ability

Figure 5.32 clearly shows that the majority of non-speaking children's reading ability was rated lower than that of the speaking children. However, the majority of reading skills for both groups remains very low, with only a very few children displaying some or reasonable functioning. None of the children displayed normal functioning for their chronological age (Rating 5).

5.5.3.3 Writing ability

Figure 5.33 differentiates between the writing ability of the speaking and non-speaking children.

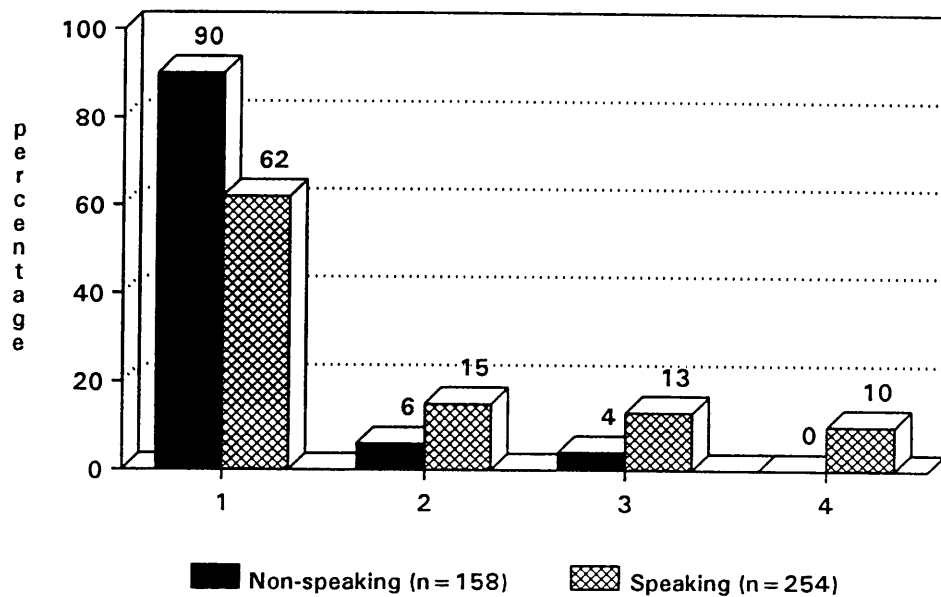


Fig 5.33: Writing ability

From Figure 5.33 it is clear that by far the majority of both speaking and non-speaking children had very poor writing abilities, namely 90% of the non-speaking population and 62% of the speaking population. Both the number of speaking children and non-speaking children decreased with an increase in writing ability. None of the children displayed normal functioning for their chronological age (Rating 5).

5.5.3.4 Mathematical ability

Figure 5.34 differentiates between the mathematical ability of the speaking and non-speaking children.

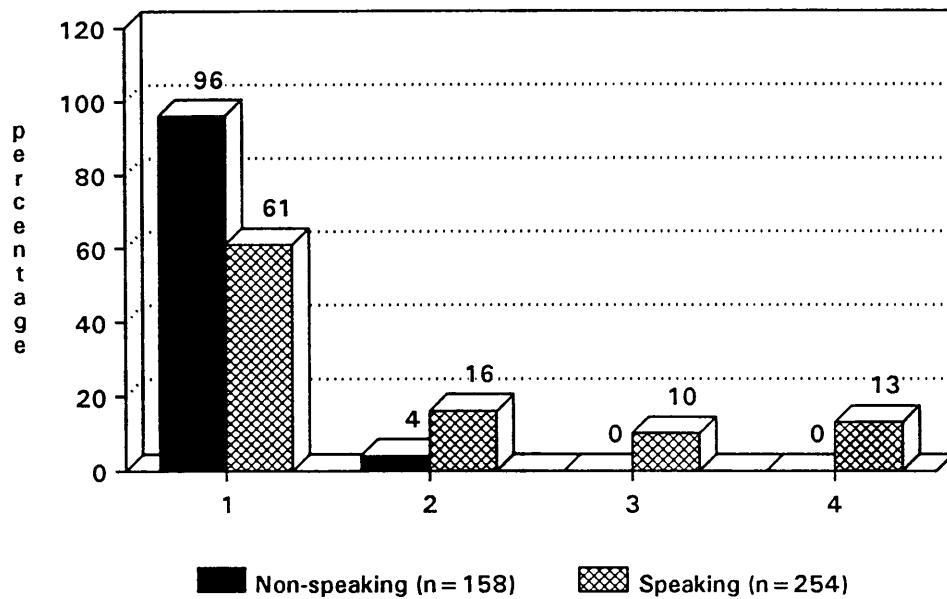


Fig 5.34: Mathematical ability

Figure 5.34 indicates that mathematical ability has similarities with Figure 5.33 (writing abilities). The non-speaking children all displayed very poor and poor mathematical abilities, with the majority being very poor (96%). The majority of speaking children also had very poor mathematical abilities (61%), but with some children having some functioning and reasonable functioning. None of the children displayed normal functioning for their chronological age.

5.5.4 Behaviour problems and epilepsy

In Figure 5.35 a differentiation is made between behaviour problems and epilepsy experienced by non-speaking children as opposed to speaking children.

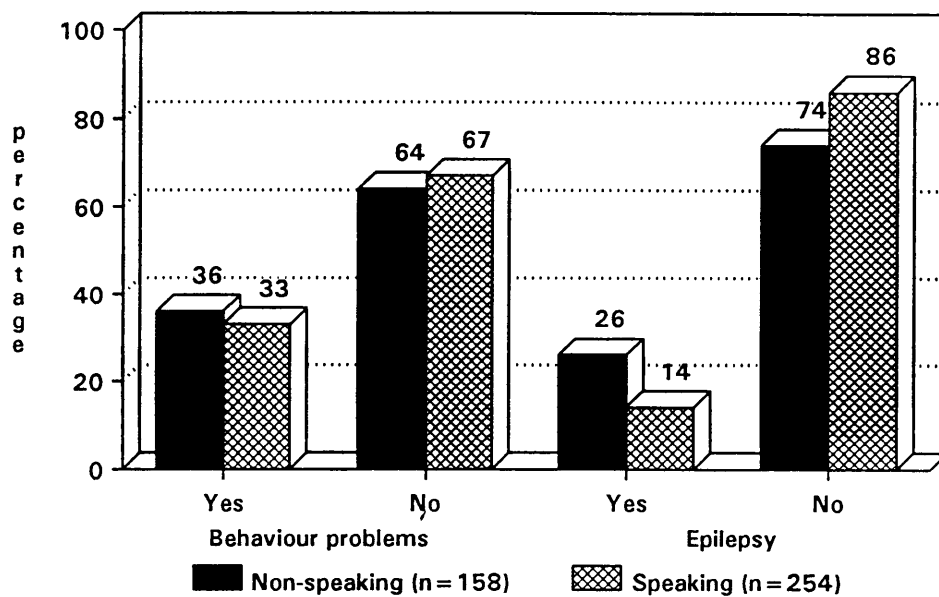


Fig 5.35: Behaviour and epilepsy

Figure 5.35 shows that the percentage of children with behaviour problems is very similar for both the speaking and non-speaking groups. However, the latter group displayed slightly more behaviour problems (36% as opposed to 33%).

Figure 5.35 also shows that the majority of children who had epilepsy were non-speaking (26%) when compared with the speaking group which only accounted for 14%. Further statistical procedures will be discussed in Section 5.6.3.

5.5.5 Therapy

Figure 5.36 differentiates between the type of therapy (speech, occupational or physio) received by the non-speaking as opposed to the speaking children as well as to whether the therapy was conducted on an individual or on a group basis.

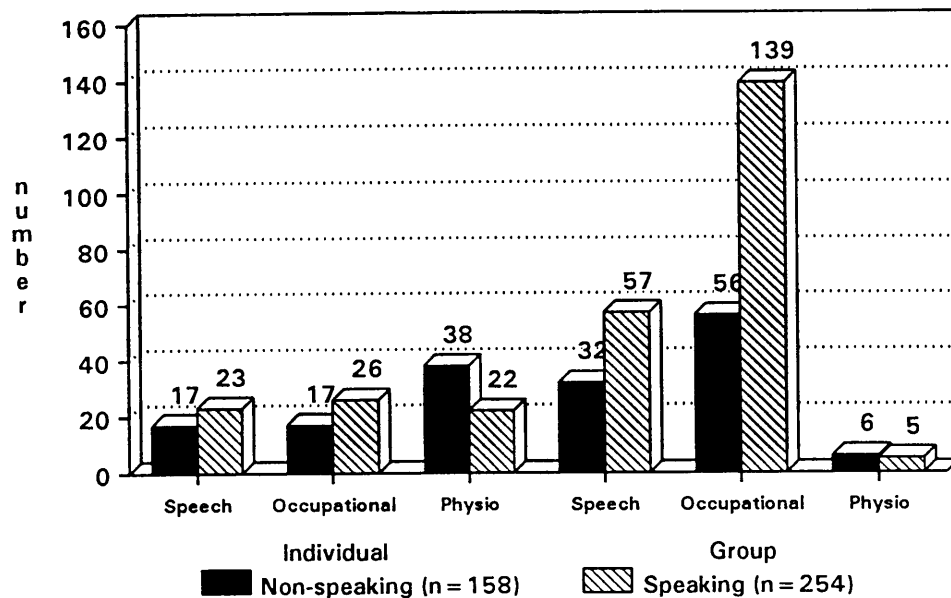


Fig 5.36: Type of therapy received

Figure 5.36 clearly shows that the majority of children received group speech and occupational therapy rather than individual therapy. However, regarding physiotherapy, the majority of children received individual therapy. It can further be noted that although more speaking children received individual speech and occupational therapy, the differences were not as great as was the case with group speech and occupational therapy. Regarding physiotherapy, the majority of children receiving services were non-speaking for both individual and group therapy.

5.6 PROFILE OF THE NON-SPEECH POPULATION

The Pearson chi-square test was administered to the data to determine whether there was a significant association between 2 variables. The 95% confidence level was taken as indicative of a significant association, and thus all probability scores higher than 0,05 indicates significance.

The chi-square test was administered to the data of all the non-speaking children (children speaking less than 15 words according to the definition used) and different variables. Of

the 23 variables that were tested against non-speech, 18 were significant. All the variables that were tested against non-speech are included in Table 5.6.

Table 5.6: Variables tested against non-speech

#	Variable	Probability $\leq 0,05$
1	Age	* 0,001
2	Gender	0,479
3	Home language	0,075
4	Place of residence	0,067
5	Primary care giver	0,488
6	Etiology	* 0,016
7	Communication desire	* 0,000
8	Receptive language ability	* 0,000
9	Coherent language ability	* 0,000
10	Means of communication	* 0,000
11	Understandability of communication attempts	* 0,000
12	Cognitive ability	* 0,000
13	Gross motor ability	* 0,000
14	Fine motor ability	* 0,000
15	Visual ability	* 0,000
16	Hearing ability	* 0,000
17	Communication ability : adults	* 0,000
18	Communication ability : peers	* 0,000
19	Reading ability	* 0,000
20	Writing ability	* 0,000
21	Mathematical ability	* 0,000
22	Behaviour problems	0,393
23	Epilepsy	* 0,002

All variables that indicated a significant correlation with non-speech on the 95% confidence level, was marked with an asterisk ().*

Table 5.6 clearly shows that the Pearson chi-square test indicated that the following variables had no significant association with non-speech: gender, home language, place of residence, primary care giver and behaviour problems. It was expected that behaviour problems would have a significant association with non-speech, but the probability score in this case was 0,393. As no significant interaction was found, further descriptive statistical procedures were not performed.

5.6.1 Background information

5.6.1.1 Gender

Although this chi-square test indicated that gender and non-speech had no significant association, these variables were further tested. When a binomial procedure (non-parametric test) was applied to the data, a value of ≥ 226 was found, which implies that there are significantly more boys than girls in the non-speech group. The ratio of 2:1 (male:female) which was found in the total severely handicapped population can also be seen for each individual group. Results are displayed in Table 5.7.

Table 5.7: Gender versus non-speech

Variable	% Boys	% Girls
Non-speaking group	68,35	31,65
Speaking group	64,96	35,96

All the variables that had shown significant interaction with non-speech in the chi-square test were further tested in order to determine the strength of the interaction. All the above-mentioned data that indicated significance will now be described in more detail.

5.6.1.2 Etiology of the non-speaking children

The chi-square test indicates that etiology is a significant predictor of non-speech. Results are shown in Figure 5.37.

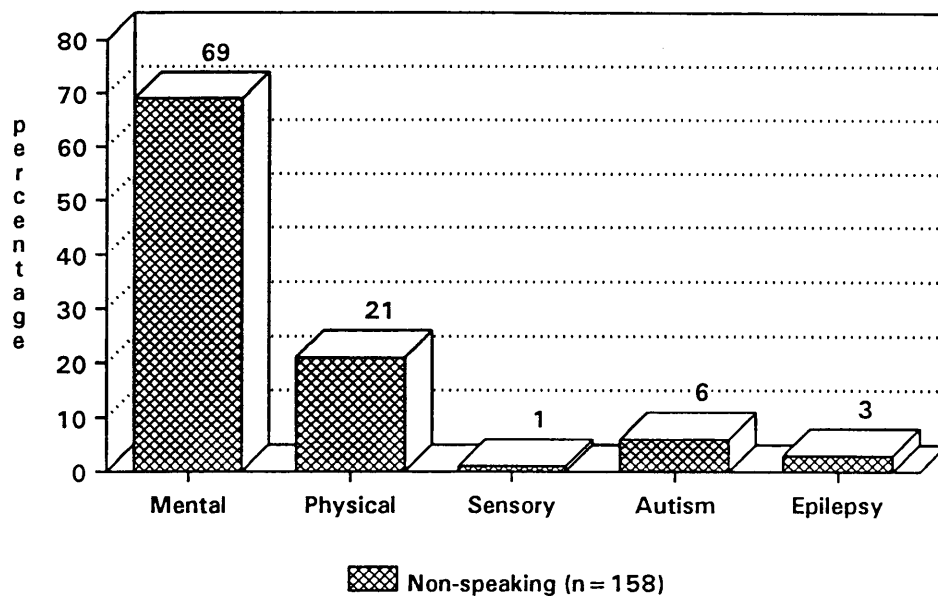


Fig 5.37: Etiology

When looking at the non-speaking children, it was found that the majority of children had a mental handicap (69%), followed by a physical handicap (21%). Autism was present in 6% of the non-speaking children, whilst 3% of them were epileptic. Deafness and blindness were grouped together, and accounted for only 1%. It is, however, important to note that this data can not be applied to the total non-speaking population, but is only representative of the non-speaking children in schools for children with mental handicaps.

5.6.2 Communication of the non-speaking children

Table 5.8 describes the results obtained where the variables related to communication were tested against non-speech by means of the loglinear model.

Table 5.8: Communication abilities of the non-speaking children

Variable	Speaking or non-speaking	z-Values ($z = \geq \pm 2,58$)				
		Very poor	Poor	Some	Reasonable	Normal
Receptive language	NS S	* 7,177 -7,177	* 3,052 -3,052	*-3,456 3,456	*-4,645 4,645	-1,366 1,366
Ability to speak sentences	NS S	* 8,545 -8,545	0,135 -0,135	*-3,047 3,047	-3,738 3,738	-0,706 0,706
Understandability of communication attempts	NS S	* 2,758 -2,758	1,885 -1,885	0,971 -0,971	*-4,645 4,645	-1,366 1,366

All variables that indicated a significant correlation with non-speech on a 95 % confidence level, was marked with an asterisk ().*

The interaction between non-speech and receptive language is highly significant. In cases where the SHC displayed very poor or poor receptive language skills, they significantly spoke less than 15 words, and when they displayed some to reasonable function, they significantly spoke more than 15 words.

When looking at the children's ability to speak sentences, it was found that children who were rated as non-speaking had a very poor ability whilst children speaking more than 15 words were rated as having some function.

Regarding how understandable teachers rated the children's communication attempts, it was found that the understandability of the non-speaking children's attempts were rated as very poor, whilst the understandability of the speaking children's communication attempts were rated as reasonable.

When looking at the Pearson chi-square test, a significant interaction between means of communication and non-speech was found (See Table 5.6). Results are shown in more detail in Figure 5.38.

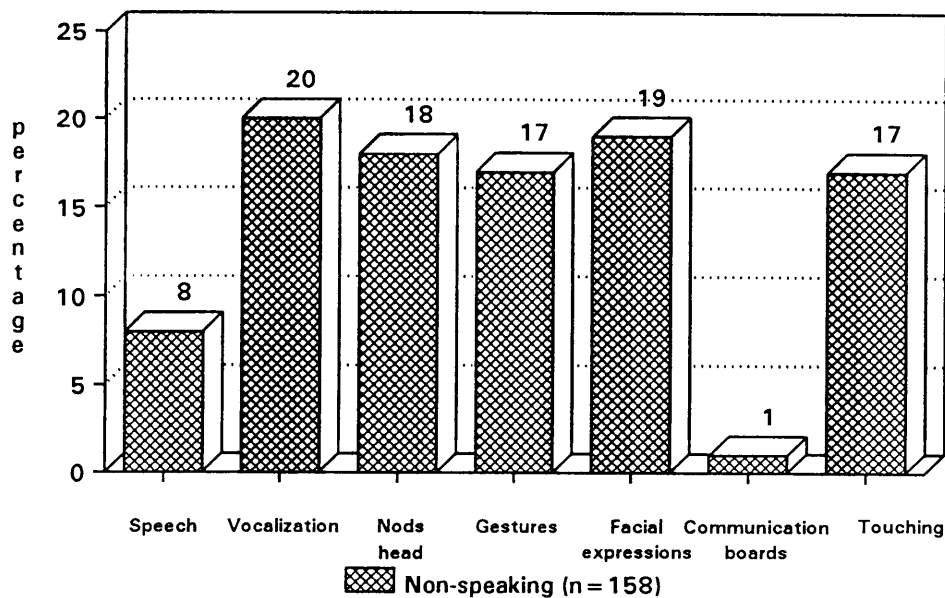


Fig 5.38: Means of communication

The use of AAC systems (sign language, typing or writing and communication boards) occurred significantly infrequently in the non-speaking population. Together they were present in only 0,79% (which was rounded off to 1%) of the time in relation to the other communication means that were present at least 8% of the time. The second lowest means of communication is that of understandable speech (8%). These two variables are significantly lower than the third lowest means of communication, touching and gestures which are both present in 17% of the cases. The non-speaking children used vocalizations as their most frequent means of communication (20%) followed by facial expressions (19%) and head nodding to indicate yes/no (18%).

5.6.3 Abilities of the non-speaking children

The loglinear model was applied to various contingency tables related to the children's abilities in order to determine the strength of the interaction between communication and non-speech. Results are displayed in Table 5.9.

Table 5.9: Correlation between non-speaking children and their abilities

Variable	Speaking or non-speaking	z-Values ($z = \geq \pm 2,58$)				
		Very poor	Poor	Some	Reasonable	Normal
Cognitive ability	NS S	* 4,044 -4,044	2,472 -2,472	1,187 -1,187	*-2,724 2,724	-0,706 0,706
Gross motor ability	NS S	* 5,576 -5,576	* 3,167 -3,167	-1,860 1,860	*-3,738 3,738	*-4,081 4,081
Fine motor ability	NS S	* 7,118 -7,118	* 3,903 -3,903	-1,810 1,810	*-4,668 4,668	-1,898 1,898
Hearing ability	NS S	2,111 -2,111	0,309 -0,309	-1,623 1,623	*-2,787 2,787	*-3,146 3,146
Communication ability : adults	NS S	* 5,461 -5,461	*2,849 -2,849	-0,974 0,974	*-3,271 3,271	*-2,993 2,993
Communication ability : peers	NS S	* 6,576 -6,576	*4,148 -4,148	-2,065 2,065	*-4,412 4,412	*-3,772 3,772
Social ability	NS S	* 6,342 -6,342	*3,564 -3,564	-1,322 1,322	*-4,162 4,162	*-4,163 4,163
Reading ability	NS S	* 5,534 -5,534	0,694 -0,694	-0,576 0,576	-2,141 2,141	
Writing ability	NS S	* 4,303 -4,303	0,765 -0,765	0,223 -0,223	-1,993 1,993	
Mathematical ability	NS S	* 4,759 -4,759	1,092 -1,092	-1,293 1,293	-1,475 1,475	
Epilepsy	NS S	<i>Normal</i>	<i>Petit mal</i>	<i>Grand mal</i>	<i>Both</i>	
		-0,885 0,885	* 3,037 -3,037	0,278 -0,278	-1,307 1,307	

All variables that indicated a significant correlation with non-speech on the 95% confidence level, was marked with an asterisk ().*

Results from Table 5.9 show that children whose cognitive ability was rated as very poor significantly spoke less than 15 words. On the other hand, children who were rated as having reasonable cognitive functioning significantly spoke more than 15 words.

The loglinear model displayed in Table 5.9 also shows that for both gross and fine motor ability there was a significant interaction between these motor abilities and non-speech. Results indicated that with very poor and poor gross motor functioning SHC significantly

spoke less than 15 words, and with reasonable to normal functioning children significantly spoke more than 15 words. SHC who were rated as having very poor or poor fine motor abilities significantly spoke less than 15 words whilst children with reasonable fine motor abilities significantly spoke more than 15 words.

On the chi-square test it was found that visual ability had no significant interaction with non-speech and thus no further testing was done. However, hearing ability indicated a significant interaction, and thus the strength of the interaction could be established with the loglinear model. Results, as displayed in Table 5.9 indicated that when hearing ability was rated as reasonable or normal for chronological age, the children significantly spoke more than 15 words.

The loglinear model also showed a significant interaction between communication (with both adults and peers) and social ability with non-speech, as displayed in Table 5.9. When communication ability with adults was rated as very poor to poor, children significantly spoke less than 15 words, and when communication ability was rated as reasonable to normal, children spoke significantly more than 15 words. Exactly the same tendency was found in the case of communication with peers, but the significance was even stronger in the latter case. A highly significant interaction between non-speech and social ability was also found. Children who spoke less than 15 words were regarded as having very poor to poor social ability, and children speaking more than 15 words were rated as having reasonable to normal social ability.

In addition, the loglinear model was also applied to contingency tables related to reading, writing and mathematical abilities to determine the strength of the interaction. The results are also shown in Table 5.9.

Results showed that children with very poor reading skills (no interest in books) spoke significantly less than 15 words. Similarly, when examining writing skills, results indicated that children who had very poor writing skills (no interest in writing) significantly spoke less than 15 words. The same trend was observed with mathematical abilities when it was found that children who had very poor mathematical abilities, significantly spoke less than 15 words.

Finally, the strength of the association between non-speech and epilepsy was further investigated. The Pearson chi-square test showed that there was an interaction between non-speech and epilepsy (See Table 5.6). However, when the loglinear model was applied to the contingency table, it indicated that only children who had petit mal significantly spoke less than 15 words, as seen in Table 5.9. This might be due to the fact that petit mal is often untreated with medication, or that the petit mal was only part of the total challenge facing the child.

5.7 SUMMARY

This chapter presented the findings of the research. The following key issues were noted:

5.7.1 Total severely handicapped population

When describing the total 412 children included in the survey, the following was found:

5.7.1.1 Communication abilities

- By far the majority of all the SHC showed a desire to communicate, namely 93,9%.
- The majority of children had poor receptive language ability (34,2%).
- Receptive language ability had a positive correlation with cognitive functioning and communication ability.
- The most frequently used means of communication was speech (20%), followed by facial expressions (18,2%). The use of AAC systems was significantly low : 0,6% of the children used communication boards, 0,2% used formal sign language and none used typing or writing.
- The more different means of communication (e.g. speech, vocalizations, gestures etc.) the children used, the better the teachers understood their communication attempts.
- In 35,5% of the time teachers understood the children's communication attempts less than "*usually*".

5.7.1.2 General abilities and behaviours

- Cognitive and motor skills were mostly rated as "*some functioning*" (Rating 3).
- Communication and social abilities showed a steady increase from "*very poor functioning*" to "*reasonable functioning*" (Rating 1-4).
- Regarding reading skills, the majority of children had poor functioning (Rating 2), but with writing and mathematical abilities the majority had very poor functioning (Rating 1).
- 66,2% of the children received some form of therapy.

5.7.2 Non-speaking population

When looking at the non-speaking children as a group within the total population, the following aspects were noted :

5.7.2.1 Background information

- 38,3% of the total severely handicapped population was non-speaking.
- As in the case of the total population, the male:female ratio remained approximately 2:1.
- Non-speaking children were present in all the different age groups, with the majority being 9 years old. Children younger than 6 years were mostly non-speaking.
- The major etiology was mental handicap (69%), followed by the physically handicapped group (21%).

5.7.2.2 Communication

- Poor receptive language abilities correlated with non-speech.
- Non-speaking children used AAC systems only 0,79% of the time.
- Understandability of communication was rated as very poor for non-speaking children.

5.7.2.3 General abilities and behaviours

- Positive correlation between poor abilities in all the different skill areas (cognitive, motor, communication and social) and non-speech was present.
- Non-speaking children had a significant correlation with very poor reading, writing and mathematical abilities.

A detailed integration and discussion of the results are provided in Chapter 6.

CHAPTER 6

INTEGRATION AND DISCUSSION OF RESULTS

6.1 INTRODUCTION

From the results obtained and outlined in Chapter 5, a few key points emerged which are discussed in this chapter. The aim of this chapter is to discuss and integrate the results related to the prevalence, characteristics, abilities and service delivery needs of the non-speaking children within the theoretical context described in the previous chapters, and the surveys discussed in Chapter 3, Section 3.5. The focus of this chapter, however, is on the non-speaking children, but where needed (e.g. skill areas and communication abilities), a comparison is made between speaking and non-speaking children in order to provide a clear understanding of the context in which the data was obtained.

6.2 NON-SPEAKING CHILDREN

6.2.1 Prevalence

The high prevalence of non-speaking children between the ages of 3 - 12 years, in schools for children with mental handicaps was the most significant factor in this research. The survey indicated that 38,3% of children in these schools were non-speaking. This implies that 158 of the total 412 children included in the survey, were non-speaking (See Figure 5.3). This figure is significantly higher than those of other international surveys. In the Washington survey it was found that 3,5 - 6% of all children in special education are non-speaking (Matas *et al.*, 1985:20). The lower incidence of non-speaking children (3,5%) was found in urban schools, and 6% in rural/remote schools. The present survey used only urban schools which means that the number of non-speaking children could have been even higher if rural schools had been included in the survey, as reported in other surveys (Matas *et al.*, 1985:26; Aiello, 1980:8).

A problem in describing the non-speaking population is that of inclusion and exclusion

criteria (See Chapter 4, Section 4.5.1.1). As children in schools for children with sensory handicaps (deafness or blindness) were excluded, the prevalence of the non-speaking population might have been underestimated (Burd *et al.*, 1988:372). In the Washington survey, numbers were calculated for both including and excluding the sensory impaired group. It reported that with the deaf group included, this population represented a third of the non-speaking children in special education (Matas *et al.*, 1985:23). Therefore the prevalence of non-speaking children in special education within the geographic area might have been underestimated due to the exclusion of schools for sensory handicapped children.

The children's ability to speak (which classified a child as speaking or non-speaking) was rated by teachers who had taught the children for at least 8 months. They were therefore in a favourable position for understanding the children's communication attempts. This factor could also have influenced the prevalence rate and caused an underestimation. Other studies found that more than 60% of speech impaired people were described as being ineffective in communication with strangers (Coon *et al.*, 1992:10). This factor has implications for the present study, as 38% of the children were rated as non-speaking by teachers familiar with them. Figures could have been even higher if strangers had been used to rate this ability. The ability to communicate with strangers is important as this leads to social integration and the enhancement of the individual's life.

The high prevalence rate raises the question as to the cause of this phenomenon. It might have been due to factors related to attitudinal problems and low expectations from teachers working with non-speaking children. As teachers and therapists expect less from non-speaking children than from speaking children, they spend less instruction time with the non-speaking children (Penderis, 1994:20). In addition, teachers working with non-speaking children often do not have specialized training and knowledge regarding teaching strategies with this population (Shrewsbury, Lass & Joseph, 1985:296). The specialized training of teachers will be discussed in Section 6.5. The fact that teachers do not know how to train non-speaking children, will be discussed in more detail later in this chapter. The result is that these children often do not only receive less instruction, but the quality of the instruction is also limited.

No other studies on non-speaking children in special education in less developed countries were found. Factors, specifically related to less developed countries such as social and economic disadvantages and access to palliative resources (e.g. rehabilitation programmes and appropriate social support) might have influenced the high prevalence rate (Yach, 1991:29). Social problems such as the high rate of violence result in more severe disabilities. In South Africa, 52 people are killed daily in acts of violence, and for every one person killed, three more are disabled (UNICEF, 1993:50). Furthermore, there are a number of factors related to poverty that contribute to disability, namely preventable diseases (e.g. polio and measles), inadequate health facilities in poor communities, inappropriate birth spacing, overburdened mothers weakened by work loads, absent fathers and lack of child care skills (UNICEF, 1993:50). Apart from the above-mentioned factors, the incidence of child abuse and neglect, as well as sexual abuse further contribute to the problem. Finally, the lack of preventative measures, inadequate facilities for early detection, diagnosis, assessment and service delivery greatly contribute to the high prevalence as well as the severity of disabilities.

The terminology that was used in the study to describe the non-speaking population was similar to that of Burd *et al.* (1988:373) who quantified "*non-speaking*" as speaking 15 or less intelligible words. Teachers reported no difficulties in rating this ability, consequently terminology could not have influenced the prevalence figures.

6.2.2 Descriptive characteristics

6.2.2.1 Age

The majority of non-speaking children included in the survey were 9 years old, with a greater distribution at ages higher than 9, indicating that more children were older, rather than younger than 9. As in the North Dakota survey, the present survey also showed a decline in non-speaking children at the age of 7 (Burd *et al.*, 1988:377). The factors responsible for this decline need further investigation.

The influence of intervention on the non-speaking status of the children is also a factor that requires further exploration. Questions raised were whether the 7 year old children were a subgroup that responded exceptionally well to intervention and whether this decline at

7 years of age would have occurred in the absence of intervention (Burd *et al.*, 1988:377). Apart from the influence of intervention, the high percentage of children who received no kind of intervention might also have influenced these results. As intervention is a very important factor, it will be discussed in more detail in Section 6.5.

International prevalence data by Burd (1988:377) suggests that changes in oral communication in special schools are unlikely after the age of 7. As the highest percentage of non-speaking children in this survey was older than 7 years, the data could suggest that the possibility of changing from non-speaking to speaking is slight. Another factor that also indicates that the possibility of changing from speaking to non-speaking is slight, is the fact that other surveys have found that a lack of speech by school entry is predictive of a poor outcome (Burd *et al.*, 1988:371). Therefore emphasis on AAC systems should be a priority in special schools as such a high percentage of children within these schools are AAC candidates.

6.2.2.2 Gender ratio

The male:female ratio in the present survey was 66,3% males and 33,7% females in the total population. When looking at the male:female distribution in the speaking and non-speaking groups separately, it remained approximately 2:1. In other surveys, the male:female ratio was not as big as in this survey, e.g. 57,8% males and 41,5% females (Bloomberg *et al.*, 1990:54), 61% males and 39% females (Murphy *et al.*, 1993:23) 61,6% males and 38,4% females (Coon *et al.*, 1992:6). Consequently it can be stated that in this study significantly more boys than girls were described as non-speaking (See Chapter 5, Section 5.6.1.1). When the male:female ratio was examined within the different age groups, the ratio of approximately 2:1 could be seen throughout all the age groups, except for the youngest (3 year olds) and oldest groups (13 year olds). This might have been due to the fact that these two groups had relatively few children. The fact that there were significantly more boys than girls in the present survey might be due to the traditionally male dominated society in South Africa (UNICEF, 1993:23).

6.2.2.3 Etiology

Due to the methodology that was used, the data reflecting etiology was biased. As only

schools for children with mental handicaps were used the majority of children were, as expected, mentally handicapped (See Chapter 4, Section 4.5.1.1). The mentally handicapped children accounted for 72,5% of the total population in this study, of which 38% were non-speaking. In a study conducted by Aiello (1980:7) it was found that the majority of non-speaking children were categorized as severely/profoundly mentally retarded or multiply handicapped. This finding was supported by results from the Washington survey which reported that 100% of the multiply handicapped, and 100% of the severely/profoundly mentally retarded children were non-speaking (Matas *et al.*, 1985:20). The North Dakota survey which reported that 82% of the non-speaking children functioned within the profound/severe mental retardation range, further supported the above-mentioned finding (Burd *et al.*, 1988:377).

Furthermore, after a comprehensive ACN survey Blackstone (1990:2) reported that school-age children who are "*non-speaking*" are likely to be multiply handicapped (45%) and/or retarded (42%). Consequently, due to the above-mentioned results from other surveys, it can be hypothesized that, even if not only schools for severely mentally handicapped children had been included in this survey, mental retardation would still have been the most frequent etiology associated with non-speaking school-age children.

6.2.3 Abilities in the different skill areas

It is clear from the results obtained in the present survey that although there was a variation regarding the abilities of the SHC in the different skill areas (motor, cognitive, sensory, communication and social), certain tendencies prevailed. In this discussion a differentiation between the non-speaking and speaking group will be made.

The data from this survey indicated that when speaking and non-speaking children's abilities were compared, non-speaking children were rated as having significantly poorer abilities than the speaking children. As the abilities in the different skill areas increased, the percentage of non-speaking children decreased (See Figure 5.21 - Figure 5.34).

This finding might suggest that the abilities of the non-speaking children might have been underestimated due to the fact that teachers do not understand these children well. The

present survey reported that when children were never, sometimes or usually understood, the majority of children were non-speaking (See Figure 5.20). Speaking children, on the other hand, were mostly or always rated as being understandable. As many teachers had not received specialized training in handling non-speaking children (See Figure 4.3), and had limited exposure to AAC strategies, their understanding and awareness of the non-speaking children's communication attempts were limited. This can result in negative attitudes regarding non-speaking children (Shrewsbury, *et al.*, 1985:295). This attitudinal problem might be reflected in the fact that teachers rated the abilities of the non-speaking children as much lower than those of the speaking children.

A number of children who were included in the survey were multiply handicapped, although the types and degrees of handicap varied. Some children were mentally as well as physically handicapped. Due to physical limitations, these children are often unable to explore their environment, which deprives them of experiences which further restricts their cognitive development. Apart from the physical limitations, the non-speaking children have very restricted communication opportunities and limited access as they are unable to make demands verbally, and non-verbal demands are overlooked. Due to the interrelatedness of all the different skill areas, a vicious circle of limited access which leads to limited opportunities and deprivation is started.

As confirmation of the above, the poor communication skills of the non-speaking children inevitably lead to poor social skills. It was clear from the results that the non-speaking children's social abilities were mostly rated as "*poor*" and "*very poor*" whilst the majority of speaking children's abilities were rated as "*good*" (See Figure 5.31). This might be due to the fact that communication attempts from the non-speaking children are ignored, overlooked or misinterpreted, which results in poor understanding of their intentions. This in turn, leads to increased isolation.

Unlike the results from the other skill areas, sensory abilities (visual and hearing) were very alike for the speaking and non-speaking children (See Figures 5.27 and 5.28). The very low percentages at "*very poor*" and "*poor*" ability indicated that the majority of children did not experience sensory problems. This is due to the fact that children with a primary sensory handicap were excluded from the survey. Thus, in all the children with a sensory handicap, it was only part of the multiple handicap.

6.3 COMMUNICATION ABILITY

Although emphasis is placed on non-speaking children in the discussion of communication abilities, reference is made to the total group of severely handicapped children included in the study, in order to form an understanding of the context in which the data was collected.

Firstly, different means of communication will be discussed. When looking at the high percentage of non-speaking children, it can be expected that the number of children who use some sort of AAC system to compensate would also be high, but this was not the case. The use of any AAC system, aided or unaided (sign language, typing, writing or communication boards in any form) occurred infrequently in the total group of severely handicapped children. As described in Chapter 5, Section 5.6.2 AAC systems were only present in 0,79% of the cases. None of the non-speaking children used typing, writing or high technology systems.

The lack of AAC systems in the schools included in the survey is a cause of great concern, as by far the majority of non-speaking children (89%) indicated a desire to communicate (See Figure 5.16), and would therefore have benefited from AAC intervention strategies.

There was a great difference in the results between international surveys and those obtained in the present survey regarding AAC use. In the Washington survey it was reported that at least 18% of the children in special education used some type of AAC system, whilst 23,3% were being trained to use an AAC system (Matas *et al.*, 1985:21). The other 29,2% were using only unintelligible speech and although the rest of the children met the minimal criteria for using an AAC system, they were in need of initial or follow-up evaluations.

When looking at the use of aided systems, such as communication boards with either tangible objects, pictures, line drawings or symbols, they were reported in 0,79% cases in the present survey which was rounded off to 1% (See Figure 5.19). In the German study, as in the present one, the use of symbol systems, e.g. Blissymbols is very low (4%) and the researchers postulated that symbol systems are either unknown or unavailable

(Coon *et al.*, 1992:2). Although Germany is viewed as a more developed country, it has certain similarities with South Africa, a less developed country, regarding AAC. AAC is a new field in both countries and not widely used in either. However, although these similarities exist, Germany is in a more favourable position, as they already acknowledge the value of AAC strategy implementation. As previously discussed, much advocacy is still needed in South Africa prior to the realization of the value of AAC. This will ensure that AAC strategies become more widely known which, in turn, will lead to more positive attitudes regarding service delivery to non-speaking children.

A discussion of AAC systems will not be complete without mentioning high technology systems. However, as not one case of high technology usage was found in the present survey, this discussion will be brief. The lack of use of high technology systems is possibly due to the fact that as with low technology systems, they are relatively unknown in South Africa. Other contributing factors might be the fact that high technology systems are expensive and also that there is a lack of funds to purchase them (Matas *et al.*, 1985:17). In addition an infrastructure for the utilization of high technology systems is lacking in South Africa. Although the data referring to Scotland, a more developed country, indicated a tremendous increase in the use of high technology systems, low technology systems still accounted for more than 50% of all AAC systems in use (Murphy *et al.*, 1993:23).

Regarding unaided systems, the German study reported that the majority of children used these systems, with facial expressions as the means most frequently used, followed by gestures, touching and pointing respectively (Coon *et al.*, 1992:7). This correlates with the findings of the present survey which reported that 17-19% of children used facial expressions, head-nodding to indicate yes and no, natural gestures and touching (See Figure 5.38). These results are further supported by results from the Washington survey, which also reported that non-speaking children used gestures/emotional reactions as the predominant communication system (Matas *et al.*, 1985:21). This is a tendency that also seems to be present in older children, as a survey amongst university students also found gestures to be the most frequently used system (Huer, 1991:235). This might be due to the fact that in the past non-speaking children did not receive AAC strategy intervention, and had to rely on natural gestures to make their needs known. The lack of skill training in

the past thus resulted in children mostly using natural ways of communicating, as these natural ways were demonstrated in their environments (e.g. most people use facial expressions, head-nodding and natural gestures). Furthermore, these unaided systems are, of course, always readily available. However, as people begin to realize the importance of communication intervention for non-speaking children with the consequent development of cognitive abilities by giving a non-speaking child entrance into abstract thought, the use of more formal aided and unaided systems will increase.

In the past, in South Africa, much emphasis was placed on the use of speech as the only way of communicating. For a great number of people the ability to communicate is equal to the ability to speak. Non-speaking children could not express themselves verbally were therefore less frequently understood by teachers (See Figure 5.20) and their communication ability was also described as significantly poorer than that of speaking children (See Chapter 5, Section 5.5.2.4). Thus, the most frequently used means of communication was intelligible speech (for the speaking group) and vocalizations (unintelligible speech) for the non-speaking group. These findings correlate with those of the German study which also reported that speech was rated as the major means of communication. German researchers felt that, as in the present survey, questionnaires were completed by speaking people, and the speaking population tend to ignore other forms of communication (Coon *et al.*, 1992:8). This might be a reflection of the attitudes regarding AAC systems which prevail where information regarding these systems are limited and where they are mostly unknown. Contrary to research which has proved that the use of AAC systems enhances communication and facilitates speech development, uninformed people hesitate to use AAC systems as they fear that this might inhibit or prevent speech development as the AAC systems reduce motivation for speech communication (Silverman, 1980:45). Thus, in countries where AAC does not have a strong basis for service delivery, and service providers do not have knowledge and skills regarding AAC systems, the tendency to aim at speech development was observed. This tendency was not noted in any of the other countries in which AAC had been in use for some time.

It is further important to note that AAC is a relatively new field in South Africa. Therefore, a strong basis for the use of AAC systems within special education has not yet been laid. Until recently speech therapists received no training in the use of AAC

strategies and thus, although 29% of the children received some kind of speech therapy, the nature of this therapy is unclear (28,9%) (See Figure 5.12). Service delivery will be discussed in more detail in Section 6.5.

Of the total group of severely handicapped children, a large percentage (34,2%) had poor and 15,0% very poor receptive language ability (See Figure 5.2). Although the German study is not totally comparable with this one concerning receptive language ability, it does provide information on this issue. In contrast to this study, the German study found that only 9% understood one-word sentences (very poor receptive language ability), 15% two- and three-word sentences (poor ability) and by far the majority (65%) understood sentences with more than 3 words (Coon *et al.*, 1992:7). The severity of the receptive language problems in the present survey might be due to the severely delayed language. Another factor that could have contributed to the poor receptive language skills was the cognitive ability of the children (Silverman, 1980:9). Consequently, the correlation between cognitive ability and non-speech was investigated. It was found that children whose cognitive ability was rated as very poor, significantly spoke less than 15 words but as cognitive ability increased the children significantly spoke more than 15 words (See Table 5.9). It seems to indicate that there is an interaction between cognitive ability and both receptive language ability and the ability to speak words.

In conclusion it can be said that when looking at the high number of non-speaking children currently in special education, and the low number of children using AAC systems, the data suggests that a substantial number of students are in great need of AAC devices and strategies. They could greatly benefit from AAC strategy implementation.

6.4 FUNCTIONAL READING, WRITING AND MATHEMATICAL ABILITY

In the past, service delivery to SHC tended to focus on face-to-face communication. More recently, however, there has been a growing recognition of the importance of addressing issues of literacy development in order to make the SHC optimally effective (Light & McNaughton, 1993:40). This survey found that reading ability was usually better than writing ability, followed lastly by mathematical ability (See Figure 5.7 - Figure 5.9). The majority of children had prerequisites for reading (62%), and were interested in books and

liked handling them, whilst 31% had no interest in reading. Regarding writing ability, the majority of children had no interest in writing (72%) followed by 12% who displayed prerequisites for writing. When taking into account the fact that without functional literacy skills severely handicapped children are greatly restricted in their access to educational and vocational opportunities the lack of functional literacy skills is of great concern (Light & McNaughton, 1993:33). Mathematical abilities were the poorest, with 74% of the children having no interest in mathematics, and 12% displaying prerequisites for mathematical ability.

In the German survey it was indicated that written language was rated as one of the aided forms of communication that would play a more important role in future (Coon *et al.*, 1992:8). When looking at the South African context, this causes great concern, as the majority of severely handicapped children do not have functional reading and writing skills, and thus do not have the ability to use written language as a means of communication.

The development of literacy is a complex process which involves many factors that influence the literacy outcomes of SHC (Kopenhaver & Yoder, 1992:144). A full account of literacy development should not only consider the child's cognitive ability, but should also focus on the support systems provided by the child's family and community in the learning of these skills (Light & Kelford Smith, 1993:14). However, the low incidence of functional literacy skills in the present survey might be due to low expectations of the teachers regarding functional literacy development (Light & McNaughton, 1993:38). This is supported by Kopenhaver, Coleman, Kalman & Yoder (1991:40) who found that perceptions and expectations of the child's competence and participation influences behaviour towards the child, which influences the quality and quantity of emergent literacy. As SHC are labelled as being disabled and delayed, these labels together with the children's behaviour may cause an underestimation of their abilities. But functional literacy skills are not automatically acquired without instruction. International surveys found that teachers gave learning to read and write in disabled children a low priority (Light & Kelford Smith, 1993:16). These results thus indicate that teachers believed that these skills were of less importance than other areas of skill development, and thus less attention is given to literacy activities. Early literacy experiences of young disabled

children therefore differ quantitatively and qualitatively from their non-disabled peers (Light & Kelford Smith, 1993:21). Furthermore, insufficient time is spent on teaching these skills (Gearheart, 1986:117).

6.5 SERVICE DELIVERY

When looking at international studies regarding service delivery to severely handicapped children, it appears that both the amount and quality of services delivered to SHC are not optimal (Blackstone, 1990:1). This is even more so when looking at the non-speaking population (Matas *et al.*, 1985:17). Some factors relating to the lack of AAC service delivery might be due to service providers (teachers and therapists) requiring more knowledge and skills specifically related to AAC.

In the present survey it was found that 36% of all teachers had no special training in working with SHC, whilst 45% had special diplomas (mostly less than 3 years) and 27% merely had in-service training. Some of the teachers who had special diplomas, also had in-service training (See Figure 4.3). Secondly, service providers require familiarity and experience with the range of AAC systems, aids, symbols and strategies in order to equip them with knowledge and skills related to AAC (Blackstone, 1990:2). As AAC is a relatively new field of expertise in South Africa, not many therapists and/or teachers receive any training in AAC techniques during their undergraduate training. However, in Scotland where AAC has been in use for some time, the survey also reported that the training of speech-language pathologists should be addressed as they do not receive knowledge and skill training related to AAC (Murphy *et al.*, 1993:25). Knowledge and skill training alone is not sufficient; there is also a strong need for the development of interdisciplinary AAC service delivery. This can be developed by exposing speech-language pathology students to work with professionals from other disciplines in order to help them to develop a more holistic approach to AAC (Huer, 1991:234).

When looking at service delivery to specific populations, Blackstone (1990:1) found that children with severe/profound mental retardation were not well served. These findings were based on results obtained from various more developed countries (America, Canada, Australia, Israel, Scandinavia and the Netherlands). When looking at a less developed

country such as South Africa, the level of service delivery is very low (See Chapter 5, Section 5.4). The majority of children who can benefit from AAC services are multiply handicapped and retarded, and yet, worldwide, not much attention is paid to them (Blackstone, 1990:3). Current AAC service delivery may successfully address the needs of less than 10% of the children who could benefit (Blackstone, 1990:3).

In the present study it was found that non-speaking children received considerably less therapy than speaking children (See Figure 5.36). This might be due to the fact that service providers do not have the knowledge and skills necessary for working with this specific population. This might also be due to the attitudes of service providers that non-speaking children have a poor prognosis of developing in the various skill areas and thus the focus of service delivery is placed on the speaking children. These attitudes are interlinked with the low expectations of non-speaking children, as service providers often do not expect any progress from them (Shrewsbury, *et al.*, 1985:296).

Apart from the fact that the severely handicapped population is underserved, more therapists with knowledge and skills to implement AAC strategies are needed. The North Dakota survey found unexpectedly low rates of speech-language therapy (59%) and occupational therapy (41%) (Burd *et al.*, 1988:378). In the present survey it was reported that only 28,8% of the children received speech therapy, (of which 38% were non-speaking and 63% speaking), whilst 60,6% of the children received occupational therapy, of which 31% were non-speaking and 69% speaking (See Figure 5.36). The low rates of service delivery to the non-speaking children might be due to the fact that therapy is viewed as a low priority for these children.

The therapy provided to the non-speaking children varied from less than half an hour per week to more than five hours per week. The majority of children receiving therapy also received group rather than individual therapy. This might be due to the fact that most schools had a limited number of therapists, resulting in high caseloads. In order to address these caseloads and to serve as many children as possible, therapists mostly provided group therapy. The effectiveness of the therapy was not measured in this study, but the high number of non-speaking children possibly suggests that the current therapy is not as effective and meaningful as possible.

Services provided to school age children have been reported as, in decreasing order, diagnostic, counselling, transportation, psychological, social work, speech language therapy, school health, recreation, audiological, occupational and physical therapy services (Huer, 1991:234). Thus it seems that communication intervention is not a high priority, and this is an issue that should be addressed as it will have great impact on social integration.

Finally, another factor negatively affecting the services provided to non-speaking children is the lack of a supportive infrastructure. Therapists often work in isolated contexts and resources are not readily available. In some cases, schools do not have therapists, and service provision is the responsibility of the teachers. As teachers do not have the skills and training to implement AAC strategies without a supportive infrastructure, the implementation of these strategies become a low priority.

In conclusion it can be stated that, for a number of reasons, the non-speaking population is underserved. This is due to the limited number of therapists working in special education (See Table 4.2) as well as limited specialized knowledge and skills regarding AAC strategies and their low expectations of non-speaking children due to attitudinal problems (Shrewsbury *et al.*, 1985:298). The results of this survey indicate a strong need for additional in-service and undergraduate training for professionals who serve the non-speaking population. Further research is also necessary to help improve the quality of service delivery to the non-speaking population.

6.6 CONCLUSIONS

This chapter interpreted the results obtained from the data analysis. Non-speaking children in Pretoria in schools for children with mental handicaps constitute a large population with heterogeneous characteristics and abilities, who need intensive, specialized therapy and AAC services. From the information of the present survey, additional service delivery, with special reference to AAC is suggested. Training of all professionals (teachers and therapists) involved with this population is of the utmost importance. Therapists should receive basic AAC skills as a part of their undergraduate training as well as through continuous education. Teachers should also become prime targets for information on AAC strategies and the variety of ways in which non-speaking children communicate needs.

CHAPTER 7

SUMMARY AND CONCLUSIONS

7.1 INTRODUCTION

This chapter provides a short summary of the results obtained in the study as well as the conclusions. A discussion of the clinical implications of the results is included. The study is also evaluated in terms of limitations and strengths. Finally, recommendations for further research are made.

7.2 SUMMARY OF RESULTS AND CONCLUSIONS

The purpose of this study was to describe the communication and related behaviours of children enrolled in schools for children with mental handicaps in the Pretoria area. Special reference is made to non-speaking children in order to assess the need for service delivery. This data was obtained through questionnaires which fieldworkers completed in conjunction with teachers.

In the present study, the non-speaking children constituted a higher than expected proportion of the total population in schools for children with mental handicaps. The results relating to prevalence are significantly higher than those of other international studies. The characteristics and abilities of both the speaking and non-speaking groups varied considerably, which indicates that they represent a heterogeneous population. In all the skill areas excluding sensory (cognitive, motor, communicative and social) the abilities of the speaking children were rated higher than those of the non-speaking children. This tendency was also noted with functional reading, writing and mathematical abilities. Although the number of non-speaking children in special education was high, the number of children currently using AAC systems was significantly low. This seems to indicate that a substantial number of children are in need of AAC strategy implementation. Teachers and therapists, however, need more information and training in AAC strategies in order to equip them with knowledge and skills in providing services to non-speaking children. As knowledge and skills regarding non-speaking children and exposure to AAC

systems increase, changes in attitude will occur which will result in teachers and therapists expecting more from non-speaking children, and will begin to provide equal opportunities for participation in the classroom context. An important implication of the above is the meaningful social integration of the severely handicapped children into their communities. The importance of developing and maintaining specialized service delivery to these children can therefore not be over-emphasized.

7.3 CLINICAL IMPLICATIONS

The most important implication of this study is that the high number of non-speaking children in special education is a matter for concern. When comparing results from this survey with results from other international surveys, it was found that the number of non-speaking children was almost six times higher than a generous estimation of the prevalence figures in the other countries. This survey thus provides initial data for estimating the number of children who would benefit from service delivery, in particular AAC strategy implementation. The implications are as follows :

- The low number of children currently using AAC systems (regardless of the high number of non-speaking children) suggests a great need for the implementation of AAC strategies.
- The low number of children with functional reading, writing and mathematical skills is disquieting. These skills are necessary for non-speaking children as they can enhance face-to-face communication, provide more control over a host of high technology systems, education, environmental control and also increase the likelihood of successful employment (Kopenhaver *et al.*, 1991:38; Wallace, 1981:459).
- The number of children currently receiving therapy is low, due to the inadequate number of therapists servicing children in schools for children with mental handicaps and their resultant high caseloads. In some of the special schools included in the survey, no therapists were available, in some only one (speech, occupational or physiotherapist) whilst in some other schools therapists were only available once a week. A further difficulty related to the limited number of therapists, is that teachers

feel isolated as they do not have sufficient support from therapists and are therefore hesitant to implement AAC strategies in the classroom.

- Teachers lack knowledge and skills regarding non-speaking children and lack exposure to AAC strategies which results in negative attitudes to and low expectations from the non-speaking children. This suggests that teachers should receive more information on and training in the implementation of AAC strategies.

7.4 EVALUATION OF THE STUDY

This study forms an integral part of the planning of service delivery to the underserved non-speaking population and contributes to the fairly new field of AAC in South Africa. This was achieved by describing the prevalence of non-speaking children in schools for children with mental handicaps as well as their characteristics, abilities, current intervention and intervention needs.

To conclude, the following points should be noted :

- As children with primary sensory handicaps were excluded, the prevalence of non-speaking children might have been even higher.
- Only children aged 3 - 12 years were included, which could have influenced results. All school-going children in these schools have however been included in the CAAC/HSRC survey (Alant, 1995).
- Due to the geographical area which was selected, no rural schools were included. International surveys found that the prevalence of non-speaking children in special education was higher in rural schools than in urban schools. The CAAC/HSRC survey, however, addressed this issue to some extent as it included both urban and peri-urban schools (Alant, 1995).
- Only registered schools were included in the survey. Therefore, children who did not attend school as well as children in non-registered schools were excluded. In a

less developed country such as South Africa, the number of children who do not attend formal, registered schools is expected to be high due to the fact that great distances often have to be travelled to school and also that formal schooling is not compulsory for severely handicapped children (UNICEF, 1993:69).

- Teachers were used to rate the different abilities of the children, including their ability to speak more/less than 15 words, but if the children's abilities had been rated by strangers, the results might have been different.

7.5 RECOMMENDATIONS FOR FUTURE RESEARCH

Recommendations for future research follow :

- Children with primary sensory handicaps should be included in order to obtain a more reliable estimate of the non-speaking population.
- All school age children should be included in future research in order to obtain a clear understanding of non-speaking children receiving special education. This recommendation has already been carried out by the CAAC/HSRC survey (Alant, 1995).
- Strategies used for teaching reading, writing and mathematical skills to the SHC should be investigated.
- Information regarding service delivery can be obtained from the relevant therapists, in order to analyze not only the amount of services provided, but also the type of services provided.
- It is important that the present study be repeated and extended in approximately 10 years time in order to determine any changes in the prevalence of non-speaking people and the use and availability of AAC systems, as well as in service delivery to SHP.

- In future, all schools for handicapped children should be included, not only registered schools, and also schools in both urban and rural areas.

7.6 SUMMARY

This chapter summarizes the results of the survey as discussed in Chapter 5 and interpreted in Chapter 6. The implications of the high prevalence rate of non-speaking children, their characteristics and service delivery needs are addressed. The clinical implications of the study were pointed out which led to a critical evaluation. This, in turn, produced recommendations for future research.

In general, this research survey was the first step in determining the prevalence and characteristics of non-speaking children in special education, in order to provide a basis from which to project service delivery. It attempted to start with the description of the non-speaking population and answered some research questions whilst at the same time creating some new questions from which to start future research.

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APPENDIX A

LIST OF SCHOOLS INCLUDED IN THIS STUDY

(In alphabetical order)

1. Alma Opleidingsentrum
2. Alfa & Omega Opleidingsentrum
3. Eersterust Opleidingsentrum
4. Horison Sorgsentrum
5. Medicos Special School
6. Nuwe Wending Skool
7. Sunrise Centre
8. Tshegofatsong Special School
9. Unica Skool vir Outisme
10. Zodwa Special School

APPENDIX B

SPECIFIC QUESTIONS THAT WERE CHANGED AFTER THE PILOT STUDY

QUESTION INCLUDED IN PILOT SURVEY	QUESTION INCLUDED IN MAIN SURVEY
Question 5 <i>What is the child's most dominant language?</i> - English - Afrikaans - Sotho (North & South) - Zulu - Xhosa - Tswana - Other : Please specify - Don't know	Question 5 <i>What is the child's most dominant language?</i> - Afrikaans - English - Sotho (North & South) - Tswana - Xhosa - Zulu - Other : Please specify - Don't know
Question 6 <i>In which language(s) is the child instructed?</i> - English - Afrikaans - Sotho (North & South) - Zulu - Xhosa - Tswana - Other : Please specify	Question 6 <i>In which language(s) is the child instructed?</i> - Afrikaans - English - Sotho (North & South) - Tswana - Xhosa - Zulu - Other : Please specify
Question 9 <i>Who does the child live with?</i> - Mother only - Father only - Both parents - Grandparents - Other : please specify - Don't know	Question 9 <i>Who does the child live with when at home?</i> - Mother only - Father only - Both parents - Grandmother only - Grandfather only - Both grandparents - Other : please specify - Don't know
Question 10 <i>What is/was the occupation of the child's father?</i>	This question was omitted
Question 11 <i>What is/was the occupation of the child's mother?</i>	This question was omitted

Appendix B / continued

APPENDIX B / continued

QUESTION INCLUDED IN PILOT SURVEY	QUESTION INCLUDED IN MAIN SURVEY
Question 13 <i>How would you rate the child's ability on the following?</i> - Cognitive functioning - Motor functioning - Visual ability - Hearing ability - Communication skills - Social skills 1 No function 2 Poor function 3 Some function 4 Reasonable function 5 Normal function	Question 13 <i>How would you rate the child's ability on the following?</i> - Cognitive ability: "How well can the child think?" - Gross motor ability: "How well can the child walk and sit?" - Fine motor ability: "How well can the child use his hands e.g. when cutting?" - Visual ability: "How well can the child see an object the size of a "Smartie"? (A Smartie is similar to a M&M). - Hearing ability: "How well can the child hear if you speak normally standing about 2m away?" - Communication ability: "How well does the child communicate with you in the classroom?" - Communication ability: "How well does the child communicate with other children on the playground?" - Social ability: "How well does the child play with other children?" 1 Very poor to almost no function 2 Poor function 3 Some function 4 Reasonable function 5 Normal function for chronological age
Question 14 <i>How would you rate the following problems the child might have?</i> - Behaviour problems - Epilepsy	This question was divided into three questions : Question 10 : <i>Does the child have any behaviour problems that are disturbing in the classroom? If yes, please specify.</i> Question 12 : <i>Does the child have epilepsy (fits)? If yes, is the epilepsy controlled with medication?</i> Question 13 : <i>What type of epilepsy (fits) does the child suffer from?</i>
Question 18 <i>How does the child try to communicate with people?</i> - Understandable speech - Gestures e.g. pointing, waving - Facial expressions, e.g. smiling - Sign language, e.g. finger spelling - Pictures, objects - Communication board with symbols - Typing/writing - Yes/no indication - Makes other non-speech sounds - No obvious communication attempts, child just sits - Other : please specify - Don't know	A question was inserted before this question : Question 17 : <i>Does the child try to communicate with people? If yes, please mark all the relevant options.</i> - Understandable speech - Other verbal sounds that are not understandable - Nods head to indicate Yes/No - Gestures e.g. pointing, waving - Facial expressions, e.g. smiling - Sign language, finger spelling - Communication board with objects, pictures or symbols - Typing/writing - Touching - Other : please specify

Appendix B / continued

APPENDIX B / continued

QUESTION INCLUDED IN PILOT SURVEY	QUESTION INCLUDED IN MAIN SURVEY
Question 19 <i>How well does the child understand instructions?</i> 1 Understands nothing 2 Understands a few easy instructions 3 Sometimes understands more difficult instructions 4 Understands most instructions 5 Understands most instructions but not appropriate for age 6 Understands adequate instructions for age	Question 18 <i>How well does the child understand when you give him instructions?</i> 1 Understands very little, almost nothing 2 Understands a few easy instructions 3 Sometimes understands more difficult instructions 4 Understands most instructions but not appropriate for age 5 Adequate understanding of instructions for chronological age
Question 20 <i>How good is this child's reading abilities?</i> 1 No interest in books 2 Shows interest in books, and likes handling books, but does not read 3 Recognizes functional labels, e.g. own name, traffic signs e.g. STOP, store signs e.g. CHECKERS 4 Has a sight vocabulary of more than 30 words 5 Reads easy sentences, but not appropriate for age 6 Reading adequate for age	Question 19 <i>How good are the child's reading abilities?</i> 1 No interest in books 2 Shows interest in books, and likes handling books, but does not read 3 Has a sight vocabulary of more than 30 words 4 Reads easy sentences, but not appropriate for age 5 Adequate reading skills for chronological age
Question 21 <i>How good is this child's writing abilities?</i> 1 Scribbles 2 Makes letters & letter-like shapes 3 Makes letters and tries to write words 4 Starts to write more words understandably 5 Writes most things, but not age appropriate 6 Writing adequate for age	Question 20 <i>How good are the child's writing abilities?</i> 1 No interest in writing, or only scribbles 2 Makes letters & letter-like shapes 3 Makes letters and tries to write words 4 Writes most things, but not appropriate for age 5 Adequate writing skills for chronological age
Question 22 <i>How good is the child's mathematical abilities?</i> 1 Cannot count at all, or can count, but does not know how much it is 2 Has number concept up to 5, knows concept more / less up to 5 3 Can do simple additions, e.g. $2+3=$ 4 Can do simple subtractions, e.g. $3-2=$ 5 Can do simple mathematics, but not age appropriate 6 Adequate mathematic skills for age	Question 21 <i>How good are the child's mathematical abilities?</i> 1 Cannot count at all OR can count, but does not know how much it is 2 Has idea of numbers : number concept up to 5 3 Knows the concept of more/less up to 5, e.g. four is more than two, three is less than five 4 Can do simple mathematics, but not appropriate for age 5 Adequate mathematic skills for chronological age
Question 23 <i>Does this child receive any therapy?</i>	Question 22 <i>Does the child receive any therapy?</i> Included 2 more categories : - Type of therapy : Individual or Group (Class) therapy - Number of hours per week

APPENDIX C

NOTES TO THE FIELDWORKERS : QUESTIONNAIRE I

GENERAL INFORMATION

1. Start with this questionnaire.
2. Complete one questionnaire for each teacher in whose class you will be obtaining data.
3. Answer **all** the questions.
4. Carefully read all the instructions on the questionnaire.
5. Mark with a cross in the appropriate block.

SPECIFIC INFORMATION

1. **School name** refers to the school currently described.
2. **Gender** refers to the gender of the teacher.
3. **Register class** implies the name of the class, e.g. "Middle Group", "Senior Group".
4. **Number of children in class** refers to the total number of children in the class, not only to the number of children who will be included in the survey. Please obtain a class list for this purpose.
5. **Highest educational qualification** refers to qualifications already obtained, and excludes all educational training in which the teacher is currently involved.
6. **Length of time involved with disabled children** refers to all time involved with disabled children, and not merely time at the specific school. Experience gained at another school can also be included.
7. **Special training** refers to all types of special training. Please stipulate the length of time very clearly, e.g. 1 week, 3 months, 2 years, 1 hour per week etc.
8. **Time devoted to activities** should be a subjective impression, and not be a mirror image of the teacher's time table.

Free play	This refers to any form of free play inside or outside the classroom, thus there is no intentional teaching of any skills, and children are left to explore on their own
Religious instruction	This refers to any religious activities, e.g. Bible stories and religious songs and prayers
Self-help instruction	This refers to formal training of self-help activities, e.g. during dressing, mealtime and/or washing etc.
Communication instruction	This refers to formal training of communication skills. Teachers could present different activities to reach this goal, but the main objective should be communication instruction. Thus a teacher cannot state that she does communication instruction the whole day
Reading instruction	This refers to the formal training of reading skills, e.g. by using Blissymbols or normal orthography
Writing instruction	This is the formal training of writing skills and may be on different levels, e.g. starting by drawing circles, achieving a pincer grip, etc.
Perception instruction	This is the formal training of any perceptual skills, visual or auditory, e.g. foreground-background discrimination, shapes, positions in space, etc.
Physical training (PT)	This is formal training of gross motor activities, e.g. walking over certain obstacles and other exercises.

9. **Assistance from the following people**, please note the differentiation between a *class aid* (a person who received no formal training) and a *teaching assistant* (a person who had received formal training). *Volunteers* refer to any people who offer their services on a voluntary basis, and the tasks they might fulfil may vary. Please specify the number of hours the teacher is assisted **per day**. If there is less assistance than one hour per day please note the exact time (e.g. 1 hour per week), and mark it clearly.

APPENDIX D

NOTES TO FIELDWORKERS : QUESTIONNAIRE II

GENERAL INFORMATION

1. Complete one form for each child between the ages of 3 - 12 years. Use the class list from the teacher to guide you. Make sure that the number of questionnaires you have at the end correlates with the number of children in the class in the specified age range.
2. Use the class list in order to guide yourself, and do not count a specific child more than once.
3. Complete the form for each child in the class if his/her name appears on the class list, even if this child is absent, or has been absent for a time.
4. After having obtained the child's name, change "*The child's name*" to the child's real name, e.g. "*What is Bobby's home language?*".
5. Answer all the questions.
6. Read the instructions very carefully, e.g. "*Mark only one option*" versus "*Mark all the relevant options*".
7. When "*Other*" is selected, specify.
8. Mark the answer with a cross in the appropriate block.

SPECIFIC INFORMATION

1. Although the **name of the child** is asked, this is merely to control that a specific child is not double counted. No identifying information will be published in the final report.
2. **Gender** refers to the gender of the specific child.
3. Please note the sequence in which **birth date** is asked : Day, Month, Year. If the teacher does not have this information, this question may be left open, but it is of crucial importance that Question 4, **age**, then has to be completed.
4. Complete **age** in terms of years and months. Please note the sequence!
5. **Dominant home language** refers to only one language. If parents do not speak the same language, ask which language is the child's dominant language.

6. **Language instructed in** refers to all the languages the child is exposed to in the class as a medium of instruction. In some cases more than one language can be marked.
7. **Place of residence whilst attending school** refers to term time. This excludes weekends. It would then also refer to the place where the child spends most of his/her time. "*Own home*" refers to a home consisting of parents and/or siblings. "*Family home*" refers to the home of extended family members, e.g. grandparents, aunts etc. "*Hostel/School*" implies a hostel which is under the care of the school. "*Other*" refers to areas not covered by the above-mentioned 3 areas, e.g. foster care. Please mark only one option.
8. **Who the child lives with** refers to people with whom the child lives when he/she is at home. More than one option can be marked.
9. **Primary reason why the child was placed in your school** refers to the etiology of the problem. Please mark only the most important reasons, e.g. if a child has only visual problems, but is not blind, do not mark "Blindness". If "*other*" is selected, please specify.

DISABILITY	DESCRIPTION
Mental retardation e.g. Down Syndrome	It is a subnormality of intelligence and is of a nature or degree that requires or is susceptible to medical treatment or other special care or training of the patient (Cooper, 1981:3). Thus this would mean all children who are unable to derive full benefit from ordinary education
Cerebral palsy (CP)	Group of conditions which share the features of a persistent central motor deficit which is non-progressive pathological (Cogher, Savage & Smith, 1992:3). This would include spastic, hypotonic (floppy), ataxia and athetoid children
Deafness	A person who is unable to use his sense of hearing as the primary mode by which he communicates with the world (Year of Disabled Person's Report, 1986:3)
Blindness	A person who is unable to see, or has great difficulty in seeing without glasses, or some difficulty in seeing with glasses as prescribed (Hogg & Sebba, 1986:10)
Autism	Person who generally fails to develop social relationships due to withdrawn or introverted behaviour, language retardation with impaired comprehension, echolalia, ritualistic compulsive features (Lahey, 1988:74)
Epilepsy	Seizures which include both primary and secondary seizure disorders (Orelove & Sobsey, 1991:195)

10. **Behaviour problems** refers to all types of behaviour problems that are disturbing in the classroom. The child can be regarded as having behaviour problems when one or more of the following is present:

- Refuses to do motor activities he is able to do
- Refuses to follow classroom rules
- Displays activity level too high for situation
- Has difficulty in listening or paying attention
- Appears nervous or anxious
- Has poor self-concept
- Shows signs of sustained sadness or depression

"Mild behaviour problems" refers to only one of the above-mentioned behaviour problems being present and only being present at times, *"Moderate behaviour problems"* refers to problems frequently experienced, and *"Severe problems"* refer to problems always or almost always present. In severe cases the child will also show a variety of problems.

11. **Abilities** refers to the child's abilities in different skill areas. When completing this question, start at the highest point on the scale, namely 5. Ask *"Does the child walk and sit like a normal child of his age?"*. Then move to 4 on the rating scale, e.g. *"Does the child almost walk like a normal child of his age?"*. Skill areas include the following :

Cognitive ability	The cognitive functioning of the child should be displayed. If <i>"Mental Retardation"</i> was marked as the etiology, this question should give an indication of the severity
Gross motor ability	This refers to all gross motor activities done by the child, e.g. walking, sitting. If a child is in a wheelchair, a 1 on the rating scale will be awarded
Fine motor ability	Hand use is assessed here, e.g. the way in which the child is able to cut or has a pincer grip, etc.
Visual ability	This would imply the visual ability with or without glasses. The child should not be penalized if he wears glasses
Hearing ability	The child should not be penalized for wearing a hearing aid, as functioning with the use of the hearing aid is implied
Communication ability	A two-fold question is asked here, relating to the communication of the child with the teacher, and communication with peers
Social ability	Refers to the social contact the child has and the way in which he socializes with others

12. Epilepsy (fits) refers to both grand mal and petit mal seizures. Medication can refer to any prescribed medication that controls the epilepsy.

13. **Type of epilepsy**

Grand mal	Experiences an aura and immediately loses consciousness at the onset. During the tonic phase breathing does not occur, and this is followed by the clonic (shaking) phase. Entire seizure lasts more than 5 minutes
Petit mal	Generalizes absence or minor motor seizures. Loses consciousness for a brief time (5-30 seconds) and typically stares into space without moving

14. **Single words** the child can say clearly refer to any single words that are complete understandable words. This excludes verbalizations and vocalizations.

15. **Sentences** refers to any sequence of understandable words.

16. **Understanding of the child's communication** refers to any of the child's attempts to communicate. Even though a child may be non-speaking, the teacher might still understand him well.

17. Modes of communication

Understandable speech	This refers to any form of understandable speech the child uses, which may be single words or sentences
Other verbal sounds that are not understandable	This refers to any verbalizations or vocalizations the child may use to communicate, e.g. "uh"
Head-nodding to indicate yes/no	This refers to the indication of yes and no by using head nodding, e.g. "Do you want a cookie?" Yes/No
Gestures, e.g. pointing waving	This refers to all gestures that the child uses spontaneously, and are natural signs, e.g. pointing to a car to indicate that he wants it
Facial expressions	This refers to any facial expressions the child might use to communicate, e.g. frowning, smiling etc.
Sign language, finger spelling	This refers to the formal use of sign language or finger spelling. The child may use any of the signs from the South African Dictionary of Sign Language
Communication boards with objects, pictures or symbols	This refers to the formal use of a communication board. What is displayed on the communication board (objects, pictures or symbols) is of less importance
Typing, writing	This refers to any child using a computer, typewriter or other communication device to type messages, or the use of writing as a communication mode
Touching	This refers to a child who physically touches you in order to communicate, or who pats you to draw attention

18. **How well the child understands instructions** refers to the receptive language abilities of the child, and how well he comprehends what is expected from him. Look at the different categories.

19. **Reading abilities** : please look at the different categories specified.

20. **Writing abilities** : please look at the different categories specified.

21. **Mathematical abilities** : please look at the different categories specified.

22. **Therapy** that the child receives, refers only to therapy he/she is currently receiving. This does not imply that the child has to receive the therapy at school, but can also be other therapy that he/she receives during the afternoon and of which the teacher is aware. Please mark the number of hours per week that the child receives a certain service and mark whether it is Individual or Group therapy. If the child receives more than one type of therapy (e.g. group and individual speech therapy) mark both. Mark all the relevant therapies the child currently receives.

APPENDIX E

QUESTIONNAIRE I : ENGLISH VERSION

QUESTIONNAIRE I

TEACHER INFORMATION

1. Answer all the questions.
2. Answer the questions as completely as possible.
3. Mark with a cross in the appropriate block.
4. All responses will remain highly confidential.
5. Identifying information will be removed from the final report.

		<i>For official use</i>	
		Respondent #	
		V1	1-2
		Card #	
		V2	3
		V3	4-5
1. Name of this school		V4	6
2. Gender Male Female		V5	7-8
3. Which is your register class?		V6	9-10
4. How many children are there in your class ?		V7	11-12
5. Highest educational qualification obtained 		V8	13
6. How long have you been involved with disabled children ?			
Less than 1 year Less than 2 years Less than 5 years More than 5 years			

					For official use																																																													
7. Have you had any special training to work with disabled children ? Yes No If YES, please specify <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 35%;">Kind of training</th> <th style="width: 10%;">Yes</th> <th style="width: 10%;">No</th> <th style="width: 45%;">Length of training</th> </tr> </thead> <tbody> <tr> <td>In-service training</td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td>Special diploma / certificate</td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td>Special degree</td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>					Kind of training	Yes	No	Length of training	In-service training				Special diploma / certificate				Special degree				V9 14 V10 15 V11 16 V12 17																																													
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8. How much time in your class is devoted to the following activities during the day? Do not use your time schedule, but give a subjective impression <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 30%;"></th> <th style="width: 10%;">1</th> <th style="width: 10%;">2</th> <th style="width: 10%;">3</th> <th style="width: 10%;">4</th> <th style="width: 10%;">5</th> </tr> <tr> <th></th> <th>No time</th> <th>Little time</th> <th>Fair amount of time</th> <th>Most of the time</th> <th>All the time</th> </tr> </thead> <tbody> <tr> <td>Free Play - inside or outside. No intentional teaching of skills</td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td>Religious Instruction, eg teaching of prayers</td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td>Self Help Instruction, eg washing hands, making sandwiches</td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td>Communication Instruction, eg formal training on how to communicate</td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td>Reading Instruction, eg formal training of reading skills</td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td>Writing Instruction, eg formal training of writing skills</td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td>Perception Instruction, eg formal training of perceptual skills</td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td>Physical Training (PT), eg exercises</td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>						1	2	3	4	5		No time	Little time	Fair amount of time	Most of the time	All the time	Free Play - inside or outside. No intentional teaching of skills						Religious Instruction, eg teaching of prayers						Self Help Instruction, eg washing hands, making sandwiches						Communication Instruction, eg formal training on how to communicate						Reading Instruction, eg formal training of reading skills						Writing Instruction, eg formal training of writing skills						Perception Instruction, eg formal training of perceptual skills						Physical Training (PT), eg exercises						V13 18 V14 19 V15 20 V16 21 V17 22 V18 23 V19 24 V20 25	
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Perception Instruction, eg formal training of perceptual skills																																																																		
Physical Training (PT), eg exercises																																																																		
9. Do you have the assistance of the following people? <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 30%;"></th> <th style="width: 10%;">Yes</th> <th style="width: 10%;">No</th> <th style="width: 50%;">If YES, specify number of hours you are assisted per day</th> </tr> </thead> <tbody> <tr> <td>Class aid : not formally trained</td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td>Trained teaching assistant : formally trained</td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td>Occupational therapist / OT assistant</td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td>Speech therapist</td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td>Volunteers</td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td colspan="4">Other : Please specify </td> </tr> </tbody> </table>						Yes	No	If YES, specify number of hours you are assisted per day	Class aid : not formally trained				Trained teaching assistant : formally trained				Occupational therapist / OT assistant				Speech therapist				Volunteers				Other : Please specify				V21 26 V22 27 V23 28 V24 29 V25 30 V26 31																																	
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Speech therapist																																																																		
Volunteers																																																																		
Other : Please specify																																																																		

APPENDIX F

QUESTIONNAIRE I : AFRIKAANS VERSION

VRAELYS I

ONDERWYSER INLIGTING

1. Antwoord alle vrae.
2. Antwoord vrae so volledig as moontlik.
3. Merk die toepaslike antwoord met 'n kruisie in die aangewese blok.
4. Alle inligting sal as hoogs vertroulik beskou word.
5. Enige identifiserende inligting sal uit die finale verslag verwyder word.

<i>Vir amptelike gebruik</i>	
1. Naam van hierdie skool _____	Respondent # V1 1-2
2. Geslag Manlik Vroulik	Kaart # V2 3
3. Watter is u register klas? _____	V3 4-5
4. Hoeveel kinders is daar in u klas?	V4 6
5. Hoogste opvoedkundige kwalifikasie verwerf _____	V5 7-8
6. Hoe lank is u reeds betrokke by gestremde kinders? Minder as 1 jaar Minder as 2 jaar Minder as 5 jaar Meer as 5 jaar	V6 9-10 V7 11-12 V8 13

						<i>Vir amptelike gebruik</i>																
7. Het u enige spesiale opleiding ontvang in die hantering van gestremde kinders?																						
Ja						V9 14																
Nee																						
Indien JA, spesifiseer asseblief																						
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;">Tipe opleiding</th> <th style="width: 10%;">Ja</th> <th style="width: 10%;">Nee</th> <th style="width: 40%;">Lengte van opleiding</th> </tr> </thead> <tbody> <tr> <td>Indiensopleiding</td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td>Spesiale diploma / sertifikaat</td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td>Spesiale graad</td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>						Tipe opleiding	Ja	Nee	Lengte van opleiding	Indiensopleiding				Spesiale diploma / sertifikaat				Spesiale graad				V10 15 V11 16 V12 17
Tipe opleiding	Ja	Nee	Lengte van opleiding																			
Indiensopleiding																						
Spesiale diploma / sertifikaat																						
Spesiale graad																						
8. Hoeveel tyd word in u klas aan die volgende aspekte gewy? Moet asseblief nie u tydskedule as riglyn gebruik nie, maar gee 'n subjektiewe indruk																						
	1	2	3	4	5																	
	Geen tyd	Min tyd	Gemiddelde hoeveelheid tyd	Meeste van die tyd	Die heeltyd																	
Vrysel - binne of buite die klas. Geen doebewuste opleiding van vaardighede						V13 18																
Godsdienst Opvoeding, bv. aanleer van gebedjies						V14 19																
Selfhelp Opleiding, bv. handewas. maak van toebroodjies						V15 20																
Kommunikasie Opleiding, bv. formele opleiding van kommunikasie vaardighede						V16 21																
Leesopleiding, bv. formele leesopleiding						V17 22																
Skryfopleiding, bv. formele opleiding in skryf						V18 23																
Perseptuele Opleiding, bv. formele opleiding van persepsie						V19 24																
Liggaamlike Opvoeding (LO), bv. oefeninge						V20 25																
9. Ontvang u enige hulp van die volgende persone?																						
	Ja	Nee	Indie JA, spesifiseer die hoeveelheid ure hulp wat u daagliks ontvang			V21 26																
Klaskhulp : nie formeel opgelei nie						V22 27																
Formeel opgeleide onderwys hulp						V23 28																
Arbeidsterapeut/Arbeidsterapeut assistent						V24 29																
Spraakterapeut						V25 30																
Vrywillige helpers						V26 31																
Ander : spesifiseer asseblief																						

APPENDIX G

QUESTIONNAIRE II : ENGLISH VERSION

1

QUESTIONNAIRE II COMMUNICATION ABILITIES OF SEVERELY HANDICAPPED CHILDREN

1. Complete one form for each pupil in your class.
2. Answer all the questions.
3. Mark with a cross in the appropriate block.
4. If questions are rated from 1 - 5,
1= Very poor 5= Very good
5. If Other is selected, specify.
6. When referring to age, chronological age is intended.

1. Name of child _____

2. Gender

Male	
Female	

3. Birth date

Day	Month	Year

4. Age

Years	Months

5. What is the child's dominant home language ?

Please mark only one language

Afrikaans	
English	
Sotho (North & South)	
Tswana	
Xhosa	
Zulu	
Other : please specify	
Don't know	

For official use

Respondent #

V1

 1-3

Card #

V2

 4

Batch #

V3

 5-6

V4

 7

V5

 8-9

V6

 10-11

V7

 12-13

V8

 14-17

V9

 18

6. In which language(s) is the child instructed ?

Please mark all the relevant languages

Afrikaans	☐
English	☐
Sotho (North & South)	☐
Tswana	☐
Xhosa	☐
Zulu	☐
Other : please specify	☐

For official use

V10	☐	19
V11	☐	20
V12	☐	21
V13	☐	22
V14	☐	23
V15	☐	24
V16	☐	25

7. Where does this child stay while attending school?

Please mark one option

Own Home	☐
Family Home	☐
Hostel / School	☐
Other : please specify	☐
Don't know	☐

V17 ☐ 26

8. Who does the child live with when at home?

Mother only	☐
Father only	☐
Both parents	☐
Grandmother only	☐
Grandfather only	☐
Both grandparents	☐
Other : please specify	☐
Don't know	☐

V18 ☐ ☐ 27-28

For official use

9. What was the primary reason the child was placed in your school ?

Please mark only the most important reason(s).

Mental Retardation, eg Down Syndrome	
Cerebral Palsy (CP), eg spasticity	
Deafness, eg very little or no hearing	
Blindness, eg very little or no sight	
Autism	
Epilepsy (Fits)	
Other : please specify	
Don't know	

V19		29
V20		30
V21		31
V22		32
V23		33
V24		34
V25		35-36
V26		37

10. Does the child have behaviour problems that are disturbing in the classroom?

Yes	
No	

V27 38

V28 39

If YES, please specify

No Problems	Mild Problems	Moderate Problems	Severe Problems
Never has any behaviour problems	Has behaviour problems only at times	Frequently has behaviour problems	Always, or almost always has behaviour problems

11. How would you rate the child's ability on the following:

	1	2	3	4	5
ABILITIES	Very poor to almost no function	Poor function	Some function	Reasonable function	Normal function for chronological age
Cognitive Ability <i>How well can the child think?</i>					
Gross Motor Ability <i>How well can the child walk & sit?</i>					
Fine Motor Ability <i>How well can the child use his hands eg when cutting?</i>					
Visual Ability <i>How well can the child see an object the size of a "Smartie"?</i>					
Hearing Ability <i>How well can the child hear if you speak normally standing about 2m away?</i>					
Communication Ability <i>How well does the child communicate with you in the classroom?</i>					
Communication Ability <i>How well does the child communicate with other children on the playground?</i>					
Social Ability <i>How well does the child play with other children?</i>					

For official use

V29	☐	40
V30	☐	41
V31	☐	42
V32	☐	43
V33	☐	44
V34	☐	45
V35	☐	46
V36	☐	47

12. Does the child have epilepsy (fits)?

Yes	
No	

If YES, is the epilepsy controlled with medication?

Yes	
No	

13. What type of epilepsy (fits) does the child suffer from?

Normal	Petit Mal	Grand Mal
No fits	Seizure lasts between 5 - 30 sec	Seizure lasts more than 5 min

14. How many single words can the child say clearly?

Less than 15 words	
More than 15 words	

15. How well does the child speak sentences ?

Can speak no sentences	
Can speak easy short sentences	
Can speak most sentences	
Can speak all sentences appropriate for age	

16. How often do you understand the child's way of communicating ?

1	2	3	4	5
Never	Sometimes	Usually	Mostly	Always

For official use

V37 48

V38 49

V39 50

V40 51

V41 52

V42 53

17. Does the child try to communicate with people?

Yes	
No	

If YES, please mark all the relevant aspects. Does he/she use :

Understandable speech	
Other verbal sounds that are not understandable	
Nods head to indicate Yes/No	
Gestures, eg pointing, waving	
Facial expressions, eg smiling	
Sign language, finger spelling	
Communication board with objects, pictures or symbols	
Typing, writing	
Touching	
Other : please specify	

For official use

V43 ☐ 54

V44 ☐ 55

V45 ☐ 56

V46 ☐ 57

V47 ☐ 58

V48 ☐ 59

V49 ☐ 60

V50 ☐ 61

V51 ☐ 62

V52 ☐ 63

V53 ☐ 64

18. How well does the child understand when you give him instructions ?

1	2	3	4	5
Understands very little, almost nothing	Understands a few easy instructions	Sometimes understands more difficult instructions	Understands most instructions but not appropriate for age	Adequate understanding of instructions for chronological age

V54 ☐ 65

19. How good are the child's reading abilities ?

1	2	3	4	5
No interest in books	Shows interest in books, and likes handling them, but does not read	Has a sight vocabulary of more than 30 words	Reads easy sentences, but not appropriate for age	Adequate reading skills for chronological age

For official use

V55 66

20. How good are the child's writing abilities ?

1	2	3	4	5
No interest in writing OR only scribbles	Makes letters & letter-like shapes	Makes letters and tries to write words	Writes most things, but not appropriate for age	Adequate writing skills for chronological age

V56 67

21. How good are the child's mathematical abilities ?

1	2	3	4	5
Can't count at all OR can count, but has no concept of numbers.	Has idea of numbers : number concept up to 5	Knows the concept of more/less up to 5, eg 4 is more than 2; 3 is less than 5	Can do simple maths, but not appropriate for age	Adequate maths skills for chronological age

V57 68

22. Does the child receive any therapy ?

Yes	
No	

V58 69

If YES, please specify all relevant options

Therapy	Type of therapy : Individual or Group (Class) therapy	Number of hours per week
Speech Therapy		
Occupational Therapy		
Physiotherapy		
Remedial Teaching		
Other : please specify		

V59 70

V60 71

V61 72

V62 73

V63 74

APPENDIX H

QUESTIONNAIRE II : AFRIKAANS VERSION

1

VRAELYS II VAARDIGHEDE VAN ERG GESTREMDE KINDERS

1. Voltooi een vraelys vir elke kind in u klas.
2. Beantwoord alle vrae volledig.
3. Merk die toepaslike antwoord met 'n kruisie in die aangewese blok.
4. Indien vrae op 'n skaal van 1 - 5 is, is
1= Baie swak 5= Baie goed
5. Indien Ander gemerk word, spesifiseer.
6. Ouderdom verwys na kronologiese ouderdom.

1. Naam van kind _____

2. Geslag

Manlik	
Vroulik	

3. Geboortedatum

Dag	Maand	Jaar

4. Ouderdom

Jare	Maande

5. Wat is die kind se dominante huistaal?

Merk asseblief net een taal

Afrikaans	
Engels	
Sotho (Noord & Suid)	
Tswana	
Xhosa	
Zoeloe	
Ander : spesifiseer asseblief _____	
Weet nie	

Vir amptelike gebruik

Respondent #

V1

 1-3

Kaart #

V2

 4

Groep #

V3

 5-6

V4

 7

V5

 8-9

V6

 10-11

V7

 12-13

V8

 14-17

V9

 18

6. In watter taal/tale ontvang die kind onderrig?

Merk asseblief alle betrokke tale

Afrikaans	☐
Engels	☐
Sotho (Noord & Suid)	☐
Tswana	☐
Xhosa	☐
Zoeloe	☐
Ander : spesifiseer asseblief	☐

Vir amptelike gebruik

V10	☐	19
V11	☐	20
V12	☐	21
V13	☐	22
V14	☐	23
V15	☐	24
V16	☐	25

7. Waar woon die kind tydens die skooltermyn?

Merk asseblief net een keuse

Ouerhuis	☐
Familie tuiste	☐
Skoolkoshuis	☐
Ander : spesifiseer asseblief	☐
Weet nie	☐

V17	☐	26
-----	--------------------------	----

8. By wie woon die kind as hy/sy tuis is?

Slegs moeder	☐
Slegs vader	☐
Beide ouers	☐
Slegs ouma	☐
Slegs oupa	☐
Beide grootouers	☐
Ander : spesifiseer asseblief	☐
Weet nie	☐

V18	☐	☐	27-28
-----	--------------------------	--------------------------	-------

Vir amptelike gebruik

9. Wat is die hoofrede waarom die kind in u skool geplaas is?

Merk asseblief net die heel belangrikste rede(s).

Verstandelik gestremd, bv. Down Sindroom	
Serebraal gestremd, bv. spastisiteit	
Doofheid, bv. baie min tot geen gehoor	
Blindheid, bv. baie min to geen sig	
Outisme	
Epilepsie	
Ander : spesifiseer asseblief	
Weet nie	

V19		29
V20		30
V21		31
V22		32
V23		33
V24		34
V25		35-36
V26		37

10. Toon die kind enige gedragsprobleme wat die klas versteur?

Ja	
Nee	

V27 38

Indien JA, spesifiseer asseblief

Geen Probleme	Geringe Probleme	Matige Probleme	Erge Probleme
Nooit enige probleme nie	Het soms probleme	Het dikwels probleme	Het altyd of omtrent altyd probleme

V28 39

11. Hoe sal u die kind se vermoëns op die volgende beoordeel:

	1	2	3	4	5
VERMOËNS	Baie swak tot geen funksione ring	Swak funksione ring	Matige funksione ring	Redelike goeie funksionering	Normale funksionering vir kronologiese ouderdom
Kognitiewe Vermoë <i>Hoe goed kan die kind dink?</i>					
Groewe Motoriese Vermoë <i>Hoe goed kan die kind loop & sit?</i>					
Fyn Motoriese Vermoë <i>Hoe goed kan die kind sy hande gebruik, bv. tydens knip?</i>					
Visuele Vermoë <i>Hoe goed kan die kind 'n voorwerp so groot soos 'n "Smartie" sien?</i>					
Gehoорvermoë <i>Hoe goed kan die kind hoor as jy ongeveer 2m weg staan en met gewone stemtoon praat?</i>					
Kommunikasie vermoë <i>Hoe goed kommunikeer die kind in die klaskamer met u?</i>					
Kommunikasie vermoë <i>Hoe goed kommunikeer die kind op die speelgrond met ander kinders?</i>					
Sosiale vermoë <i>Hoe goed speel die kind met ander kinders?</i>					

Amptelike gebruik

V29		40
V30		41
V31		42
V32		43
V33		44
V34		45
V35		46
V36		47

12. Ly die kind aan epilepsie?

Ja	
Nee	

Indien JA, word die epilepsie deur medikasie beheer?

Ja	
Nee	

13. Watter soort epileptiese aanvalle kry die kind?

Normaal	Petit Mal	Grand Mal
Geen aanvalle nie	Aanval duur 5 - 30 sek	Aanval duur langer as 5 min

14. Hoeveel enkel woorde kan die kind duidelik sê?

Minder as 15 woorde	
Meer as 15 woorde	

15. Hoe goed kan die kind in sinne praat?

Kan glad nie in sinne praat nie	
Kan in eenvoudige, kort sinne praat	
Kan meeste sinne praat	
Kan alle sinne, toepaslik vir kronologiese ouderdom praat	

16. Hoe gereeld verstaan u die kind se manier van kommunikasie?

1	2	3	4	5
Nooit	Amper nooit	Soms	Meeste van die tyd	Altyd

Vir amptelike gebruik

V37 48

V38 49

V39 50

V40 51

V41 52

V42 53

17. Probeer die kind om met ander mense te kommunikeer'

Ja	
Nee	

Indien JA, merk asseblief al die relevante maniere. Gebruik hy/sy:

Verstaanbare spraak	
Onverstaanbare vokalisasies	
Kopknik om Ja/Nee aan te dui	
Gebare, bv. uitwys, waai	
Gesigsuitdrukings, bv. glimlag	
Gebaretaal, vingerspelling	
Kommunikasiebord met voorwerpe, prente of simbole	
Tik, skryf	
Aanraking	
Ander : spesifiseer asseblief	

Vir amptelike gebruik

V43 54

V44 55

V45 56

V46 57

V47 58

V48 59

V49 60

V50 61

V51 62

V52 63

V53 64

18. Hoe goed verstaan die kind wanneer u hom instruksies gee?

1	2	3	4	5
Verstaan baie min, omtrent niks	Verstaan 'n paar maklike instruksies	Verstaan soms moeiliker instruksies	Verstaan meeste instruksies, maar nie toepaslik vir ouderdom nie	Verstaan toepaslike instruksies vir kronologiese ouderdom

V54 65

19. Hoe goed is die kind se leesvaardighede?

1	2	3	4	5
Geen belangstelling in boeke nie	Stel belang in boeke, hanteer dit graag, maar geen leesvaardighede nie	Het 'n sigwoordeskat van meer as 30 woorde	Laes maklike sinne, maar nie toepaslik vir ouderdom nie	Toepaslike leesvaardighede vir kronologiese ouderdom

Vir amptelike gebruik

V55 66

20. Hoe goed is die kind se skryfvaardighede?

1	2	3	4	5
Geen belangstelling in skryf nie OF krabbel net	Maak letters & vorms wat soos letters lyk	Maak letters en probeer skryf	Skryf meeste dinge, maar nie toepaslik vir ouderdom nie	Voldoende skryfvaardighede vir kronologiese ouderdom

V56 67

21. Hoe goed is die kind se wiskundige vaardighede?

1	2	3	4	5
Kan nie tel nie OF kan tel, maar sonder getalle-konsep	Het 'n idee van getalle, getallekonsep tot 5	Ken die konsep meer/minder tot 5, bv. 4 is meer as 2; 3 is minder as 5	Kan eenvoudige wiskunde doen, maar nie toepaslik vir ouderdom nie	Voldoende wiskundige vaardighede vir kronologiese ouderdom

V57 68

22. Ontvang die kind enige terapie?

Ja	☐
Nee	☐

V58 69

Indien JA, spesifiseer alle toepaslike opsies

Terapie	Tipe terapie : Individueel of Groep (Klas) terapie	Hoeveelheid ure per week
Spraakterapie		
Arbeidsterapie		
Fisioterapie		
Remediërende Onderwys		
Ander : spesifiseer asseblief		

V59 70
 V60 71
 V61 72
 V62 73
 V63 74

APPENDIX I

LETTERS TO THE PRINCIPALS FOR CONFIRMING THE APPOINTMENT DATE AND THANKING FOR PARTICIPATION

To : _____

29 August 1994

Dear _____ ,

RE : RESEARCH TO BE DONE AT _____ SCHOOL / CENTRE

I would like to confirm that _____ (fieldworker's name) will be
having interviews with the teachers from _____ School / Centre in
connection with all the children between the ages of 3 - 12 years.

I would again like to express my sincere thanks to you for your willingness to assist
me. I appreciate it very much.

Kind regards,

(Mrs) Juan Bornman

Centre for Augmentative and Alternative Communication
