# A PSYCHOLOGICAL EVALUATION OF A GROUP OF CEREBRAL PALSIED PUPILS

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TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1

# INTRODUCTION AND GOAL

Cerebral palsy is a motor handicap caused by damage to the brain. The disability causes major problems and limitations in all fields of the individual's life. One would, therefore, suppose that research would have been intensively conducted on every aspect of the cerebral palsied person's life, seeing that his disability is such a complex problem. However, as Phelps (1974:8) states, research has provided too few answers to many questions, issues and problems. Many aspects and facets of the cerebral palsied individual have been tested and discussed, but much research still needs to be done in order to understand all the problems.

The majority of studies done on cerebral palsy, particularly in this country, involve intelligence, perception, education, the parents of the cerebral palsied child, physical problems, aetiology and vocation. Very little has, however, been done in the line of personality. As Nielsen (1968:28) points out, only a limited number of personality studies have been made on cerebral palsied patients. The researcher has found this to be true to date. During the course of the research computer printouts regarding research done on cerebral palsy in this country, were obtained from the Human Sciences Research Council at regular intervals. The only really comprehensive work on cerebral palsy before the 1960's, was done by Nel (1955). It comprises an overall discussion of the cerebral palsied child, but personality is not discussed as such. It rather includes an observation of behaviour. During the sixties, studies were done on education, cognitive development, perception and career adjustment. During the seventies, studies included education, physical aspects, parental relationships and perception. During the eighties, studies involved

education, the parents of the cerebral palsied child and the role of the church. Only two studies on psychological assessment as such have been done during the last thirty years. The one Psychological Assessment of Children with Cerebral Palsy was started in 1976 by B.N. Kalshoven, but according to the University of Cape Town, it was not completed. The nature of the assessment is unknown. The other study by Sillip (1985) was to investigate a developmental intervention programme and to determine the progress in development made by a cerebral palsied group of children (aged 4 to 13 years) after six months. The hypothesis tested was that an intervention programme based on an age normed Developmental Scale will be effective in improving the level of functioning, which includes number concept, language, perceptual development, co-ordination, body image, social development and motor development (Sillip, 1985:17). The tests used were the Wechsler Preschool and Primary Scale of Intelligence, the Vineland Social Maturity Scale and a Developmental Profile devised by Sillip (Sillip, 1985:18-20). Thus, to date no study on the psychological evaluation of the personality of the cerebral palsied individual has been done as such.

This present research is conducted to give a global assessment of the cerebral palsied child, including not only intelligence testing, but specifically personality testing with reference to interest and the cerebral palsied child's view of the future.

Most of the foreign studies on the cerebral palsied individual's personality have been based on observations of behaviour and personal interviews. Wortis and Cooper (in Allen & Jefferson, 1962:59) evaluated the adjustment of 63 cerebral palsied adults and adolescents. Data about emotional adjustment were acquired from medi-

cal and social service records and from interviewing the patients and their families. Non-test information was also used by Broadway (in Allen & Jefferson, 1962:59). Linde & Patterson (in Allen & Jefferson, 1962:59) used the Minnesota Multiphasic Personality Inventory (MMPI) and achieved higher scores for the cerebral palsied testees than the control group. The higher the scores on the MMPI the more disturbed the individual is (Anastasi, 1968:443). Allen and Jefferson (1962:59), however, contend that the scores could have been due to the influence of motor disabilities. They also report the use of the Children's Apperception Test (CAT) by Gurwitz and Klopper, as well as categories formed by Phelps whose work was contradicted by the findings of Block and Shere's picture story test. Shere did not use a personality test, but he used the Fel's Appraisal of Parent Behaviour and the Vineland Social Maturity Scale. Other projective techniques mentioned by Allen and Jefferson (1962:59) are the Bender Visual Gestalt Motor Test (BVMGT) and the Draw-a-Person (DAP) test, but according to them these were restricted to individuals who had control over arm and hand. The researcher has found the latter to be true, as some cerebral palsied individuals do not have arm and hand control due to spasticity or athetosis.

Intellectual performance is heavily influenced by such personality factors as ego-strength, emotional balance, motivation, energy and level of aspiration. However, as was found, personal characteristics are better understood if the individual's intellectual ability is known. Thus, in evaluating the future possibilities of the individual cerebral palsied patient, his personality and whole life situation should be taken into account. Only when intellectual potential is seen in this broader context, can a thorough and comprehensive background for prediction be made (Nielsen, 1968:32).

In this research this prediction encompasses an understanding of the cerebral palsied individual's difficulties in order to stimulate his development. His interest in and expectations of the future are included in order to recommend the stimulation of certain interests, behaviour patterns and attitudes, in order to help him to develop into a "normal mature" adult.

It has been pointed out that there are problems involved in assessing children with motor disabilities and that these disabilities make objective testing of the cerebral palsied individual very difficult. However, the researcher feels that psychological assessment of the cerebral palsied individual is valuable where more than one test is used. As has been seen from this study, different tests reflect similar results and there is even an overlapping in this respect between intelligence and personality tests. In the face of such correlating results between tests, the researcher is confident that the assessment is thus of value.

It is of utmost importance that the cerebral palsied individual be encouraged and assisted in developing latent interests during childhood and adolescence. A global assessment of the cerebral palsied child is valuable in the development of attitudes and experiences to assist him in the attainment of a meaningful future, thereby justifying his existence.

## 1.1 General Aims of this Study

The general aim of this study is to analyze the symptomatology of the cerebral palsied child at a physical and psychological level and thereby make recommendations for the optimal functioning of the child in the light of literature and empirical findings.

## 1.2 Specific Aims of this Study

This research has been conducted in order to

1.2.1 determine whether a group of cerebral palsied children and a control group differ significantly with regard to intelligence as measured by the Senior South African Individual Scale (SSAIS).

1.2.2 determine whether a significant difference exists in the interest patterns of a group of cerebral palsied and normal children respectively as reflected by the Cape Vocational Interest Questionnaire (CV).

1.2.3 determine whether there are significant differences between the personality characteristics of a group of cerebral palsied and a group of normal children as evaluated by the High School Personality Questionnaire (HSPQ), the Thematic Apperception Test (TAT), the Draw-a-Person Test (DAP) and the Bender Visual Motor Gestalt Test (BVMGT).

1.2.4 make specific recommendations for the optimal development of the cerebral palsied children's potential in the light of literature and empirical findings.

The present design of this study is as follows:

After the introduction and statement of the aim of the study in chapter 1, the condition "cerebral palsy" is defined and classified according to findings in literature. Chapter 3 deals with the definition of intelligence and personality and a discussion of each as background to the research. In chapter 4 the method of research is conducted and the results are discussed in chapter 5. Recommendations based on the results and discussion appear in chapter 6.

CHAPTER 2

# DEFINITION, HISTORICAL BACKGROUND AND CLASSIFICATION OF CEREBRAL PALSY

In this chapter the term "cerebral palsy" is defined, the historical developments are given and the various classifications of cerebral palsy are described.

## 2.1 Definition

The word "cerebral" means "pertaining to or relating to the brain or cerebrum" (Oxford University Press,1978:230). "Palsy" means "to paralyse" (Oxford University Press, 1978:407). Cerebral palsy is a major disorder of the nervous system and has significant behavioural, educational and social consequences (Hobbs, 1978:76). It is, however, not a disease entity, but a static encephalopathy whose manifestations may include malfunction of the motor system (Bax, 1981:703). Although it is most frequently present at birth, it may be acquired anytime due to head injury or infectious disease and as a result of the brain injury it is characterized by varying degrees of disturbance of voluntary movements (Gerhart & Weishahn, 1980:104). The major presenting difficulty of the cerebral palsied child is motoric (Barnett, 1982:162). The amount of physical ability may vary greatly. Thus, some individuals may have only slight fine motor co-ordination problems, some may walk with extreme difficulty and others may be severely handicapped (Bigge & Sirvis, 1982:302). A defect may even be present in infancy, but not identifiable until a later age when an anticipated higher level of functioning fails to emerge, such as fine motor co-ordination (Hewett & Forness, 1984:164).

Lord (1972:1) defines cerebral palsy as a disturbance

of motor function due to damage to the brain before, during or after delivery of the infant. Perlstein (1960: 51) sees this condition as one being characterized by paralysis, weakness, inco-ordination, or any other abnormality of motor function involving motor-control centres of the brain.

Nel (1955:18) is of the opinion that is is better to talk about the "serebraalgestremde kind" because the term includes all the possible results of brain-damage. According to him the term "brain-damaged", as used in America, refers to the causes and not the results sprouting from this condition, while the term "serebraalgestrem" includes causes and results. Only in this sense can the term "brain-damaged" be synonymous to "serebraalgestremdheid". Engelbrecht (1975:3), however, says that although cerebral palsied children are brain-damaged, they are not synonymous to the "brain-damaged child" or "brain-injured child". He feels that before the apparently absurd conclusion is made that there are children with brain-damage who are not brain-damaged children, authors supporting this view should reconsider their scheme, category, definition and symptomatology of what they call "the brain-damaged child".

Foley (1969a:3-4) adds that although "palsy" commonly refers to movement, it actually means "a loss of motion or sensation in a living part or member". The word is, therefore, simple and useful when applied to the adult who has had a stroke or lesion of the spinal cord, but the term "cerebral palsy" has a much more complex meaning. Thus, in an adult, the signs of paralysis are those concerning the dissolution of function of an established nervous system, whereas, in the case of an infant, the developing nervous system has been afflicted. For this

reason, the manifestations may not be the same as those encountered in the adult. Furthermore, several disorders of motor function are rather clumsily gathered together under the term "cerebral palsy". Thus, one finds that a child may be "paralysed" by ataxia or unsteadiness, or be "paralysed" by involuntary movements, in which cases there can hardly be said to be a want of movement or sensation. Therefore, the very imprecision of the term makes it one to be frowned upon, but it is still useful all the same and indispensable.

It is striking that most writers and researchers refer to cerebral palsy as being "non-progressive". This non-progressive quality is one of the basic criteria in diagnosing cerebral palsy. It implies that the damage done to the brain, once incurred, is essentially stationary. The condition of the person does not worsen with time, unless there is a lack of intervention in which maximizing of skill potential will be lost (Bigge & Sirvis, 1982:302). Thus, the clinical pattern in cerebral palsy, once established, tends to remain static and unaltered (Towbin, 1960:12 & 13). The responsible cause has done its work and is no longer operating. The child, therefore, suffers from the results of a past lesion or damage rather than an active disease and the tissue changes are 'fixed' rather than 'progressive'. This implies that the anatomic lesion will not increase in size so that the functional disturbances dependent on the anatomic deficit will probably not worsen. However, after injury the tissues making up the nervous system are replaced to a very small extent, but the nerve cells themselves are never replaced. The lesion is also likely to be diffuse rather than localized (Lord, 1972:2).

Molnar and Taft (1973:86) point out that despite the non-progressive brain lesion, alterations may be observed in cerebral palsied infants and young children. These changes may be ascribed to the continuing, though defective, maturation of the central nervous system. Deterioration of motor function may be seen in adolescents having a moderately severe degree of motor involvement, but this "progression" may be attributed to combinations of sudden growth, changing body proportions, progressive orthopedic deformities and the inability of the skeletal musculature to meet the increased demands for strength and endurance.

In conclusion then, cerebral palsy is a non-progressive disorder of the nervous system resulting in disturbance of motor function. The motor disturbances may differ in severity in different individuals. In children the disorder is caused by damage to the developing nervous system, while in adults the damage is reflected in a decrease in the function of the established nervous system. The disorder is caused by a past lesion and the condition will not worsen. During adolescence, however, motor difficulties may increase due to developmental changes. The term "cerebral palsy" is not very precise in its description of the affliction, because the condition involves a handicap in some cases rather than a paralysis. Nonetheless, the term "cerebral palsy" has traditionally been used in reference to this disorder and it has remained as such. For this reason it will also be used in this study.

## 2.2 Historical developments and the classification of cerebral palsy

### 2.2.1 Historical Background

Cerebral palsy is a state which has been known to man since very early times, particularly as it is often very obvious in its physiological manifestations. Even in the Bible (Mark 2 verses 3-10) we find mention of palsy.

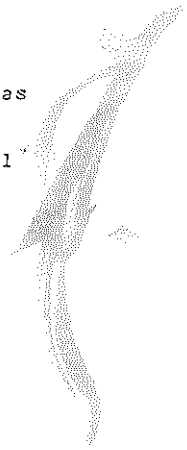
Medical descriptions of conditions like cerebral palsy appeared in medical textbooks as far back as 1497. The first clinical description of 'spastic rigidity resulting from the act of birth' was given by Dr William John Little in 1843 and later it was clarified and called cerebral palsy by Dr Winthrop Phelps (Bigge & Sirvis, 1982:329).

Gradually it became recognized that children with cerebral palsy should have educational opportunities. Such schools were the last to be erected for cerebral palsied individuals, despite the establishment of schools for other handicapped persons. This delay was due to difficulties involved in educating these children, as well as the need for a generous pupil-staff ratio (Bigge & Sirvis, 1982:329).

### 2.2.2 Review of Early Classifications

During the first half of the 19th century, pathologists showed the first consistent interest in children with cerebral palsy. Thus, classification was based on pathological changes. Different forms of cerebral atrophy were defined. During the second half of the

19th century, attempts were made to define clinical syndromes, each of which was characteristic for specific changes. The possibility of classifying cerebral palsy syndromes by aetiological findings was also considered and the most comprehensive scheme was that presented by Sachs in 1891. However, it was not possible to make categories which were mutually exclusive both in their aetiological and clinical findings. It was only when distinctions were made between the symptoms of paralysis of spinal origin and those due to cerebral damage, that clinical classification of cerebral palsied patients became possible (Ingram, 1963:2-3).



The first classification of cerebral palsy was that of Little who was concerned with demonstrating that the various clinical orders which he described were attributable to birth injury. This classification of "central birth palsies" recognised hemiplegia, paraplegia and rigidity. The American classification, during the second half of the 19th century, discarded rigidity and included athetosis. This was followed by Freud's classification based on neurological syndromes (Ingram, 1964:4-5).

The increase of interest in therapy for cerebral palsied patients since the early nineteen thirties, has meant that clinicians and therapists with differing outlooks have become concerned with the diagnosis and treatment of the condition. Classifications most widely used today are based on suggestions made by Phelps in the nineteen forties (Ingram, 1964:6-7).

### 2.2.3 Recent Classifications

Recent classifications may be divided into three major groups, viz. the clinical classification, the neuro-anatomic classification and the classification based on pathological factors.

#### 2.2.3.1 The Clinical Classification

According to this classification, types of cerebral palsy are based on the limbs affected or on the nature of the abnormal movement demonstrated (Bigge & Sirvis, 1982:302). The researcher has also found this to be the most widely used recent classification:

##### 2.2.3.1.1 Monoplegia

Only one limb is affected.

##### 2.2.3.1.2 Paraplegia

Both lower extremities are affected.

##### 2.2.3.1.3 Hemiplegia

Both extremities on the same side are affected, e.g. the right arm and leg. This is due to a lesion of the opposite cerebral hemisphere (Foley, 1969a:5).

##### 2.2.3.1.4 Diplegia

All four limbs are affected, with the greater disability being in the legs.

2.2.3.1.5 Quadriplegia

All four limbs are affected approximately equally (Bigge & Sirvis, 1982:303). According to Foley (1969a:5), the musculature innervated by the nerve stem is not involved here and if it is involved, the condition is sometimes termed "double hemiplegia". It is this type of cerebral palsy that is called "Little's Disease". If the movement defect on both sides is of equal severity, the term "symmetrical quadriplegia" is used. In some cases they may be bilateral hemiplegias where both sides of the body are affected. In spastic quadriplegia the movement patterns are abnormal due to the presence of spasticity in certain groups of muscles which can be demonstrated by the stretch reflex (Woods, 1957:54, 55 & 57).

According to Engelbrecht (1975:5), monoplegia and triplegia are actually theoretic terms because usually two or four limbs are affected. Diplegia refers to the state in which the legs are affected, the arms to a small extent or not at all. Foley (1969a:4) says that monoplegia is a sub-group of hemiplegia, and paraplegia and atonic diplegia are sub-groups of diplegia.

Paraplegia is a movement defect which varies according to the position in which the child is. When the child is held up by support under the arms, the scissors appearance is given due to extension, adduction and internal rotation of the hips, with extension of the knees and flexion of the feet. In flexion, there is flexion of the hips and knees, abduction of the hips and dorsiflexion of the ankles. The position of the joints is caused by spasticity in the muscle group

concerned. Muscle tone is also abnormal. Therefore, a paraplegic child who tries to walk before correction by treatment of the abnormal muscle tone, will develop the scissors gait. The paraplegic child sitting in a chair for long periods of time will develop severe flexor deformities of the hips and knees (Woods, 1957:18).

2.2.3.1.6 Spasticity

Spastic cerebral palsy is characterized by jerky or explosive motions when the individual initiates a voluntary movement (Gearheart & Weishahn, 1980:104). In this type of cerebral palsy, muscle tone is increased and muscles are tight and overactive. Unable to contract normally, they resist movement, which if it occurs at all, is slow and jerky.

Rigidity is a severe form of spasticity in which muscles are continually tense (Bigge & Sirvis, 1982:303). Motions of the extremities are made slowly and with great effort and the individual's efforts are blocked when attempts are made to bend various joints, due to the contraction of opposing muscles.The muscles of the rigid cases are characterized by stiffness and they respond very slowly and with great effort to stimulus. The rigid muscles have a lack of elasticity. Whether the muscles are drawn in or stretched out, they remain stiff and hard. Usually the patient lies in such a rigid outstretched position that his back is arched. When the patient sleeps, various degrees of relaxation do occur. These cases are treated the same as other spastic cases, but the exercises are conducted quicker because the reflex of reaching is absent in the rigid cases in contrast to the other spastic cases. Therefore, the tension diminishes as

soon as the legs and arms, which are first moved slowly, are exercised quickly and rhythmically. However, these cases do not respond favourably to treatment (Nel, 1955:29).

Spasticity is caused by damage to the cerebral cortex, particularly the centres which control muscle movements (Van den Heetkamp, 1979:196).

2.2.3.1.7 Athetosis

The individual with athetosis also has difficulties with voluntary movements, but controlling the movement in the desired direction is an added problem, resulting in the demonstration of extra or purposeless movements (Gearheart & Weishahn, 1980:104). The uncontrolled and irregular movements are due to fluctuating muscle tone (Bigge & Sirvis, 1982:303).

Molnar and Taft (1973:91) distinguish between two aetiologically different athetoid groups:
The one group comprises the athetosis following bilirubin encephalopathy which causes lesions of the basal ganglia and the eighth cranial nerve nuclei. Signs and symptoms of this athetosis are high frequency hearing loss or deafness, dysarthia and conjugate upward gaze palsy, while the intellectual ability is well preserved. The second type of athetosis is related to perinatal anoxia causing a more diffuse damage. Associated disabilities in this type of athetosis are mental deficiency and seizure disorders.

Characteristic of the athetoid are his repeated, involuntary, slow movements which are the result of injury to the basal ganglia. According to Foley (1969b:24) these irregular, arrhythmic writhing movements affect almost all muscles with the exception

of those of the eyes, neck and arms. The movements are less evident when the person is in repose, when his attention is deeply held, when he is tired or feverish and when he is in a prone position. The movements are most evident when the person is in the vertical position, when his emotions are provoked, when he experiences insecurity, when he is startled or when he wishes to perform a voluntary movement. When the movements are least evident they involve slow rippling or rolling movements of the tongue, or retraction and protrusion of the lips, or fairly rhythmical flexion and hyperextension of the fingers and toes. When the movements are most marked, they involve violent writhing or 'throwing' movements of the whole body, preventing any voluntary activity.

2.2.3.1.8 Ataxia

Cases of ataxia are characterized by inco-ordination which includes lack of balance, whether trunk or limbs and usually there is diminution of muscle tone. They also walk with their legs apart (Foley, 1969a:5). According to Engelbrecht (1975:5) the condition is due to injury to the cerebellum. Other characteristics include a lack of muscle co-ordination with regard to hand skills and a lack of the sense of kinaesthesia. The child also has problems with his direction of movement. Bigge and Sirvis (1982:303) mention that individuals with this kind of cerebral palsy have difficulty in maintaining their position in space and controlling balance reactions.

Congenital cerebellar ataxia, due to defective development of the cerebellum or its pathways, is rare. It is characterized by impairment of control of the head and trunk, as well as hypotonia and an irregular tremor of

the limbs when voluntary movement is attempted. Ataxia may be limited to the limbs or to the trunk.Trunk ataxia may make both sitting and standing impossible. At first, this defective fixation of the head and trunk appears as head lag and lolling and such a baby cannot be sat up at the age of six months. In the adult, however, ataxia is associated with cerebellar disease, or in terms of loss of the special sensations derived unconsciously from joints and muscles, because without this inflow of information, co-ordianted movement is almost impossible. In the child, impairment of postural fixation may result from lesions almost anywhere in the circuits governing movement, e.g. in the basal ganglia which are concerned with the posture of the head and trunk. Destruction of these basal ganglia results in an inability to raise the head when in the prone position.

2.2.3.1.9 The Atonic Group

This is also known as the hypotonic group. Muscle spindles control the length and tension within all skeletal muscles. Under normal circumstances the tension of the spindle is kept at a constant level regardless of the length of the muscle in which the spindle lies, so that it can respond to stretch. In hypotonia the muscle spindles are slack and fail to respond to stretch unless it is extreme. When the limbs are moved, there is no or very little resistance. Once more the cause is due to injury to the cerebellum (Foley, 1969b:23).

2.2.3.1.10 The Mixed Group

The types of movement described above may occur in various combinations in cerebral palsied individuals (Bigge & Sirvis, 1982:303).

2.2.3.2 The Neuroanatomic Classification

This classification involves the correlations of the neurological manifestations with the site of damage in the brain. The anatomic site and the extent of damage rather than the cause of the damage is of importance here. Anatomically cerebral palsy is due to damage in the pyramidal system or the extra-pyramidal system or both (Towbin, 1960:16).

2.2.3.2.1 The Pyramidal System

Interference with the pyramidal tract or its cortical origin is frequently equated with spasticity. However, spasticity is not purely of pyramidal origin. Pure pyramidal lesions seem to produce hypotonus and hyporeflexia with loss of voluntary control and loss of cortical reflexes such as supporting, placing and hopping reactions (Crothers & Paine, 1959:40-43 and Towbin, 1960:16).

2.2.3.2.2 The Extra-pyramidal System

The extra-pyramidal system involves the basal ganglia and their connections. The term "extra-pyramidal cerebral palsies" is used to separate predominantly spastic cases from the others and "extra-pyramidal" is a more convenient term than "nonspastic". These patients are more striking for their disorders of movement and for additive movement on attempted activity than for more fixed features as in spasticity. The most important disorders of movement in extra-pyramidal cerebral palsy are athetosis (Crothers & Paine, 1959:44-45 and Towbin, 1960:16).

2.2.3.2.3 Mixed Pyramidal Types

Mixed pyramidal types refer to the mixed types of cerebral palsy which involve pyramidal and extra-pyramidal connections.

2.2.3.3 Classification According to Pathological Factors

In this classification three factors are considered. They include the aetiology, pathogenesis and morphological end-picture of the disorder. Aetiology refers to the agents and mechanisms that cause the process of disease in the tissues. Pathogenesis refers to the phase-by-phase tissue changes occuring during the genesis or evolution of the brain lesions. The morphological end-picture involves the lesions of the brain in cerebral palsy encountered at autopsy. On the basis of these three factors the pathological classification can be divided into systemic disorders producing cerebral palsy, local intracranial pathogenetic processes in cerebral palsy and developmental defects of the brain in cerebral palsy. Systemic disorders producing cerebral palsy are the results of destructive reactions in the brain during the course of a generalized bodily disturbance, such as anoxia and systemic processes like erythroblastosis fetalis. Local intracranial pathogenetic processes in cerebral palsy are the result of mechanical injury, haemorrhage, or local encephaloclastic processes. Developmental defects refer to abnormalities of hereditary or induced nature, such as defects due to maternal rubella (Towbin, 1960:18-21).

In this classification according to pathological factors, aetiological factors are of prime importance and the researcher gives more attention to these factors which may be classified prenatally, perinatally and postnatally:

2.2.3.3.1 Prenatal Factors

Prenatal factors are those factors operating from the time of conception to the time of labour (O' Reilly & Walentynowicz, 1981:634). They include genetically inherited transferences, radiation, infections and diseases, anoxia and metabolic disturbances:

a) Genetically Inherited Transferences

Woods (1969:9) mentions that between 5 and 10% of all cases of cerebral palsy are inherited. According to her, dominant inheritance, where the condition is passed from parent to child, is rarely the cause of cerebral palsy because handicapped people do not marry as frequently as do normal ones. The recessive type is more common, where both parents carry the same abnormal gene. When they have children some may be normal, some may be normal but carry the abnormal gene and one in four will have the inherited disease. The children with the abnormal gene will only pass it on if they marry a partner with the same gene. Inherited forms often include spastic paraplegia, or severe spastic quadriplegia with microcephaly, or cases of ataxia and incoordination.

b) Radiation

Exposure to ionizing radiation during early gestation may cause microcephaly, other malformations of the brain and be associated clinically with spasticity and other neurological symptoms. The damaging effects of radiation during late pregnancy are not known, but, as indicated by many studies on experimental animals, it is likely that high dosage and prolonged exposure

may cause significant encephaloclastic damage to the immature brain (Towbin, 1960:108). Further research in this field is urgently needed (O' Reilly & Walentynowicz, 1981:640).

c) Infections and Diseases

Various infections and diseases may cause cerebral palsy in the foetus:

Kernicterus is a disease which is caused by erythroblastosis fetalis, septic and febrile diseases and prematurity. Erythroblastosis fetalis is a condition resulting from blood incompatibility between the mother and the foetus. If the mother is Rh negative and the foetus is Rh positive, antibodies are built up in the mother if pregnancies are repeated. These antibodies circulate through the placenta to the foetus and hemolyze the red cells of the offspring. The destruction of the red cells is associated with the development of jaundice which is a prelude to the development of kernicterus. Kernicterus damage is also caused by prematurity, severe infections, diarrheal diseases, cerebral haemorrhage and maternal diabetus melitus. As kernicterus damage is centred in the basal ganglia, the clinical pattern evoked is that of extra-pyramidal tract disease and the predominant neurological feature is athetosis (Towbin, 1960:86, 89, 90).

Congenital syphilis is the cause of parenchymal damage in the brain as well as in other organs. Infection in infants causes convulsive disorders, hemiplegia and paralegia (Towbin, 1060:110).

d) Anoxia

Anoxia means a lack of oxygen. Cerebral palsy is often the result of a severe reduction in the oxygen supply to the foetus (Bigge & Sirvis, 1982:301). Prenatally the interference with oxygenation may be due to pathological mechanisms which develop in the mother or foetus during gestation (Towbin, 1960:23). According to Crothers and Paine (1959:55) cerebral anoxia is of major importance in the production of cerebral palsy.

e) Metabolic Disturbances

Systemic disturbances of biochemical nature resulting in errors in protein metabolism causes phenylpyruvic oligrophenia (phenyldetonuria). The outstanding clinical manifestations of this disorder is mental deficiency, but a significant number of cases present the picture of cerebral palsy with diplegia, pyramidal signs, tremors and athetosis (Towbin, 1960;109).

2.2.3.3.2 Perinatal Factors

Perinatal factors include conditions associated with premature delivery, asphyxia and mechanical birth trauma:

a) Premature Birth

This is a major aetiological factor in the development of brain dysfunction and increased incidence of cerebral palsy (Dierker & Hertz, 1983:43-44). The spastic tetraplegic group has the greatest incidence of prematurity (Crothers & Paine, 1959:66).

b) Asphyxia

Foetal asphyxia entails the suffocation of the foetus as a result of disturbances in oxygenation. Extrinsic pressure on the umbilical cord may result in partial compression of the umbilical vein, causing a decreased return of oxygenated blood from the placenta to the foetus (Dierker & Hertz, 1983:47). Prolonged delivery can also cause asphyxia. Woods (1969:11) says that in the case of cerebral palsy following a twin birth, it is often the second twin that is affected owing to delay in the child's birth. Crothers & Paine (1959:66) report a greater than normal frequency of twinning in all types of cerebral palsy, except spastic tetraplegics.

c) Mechanical Birth Trauma

Midforceps delivery and breech extraction can cause brain damage (Golden & Rubin, 1983:48). Breech extraction is especially frequent in extra-pyramidal cerebral palsy (Crothers & Paine, 1959:66). Forceps and breech extractions often lead to subdural haemorrhages (Rubin, 1983:55).

In 1960 Connor (1960:27) stated that according to the Children's Bureau Stastical Series No. 21 of the Washington Department of Health, 90% of the cases of cerebral palsy were due to perinatal factors. However, Dierker and Hertz (1983:45) report a decrease in these number of cases. During the past 10-15 years several major changes have taken place in the way deliveries are managed. Thus, with respect to prematurity, much research has been directed in recent years toward developing effective therapeutic methods of inhibiting

labour, thereby preventing premature delivery. Furthermore, Friedman curves (a technique for graphing labour progress) are widely used for early identification and subsequent treatment of abnormal labour progress in order to minimize risk of birth injury and brain damage.

2.2.3.3.3 Postnatal Causes

The postnatal causes include trauma, infections, vascular accidents, toxic factors, anoxia, brain tumour and child abuse (O' Reilly & Walentynowicz, 1981:634).

a) Trauma

These include meningeal haemorrhage and direct injury to the brain:

During the process of cephalic moulding, with the elongation and compression of the head, various injuries are caused. A large persistent subdural haemorrhage over the cerebrum may cause hemiplegia. When direct trauma to the brain has been effected during birth, lacerations and hematomas of the brain may occur. After birth these hematomas enlarge and account for spasticity (Towbin, 1960:117-119). When bloodvessels in the brain have been ruptured, the clinical picture is determined by the extent and progression of the bleed. Possible consequences are the development of seizures and intracranial pressure (Rubin, 1983:55).

b) Infections

Tuberculosis in the infant causes heavy damage to the nervous system in the forms of meningitis or hydrocephalus. According to Rubin (1983:56) almost all organisms causing sepsis in the newborn can cause meningitis. Another form of tuberculosis causes tuberculomas. If these encephaloclastic changes involve the motor ares of the brain, varied patterns of cerebral palsy may be evoked (Towbin, 1960:111).

Viral infections such as measles, chicken pox and influenza may be complicated by the development of encephalitis, which can cause oaralysis of limbs, epilepsy and other nervous system symptoms. Cytomegalic inclusion (salivary gland virus or inclusion disease) is a systemic infection which can cause severe cerebral damage (Townin, 1969:11-12).

c) Vascular Accidents

Cerebral thrombosis occurs during convalescence from diptheria, scarlet fever, or other infectious diseases. Arteritis develops and thrombosis of large cerebral arteries and extensive cerebral infarction may be caused. Cerebral thrombosis is the commonest cause of infantile hemiplegia (Towbin, 1960:120).

d) Toxic Factors

Exogenous poisons have been related to the induction of malformations. Lead poisoning is of major importance here (Towbin, 1960:155 and O' Reilly & Walentynowicz, 1983:634).

e) Anoxia

This has already been discussed under prenatal factors. Postnatally it can occur in conditions such as epilepsy. There has been a reduction in anoxia in recent years, thus a reduction in the incidence of athetosis caused by anoxia (O' Reilly & Walentynowicz, 1981:634 & 640).

f) Brain Tunours

Choroid plexus tumours in infants cause hydrocephalus, and symptoms of spasticity and ataxia (Towbin, 1960:146).

g) Child Abuse

Child abuse is increasingly becoming a significant aetiological factor and in many cases it is difficult to prevent (O' Reilly & Walentynowicz, 1981:640).

2.2.3.4 Secondary Disabilities

Other disturbances are also found, including disturbances manifested in the different sensory and motor modalities and disturbances in mental or complex cognitive psychological processes.

2.2.3.4.1 Disturbances Manifested in the Different Sensory and Motor Modalities

Disturbances may occur in the visual, auditory, tactile, olfactory, taste and motor modalities: Agnostic disturbances are also included here. The term "agnosia" refers to an inability to perceive and to recognize as a result of a dysfunction in the brain. This inability to recog-

nize is, however, not ascribed to sensory defects, mental retardation, or unfamiliarity with the object. The word "agnosia" is added to the term designating the modality involved. Thus, one finds visual agnosia, auditory agnosia, etc. (Myklebust, 1973:171 & 174).

a) The Visual Modality

Visual agnosia may apply to objects, pictures, recognition of depth, spatial orientation, symbols such as written words or letters, and even for faces or places resulting in the fact that the patient cannot recognise his own home, street or bed. The commonest form of visual agnosia is visual agnosia for position (spatial disorientation) and visual agnosia for symbols. This makes reading impossible. In spatial disorientation the child finds it difficult to determine a specific position in space e.g. below, left, right, above, underneath, behind, inside and above. The child also distinguishes poorly between different forms e.g. a circle, a triangle, or a star. Another problem the child may experience is in connection with visual conceptualization. The child is unable to associate and integrate meaningfully in his manipulation in space. Thus, he experiences mathematical problems. Visuo-motor difficulties are other problems that the child may have to cope with e.g. he may find it extremely difficult to draw a straight line or a circle despite the fact that he knows exactly what he wants to do. A further problem is that he may concentrate on detail to such an extent that the meaningful context of what he sees is lost (Van den Berg, 1971:39-40).

Meyerson (1968:1-5) refers to various studies having been done and he uses them as a basis to declare that more than 50% of cerebral palsied children suffer from visual disturbances. He mentions eye defects such as inefficiency in perceiving keenly, myopia, muscle imbalance and squinting (particularly in athetoid children), lack of colour of the retina, optic atrophy, nystagmus and spatial disturbances. The visual problems are mostly caused by weak muscle control, a poor eye convergence and thus different degrees of being squint.

Squints are common in the eyes of cerebral palsied children and are the result of lesions affecting both sensory and motor pathways. They indicate the need for a full objective and subjective examination. The inability to converge the eyes in binocular vision results in the child becoming tired very soon and he also experiences difficulty in following the lines or typed matter (Pritchard, 1969:64).

Another major problem is distinguishing between foreground and background. Some children confuse the figures and the background, others reverse background and figures and others are unable to see any difference whatsoever between figures and background. The child is unable to choose items selectively in his field of vision. Therefore, the full implication of what he sees is lost because he perceives everything that he sees at the same time without concentrating on one or two items (Cruickshank, 1961:6).

b) The Auditory Modality

Auditory agnosia is a condition which may entail the incapability of recognising the significance of any

kind of sound, all noises being meaningless (Foley, 1969c: 39). The inability to recognize the meaning of spoken words is known as "auditory verbal agnosia" and it represents a breakdown of the association processes essential to the basic symbolic functions of language (Schonell, 1974:187 & 190). The individual apparently hears the speech signal well enough, but does not recognize it as a meaningful stimulus (Mysak, 1976:212).

Auditory verbal agnosia is also known as receptive aphasia. The auditory pathway from the ear through the brain stem to the auditory cortex is intact, but the message, on arrival, cannot be unravelled and interpreted. This condition has also been called "central deafness" (although some authorities strongly disapprove), because in the early stages of the child's development it seems to involve the reception of speech as well as that of other meaningful sounds. In such cases, the child seems unable to listen. Children with receptive aphasia are characterized by inability to listen, absence of speech, relatively good mechanical and social abilities and poverty of gesture, which is uncommon amongst "ordinary" deaf children. Receptive aphasia is also known as auditory imperception and it is an agnosia mainly for heard speech symbols (Foley, 1969c:39).

When a word is heard, it is accompanied by a kinaesthetic written image, a visual image, a spoken image and an auditory image. In acoustic word agnosia, the auditory image is not recognized. Neither can the patient hear his mistakes and, therefore, he sometimes uses a wrong or unintentional word. This is known as paraphasia (Nielsen, 1965:55). It is also characterized by errors of omission, substitution and transportation of sounds or words (Eisenson, 1976:1274).

c) The Olfactory Modality

Olfactory agnosia is the inability to recognize smells.

d) The Taste Modality

Agnosia of taste refers to the inability to recognize different tastes.

e) The Tactile Modality

Astereognosis is the inability to recognize objects by touch and yet no sensory defect as such is present. All the sensations of touch, heat, cold, intense pain and superficial pain and of muscle and vibrations must be intact before the inability to identify an object may be ascribed to astereognosis. Usually the lesion in the parietal lobe is on the opposite side to the affected hand (Nielsen, 1965:55).

Asomatognosia is a disturbance with regard to body image. Two sub-forms may be differentiated, viz. autotopagnosia and anosognosia for hemiplegia. Autotopagnosia is a disturbance in orientation with regard to visual body image. The individual is unable to recognize parts of the body, cannot give a representation of his own anatomy and shows an inability to point out different parts of the body when asked to do so. Anosognosia of hemiplegia is a disturbance of body image involving the inability to recognize or the denial of personal functional handicaps. Lack of recognition here usually entails not recognizing one-sided paralysis present, usually of the left side of the body (Allen & Jefferson, 1962:72 and Nielsen, 1961: 129 & 134). Denial is explained by Evans (1977:409) in greater detail. Usually the disturbance of the body

image described by the patient correlates relatively well with the physical evidence of it, so that the distinction between the subjective world of symptoms and the objective world of symptoms is small. In certain conditions, however, there is such disparity between the body image as described by the individual, or as expressed in his non-verbal behaviour, and the objective picture of his body, that the disparity itself is a prominent sign. This may particularly be seen in cerebral palsied individuals who deny the existence of their blindness or who disown their hemiplegic limbs.

f) The Motor Modality

Disturbances in this modality include movement.

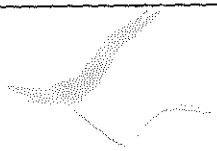
Apraxia is the loss of ability to perform purposeful movements or complex acts in the absence of paralysis when comprehension is satisfactory (Sies, 1974:37). The impairment of the voluntary and purposeful movements cannot be accounted for on the basis of motor weakness (Eisenson, 1971:1224). It is an inability to transduce auditory and visual information into motor activity (Myklebust, 1965:18). It is particularly the loss of the ability to perform elementary units of actions in the expression of language (Woods, 1971:7). Thus, apraxia may be non-verbal or oral (Eisenson, 1971b:1271-1272).

In ideomotor apraxia an inability to perform movements when ordered to do so, is present, in spite of the individual understanding the instructions and there being an absence of paralysis. The performance is impaired as though there had been a breakdown between the idea and the required motor pattern. This type of apraxia can involve the face, so that the child cannot

close his eyes, or show his teeth, or blow, suck, kiss or wink if it is expected of him, though he may do these involuntarily at times. He may also have difficulty in protruding his tongue. Apraxia for voluntary eye movements can also occur. Ordinary eye movements are normal, but it is impossible to turn the eyes on command to one or the other side or to follow a moving object. These disorders of following movements may make reading difficult. Apraxia can be limited to hand movements, individual finger movements (can be tested only if there is no paresis), or for such movements as hopping or dancing (Foley, 1969c:41 and Eisenson, 1971a:1224-1225).

Apraxia for positioning the trunk in bed or on a chair may also occur and an important kind of aproxia encountered in children with brain damage is apraxia for dressing which is a mixture of constructional apraxia and a disorder of the body image. Constructional apraxia is a disturbance in movement found in assignments containing spatial representation. It is a disturbance in spatial structuring and is visually controlled. It also affects ordinary activities like tying knots and doing buttons and laces. The child with constructional apraxia experiences difficulty in building a two-dimensional unit in order to form a three-dimensional figure. The spatial part of the assignment is amiss. Two-dimensional patterns (such as the ability to recognise and reproduce letters, numbers and other symbols are essential for reading, writing, arithmetic and particularly for the skills that the disabled child is likely to encounter in later life, e.g. sorting, matching and assembling (Foley, 1969c:42).

Perceptual and constructional difficulties are commoner in cases of spastic cerebral palsy, including



hemiplegia, than in athetoids, occurring in between a third and a half, for example, spastic diplegias. Apraxia for limb movements (excluding the effect of paralysis or involuntary movements) is not very common, but facial apraxia is fairly common and may also give an unjustified expression of imbecility. Apraxia for eye movements (difficult to distinguish from kinds of complex ocular palsy) is rare, but it is important because it may be one of the irremediable causes of difficulty with reading (Foley, 1969c:42).

"Oral apraxia may be defined as an inability or a severe impairment in the individual's ability to perform voluntary movements involving muscles of the larynx, pharynx, tongue, lips, palate and cheeks, although automatic movements of the same musculature appear to be unimpaired" (Eisenson, 1972:190). It describes a neurogenic articulatory disorder as a result of a lesion of the auditory left cerebral hemisphere, in which limitations in direction and range of articulatory movements are not major contributory factors (Mysak, 1976:139).

At this stage a differentiation between apraxia and dyspraxia should be made. Apraxia refers to a very severe impairment with a total disability, while dyspraxia refers to a less severe amount of impairment (Eisenson, 1972:190).

2.2.3.4.2 Disturbances in mental or complex cognitive psychological processes

Various disturbances in mental and cognitive functioning occur, the major group here being aphasia or dysphasia. At this stage it is important to make a distinction between the use of the prefix "a-" and the prefix "dys-".

During the 1930's and the 1940's aphasiologists used the prefix "a-" for severe forms of aphasic disorders and "dys-" for moderate forms. As has been mentioned under apraxia, "a-" refers to severe impairment, while "dys-" refers to less impairment. At present, however, the single prefix "a-" is used for all degrees of disorder and the degree is expressed by means of the modifying adjectives, mild, moderate or severe (Eisenson, 1971a: 1228).

a) Aphasia or Dysphasia

Aphasia is a reduction of available language (Schonell, 1974b:138). It is an impairment of language functioning of persons who have incurred localized cerebral damage resulting in a reduced likelihood that an individual involved in a communicative situation will understand or produce appropriate verbal formulations (Eisenson, 1971a:1220). It includes a loss of symbolic formulation and expression, due to brain lesion. It is synonymous to dysphasia which is defined as a partial or complete loss of the ability to speak or comprehend the spoken word due to injury, disease or maldevelopment of the brain (Wood, 1971:7 & 11). Sies and Butler (1974:176) describe dysphasia as a medical term meaning impairment of the ability to use language, a language-disability following from nerve damage as related to brain injury.

Childhood aphasie refers to deficits in essential processes related to facility in the use of auditory language. These individuals show a discrepancy between expected and actual achievement with respect to one or more of the following functions: auditory, perception, auditory memory, integration, comprehension and expression. The deficits are not the result of sensory, motor,

intellectual or emotional impairment, nor to the lack of opportunity. They are assumed to derive from dysfunctions in the brain, despite mainly behavioural evidence of dysfunction, rather than neurological evidence (Myklebust, 1974:1186).

Simple aphasia is characterized by impaired retrievability of language. On the basis of an impairment of retrieval processes, one finds a reduction of available vocabulary, word-finding, errors and a reduction of verbal retention span (Schonell, 1974a:83).

Originally neurologists divided language disorders into two groups of aphasias, viz. motor aphasia (also Broca's aphasia) and sensory aphasia (also Wernicke's aphasia). During the 19th century, however, neurologists found that there were more complex forms of speech disorders than just simple sensory or motor disorders. This led to the distinction of other forms of aphasia (Luria, 1976:233).

Conduction aphasia is based on interruption of the pathways between the "sensory" and "motor" centres of speech. It is characterized by an inability to repeat words, although spontaneous speech remains unaffected (Luria, 1976:233).

In transcortical sensory aphasia the pathways between the "sensory centre of speech" and the "centres for concepts" are interrupted. This causes a defect of the understanding of narrative speech, although the perception of the sounds of speech and repetitive speech remain intact and there is no significant disturbance of spontaneous speech movements (Luria, 1976:233).

In amnestic aphasia, or anomia, the sensory and motor componehts of the speech process remain intact, but the

word memory is disturbed and the naming of objects is impossible (Luria, 1976:234). Typical anomic errors are the substition of related items for a term required, e.g. refering to a knife as a fork (Eiserson, 1971a:1228).

Formulation aphasia, or syntactical aphasia, is characterized by an inability to formulate sentences. Words are used inthe wrong relationship to one another, tenses are confused and the unit is generally agrammatical. The individual is aware that he has made errors and that his expressive language is different from that of other people (Myklebust, 1965:26).

Developmental aphasia (also congenital aphasia or dyslogia) refers to a child's impairment to acquire symbols for a language system. The child's perceptual abilities for auditor (speech) events underlies his impairment for the acquisition of auditory symbols (Eisenson, 1972:68-69).

In auditory aphasia, disturbances in auditory association occurs wher the individual hears a speech signal, recognizes its meaningfulness, but cannot associate it with an object, person, or event (Mysak, 1976:212).

Acalculia or dyscalculia is an aphasic disorder involving arithmetic disturbances. Two kinds of problems may be found. There may be an actual difficulty in dealing with the arithmetic process. This includes a degressive memory for figures, problems in counting and general retardation in calculations. On the other hand, there may be difficulty in the oral or written production of symbols involved in calculation. The latter is actually the result of anomia (Eisenson, 1971a:1229).

Agraphia or dysgraphia refers to writing disturbances. Agraphia is a total inability, while dysgraphia is a

partial inability to write , because of a dysfunction in the brain. The child can readily learn the auditory and visual aspects of words, but he cannot convert these aspects into motor patterns (Myklebust, 1965:8 & 17). Agraphia may be discerned by the use of faulty grammar, or by omissions of articles, prepositions and conjunctions. It may also be manifest in the writing of nominal words, or it may even be found in all the individual's writing (Eisenson, 1971a:1228).

Alexia or dyslexia is a disturbance of read language and the comprehension of written symbols (Eisenson, 1971a: 1228 and Myklebust, 1973:126). Alexia is a complete inability to read, chracterized by an associative learning disability, while dyslexia is a partial inability to read, characterized by associative learning difficulty (Wood, 1971:6 & 11).

2.2.3.5 Other Disturbances

These disturbances include convulsive disturbances, organic disturbances and emotional disturbances.

2.2.3.5.1 Convulsive or Spasmodic Disturbances

Convulsive disturbances accompany cerebral palsy in about 50% of the children (Connor, 1960:43). A third of cerebral palsied children have epileptci fits, but most of them have them only after the first five years of life (Tizard, 1968:92). The significance of epilepsy in the cerebral palsied person lies in its association with cortical scarring and the nature of the attack may point to the site of origin of the fit, although it is very fare that such a localized area of abnormality can be dealt with surgically. Epilepsy is rare in cases of athetosis and most frequent in those cases

of quadriplegia or hemiplegia with low intelligence. Though minor fits are not dangerous, they lead to a major attack if they go uncontrolled. Where a child has multiple minor attacks occurring at frequent intervals, his development can be retarded to such an extent that consciousness is blurred and there is an interference in movement. The dangers of these fits are injuries due to falls and particularly burns. Asphyxia can cause further damage to the brain during a severe attack or convulsion (Foley, 1969c:47).

2.2.3.5.2 Organic Disturbances

Organic disturbances occur when the brain has been damaged and the psychological processes causing behaviour are changed. Behaviour disorders are caused by damage to the diencephalon or the telencephalon. The diencephalon influences the emotions and the higher psychological processes in the telencephalon. When the telencephalon has been damaged, extreme emotional reaction and motor activity take place. Such people are easily frustrated and the frustration may cause violent emotional reaction, such as extreme anger and bursting into tears. The individual's involuntary movements and clumsy action make matters worse (Nel, 1955:117-118).

2.2.3.5.3 Emotional Disturbances

Often the emotional disturbances play a more important role in handicapping the cerebral palsied individual than do the physical defects, as Connor (1960:152) points out. The child's physical incapacity may prevent him from having ordinary social experiences and normal social maturation. His emotional difficulties may colour and change his reaction to the environment permanently. He may, for instance, become embittered. In Erlank's

(1984:82) research, 100% of the subjects who were tested were embittered.

Oswin (1967:26-30) divides emotional disturbances into two broad categories. These categories are the outward behaviour problems and the inward behaviour problems. The outward behaviour problems include destructiveness, distractibility, catastrophic reactions, spitting, crying, hyperactivity like chattering and noisiness, excitability, spitefulness, swearing, unco-operativeness, giggling and disinhibition. The inward behaviour disturbances are emotional instability, perseveration, withdrawal, laziness, fluctuating learning performances, social immaturity, extreme goodness, fear, depression, learning disorders and distractibility. Some of the disturbances have a direct bearing upon learning ability, other have arisen because of a learning disability and some others are the result of the individual's handicap and/or environment.

Perseveration is particularly found in the child who is fearful, excitable and lacking in confidence or mental ability. As well as being distracted by outside stimuli in the environment, cerebral palsied children are liable to be distracted by their own inner thoughts. Disinhibition occurs when the distractibility, hyperactivity and excitability are so great that the individual ceases to have control over his actions and he cannot inhibit himself. Catastrophic reactions show themselves in reactions which are extremely exaggerated considering the cause of the reaction. Although social immaturity and emotional instability are not directly related, they often have bearing upon each other in the cerebral palsied child. Furthermore, giggling and crying are more pronounced than in normal children because they are more prolonged and less controlled in

cerebral palsied children. Spitefulness is a problem that occurs frequently. There may be different causes for it. It may be the outcome of another problem. It may occur during a destructive outburst of temper, it may be the result of distractibility, it may occur in a fit or excitement, or it may even occur for no apparent reason due to fear or defence or as a means of making contact. Depression is the direct result of another problem caused by outside circumstances or feelings within the child himself (Oswin, 1967:26-30).

With regard to unco-operativeness, one finds two kinds. Outward unco-operativeness may take the form of refusals to work in school or to do physiotherapy or speech therapy. Inward unco-operativeness may be reflected in a quiet reluctance to respond to other people in the environment. The child is often not only unco-operative, but also fearful, shy and withdrawn. He may also be mentally backward (Oswin, 1967:26-30).

## 2.3 Summary

In conclusion cerebral palsy is a non-progressive motor disorder caused by damage to the brain. Originally, the condition was merely described medically. This led to the development of aetiological and clinical classifications during the 19th century. After the 19th century the classifications developed into three major groups, viz. the clinical classification, the neuro-anatomic classification and the classification according to pathological factors.

The clinical classification is based on the site and nature of the abnormal movement. The clinical types are monoplegics, paraplegics, hemiplegics, diplegics

quadriplegics, spastics, athetoids, ataxics, the atonic group and the mixed group. The researcher has found this classification to be the most popular.

The neuroanatomical classification correlates the neurological manifestations with the site in the brain and involves the pyramidal or extra-pyramidal system or both.

The classification according to pathological factors is based on the aetiology, pathogenesis and morphological end-picture of the disorder. Aetiological factors are of prime importance in this classification and are classified prenatally, perinatally and postnatally.

In this study the research done in literature on cerebral palsy gives an overview of the terminology and background of cerebral palsy.

CHAPTER 3

# THE INTELLIGENCE AND PERSONALITY OF THE CEREBRAL PALSIED INDIVIDUAL

In this chapter intelligence and personality are defined. This is followed by a description of intelligence and aspects of intelligence with regard to cerebral palsy. Although the researcher's prime objective in this study is assessment of aspects of the personality of the cerebral palsied child, intelligence will be included to give a global view of the assessment of the individuals concerned. According to Nielsen (1968:32) the prognostic value of the intelligence assessment is increased if the examination is extended to include other aspects of the child's psychological characteristics and the researcher has found this to be vice versa as well.

## 3.1 Intelligence

### 3.1.1 Definition of Intelligence

There are various definitions of intelligence. Some psychologists stress adaptation, while others emphasize educability. It may be seen as the ability to adapt to new demands and design possibilities to make this adaptation possible (Van der Walt, 1970:181). Defined concisely, intelligence may be seen as the mental ability of an individual, which may be determined by inherent and acquired qualities, with specific emphasis on the inherent qualities, which may include global and semi-global facets (Oosthuizen, 1978:2).

### 3.1.2 Measurement of Intelligence

The measurement of intelligence is acquired by means

of intelligence tests. These tests provide a single score, such as a intelligence quotient, indicating the individual's general intellectual level (Anastasi, 1968:188).

### 3.1.3 The Intelligence of the Cerebral Palsied Child

Although intellectual retardation occurs in a large proportion of cerebral palsied cases, it is not a necessary accompaniment. Many cerebral palsied persons fall in the superior and very superior ranges of intellectual functioning, (Hobbs, 1978:77). Wide variations in intellectual functioning, ranging from 'defective' to 'average' to 'superior' levels have been based on well-accepted and validated tests (Allen & Jefferson, 1962:8).

However, a high incidence of mental retardation is found among cerebral palsied individuals. Greenbaum and Buehler (1960:261) mention that 45 to 55% of cerebral palsied patients are mentally retarded. More recently Foley (1969c:35) and Engelbrecht (1975:8) report that about 75% of cerebral palsy cases are mentally retarded. According to Nielsen (1968:26), 65 to 80% of cerebral palsied people suffer from mild to severe degrees of mental handicap. Allen and Jefferson (1962) found that while 70% of children with cerebral palsy conduct themselves as if they were mentally retarded, only 50% are in actual fact intellectually retarded.

It is important to mention that the correlation between motor and mental involvement is not as high as one may expect. The individual may be totally physically handicapped with normal intelligence, or he may be slightly physically involved and severely retarded (Perlstein, 1960:152). Cases of severe quadri-

plegia are mentally retarded, but cases of athetosis may be normal or even of above normal intelligence (Foley, 1969c:35-36).

The cerebral palsied child with normal intelligence may probably have suffered some intellectual deficit since it is not possible to know what his intelligence would have been had he not had cerebral palsy. The average IQ of cerebral palsied children with 'normal' intelligence is less than that of their unaffected siblings. Thus, although some cerebral palsied children are of average or superior intelligence, it is probable that the damage to the brain has affected their intelligence adversely (Perlstein, 1960:152 and Abercrombie, 1964:13).

Strauss (1960:138) gives the following summary concerning the incidence of mental defect in cerebral palsied children:

a) Cerebral palsied without mental or psychological complications are those cases which are merely a medical problem.
b) Cerebral palsied children with organic mental involvement, ranging from behaviour and learning difficulties to mental retardation include those cases which present a medical, educational and psychological problem.
c) Cerebral palsied children with secondary psychological reactions caused by maladjustment resulting from the handicap, are a medical and psychological problem.
d) Cerebral palsied children with organic mental involvement and having secondary psychological reactions are a medical, educational and psychological problem.

Assessment of the mental potential of a child seriously handicapped by cerebral palsy is very difficult. This is due to the fact that various disorders associated with the defect may influence the intelligence assessment. The major problem here may be his motor disability which affects the efficiency of the motor tasks incorporated in the tests. Similarly, sensory defects and emotional problems may have the same handicapping influence (Barnett, 1982:162-163; Lord, 1972:26 & 37 and Bowley, 1969:98). The child may also be confronted with other problems, such as the inability to think abstractly, the inability to form associations and to learn, distractibility, defective judgement, impaired memory and perceptual disorders (Foley, 1969c:35-36).

The goal of intelligence testing is to elicit behaviour by standardized means that will yield insights into the individual's intellectual level, potential and efficiency. Therefore, in the cerebral palsied, where speech and motor dexterity problems occur, the measurement instruments must be selected with extreme care (Phelps, 1974:5).

## 3.2 Personality

Personality may be defined as the individual's characteristic pattern of behaviour and thought, which includes an accordant self-concept, as well as a set of traits consistent over time (Holme, 1971:558).

The researcher has found that the majority of studies done on cerebral palsy enphasize the physical aspect and that relatively few studies have concentrated on the personality of the cerebral palsied individual. Allen and Jefferson (1962:59) observe that reports of actual studies of personality assessment using different tests are scarce and most of the descriptions

of the cerebral palsied individual's personality make-up, are based on observations or behaviour and interviews.

Personality evaluation is not easily accomplished with the severely disabled, particularly with those whose speech is so impaired that oral response is an almost impossible task. However, where intelligible speech is present, the usual personality tests may be employed. These tests can only be utilized successfully if the psychologist takes into consideration the individual's ability to see, speak, hear, write, or indicate that he can perceive and respond to the requirements of the test. Only then can tests like the MMPI, Rorschach, TAT, sentence completion forms, figure drawings and other projective and psychometric paper and pencil personality tests be used in evaluating the individual's personal-social adjustment as it becomes a predictor for adjustment (Phelps, 1974:7).

Due to the fact that this study has been conducted in order to make specific recommendations for the optimal development of the individual which, therefore, includes consideration of the future of the cerebral palsied individual, the researcher has felt the need to include interest, self-concept, activation and self-expression under personality as these are closely linked with personality and attitudes toward the future.

### 3.2.1 Interest

Interest is a conditioned reaction related to an individual's goals and it is expressed in terms of the person's preferences and aversions to various activities (Oosthuizen, 1978:35). It can be measured by means of an interest questionnaire determining the degree to which an individual is attracted to a certain activity.

It is compiled in such a way as to determine preferences with regard to one's career and education, as well as social and personal preferences (Van der Walt, 1970:313).

The researcher has found hardly any information on the interest of the cerebral palsied child and will, therefore, include it in the present investigation.Stimulating interest is important in the light of the fact that the cerebral palsied individual is limited in his experience of "normal" interests due to his handicap.

### 3.2.2 Self-concept of the Cerebral Palsied Individual

The self-concept may be defined as a conglomeration of unitary processes as well as a set of separated components which reflect what a child knows and feels about himself at given times and in various activities. It contributes to social interaction, experimenting in new situations, trusting people, assuming responsibility, being creative, showing initiative and other traits. It is malleable and can change over a period of time depending on the quality and quantity of the individual's experience (Yawkey, 1980:4-5).

Development of a self-concept is based upon body image. The development of a realistic body-image concept is based upon security, co-ordinated physical growth and sound emotional development. Should any of these facets be retarded, the learning and adjustment of the individual will also be retarded and the individual's body image may, therefore, be impaired. The self-concepts of cerebral palsied children are frequently disturbed and their drawings of the body image are significantly mutilated. Brain-injured children have not yet had the opportunity to develop appropriate self-concepts, nor have they been able to come to a

good understanding of their own body images. Therefore, their learning will be impaired until they come to a good understanding of their own body images within relatively normal limits. Their lack of well-formulated self-concept results in insecurity (Cruickshank et al. 1962:8).

Nielsen (1961), however, did an investigation to determine to what extent the drawings of the body image were mutilated and found that their physical handicap was not projected in the drawings to the degree that was expected. Her experimental and control groups were tested on 19 variables to prove this theory and the investigation resulted in a lack of difference between the two groups on 18 of the variables.

Various studies prove that self-esteem is definitely influenced by anxiety (Brookfield, 1969:5222-B; Anderson, Lemke and Lewis, 1979:733 and Pilisuk, 1963:387). Anderson, Lemke and Lewis (1979:733) proved that low self-concept students were more anxious than high self-concept students. Brookfield (1969:5222-B) points out that anxiety affects disabled people more than non-disabled ones and has a more negative effect on attitudes toward disabled persons. Pilisuk (1963:387) emphasizes that anxiety is a threat to the self and he says that it is met by cognitive constriction, particularly in matters pertaining to self-concept.

Children who are slightly handicapped are more keenly conscious of their handicaps than seriously handicapped ones. Slightly handicapped children are self-conscious and experience a feeling of inadequacy arising from unsuccessful competition. Seriously handicapped children are, however, usually shielded from contact with

the outside world and show a surprising lack of self-criticism (Lord, 1972:90-91). Children handicapped with cerebral palsy are so constantly referred to by others as "not normal" that their self-esteem and sense of security are extremely negatively influenced (Gratke, 1947:167). It is extremely difficult for these individuals to establish themselves because of the frequently stereotyped view other people have of them (Richards, 1965:203). An unconscious rejection of the self is one of their areas of great difficulty (Allen and Jefferson, 1962:72).

Inability to accept the self may cause depression, tempers, discouragement, withdrawal, lack of effort, un-co-operativeness and possibly other problems which will appear in adult life. Lack of self- acceptance is often the cause of outward aggressive behaviour and destructiveness amohg cerebral palsied children (Oswin, 1967:71).

### 3.2.3 Activation and Self-expression

As the degree of passivity is of importance in the personality of the cerebral palsied individual, the researcher has felt the need to report on activation and self-expression in the cerebral palsied child. Activation and self-expression are also closely linked with experience and interest.

The low self-esteem of the cerebral palsied individual results in the child not expecting to finish school and not considering an occupation. This may be the beginning of general passivity which often characterizes older handicapped individuals (Minde, 1978:1344).

The handicapped child is at a disadvantage regarding the

satisfaction of his need for new experiences. His handicap distorts, delays or even makes it impossible to acquire new experiences. If the presentation of new experiences is not modified so as to minimize difficulties and failure, the child may refuse to cope with new experiences and may withdraw into passivity (Kellmer-Pringle, 1965: 55-56).

Females adapt to their physical handicap by passivity, thus adhering to the female role, while males are more anxious and socially alienated (Imperio, Cullinan and Riklan, 1979:1003).

According to Lord (1972:89) the cerebral palsied individual has never known independence, therefore such persons are only interested in watching others and accepting an infantile role without any resistance. Frank (1960:173-174) disagrees with this remark and says the handicapped adolescents may outwardly appear to be indifferent and uninterested. However, with few excèptions, they are much concerned, but they often feel helpless and hopeless to do anything about it. Even those who can go out and move around, despite some physical handicap, may feel blocked and self-defeated by their feelings of being different, abnormal and disliked.

Among these children physical limitations in mobility and sensory or speech problems hinder participation in ordinary social activities with age mates. Alternatives for such social contacts are probably unavailabe to most of them. Therefore, the implications of these findings for the life chances of disabled children are grave (Breslau & Marshall, 1985:213).

Many prefer to avoid socially demanding situations and

no longer want to be reminded of their motor and social awkwardness because they know their own limitations too well and are very easily embarrassed and discouraged. Often it helps to relieve tension if families respect the desire for privacy of handicapped children,instead of arranging social and occupational situations which require more social poise than they are capable of (Taylor, 1961:181). Deprivation of normal social participation can, however, even lead to retarded language development and perception (Berry, 1969:148).

In spite of their dependence on those close to them, many cerebral palsied children show an increasing interest in performing for others and gain more experience in social contacts as they progress from childhood to the pre-adolescent and adolescent stages. However, interaction still remains limited due to slow speech and precarious locomotion. They depend largely on the good will of others in listening to them, coming to them and waiting for them. They lack the social give-and take of life through which normal children learn. Some of them even appear somewhat demanding, over-enthusiastic, aggressive or inconsiderate (Taylor, 1961:132).

### 3.2.4 Conflict and Defense Mechanisms

Due to his handicap and lack of normal opportunities, the cerebral palsied individual experiences conflict. This results in the development of defense mechanisms. Conflict and defense mechanisms play an important part in personality development and have, therefore, been included under personality.

3.2.4.1 Conflict

The handicapped adolescent experiences conflict in having to carry an immense load of repressed feelings, especially mixed feelings of love, gratitude and dependence upon his parents, but at the same time resentment and rebellion against his dependence and his inability to escape from it (Frank, 1960:175). This is particularly acutely felt by more intelligent children and children with a strong drive to excel (Bowley,1969: 105).

Various factors may cause conflict:

a) Anxiety

The handicapped adolescent feels very anxious when adults try to push him into solutions and this may result in his developing a resistance to protect his identity (Richards, 1965:201-203).

b) Identity Crisis

The individual experiences conflict in the ability to feel sure of himself as a male (or female) in relationships to the other sex (Richards, 1965:201-203).

c) Non-acceptance by the Opposite Sex

This is experienced as another expression of rebuff and reinforces the cerebral palsied person's self-perception as being a member of a minority group (Allen, 1962:171).

d) Frustration

A cerebral palsied child is probably more frustrated than any other type of handicapped child, because he not only has physical frustrations to contend with, but mental ones as well, e.g. in parts of the body or the whole body that will not obey him, combined with a mind that cannot always co-ordinate his thoughts. Frustration may show itself in various ways, such as anger, aggression, depression, refusal to work and withdrawal (Oswin, 1967:34).

e) Fear

The cerebral palsied child is governed by fear (Harvey & Greenway, 1982:115; Collis, 1941:37). This is partly due to the individual's actual motor-disability and partly due to his lack of normal experience as a result of the disability. Many of these children have fears about operations due to the fact that they are under the 'constant threat' of treatment. Another fear is the fear of falling which is often a serious deep-rooted fear, even among those cerebral palsied children who are not learning to walk and never will. This fear of falling can cause behaviour problems, as it destroys confidence and makes the individual timid and fearful of trying new experiences, thus affecting his natural learning. A third fear is the fear of society. This type of fear is found among those individuals who are grossly handicapped and completely dependent on other people. They fear strangers handling them, are afraid of perhaps being dropped or misunderstood and are afraid that their feeding or toilet requirements will not be attended to (Oswin, 1967:36-38).

f) Competition

Conflict is most dramatically found in those individuals who prepare themselves to struggle with competition because their impairment is not severe enough to qualify them as disabled (Taylor, 1961:181).

3.2.4.2 Defense Mechanisms

As a result of the conflict that the cerebral palsied individual experiences, he may resort to defense mechanisms to protect himself. In general, he seems to react with aggressive defensiveness as if he wanted to prove his right in the world (Allen, 1962:167). The handicapped adolescent may even use neurotic behaviour to seek attention, to manipulate people and to control situations (Richards, 1965:202). Other kinds of defense mechanisms which may appear are regression, egocentricity, temper tantrums and withdrawal from contact. In regression the individual would rather behave childishly than accept responsibility. In egocentricity the person shows a low frustration level and is excessively demanding. This can tie up with the tendency to temper tantrums (Bardach, 1977:81 and Bowley, 1969:105).

## 3.3 Summary

Intelligence is the mental ability of an individual determined particularly by inherent qualities. It has been included to give a global view of the assessment of the individuals concerned. Despite a high incidence of mental retardation among cerebral palsied individuals, they need not necessarily be mentally retarded and may even have above average intelligence.

Personality is the individual's characteristic pattern of behaviour. Very few studies have been done on the personality of the cerebral palsied individual. Personality tests are only successful if the individual's ability is considered and if other data are taken into account.

Interest is an important aspect as it is tied up with the individual's level of aspiration and activation and his view of the future. Due to its importance the researcher has included it under personality. Hardly any information can be found on the cerebral palsied person's interests.

Self-concept plays an important part in personality development and it is based upon body-image. A negative attitude toward body-image consequently leads to a negative self-concept and a lack of self-esteem.

Activation and self-expression have been included as part of the expression of personality. It is based upon self-esteem and the acquisition of normal experiences plays an important role here.

Conflict is another aspect found in the cerebral palsied child's personality. It is influenced by factors such as anxiety, identity crisis, attitude of the opposite sex, frustration, fear and competition. Conflict leads to the development of defense mechanisms.

In conclusion, knowledge of the intelligence and personality aspects of the cerebral palsied individual is of importance in order to acquire a global assessment.

The next chapter describes the empirical study and includes the sample, measuring instruments, procedure and statistical techniques.

CHAPTER 4

# EMPIRICAL STUDY

In this chapter a description is given of the way in which the sample has been selected, the measuring instruments, the procedure, the statistical techniques and the hypotheses formulated.

## 4.1 The Sample

In order to acquire a basis for comparison, a sample has been used of children having cerebral palsy and a control group not having cerebral palsy.

The cerebral palsied group consisted of 15 white boys and girls from the West Rand School for Cerebral Palsied Children in Krugersdorp. Their ages ranged from 12 years to 19 years. The children were randomly selected, but it was taken into consideration that the child should not be so handicapped as not to be able to do the tests required.

The control group also consisted of 15 white boys and girls taken form the Monument High School in Krugersdorp. They were also randomly selected, but their ages, sex and social background had to agree with that of the children in the experimental group. If a child from the experimental group was a dayscholar and came from the city, the child with whom he was matched in the control group also had to be in similar circumstances. Similarly, boarders from cities, towns or farms were considered respectively, as well as whether a child's parents were divorced or not, or whether a child only had one parent. In this way the background of the control group was directly matched with that of the

experimental group.

Although there is a pairing-off of subjects in the experimental and control groups, this does not imply the forming of dependent groups. It merely served as control for variables that could contaminate the results because of systematic variance between the groups.

The experimental design in this study can, therefore, be described as a testing of differences between certain variables in two small independent groups.

## 4.2 The Measuring Instruments

In order to describe the cerebral palsied child's personality and give an evaluation of the group within the specific milieu, the two groups were tested by means of various measuring instruments. These measuring instruments included the following:

### 4.2.1 The Senior South African Individual Scale (SSAIS)

#### 4.2.1.1 Background of the SSAIS

According to the Preliminary Manual for the Senior South African Individual Scale, Part I (Human Sciences Research Council, 1970:1), the drafting and standardization of a new South African individual intelligence scale was conducted by senior research personnel of the National Bureau of Educational and Social Research and the inspector-psychologists of the five education departments. The process of standardization started in 1957 when the existing Individual Scale of the National Bureau of Education and Social Research, which

had been standardized by Dr M.L. Fick, had become obsolete.

The SSAIS, which was dispensed in 1964, had to comply with certain criteria, viz:

a) the content had to stimulate the child's interest
b) the instrument ahd to be restricted so that only a minimum apparatus was necessary
c) the instrument had to be replaceable
d) the scale had to be of clinical value
e) there had to be common norms for Afrikaans as well as English speaking subjects for both the verbal and non-verbal tests
f) it had to be a point-scale rather than an age-scale.

4.2.1.2 Description of the SSAIS

The tests included in this scale fall into two groups, viz: verbal tests and non-verbal tests.

4.2.1.2.1 The Verbal Tests

There are five verbal tests:

a) Vocabulary

This test consists of five illustrated cards each containing four pictures. The subject is given a stimulus-word and he then has to point out the card associated with the word. There are six stimulus-words for each card.

b) Comprehension

The subject has to answer 10 questions concerning every-day situations. The answers are provided in the manual

for the researcher and the subject gets two marks for an answer. Marks are awarded on a qualitative basis.

c) Verbal Reasoning

The subject has to point out the similarity between two things, e.g. wealth and poverty. A correct abstract response receives 3 marks, while a functional definition receives 2 marks and a concrete response receives 1 mark. Incorrect responses, subjective evaluation and unimportant similarities receive no marks.

d) Problems

The subject is given 15 formulated problems to solve. Items 1 - 9 are oral, while items 10 - 15 are on cards. Items 9 - 15 also receive time bonuses.

e) Memory

A short story is read to the subject who then has to relate what he has heard. There are 40 points to be mentioned and he receives one mark for each correct response.

4.2.1.2.2 The Non-verbal Tests

There are four non-verbal tests:

a) Pattern Completion

Partially-completed patterns are given to the subject who has to complete them. Time bonuses are given to the subject if a correct response is given within the time limit.

b) Blocks

The subject is given an example of a pattern and he has to build it with coloured blocks. All items have time limits and time bonuses.

c) Absurdities

Fifteen pictures are shown to the subject respectively. He has to point out the absurdities on the pictures while each picture has a time limit of 20 seconds.

d) Form Board

This board contains six figures consisting of 3 or 4 coloured parts. These parts are in the lid of the board and the subject has to take them out and fit them into the various figures within a time limit of 100 seconds . Marks are allocated according to the time the subject takes to give the correct response within the time limit.

4.2.1.3 Rationale of the SSAIS

The vocabulary test indicates the subject's verbal ability. However, the education and culture of the subject influence the person's vocabulary. The comprehension test gives an indication of the social and cultural background of the individual. Its greatest advantage lies in the clinical facts which it provides, such as its value in diagnosing psychopathic personalities, as well as the presence of schizophrenic inclinations. The verbal reasoning test determines the individual's level of reasoning, i.e. whether he thinks abstractly, functionally or concretely. The problem

test, which has a high correlation with global measurements of intelligence, tests the ability to concentrate. The memory test hs been included because there is an average correlation between intelligence and memory. In the pattern completion test, visual orientation and the ability to concentrate are important. The blocks test depicts subnormality. It requires the ability to synthesize and analyze, but particularly the ability to solve problems in their various spatial relationships. The test is qualitatively analytical in that it portrays the way in which the subject sets about the task, i.e. by following the pattern or breaking it up into component parts. The subject's attitude and emotional reaction may also be reflected in this test, i.e. whether the individual is hasty, impulsive, thorough, whether he gives up easily, shows disapproval, or whether he persists and keeps on working despite the fact that the time limit may have lapsed. Brain-damaged individuals experience great difficulty with this test, often not being able to complete the simplest pattern, despite strenuous effort. They show a lack of synthesis, abstraction and integration. The absurdities test differentiates between essential and non-essential details and is suitable for measuring intelligence on a lower level. It tests the individual's basic perceptual ability in as much as it is associated with visual recognition and the identification of familiar objects and forms. The individual has to recognize the missing part of the picture as an essential part of the form and function of what is suggested. The form board test indicates the qualitative aspects of the subject's mind, as well as the differences in temperament with regard to the solving of difficult problems. The test reveals the subject's manner of perception, the degree to which he reverts to trial and error methods and his manner of reaction with regard to errors (Swanepoel, 1975:75-77).

#### 4.2.1.4 Motivation for including the SSAIS in the present investigation

As has been seen in the literature, cerebral palsied individuals are not always intellectually inferior to normal individuals although it may be supposed to be otherwise. The goal of the research was not to determine the quantative difference in IQ between the two groups, but rather to determine at what level of intellectual functioning the cerebral palsied individuals were in comparison to the normal group, considering that the cerebral palsied child's IQ had to be high enough for him to be able to understand what was expected of him.

#### 4.2.1.5 Reliability of the SSAIS

According to the Preliminary Manual for the SSAIS (Human Sciences Research Council, 1970:14), the split-half technique has been used to compute the reliability coefficients of the SSAIS. It has further been corrected by the Spearman-Brown formula for the full length of the test. The reliability coefficients for the various tests vary between 0,43 and 0,98.

#### 4.2.1.6 Validity of the SSAIS

The predictive and internal validity of the SSAIS with regard to school achievement, IQ and background variables, shows coefficients varying between 0,46 and 0,66 (Human Sciences Research Council, 1970:15).

### 4.2.2 The Cape Vocational (CV) Interest Questionnaire

#### 4.2.2.1 Background of the CV Interest Questionnaire

The CV Interest Questionnaire was compiled by the Cape Department of Education in order to measure the interest of pupils.

#### 4.2.2.2 Description of the CV Interest Questionnaire

This interest questionnaire consists of a list of questions used to determine what the individual's interests are. There are two sections of questions.

In the first section, each question has two alternatives.

In the second section each question has three alternatives and the subject has to mark the one he prefers by putting a cross on the activity indicated by letters (a), (b) or (c).

Boys have a different questionnaire from that of girls. The boys' questionnaire includes 192 items, while the girls' questionnaire includes 205 items.

Items are divided so as to be representative of the twelve fields of interest corresponding to the occupational categories found in the Kodus Interest Questionnaire. This questionnaire is a revised edition of the CV Interest Questionnaire and was compiled according to reliability requirements. A person's interest in a particular field is indicated by the number of times he prefers the items representative of that field in relation to the other fields. The rank order and the inter-relationship of the twelve fields are also determined. According to the Preliminary Manual for the Kodus Interest Questionnaire (Psychological and Guidance Services, Department of Education, Cape Town and the Bureau for Student Counselling University of Stellenbosch, 1978:2-10), the twelve fields include the following:

So - this field includes the preference for working with individuals or small groups
B - includes a preference for business activities
Sy - includes a preference for working with figures
Sk - includes a preference for writing
L - includes a preference for reading and literature
K - includes a preference for art and art appreciation
H - includes a preference for handwork
M - includes a preference for machines and working with machines
W - includes a preference for natural sciences and work connected with physical science
D - includes a preference for animals, zoology and related biological sciences
P - includes a preference for plants, botanical and horticultural work.

#### 4.2.2.4 Motivation for including the CV Interest Questionnaire in the present investigation

The CV Interest Questionnaire has been implemented in this study because interest has to do with the orientation of the individual in his totality (Psychological and Guidance Services and the Bureau for Student Counselling, 1978:1) and it is, therefore, important in the psychological assessment of the individual. It is also of importance to note whether, for example, the experimental and control groups differ in their interest in people or machines, thus reflecting possible social aspects.

#### 4.2.2.5 Reliability of the CV Interest Questionnaire

Due to the fact that there is no existing manual, as such, for the CV Interest Questionnaire, the researcher has had to depend on information gleaned from the Preliminary Manual for the Kodus Interest Questionnaire (Psychological and Guidance Services, Department of Education, Cape Town and the Bureau for Student Counselling, University of Stellenbosch, 1978:12-13). According to this manual, the items of the CV questionnaire that did not comply with the reliability requirements were replaced by other items, resulting in the fields K and D being altered in the Kodus questionnaire. The accepted reliability coefficients were r=0,75. Items not meeting the reliability requirements could not merely be excluded, for then there would be an unequal number of items in the different fields. Comparison of the fields would then be impossible because the number of items in the questionnaire depends on a pre-determined model.

#### 4.2.2.6 Validity of the CV Interest Questionnaire

The validity of the CV Interest Questionnaire, or the Kodus Interest Questionnaire, is still being investigated and no details are yet available (Psychological and Guidance Services and Bureau for Student Counselling, 1978:23).

### 4.2.3 The High School Personality Questionnaire (HSPQ)

#### 4.2.3.1 Background of the HSPQ

According to Madge (1967:1) the HSPQ is an aid for giving an objective analysis of the individual personality to supplement the psychologist's personal evaluation. It is based on the work of the American authors Cattell and Beloff and has been adapted for South African use by E.M. Madge (1967).

#### 4.2.3.2 Description of the HSPQ

The HSPQ contains two different test booklets, forms A and B respectively. The form A may be used independently, or it may be followed up by B for extensive retesting. For the purpose of this investigation, form A is used independently. In the booklet each question has three alternatives. The testee has to mark the space next to a) or b) or c) on the answer sheet according to each question.

The HSPQ has been designed so that it measures fourteen dimensions of the personality. Each of these dimensions has been given an alphabetical designation, e.g. Factor A or B or C etc. Each dimension has two extremes or poles. The left-hand pole represents a low sten score (1, 2 or 3) and the right-hand pole a high

sten score (8, 9 or 10). The following table gives a brief description of the fourteen HSPQ personality factors (Madge, 1967:6):

TABLE I: BRIEF DESCRIPTION OF THE FOURTEEN HSPQ PERSONALITY FACTORS

| Low Sten Score (1 - 3) A boy or girl with low score is: | Alphabetical designation | High Sten Score (8 - 10) A boy or girl with high score is: |
|---|---|---|
| Reserved, detached critical, cool | A | Outgoing, warm-hearted, easy-going, participating |
| Less intelligent, concrete-thinking, of lower scholastic mental capacity | B | More intelligent, abstract-thinking, bright, of higher scholastic mental capacity |
| Affected by feelings, emotionally less stable, easily upset, changeable, of lower ego strength | C | Emotionally stable, faces reality, calm, of higher ego strength (not the same as egotistical) |
| Phlegmatic, deliberate, inactive, stodgy | D | Excitable, impatient, demanding overactive |
| Obedient, mild, conforming, submissive | E | Assertive, independent, aggressive, stubborn, dominant |
| Sober, prudent, serious, taciturn | F | Happy-go-lucky, gay, enthusiastic, impulsively lively |
| Expedient, evades rules, feels few obligations, has weaker superego strength | G | Conscientious, persevering, staid, rule-bound, has stronger superego strength |
| Shy, restrained, diffident, timid | H | Venturesome, socially bold, uninhibited, spontaneous |

TABLE I (Continued)

| Low Sten Score (1 - 3) A boy or girl with low score is: | Alphabetical | High Sten Score (8 - 10) A boy or girl with high score is: |
|---|---|---|
| Tough-minded, self-reliant, realistic, no-nonsense | I | Tender-minded, dependent, over-protected, sensitive |
| Vigorous, goes readily with the group, zestful, given to action | J | Doubting, obstructive, individualistic, reflective, internally restrained, unwilling to act |
| Placid, confident, serene, untroubled | O | Apprehensive, worrying, depressive, troubled, guilt prone |
| Group-dependent, a "joiner" and sound follower | $Q_2$ | Self-sufficient, prefers own decisions, resourceful |
| Undisciplined self-conflict, careless of protocol, follows own urges, has low integration | $Q_3$ | Controlled, socially-precise, self-disciplined, compulsive, has high self-concept control |
| Relaxed, tranquil, torpid, unfrustrated | $Q_4$ | Tense, driven, overwrought, frustrated |

Although the fourteen personality dimensions are fairly independent of each other, they may be combined in order to be of diagnostic value, e.g. high scores on Factor I along with below average scores on E and F may denote neurosis, while the pattern A, F, H, J, $Q_2$ shows the individual to be extraverted (Madge, 1967:5).

4.2.3.3 Rationale of the HSPQ

The HSPQ is a highly effective instrument in that it measures fourteen personality traits which cover practically the total personality. By using these fourteen scores, various predictions can be made, e.g. school achievement, vocational fitness, danger of delinquency, leadership qualities and the need for clinical help in avoiding neurotic conditions. The HSPQ can be applied individually or in groups (Madge, 1976:1).

4.2.3.4 Motivation for including the HSPQ in the present investigation

Obviously an intellectual comparison between the sample and the control group would be of lesser value, therefore the psychological assesment would have to comprise primarily personality factors. For this reason the HSPQ forms a very important part of the present research, particularly as insight into the factors themselves permits much useful inference and understanding of the testees' personality profiles and the factors also correlate with important educational, occupational and clinical criteria.

4.2.3.5 Reliability of the HSPQ

According to Madge (1967:1-2) reliability coefficients (retest after one week) for Afrikaans and English speaking pupils between ages 14 - 18 years, vary between 0,61 and 0,75. Reliability data are, however, still being investigated.

4.2.3.6 Validity of the HSPQ

Construct validity can be estimated and is being analyzed for publication. Validity coefficients for each factor based on equivalence coefficients vary between 0,63 and 0,84 for English speaking pupils and 0,60 and 0,81 for Afrikaans pupils (Madge, 1967:2).

4.2.4 The Thematic Apperception Test (TAT)

4.2.4.1 Background of the TAT

This test was developed by Henry A. Murray and Christina Morgan at the Harvard Psychological Clinic in 1935. Despite difficulties in recording, scoring and interpretation, this test has become so widely used that it ranks second to the Rorschach in clinical use, research and as model for the development of other instruments (Holt, 1951; Anastasi, 1968; Van der Berg, 1980; Du Toit and Pick, 1974; Kagan, 1965 and Bellak, 1950).

4.2.4.2 Description of the TAT

The TAT consists of 19 cards containing pictures in black and white and one blank card. The cards are

marked on the back as to whether they have to be administered to men, boys, women or girls, e.g. cards marked "BG" are used for boys and girls, those marked "BM" are used for boys and men and those marked "GF" are used for girls and women. The letters also appear independently on some cards. Each card has a serial number. If a card number is not followed by a letter the picture may be used for both sexes and all ages. The following description of the cards is adapted from Murray (1971), but only the cards which are used in this research study are described:

1 A young boy contemplates a violin resting on a table in front of him.

2 A country scene: in the foreground a young woman is standing with books in her hand; in the background a man is working in the fields while an older woman is watching.

3BM A boy huddles on the floor against a couch with his head bowed on his right arm. There is a revolver on the floor beside him.

3GF A young woman stands, head down-cast, with her left arm stretched forward against a wooden door. She covers her face with her right arm.

6BM A short, elderly woman is standing with her back to a tall young man who is looking downward with a perplexed expression.

6GF A young woman is sitting on the edge of a sofa. She is looking back over her shoulder at an older

man with a pipe in his mouth. He seems to be addressing her.

7BM A grey-haired man looks at a younger man who is sullenly staring into space.

7GF An older woman is sitting beside a girl on a sofa. She is speaking or reading to the girl who holds a doll on her lap and is looking away.

8GF A young woman is sitting with her chin in her hand, looking off into space.

9BM Four men in overalls lie on the grass, taking it easy.

12F A portrait of a young woman is in the foreground, while a weird old woman with a shawl over her head is grimacing in the background.

12BG A rowing boat is drawn up on the bank of a woodland stream. No human figures are portrayed in the picture.

13B A little boy sits on the doorstep of a log cabin.

13G A little girl climbs a winding flight of stairs.

14 A man (or woman) is silhouetted against a bright window. The rest of the picture is totally black.

17BM A naked man clinging to a rope climbs up or down it.

The testee has to tell a story about each card and any enquiry by the tester has to be done non-directively.

4.2.4.3 Rationale of the TAT

The rationale of the TAT may be summarized according to four assumptions (Du Toit & Piek, 1974:17-18).

a) The individual's personality is manifested by his behaviour. It reflects his thoughts, emotional organization, needs, interpersonal relationships and attitudes towards himself. Holt (1951:182) points out that the TAT is a multi-dimensional instrument that elicits from the subject a rich source of data about himslef.

b) The individual's perception of the world around him indicates how he experiences the world. Holt (1951: 182) says the subject's perceptual reactions to the pictures yield a source of valuable data about the way he looks at his world. Anastasi (1968:499-500) supports this view by saying that the mental aspects of the individual's psychological functioning will be reflected by the way in which the individual perceives and interprets the test material or structures the situation.

c) The individual's behaviour is psychologically determined by causes in his past. Configurations in the individual's emotional and conative life use the perceptual process to come to indirect conscious expression (Holt, 1951:182).

d) The individual's TAT profile can be used to predict his behaviour in other situations as well as in the future. The possibility that the individual might act differently can also be determined by the information he has given.

#### 4.2.4.4 Motivation for including the TAT in the present investigation

The TAT has been included in this investigation because it is an effective method of obtaining information from the individual about experiences which he normally withholds from others. As Henry (1951:235) defines it, the TAT is an appropriate aid in the study of any system of human inter-action that has a substratum of dynamically related emotions and a consistent social life space.

In order to obtain better insight into the child's capacities, one is obliged to look for tests free from the limitations caused by motor disability. The diagnostic interview is a good model for discovering individual attainments and attitudes (Morgenstern, 1968:37). In this way the attitudes of the physically handicapped individual may easily be tested.

#### 4.2.4.5 Reliability of the TAT

According to Bellak (Abt & Bellak, 1950:214) the number of attempts to establish the reliability of the TAT are not sufficient to answer even some of the basic questions in this area. (Kagan (1965:116), however, reports test-retest reliability coefficients of 0,26 and 0,50 for occurrence of achievement themes with the higher coefficient associated with the shorter test-retest interval. Reliability coefficients ranging from 0,42 to 0,73 for themes concerned with hostility toward authority and themes of achievement and security and hostility are also reported by the same author. Reliability test-retest coefficients of 0,8 and 0,9 have, however, been reported (Holt, 1951: 222). Kagan (1965:116) is also of the opinion that

when the stimuli are relatively non-ambiguous for a specific content, reliability estimates are low but significant. There is thus a positive relationship between the reliability of a content on the TAT and the presence of stimuli which have a pre-potent tendency to elicit that content. He also adds that the tendency to attribute affect and feeling states to TAT figures was moderately reliable ($r = 0,44$, $p$ 0,05) when the protocols were separated by approximately two years.

Tomkins (1947:4), however, did a more extensive study on the reliability of the TAT. He reports coefficients of 0,80 over a period of two months, 0,60 for a period of six months in another group and 0,50 for a period of 10 months in a third group. He mentions inter-correlations of 0,30 and 0,96 on studies done by 13 researchers.

4.2.4.6 Validity of the TAT

The validity of apperceptive fantasy can only be applied to specific variables derived from specific stimuli. Thus, certain need, press and cognitive-expressive variables such as aggression, aggression anxiety, achievement, perception of acceptance or rejection of the social environment and fantasy indices of maladjustment and pathology, show evidence of stability, predictive accuracy and construct validity (Kagan, 1965:123 and Holt, 1951:222).

### 4.2.5 The Draw-a-Person (DAP)

#### 4.2.5.1 Background of the DAP Test

Although the late nineteenth and early twentieth centuries established various investigations of children's drawings, the most important contribution in this field was made by Florence L. Goodenough who demonstrated that children's drawings had a cognitive meaning. However, she also anticipated that the drawings could be used in personality interpretations. This test was used as originally standardized in 1926 until 1963 when it was revised under the title of Goodenough-Harris Drawing Test (Harris, 1963). The importance of the Draw-a-Person technique as a projective test was emphasized by Machover (1949) who stressed the analysis of human figure drawings, saying that the subject consciously or unconsciously projects the self-image into the drawing of the human figure.

#### 4.2.5.2 Description of the DAP Test

The subject is provided with paper and a pencil and simply told to draw a person. After having completed the drawing the subject has to draw a person of the opposite sex.

#### 4.2.5.3 Rationale of the DAP Test

The drawings reflect elements of self-evaluation in both direct and compensated forms of projection as well as conscious and unconscious phases of self revelation (Machover, 1949:9). The drawings may also be a reflection of the cognitive and emotional state, as well as the attitudes of the individual

(Koppitz, 1963:103,107). The individual must refer to images of himself and other persons when drawing a person and in doing so the organization of the self in terms of central focus and attitudes is selective, being a product of experience, identifications, projections and introjections. Therefore, the image that constitutes the figure drawn is intimately tied to the self (Machover, 1951:349).

#### 4.2.5.4 Motivation for including the DAP Test in the present investigation

The fact that drawings can provide significant cues for personality diagnosis has become widely accepted by psychologists (Machover, 1949; Harris, 1963 and Nielsen, 1961). Nielsen (1961:137) is of the opinion that physical handicap is not projected in drawings to the degree that is expected. Abercrombie and Tyson (1966:14) warn that many of the 'impairments' made by cerebral palsied children may come within range of drawings made by normal children of similar mental age. Abercrombie and Tyson (1966:14) feel that the test does not give evidence of "body-image" disorder, but of a difficulty of drawing generally. The researcher, however, feels that despite negative attitudes toward this technique the child does frequently express inner thoughts and feelings through his drawings and as Linde (1964:17) suggests, the response of the individual must be interpreted in the light of knowledge of the presence and effect of his pathology.

It is generally accepted that drawings are most useful when teamed with other information about the individual (Harris, 1963:52). This view is supported by Koppitz (1975:95) who points out that human figure drawings are significant when used with the Bender Visual Gestalt Test. As a number of tests have been included in this investigation the researcher is of the opinion that the DAP test is significant in its administration along with the other tests. The researcher has further been motivated to use this test by considering several advantages mentioned by Machover (1951:342). The product offers direct testimony of the subject's projection, rather than a verbal description. As a motoric medium it is often welcomed by the verbally inhibited or shy child. It is not limited by age, intelligence or artistic skill.

4.2.5.5 Reliability of the DAP test

Harris (1963:57) studied reliability coefficients in drawing assessment and found an inter-judge correlation of 0,71 in the work of various researchers such as Cassell, Johnson and Burns. Similarly Harris also reports percentages of agreement on several points in research done by Lehner and Gunderson and Harris arrives at an average percentage of 90 between ratings of different authors. He points out the importance of Gasorek's study on reliability when she determined inter-judge correlations on 23 elements in drawings in a test-retest situation and found the coefficients to range between 0,72 to 0,94 which is reasonably high.

#### 4.2.5.6 Validity of the DAP

Validation studies by investigators have yielded conflicting results (Anastasi, 1968 and Blum, 1954). However, as Levy (1950:258) suggests, the lack of adequate information about validity does not negate the clinical utility of this technique and as Blum (1954:125) says the DAP technique has highly questionable validity, but it proves to be no worse than any of the other common clinical personality assessment techniques.

Harris (1963:63-64) points out that one validation study merits extensive discussion because it is well designed and also not generally available and that is the study by Stone in 1952. In a figure drawing preference scale the subject had to designate which of the choices was most like the drawing he would make himself. A retest reliability of 0,72 was determined for a small sample. Stone then did a similar study but used a larger sample this time. The corrected split-half reliability for this scale was 0,82 for the first drawing and 0,76 for the second. An intercorrelation of 0,50 was found for the first and second drawings of the total group. Stone also determined that three criterion measures of personality, combined by multiple correlation methods, yielded correlations with figure drawing "typicality" scores from 0,38 to 0,45, depending on the sex and the figure drawn. He comments on the high validity of drawing performance shown by substantial correlations with a multiple criterion of adjustment. Thus, although Stone's correlations are the only of their kind, they suggest that figure drawings can be of good use statistically with other personality measures.

### 4.2.6 The Bender Visual Motor Gestalt Test

#### 4.2.6.1 Background of the Bender test

This copying test was published in 1938 by Lauretta Bender. It consists of nine patterns which were chosen from a longer series originally employed by Wertheimer in his "Studies in the Theory of Gestalt Psychology" in 1923. Originally Wertheimer used the designs to demonstrate the principles of Gestalt Psychology as related to perception, but Bender adapted the figures as a visual motor test (Bender, 1938:4).

This test has, however, not merely been used as a visual motor test, but has been employed in many different areas of investigation. It has been used to screen children for school readiness, to predict school achievement, for diagnosing reading and learning problems, for evaluating emotional difficulties, for determining the need for psychotherapy, for diagnosing brain injury and to study mental retardation (Koppitz, 1963: 3-4).

Another major adaptation of this test was done by Hutt (1969) when he adapted this test as a projective device.

#### 4.2.6.2 Description of the Bender Gestalt test

The test consists of nine cards each 10cm by 15cm. They are numbered A and 1 to 8. On each card is a design which the subject has to copy. The cards are presented one at a time. Although there is no time limit to the test, record of the time is taken because it can be of diagnostic value.

The patterns on the cards are as follows:

Figure A: a circle and a square. One corner of the square touches the right hand side of the circle.

Figure 1: 12 dots in a row.

Figure 2: three rows of small circles. The circles lie at a slant, from left above to right below, below one another.

Figure 3: a series of slanting dots having one single dot to the extreme left and the others forming a boomerang shape. The dotted boomerangs increase in size consecutively to the right.

Figure 4: an open square, the lower right-hand corner of which is touched by a figure representing a normal frequency distribution curve.

Figure 5: a series of dots forming an incomplete circle with a dotted line slanting from it in a north-easterly direction.

Figure 6: two sinusoidal lines of different wave lengths crossing each other at a slant (Bender, 1938:5).

Figure 7: two configurations intersecting each other. Each configuration has a sharp point, the one of which points upward and the other down.

Figure 8: two configurations made up of the same units as figure 7 except that the principles of geometric form prevails (Bender, 1938:5). Thus, the two sharp points lie east-west

respectively and the bases of the two configurations are joined to form what seems to be another diamond-shaped figure in the centre.

4.2.6.3 Rationale of the Bender Gestalt test

In adapting the figures as a visual motor test Bender has applied the theory of Gestalt Psychology to the study of personality and clinical practice. However, the perception and the reproduction of the figures are influenced by the maturation level of the individual, and his pathological state, whether organically or functionally determined (Koppitz, 1963:1; Halpern, 1951:326). Furthermore, it can also be used as a projective test testing emotional adjustment and personality (Hutt, 1969 and Koppitz, 1963:123).

Whereas most examiners have used the Bender as either a test of visual-motor perception or a test of emotional adjustment, Koppitz (1963:6) points out that an examiner can use a single Bender Test protocol to evaluate perceptual maturity, possible neurological impairment and emotional adjustment all at the same time.

The test may also be applied to see how well the subject can function under pressure and to test memory (Lezak, 1979:314). When used in this way, it is known as the "stress Bender" and the subject is timed to copy the designs as quickly as possible. When used as a memory test, the subject is shown the card for two seconds and then the card is removed and has to be drawn by memory.

#### 4.2.6.4 Motivation for including the Bender Gestalt Test in the present investigation

A combination of the Bender Gestalt Test and Human Figure Drawings is very effective in that the Bender not only measures the child's visual-motor perception, but also reflects his inner control and organization while the Human Figure Drawings also reveal information about the individual's mental ability and emotional adjustment (Koppitz, 1975:95). In the present study the personality of the two groups is of prime importance, rather than intellectual difference and visual-motor performance which would inevitably differ. For this reason, the test was administered primarily as an evaluation based on emotional indicators along with the Human Figure Drawings. Therefore, the researcher has attempted to omit distortions on the Bender due to immaturity or perceptual malfunctioning and has concentrated on those distortions which reflect emotional factors.

#### 4.2.6.5 Reliability of the Bender Gestalt Test

Anastasi (1968:305) reports retest reliabilities of about 0,70 in normal samples over a 24-hour interval, as well as scorer reliability of approximately 0.90 for trained scorers.

Koppitz (1963:12) mentions two aspects about the reliability of the Developmental Bender Scoring System:

a) Scorer reliability

Miller, Loewenfeld, Lindner and Turner (in Koppitz,

1963:12) made a reliability study of the Developmental Bender Scoring System by each independently scoring 30 Bender protocols. They then sent copies of these Bender records to Koppitz for scoring purposes. Pearson product moment correlations were computed between the test scores of the five raters, Koppitz's score being included. The correlation ranged from 0,88 to 0,96.

b) Test-score reliability

As the split-half and alternate form methods are inappropriate for testing the reliability of the Bender Scoring System, the retest method has to be used. However, immediate retesting would show the result of practice, while a long interval between test administrations would reflect maturation in visual-motor perception. Therefore, the time interval should be neither long nor short (Koppitz, 1963:13).

A four-month test administration interval by Koppitz between 2 kindergarten and 2 first grade classes showed correlations significant on the 0,001 level of probability. She also administered the test to 5 other groups of subjects at different time intervals. The Bender protocols were scored blindly without knowledge of the child's age, previous or later test score. Then the records were grouped according to the time interval between the first, second or third test and according to the children's age and grade placement. The Bender scores of the earlier and later test administrations were compared after a time interval of 6 and of 12 months. Chi squares were computed. The number of subjects whose Bender

score was above or below the mean score for their respective age groups on the first, second and third test administrations respectively, were compared. Twelve chi-squares were computed and nine were statistically significant at the two percent level of probability. From these results, Koppitz (1963:13,38) thus considers the Developmental Scoring System to be reliable.

Hutt (1969:128) reports a total score reliability correlation of 0,96 for the 19-Factor Psychological Scale for scoring the Bender, while a correlation of 0,69 was obtained for 114 cases between his Hutt Adaptation of the Bender Gestalt Test score on psychopathology and his adience-abience score (another method of scoring the Bender devised by Hutt). He also mentions a study in which a correlation of 0,55 was obtained between the 19-Factor Psychopathology Scale and the Wechsler Performance IQ.

4.2.6.6 Validity of the Bender Gestalt Test

Koppitz (1963:10) reports two studies in which the validity of the Initial Bender Scoring System was determined. In one study composite scores, from which Bender mean scores were derived, were computed. Chi-squares were used to determine how well the Bender composite scores could differentiate between high and low achievers. All the results were statistically significant. In the other study the Initial Scoring System was cross-validated on another group and the three chi-squares determined for the grades concerned were significant at the one percent level.

With the re-evaluation of the Initial Bender Scoring System, the Developmental Bender Scoring System for Children originated and each scoring item in the Developmental Scoring System was validated against first and second grade achievement as measured on the Metropolitan Achievement Test. Only items differentiating between above and below average students in either the first or the second grade at the 5% level of probability or better, or which demonstrated significance at the 10% level of probability in both the first and second grades, were included (Koppitz, 1963: 12).

Koppitz (1963:75) reports high validities for the Bender in assessing school readiness (individually and as a group test), as a predictor of school achievement and to predict reading and arithmetic problems. She also mentions correlations of -0,44 between Bender and IQ scores and correlations of -0,85 between Bender and mental age scores of the same group. Three other studies by Koppitz (1963:110) proving a higher correlation between mental age and the Bender score than the correlation between IQ and the Bender score, yielded correlations of -0,84, -0,50 and -0,70 respectively, all being significant at the 0,001 level of probability. Therefore, the Bender has a high validity in screening mental maturity for retarded youngsters and in predicting their academic achievement. Anastasi (1968:306), however, says that these analyses need further verification because they were based on small samples.

Research data indicate that the Bender test is used to identify and evaluate children with emotional

problems (Koppitz, 1963:125-126 and Anastasi, 1968:306). However, it is difficult to differentiate signs of emotional disturbance from immaturity in young children's performance on this test. For this reason Koppitz (1963:125-126) suggests that the Developmental Scoring System should not be used for identifying emotional disturbance in children, but should rather be used to investigate underlying factors contributing to the child's emotional adjustment. Furthermore, Koppitz (1975: 84-88) proposes twelve emotional indicators which reflect emotional attitudes and personality structure. These indicators are not considered to be a function of visual-motor performance. However, chi-squares comparing the number with and without emotional problems according to a given emotional indicator, showed statistically significant differences between emotionally disturbed subjects and the control group relative to six of the indicators. Four additional indicators showed differences not statistically significant.

Hutt's determinants indicative of psychopathology were tested by Byrd (in Hutt, 1969:19) who found that his data supported the validity that the majority of test factors as selected from Hutt reflected signs of personal adjustment.

Clawson (1959:198-206) also investigated the utility of some of Hutt's factors in differentiating emotional disturbance. She concluded that her study revealed the presence of meaningful diagnostic signs in children's BVMGT records beyond a simple ability to reproduce signs of differing complexity.

Rao and Potash (1985:838) tested Hutt's hypothesis that anxiety is reflected by absolute size deviations on reproduced Bender Gestalt figures and found that size deviations may indicate the presence of anxiety.

According to Hutt (1969:25) there is still considerable controversy concerning the projective possibilities of the Bender Gestalt procedure. The technique does have considerable potential, but questions do exist relating to the extent of its validity, best methods of eliciting projective behaviour and evaluating it and the relations of these projections to other significant criteria.

Despite Anastasi's view (1968:306) that the Bender test's validity remains largely to be improved, although it has been used for a wide variety of testing purposes, the researcher is of the same opinion as Hutt (1969:21) that "no single indicator is likely to have high validity in assessing personality characteristics....Even the most valid of 'signs' would be likely to have relatively low reliability (as well as validity) if taken entirely by itself, and if for no other reason should not be used,by itself, to make predictions in an individual case. Here only the concurrent contribution of a number of signs, without contradictive evidence, would be meaningful."

## 4.3 Procedure

The experimental group was tested at the West Rand School for Cerebral Palsied Children in Krugersdorp during the period 1981-06-22 to 1981-06-26. Due to technical and administrative reasons the control group could not be tested in the same year and were tested during the period 1982-03-15 to 1982-03-26 at the Monument High School in Krugersdorp.

The actual testing procedure is best described according to the instruments used during the research:

### 4.3.1 Administration of the SSAIS

The SSAIS was administered according to the directions in the Preliminary Manual, SSAIS, Part II (National Bureau of Educational and Social Research). While the subject was doing the respective tests, as mentioned in the descriptions of the tests, the researcher filled in the SSAIS Answer Sheet, number 502pp. A time limit was set according to the instructions in the manual.

### 4.3.2 Administration of the CV

Each subject was given a CV Interest Questionnaire booklet containing the questions and an answer sheet. The researcher explained the instructions of the booklet and the subject marked one of the three activities on the answer sheet as was expected of him. Where it was necessary, the researcher explained terms which the subject did not understand. No time limit was given for doing the questions.

### 4.3.3 Administration of the HSPQ

As the researcher was unable to test the experimental and control groups in a group situation, the HSPQ was administered individually to the subjects. Each testee was given a test booklet, form A, an answer sheet, a pencil and a rubber. The researcher read the instructions on the cover of the booklet aloud. The examples were completed. Any questions on behalf of the testee were answered. The testee was then left to work alone after it was clear that he had understood the instructions and knew how to answer each question on the answer sheet. Meanings of words were explained where necessary, particularly in the case of the experimental group. The test was administered without a time limit. The control group took 40-50 minutes, which is the standard time limit. The experimental group took longer, averaging about an hour, seeing that many of them were physically and mentally handicapped and therefore, much slower than the control group.

### 4.3.4 Administration of the TAT

The importance of this type of test lies in the combination of maximum usefulness with maximum validity, reliability and economy (Abt and Bellak, 1950: 190). Due to the fact that the administration of the TAT varies according to the aim of the researcher, a selection of cards was made. According to Holt (1951:207), it is generally inadvisable to use fewer than 10 cards, therefore the researcher has selected 10 for the purpose of the investigation. The following table gives the numbers of the pictures which were used as well as the expected projections:

TABLE II: TAT CARDS AND THEIR EXPECTED PROJECTION

Pictures used for both boys and girls

| Card | Expected projection |
|---|---|
| 1 | aspirations and attitude to assignments and the demands of life |
| 2 | family relationships |
| 12BG | free projection |
| 14 | expectancies, ambitions, frustrations, worries |

Pictures used for boys

| Card | Expected projection |
|---|---|
| 3BM | depression/suicidal inclinations |
| 6BM | mother-son relationship |
| 7BM | father-son relationship/ attitude to figure of authority |
| 9BM | attitude towards work, recreation and homosexuality |
| 13B | interpersonal conflict/feelings of deprivation |
| 17BM | escape from dilemmas or problems |

Pictures used for girls

| Card | Expected projection |
|---|---|
| 3GF | despair/feeling of guilt |
| 6GF | female reaction to dominant male figure |
| 7GF | mother-daughter relationship |
| 8GF | daydreams regarding the future |
| 12F | mother-daughter relationship/attitude to marriage and aging |
| 13G | aspirations/future expectancies |

The expected projections may be found in Murray's Manual (1971). The test was administered individually. Each card was placed before the testee with the instruction that he had to relate what he saw, what had happened and what the people (if any) on the cards thought, felt and did. The testee also had to relate what was going to happen in the future. Due to the fact that the researcher was aware that there might be limitations, such as an inability to abstraction, among the cerebral palsied individuals, the children were explicitly asked for their views on the future. The emphasis was placed on the future in order to reveal the individual's view of the future. If the children asked any questions, they were answered non-directively. It was necessary for the researcher (in certain cases) to ask a question in order to make the testee elaborate an obscurely stated statement.

### 4.3.5 Administration of the DAP

The test was administered individually. Each child was given a pencil, rubber and a blank sheet of paper. The subject was instructed to draw a person. The researcher made notes of the comments and drawing procedure. Upon completion, the individual was requested to draw a person of the opposite sex. The researcher again made notes on the subject's responses. After the drawings had been completed, the subject was asked to make a story about each person. Questions were asked about the drawn figure. The questions concerned age, schooling, occupation, ambition, family, preference for which parent, attitudes toward the body and towards friends, family and school, as suggested by Machover (1949). No time limit was set for the administration of the test.

### 4.3.6 Administration of the Bender Gestalt Test

The test was administered individually. The testee was asked to copy the figure on the card which was represented to him. Although there is no time limit to this test, the time taken by the testee to complete a figure was noted in case it might be of diagnostic significance.

## 4.4 Scoring

### 4.4.1 Scoring of the SSAIS

The SSAIS was scored according to the Preliminary Manual for the SSAIS, Part II (National Bureau of Educational and Social Research, 1964). The raw scores were converted to scaled scores according to the tables of scaled scores in the manual.

### 4.4.2 Scoring of the CV

As there was no manual available for the scoring of the CV test, it was scored according to the Preliminary Manual for the Kodus Interest Questionnaire (Psychological and Guidance Services, Dept of Education, Cape Town & the Bureau for Student Counselling, University of Stellenbosch, 1978), seeing that the Kodus is a revised form of the CV test.

### 4.4.3 Scoring of the HSPQ

The HSPQ was scored according to the Manual for the Jr - Sr HSPQ (Madge, 1967:4-6).

### 4.4.4 Scoring of the TAT

The responses of the individuals were analyzed according to a ten point scale. The higher the weight ascribed to the individual, the more negative his response. The ten point scale, by means of which the researcher evaluated the TAT responses, was a construed scale which was being used at the Psychology Department of the PU vir CHO at the time. It was devised by Badenhorst (1980:163-164) in order to provide a quantative interpretation technique which would allow for the statistical manipulation of empirical data. The following table reflects this construed scale of evaluating the responses:

TABLE III: CONSTRUED SCALE FOR EVALUATING TAT RESPONSES

Card 1: Aspirations; Attitude to assignments and the demands of life

| Weight assigned | Content |
|---|---|
| 2 | Realistic ambition |
| 4 | Uncertain/confused about demands of reality (Doesn't know) |
| 6 | Inability to handle demands (can't) |
| 8 | Denies demands of reality (ignores, e.g. the violin) |
| 10 | Pathological escape mechanisms with regard to the demands of reality (irrelevant answers) |

Card 2: Family relationships/dynamics

| Weight assigned | Content |
|---|---|
| 2 | Healthy family interaction |
| 4 | Uncertain/confused (doesn't know) |
| 6 | Inability to integrate relations (merely names them) |
| 8 | Unhappy dissatisfactory relations (implies negative feelings) |

TABLE III (Continued)

| | |
|---|---|
| 10 | Pathological response (irrelevant) |

Card 6BM: Relationship with mother

| Weight assigned | Content |
|---|---|
| 2 | Healthy interaction |
| 4 | Uncertain/confused ("doesn't know") |
| 6 | Inability to integrate relation (merely names it) |
| 8 | Unhappy/dissatisfactory relations (implies negative feelings) |
| 10 | Pathological response (irrelevant) |

Card 7BM: Relationship with father

| Weight assigned | Content |
|---|---|
| 2 | Healty interaction |
| 4 | Uncertain/confused ("doesn't know") |
| 6 | Inability to integrate relation (merely names it) |
| 8 | Unhappy/dissatisfactory relations (implies negative feelings) |
| 10 | Pathological response/irrelevant |

Card 8BM: Handling of aggression

| Weight assigned | Content |
|---|---|
| 2 | Healthy handling of aggression |
| 4 | Uncertain/confused ("doesn't know") |
| 6 | Denies/avoids aggression |
| 8 | Strong underlying aggression |
| 10 | Pathological response (irrelevant) |

As Table III does not allow for the evaluation of all the cards, the researcher has grouped the cards according to their content and evaluated them in the same way, using this scale as background. The following table shows how each card was evaluated:

TABLE IV: EVALUATION OF TAT CARDS

| Card | Evaluation |
|---|---|
| 1, 8GF, 9BM, 13B, 17BM | Evaluated according to Card 1 in the Construed Scale |
| 2 | Evaluated according to Card 2 in the Construed Scale |
| 3GF, 3BM | Evaluated according to Card 8BM in the Construed Scale |
| 6GF, 6BM | Evaluated according to Card 6BM in the Construed Scale |
| 7GF, 7BM, 12F | Evaluated according to Card 7BM in the Construed Scale |
| 13G, 14 | Evaluated according to both Cards 1 and 8BM |
| 12BG | Evaluated according to the results of all the other cards |

The weights were then tested by means of the Mann-Whitney U Test for the level of significance.

### 4.4.5 Scoring of the DAP Test

In the scoring of this test, 22 personality characteristics were considered. These characteristics have been selected from 37 characteristics which Blum (1954:123) tested for validity in the DAP test. The researcher chose those characteristics most relevant to this study. The characteristics which were omitted were considered irrelevant for the purpose of this research, e.g. factors reflecting psychoses or adult deviations like alcoholism. It was then noted how many of the individuals in the experimental and control groups portrayed each of the chosen personality characteristics. The percentage of individuals showing each characteristic was calculated, in relation to the total number in each group. T-tests were then done on the percentages of the two groups.

### 4.4.6 Scoring of the Bender Gestalt Test

The BVMGT is usually used and scored to determine perceptual disorders (Bender:1938). It can, however, also be used to determine the existence of certain personality characteristics (Koppitz, 1963:132-141 and Koppitz, 1975:84-89). In this research study the researcher has used both scoring methods.

To determine the perceptual disorders, the test was scored according to the standard BVMGT scoring procedure. The number of errors in copying the figures were counted and t-tests were computed on the scores of the two groups to determine the difference and level of significance.

To determine the existence of certain personality characteristics, the BVMGT was scored according to the "Scoring Manual for Emotional Indicators on the Bender Test for Children" (Koppitz, 1963:132-141 and Koppitz, 1975:84-89). In this method the emotional indicators are related to personality characteristics. The number of emotional indicators found in both the experimental and control groups were noted. The percentage of individuals showing each emotional indicator was calculated, in relation to the total number in each group. T-tests were computed on the percentages of the two groups.

## 4.5 Statistical Techniques

In this study the research is directed at the significance of the differences between two groups. As the research includes small independent samples ($N_1 = N_2 = 15$), non-parametric techniques have been applied here.

### 4.5.1 The Mann-Whitney U Test

The Mann-Whitney U Test is a powerful test for uncorrelated data. It is used with independently-drawn random samples. It is a non-parametric substitute for the T-test. U is obtained by means of the following formula:

$$U_1 = N_1N_2 + \frac{N_1(N_1 + 1)}{2} - \Sigma R_x$$

$$U_2 = N_1N_2 + \frac{N_2(N_2 + 1)}{2} - \Sigma R_y$$

The smaller value of the two is used to interpret significance and acceptance or rejection of the null hypothesis (Downie & Heath, 1979:270-272).

### 4.5.2 Testing the Difference between two Proportions

In order to determine the difference between certain percentages of the experimental and control groups, the following formula has been used (Oosthuizen, 1976: 35):

$$t = \frac{p_1 - p_2}{S_{p_1 - p_2}}$$

where $S_{p_1 - p_2} = S^2_{p_1} + S^2_{p_2} = \sqrt{\frac{p_1 q_1}{N_1} + \frac{p_2 q_2}{N_2}}$

The statistical operations have been done by the Statistical Consultation Service of the PU vir CHO.

## 4.6 Hypotheses

In this section, the specific null hypotheses to be tested are formulated.

$Ho_1$ : There is no significant difference between the experimental and control groups with regard to the results of the SSAIS.

$Ho_2$ = There is no significant difference between the experimental and control groups with regard to the results of the CV test.

$Ho_3$ = There is no significant difference between the experimental and control groups with regard to the results of the HSPQ.

$Ho_4$ = There is no significant difference between the experimental and control groups with regard to the results of the TAT.

$Ho_5$ = There is no significant difference between the experimental and control groups with regard to the results of the DAP test.

$Ho_6$ = There is no significant difference between the experimental and control groups with regard to the results of the BVMGT.

Therefore, the alternative hypotheses may be formulated:

$H_1$ = There is a significant difference between the experimental and control groups with regard to the results of the SSAIS.

$H_2$ = There is a significant difference between the experimental and control groups with regard to the results of the CV test.

$H_3$ = There is a significant difference between the experimental and control groups with regard to the results of the HSPQ.

$H_4$ = There is a significant difference between the experimental and control groups with regard to the results of the TAT.

$H_5$ = There is a significant difference between the experimental and control groups with regard to the results of the DAP test.

$H_6$ = There is a significant difference between the experimental and control groups with regard to the results of the BVMGT.

In the results, $p = .01$ is the level of probability at which the null hypothesis will be rejected or not. The specific level of probability (p) will be indicated. Results significant at the .05 level of probability will also be discussed, because it gives an indication of tendencies for future research.

## 4.7 Summary

In this chapter a description has been given of the way in which the sample was selected, of the measuring instruments, the procedure, the statistical techniques and the hypotheses to be tested. The next chapter gives the results and discussion of these results as determined by this empirical study.

# CHAPTER 5

# RESULTS AND DISCUSSION

This chapter expounds the results of the empirical study. The information has been systematically organized according to the hypotheses in chapter 4.

## 5.1 Results of the SSAIS

The data of the SSAIS have been analyzed according to the Mann-Whitney U Test. The results of the test may be seen in Tables V and VI. Table V merely gives the power scores, whereas Table VI gives the power plus time scores.

In the tables the Mann-Whitney Test statistic = U and the level of significance = p. E refers to the experimental group consisting of the cerebral palsied children, while C indicates the control group.

* = significance at the 5% level of probability.
** = significance at the 1% level of probability.

TABLE V: SSAIS POWER SCORES

| VARIABLE | MEAN | | STANDARD DEVIATION | | POWER SCORES | |
|---|---|---|---|---|---|---|
| | E | C | E | C | U | p |
| Verbal Tests | | | | | | |
| Vocabulary | 10.2667 | 13.3333 | 4.1139 | 3.1547 | 50 | 0,01** |
| Comprehension | 8.4667 | 11.1333 | 3.4198 | 1.9223 | 54,5 | 0,02* |
| Verbal Reasoning | 9.8667 | 11.4667 | 2.7740 | 2.7220 | 78,5 | 0,15 |
| Problems | 8.8667 | 13.2000 | 3.3566 | 3.4476 | 47 | 0,01** |
| Memory | 7.3333 | 7.7333 | 4.1519 | 2.7115 | 100 | 0,6 |
| Non-verbal Tests | | | | | | |
| Pattern Completion | 8.0667 | 10.7333 | 3.9182 | 3.6930 | 72 | 0,09 |
| Blocks | 7.8667 | 10.7333 | 4.5018 | 2.0517 | 59 | 0,03* |
| Absurdities | 9.0000 | 12.0667 | 3.1623 | 3.6148 | 57,5 | 0,02* |
| Form Board | 9.8667 | 11.6000 | 4.8087 | 3.1803 | 97 | 0,51 |
| VERBAL IQ | 90.1333 | 106.9333 | 18.9166 | 14.3251 | 55 | 0,02* |
| NON-VERBAL IQ | 88.2000 | 107.8000 | 21.7459 | 14.1633 | 69 | 0,07 |
| TOTAL IQ | 88.1333 | 107.8000 | 19.4123 | 13.2730 | 43 | 0,003 |

TABLE VI: SSAIS POWER PLUS TIME SCORES

| VARIABLE | MEAN | | STANDARD DEVIATION | | POWER PLUS TIME SC | |
|---|---|---|---|---|---|---|
| | E | E | E | C | U | p |
| Verbal Tests | | | | | | |
| Vocabulary | 10.2667 | 13.3333 | 4.1139 | 3.1547 | 50 | 0,01** |
| Comprehension | 8.4667 | 11.1333 | 3.4198 | 1.9223 | 54,5 | 0,02* |
| Verbal Reasoning | 9.8667 | 11.4667 | 2.7740 | 2.7220 | 78,5 | 0,15 |
| Problems | 8.8000 | 12.5333 | 3.4059 | 3.2704 | 51 | 0,01** |
| Memory | 7.3333 | 7.7333 | 4.1519 | 2.7115 | 100 | 0,6 |
| Non-verbal Tests | | | | | | |
| Pattern Completion | 8.5333 | 11.8000 | 4.3567 | 3.9497 | 63,5 | 0,04* |
| Blocks | 7.8000 | 10.0667 | 4.1782 | 2.4631 | 69 | 0,07 |
| Absurdities | 8.6667 | 12.0667 | 3.3310 | 3.5349 | 59,5 | 0,03* |
| Form Board | 9.8667 | 11.6000 | 4.8087 | 3.1803 | 97 | 0,51 |
| VERBAL IQ | 90.2000 | 106.3333 | 19.3065 | 14.1101 | 57 | 0,02* |
| NON-VERBAL IQ | 89.7333 | 108.5333 | 22.7076 | 14.8990 | 57,5 | 0,06 |
| TOTAL IQ | 88.9333 | 108.3333 | 19.5501 | 13.9728 | 47 | 0,01** |

### 5.1.1 Results of the Verbal Tests

The tests on vocabulary and problems show differences significant at the 1% level of probability. The test on comprehension shows a difference at the 5% level of significance. All higher scores have been obtained by the control group.

The disadvantage in vocabulary among cerebral palsied children seems to be the result of a lack of normal experience and stimuli due to their disability. Performances in vocabulary tests are often low because there is not enough differentiation of meaning of words and the vocabulary which has been acquired by these children is based on the simplest associations (Taylor, 1961:86).

The poor performance of the cerebral palsied group in the problems test, reflects an inability to concentrate, which may be associated with behavioural disturbances such as distractibility and disinhibition.

### 5.1.2 Results of the Non-verbal Tests

The difference between the two groups with relation to the tests on blocks and absurdities is at the 5% level of significance. The experimental group performed significantly lower in both cases.

Poor performance in the blocks test depicts subnormality of the cerebral palsied group and an inability to synthesize, analyze and solve problems in their spatial relationships. Lack of abstraction was one of their major problems, not only reflected in this test, but also in the personality tests.

Poor performance in the absurdities test reflects perceptual problems. The poor performance in the test can, however, also be due to the cerebral palsied child's motor disability, rather than a lack of perception.

The only difference between the power scores and the power plus time scores, is in the pattern completion test where the power plus time score is significant at the 5% level of probability. The control group is quicker at visual orientation and concentration. The difference between these two scores can also be due to the cerebral palsied child's motor disability having hampered him, rather than a perceptual problem.

5.1.3 Results of the SSAIS in general

The total IQ differs significantly due to the fact that the control group depicts a greater competence in the various tests. The verbal IQ differs significantly because of the significant level of difference ($P \leq .02$) in the different verbal tests. The fact that the cerebral palsied group's non-verbal IQ was not significantly lower than that of the control group, was unexpected. On investigation it appeared to be the result of stimulation in the cerebral palsied children's motor programme at the school at that specific time.

Thus $Ho_1$, which poses that there is no significant difference between the experimental and control groups with regard to the results of the SSAIS, is rejected. $H_1$ is accepted seeing that the two groups do differ

with respect to vocabulary, comprehension, problems, blocks, absurdities, pattern completion, verbal IQ and total IQ.

## 5.2 Results of the CV test

The 12 fields of the CV Interest Questionnaire have also been analyzed according to the Mann-Whitney U Test. The results may be seen in Table VII.

TABLE VII: RESULTS OF THE CV INTEREST QUESTIONNAIRE

| FIELD OF INTEREST | MEAN | | STANDARD DEVIATION | | U | p |
|---|---|---|---|---|---|---|
| | E | C | E | C | | |
| Social | 47.5333 | 56.4666 | 24.1450 | 30.2510 | 92 | 0,4 |
| Public Appearances | 43.7333 | 54.5999 | 25.5914 | 33.1981 | 86,5 | 0,28 |
| Business | 62.1333 | 51.6666 | 20.6116 | 31.5270 | 136 | 0,33 |
| Figures | 54.1333 | 60.9999 | 26.4355 | 33.0432 | 91,5 | 0,38 |
| Writing | 59.5333 | 34.2000 | 23.9996 | 24.1785 | 174,5 | 0,01** |
| Literature | 46.0666 | 31.7999 | 30.5087 | 24.2610 | 143,5 | 0,2 |
| Art | 59.8000 | 53.2666 | 17.2304 | 32.1369 | 114,5 | 0,9 |
| Handwork | 61.4666 | 59.7333 | 25.7983 | 27.9348 | 117,5 | 0,8 |
| Machines | 58.7333 | 49.9999 | 24.0964 | 30.9308 | 134 | 0,8 |
| Science | 47.1999 | 65.0666 | 21.5413 | 32.0634 | 70,5 | 0.08 |
| Animals | 71.9333 | 71.9333 | 22.0080 | 29.4460 | 93,5 | 0,43 |
| Plants | 41.8666 | 52.7999 | 29.2523 | 25.9235 | 85,5 | 0,26 |

The only significant variable is that of interest in writing, being significant at the 1% level of significance. The cerebral palsied group showed great interest in the field of writing. This result is surprising in the light of the fact that many cerebral palsied children have real difficulties in writing.

According to Oswin (1967:84), they find it very frustrating due to their motor disabilities or lack of perception.

The researcher ascribes the interest in writing to experience. It appears to be the only field which is most familiar to these children. The other fields, except figures at which they have been proved to be incompetent, lie beyond their scope of experience.

Furthermore, in the face of severe motor disability and the inability to perform physical feats, writing would seem easier than other fields where the individual's disability prevents him from being able to perform these skills. Thus, he would have no interest in such a field or would lose interest when he struggles to perform a feat.

On the whole, the cerebral palsied child's interest profile, thus, corresponds with that of the "normal" child. $Ho_2$ can only be rejected with regard to interest in writing, but taking all the other variables into consideration, it can be said that from a global point of view, the $Ho_2$ has to be accepted.

## 5.3 Results of the HSPQ

The HSPQ has been analyzed according to the Mann-Whitney U Test. The results are reflected in Table VIII.

TABLE VIII: RESULTS OF THE HSPQ

| MEAN | | STANDARD DEVIATION | | FACTOR | U | p | |
|---|---|---|---|---|---|---|---|
| E | C | E | C | | | | |
| 6.8667 | 10.4000 | 2.0999 | 2.1974 | A | 28 | 0,0004 | ** |
| 5.4000 | 7.3333 | 1.7647 | 1.5430 | B | 46,5 | 0,01 | ** |
| 10.2667 | 10.4000 | 4.1312 | 3.3123 | C | 110,5 | 0,93 | |
| 12.6667 | 9.2000 | 3.0628 | 3.8951 | D | 165,5 | 0,03 | * |
| 6.4000 | 8.3333 | 2.5014 | 3.3310 | E | 65 | 0,05 | * |
| 9.4000 | 8.6000 | 3.5214 | 3.2249 | F | 129 | 0,5 | |
| 13.4667 | 11.4667 | 2.9488 | 2.5033 | G | 154,5 | 0,08 | |
| 9.0667 | 8.9333 | 3.5550 | 3.9364 | H | 114 | 0,94 | |
| 9.4667 | 10.6000 | 4.7188 | 2.8486 | I | 89,5 | 0,34 | |
| 7.9333 | 7.6000 | 2.4631 | 3.7759 | J | 119,5 | 0,77 | |
| 8.9333 | 9.1333 | 3.2616 | 2.5317 | O | 101 | 0,63 | |
| 10.8000 | 9.8000 | 3.4268 | 2.5411 | $O_2$ | 145 | 0,17 | |
| 12.7333 | 12.0667 | 3.0582 | 3.1045 | $O_3$ | 133,5 | 0,38 | |
| 8.2000 | 9.8000 | 2.7308 | 3.0284 | $O_4$ | 73,5 | 0,1 | |

Significant differences are reflected in the different factors of the HSPQ:

5.3.1 Factor A - introversion - extroversion

The control group showed a significantly higher sten score on this factor ($p = 0,0004$). This suggests that the experimental group is much more introverted than the control group. The experimental group is more reserved, detached, critical and cool than the control group. The control group is more outgoing, warm-hearted, easy-going and participating.

The evidence of introversion among cerebral palsied persons is supported in the research of Phelps (in Schonell, 1957:172) who found spastics to be introverted and egocentric. Schonell (1957:172) disclaims this view, as his research proved severely handicapped spastics to be self-absorbed, but slightly and moderately handicapped ones to be more natural. The researcher agrees with Schonell's view, seeing that slightly handicapped children are placed into more competitive situations than severely handicapped ones and appear to be more self-conscious. This was particularly reflected in the TAT interviews.

According to the National Bureau of Educational and Social Research (1969:6), low sten scores on Factor A in children is a reflection of stubborn withdrawal. This is associated with behavioural disturbances such as aggression and withdrawal from social contacts, as well as low self-esteem and lack of self-acceptance. The researcher found this to be true as may also be seen in the results of Factors D and E of the HSPQ. The researcher also recalls aggressive attitudes in the TAT interviews among some of the cerebral palsied children.

### 5.3.2 Factor B - intelligence

The control group attained a higher sten score with regard to intelligence and is depicted as more abstract-thinking and brighter than the cerebral palsied group. The latter is shown to have been more concrete-thinking and of a lower scholastic mental capacity.

These results are supported by the results of the SSAIS. Concrete thinking for the experimental group was also reflected in the answers to the TAT.

Low scores in Factor B also reflect the tendency to give up quickly in a problem situation, i.e. resignation. These individuals are also inclined to be submissive (National Bureau of Educational and Social Research, 1969:9). This evidence is supported by Block (in Allen, 1962:170) who describes cerebral palsied children as being excessively submissive and given to resignation rather than recognition of limitations imposed by their disability. This is due to low self-esteem and an inability to accept the self.

5.3.3 Factor D - temperament

The experimental group attained a much higher sten score here than did the control group, proving the cerebral palsied children to have problems such as excitability, impatience, over-activeness and being demanding. These disturbances coincide with some of the behavioural and emotional disturbances discussed in chapter 2. A high sten score on this factor also reflects behavioural problems such as the tendency to be negative, the tendency to be noisy, the tendency to show over-aggressive bravado, the tendency to feelings of inferiority, the tendency to compensation and egocentricity (National Bureau of Educational and Social Research, 1969:16). These results, as reflected by Factor D, are supported by Block (in Allen, 1962:170) who also reports the incidence of egocentricity with emphasis on expansive self-concepts and compensation for feelings of inferiority, among cerebral palsied individuals.

### 5.3.4 Factor E - dominance

The cerebral palsied group showed a low sten score on this factor. This supports the evidence of submissiveness in the experimental group, as previously reported. This reflects passivity which is the result of low self-esteem, lack of self-acceptance and an inability to cope with demands.

$Ho_3$ which poses that there is no significant difference between the experimental and control groups with regard to the HSPQ, is rejected. $H_3$ is accepted seeing that the two groups do differ significantly on Factors A and B ($p = 0,01$) and Factors D and E ($p = 0,05$).

According to the HSPQ the cerebral palsied child, thus, reflects introversion or withdrawal, aggression, a lower concrete-thinking mental capacity, negative attitudes, inferiority, egocentricity and a tendency to compensation. Submissiveness is portrayed by Factors B and E and this reflects passivity.

## 5.4 Results of the TAT

The results have been divided into three groups, viz. those done by both boys and girls, those done by boys only and those done by girls only.

### 5.4.1 Results of the Cards done by both Girls and Boys

The results of the cards done by both the girls and the boys are shown in Table IX.

TABLE IX: RESULTS OF THE TAT CARDS DONE BY BOTH GIRLS AND BOYS

| CARD | PROJECTION | U | p |
|---|---|---|---|
| Card 1 | Aspirations | | |
| | Attitude to assignments | 174,5 | 0,01** |
| Card 2 | Family relationship | 117,5 | 0,82 |
| Card 12BG | Free projection | 138,5 | 0,22 |
| Card 14 | Ambitions/Frustrations | 106 | 0,74 |

A significant difference at the 1% level of probability is shown with regard to Card 1, pertaining to aspirations and attitude to assignments. The experimental group attained a much higher score than the control group did, reflecting an inability to cope with the demands put to the cerebral palsied group. The control group does not show low scores, which in turn reflects an uncertainty towards demands which is normal during adolescence.

### 5.4.2 Results of the cards done by boys only and girls only

The results of the cards done by boys only are shown in Table X. According to the weights assigned, the cerebral palsied group was shown to have feelings of excessive depression. The control group also showed signs of depression, but once again this is normal during adolescence. The researcher also found a possibility of cerebral palsied boys having a greater tendency towards suicidal inclinations than do normal boys.

TABLE X: RESULTS OF TAT CARDS DONE BY BOYS ONLY

| CARD | PROJECTION | U | p |
|---|---|---|---|
| 3BM | Depression<br>Suicidal inclinations | 64,5 | 0,02* |
| 6BM | Mother-son relationship | 42,5 | 0,85 |
| 7BM | Father-son relationship<br>Attitude to figure of authority | 40 | 0,96 |
| 9BM | Attitude towards work, recreation and homosexuality | 50,5 | 0,36 |
| 13B | Interpersonal conflict<br>Feelings of deprivation | 52,5 | 0,18 |
| 17BM | Escape from dilemmas and problems | 55,5 | 0,15 |

TABLE XI: RESULTS OF TAT CARDS DONE BY GIRLS ONLY

| CARD | PROJECTION | U | p |
|---|---|---|---|
| 3GF | Despair/feelings of guilt | 13,5 | 0,39 |
| 6GF | Reaction to male dominant figure | 17,5 | 0,93 |
| 7GF | Mother-daughter relationship | 30 | 0,05* |
| 8GF | Daydreams about future | 25 | 0,21 |
| 12F | Mother-daughter relationship; Attitude to marriage/aging | 31 | 0,03* |
| 13G | Aspirations/future expectancies | 31 | 0,03* |

There is a greater incidence of significant differences between the two groups of girls. Among the cerebral palsied girls, both cards 7GF and 12F reflect either an inability towards a meaningful mother-daughter relationship, or an unhappy dissatisfying mother-daughter relationship, implying negative feelings. These girls also have a pronounced negative attitude towards marriage and aging.

Card 13G ties up with card 1 in which the cerebral palsied girls show an inability to cope with environmental demands. Therefore, their aspirations and future expectancies are negative. Card 13G also reflects a greater tendency towards denying the demands of reality than is found among both cerebral palsied boys and normal children.

According to Minde (1978:1347), only cerebral palsied children in normal schools have been found to consider the future. The researcher disagrees with this view as she found the older boys in the experimental group were concerned about an occupation in the future.

The $Ho_4$ that there is no significant difference between the experimental and control groups with regard to the results of the TAT, is rejected. $H_1$ is accepted because significant differences did occur between the two groups with regard to cards 1, 3BM, 7GF, 12F and 13F ($p = 0,05$ for all these cards except card 1 which shows a difference significant at the 1% level of probability).

## 5.5 Results of the DAP test

Table XII gives the results of the DAP test.

TABLE XII: RESULTS OF THE DAP TEST

| VARIABLE | MEAN DIFFERENCE | STANDARD DEVIATION | T | p |
|---|---|---|---|---|
| Anxiety/tension | 0,07 | 0,15 | 0,47 | $\geq$ 0,10 |
| Problems in handling aggression | 0 | 0,098 | 0 | $\geq$ 0,10 |
| Other defenses | 0,13 | 0,17 | 0,76 | $\geq$ 0,10 |
| Overconcern with bodily processes | 0,13 | 0,64 | 0,20 | $\geq$ 0,10 |
| Infantile & immature | 0,13 | 0,16 | 0,81 | $\geq$ 0,10 |
| Insecurity | 0,27 | 0,18 | 1,5 | $\geq$ 0,10 |
| Mother rejection | - | - | - | - |
| Tendency to social withdrawal | 0 | 0,12 | 0 | $\geq$ 0,10 |
| Dependence | 0,13 | 0,16 | 0,81 | $\geq$ 0,10 |
| Dominance | 0,07 | 0,07 | 1 | $\geq$ 0,10 |
| Guilt | 0,33 | 0,12 | 2,75 | 0,01 |
| Inversion | 0 | 0,09 | 0 | $\geq$ 0,10 |
| Drive to social participation | 0,20 | 0,18 | 1,11 | $\geq$ 0,10 |
| Maturity | - | - | - | - |
| Poor reality contact | 0,07 | 0,07 | 1 | $\geq$ 0,10 |
| Emotions too controlled | 0 | 0,15 | 0 | $\geq$ 0,10 |
| Passivity | 0,34 | 0,17 | 2 | 0,05 |
| Tendency to identification with opposite sex | 0,07 | 0,18 | 0,39 | $\geq$ 0,10 |
| No control of emotions | 0,13 | 0,18 | 0,72 | $\geq$ 0,10 |
| Disturbed personal relationships, non-specific | 0,20 | 0,46 | 0,44 | $\geq$ 0,10 |
| Non-specific sexual distress | 0 | 0,18 | 0 | $\geq$ 0,10 |
| Depression | 0,06 | 0,11 | 0,55 | $\geq$ 0,10 |

In Table XII those variables which were tested, but were not found among either the experimental or the control group, are marked with a dash " - ". Variables with differences larger than p = 0,10 are not discussed as these differences are insignificant.

The cerebral palsied children showed the presence of much guilt, which was completely absent in the case of the control group. The difference in the presence of guilt was found to be significant at the 1% level of probability.

The difference in passivity is of some significance, shown to be at the 5% level of significance. Cerebral palsied children are reflected as being more passive than "normal" ones. This evidence is also supported by the HSPQ.

The $Ho_5$ that there is no difference between the results of the experimental and control groups with regard to the DAP test, is rejected seeing that they do differ with regard to guilt and passivity. $H_5$ is thus accepted.

5.6 Results of the Bender Visual Motor Gestalt Test

Table XIII gives the results of the BVMGT as scored for perceptual disorders. The cerebral palsied group was found to have severe perceptual difficulties in comparison to the control group. This is due to the brain damage in the experimental group.

TABLE XIII: RESULTS OF THE BVMGT

| MEAN | | STANDARD DEVIATION | | T | p |
|---|---|---|---|---|---|
| E | C | E | C | | |
| 5.6000 | 1.4667 | 3.9243 | 1.3558 | 3,86 | 0,0012** |

Table XIV gives the results of the emotional indicators as reflected by the BVMGT. Differences larger than p = 0,10 are not discussed as they are insignificant.

TABLE XIV: SIGNIFICANCE OF THE EMOTIONAL INDICATORS ON THE BVMGT

| VARIABLE | MEAN DIFFERENCE | STANDARD DEVIATION | T | p |
|---|---|---|---|---|
| ORGANIZATION: | | | | |
| Irregular sequence | 0,20 | 0,17 | 1,18 | $\geq$ 0,10 |
| Collision | 0,07 | 0,07 | 1,00 | $\geq$ 0,10 |
| Margin | - | - | - | - |
| Wavy line sequence | 0,07 | 0,07 | 1,00 | $\geq$ 0,10 |
| LINE QUALITY: | | | | |
| Tremors | 0,14 | 0,45 | 0,31 | $\geq$ 0,10 |
| Heavy reinforced lines | 0,06 | 0,18 | 0,33 | $\geq$ 0,10 |
| Fine line | - | - | - | - |
| Sketching | - | - | - | - |
| DASHES FOR CIRCLES | - | - | - | - |
| SIZE: | | | | |
| Progressive increase in size | 0,13 | 0,13 | 1,00 | $\geq$ 0,10 |
| Large size | 0,27 | 0,18 | 1,5 | $\geq$ 0,10 |
| Small size | - | - | - | - |
| SPACE: | | | | |
| Expansion | 0,07 | 0,07 | 1,00 | $\geq$ 0,10 |
| Constriction | - | - | - | - |
| SECOND ATTEMPT | 0,20 | 0,46 | 0,44 | $\geq$ 0,10 |
| BOX AROUND DESIGN | - | - | - | - |
| ELABORATION | - | - | - | - |
| SHIFT IN POSITION OF PAPER | 0,20 | 0,45 | 0,44 | $\geq$ 0,10 |
| SHIFT IN POSITION OF STIMULUS CARD | - | - | - | - |

Variables marked - were not found among either groups

TABLE XIV (Continued)

| VARIABLE | MEAN DIFFERENCE | STANDARD DEVIATION | T | p |
|---|---|---|---|---|
| CHANGES IN GESTALT: | | | | |
| Closure difficulty | 0,53 | 0,46 | 1,15 | ≥ 0,10 |
| Crossing difficulty | 0,13 | 0,16 | 0,81 | >0,10 |
| Curvature difficulty (irregular) | 0,06 | 0,46 | 0,13 | >0,10 |
| Change in angulation: | | | | |
| Increased angulation | 0,07 | 0,14 | 0,50 | ≥0,10 |
| Decreased angulation | 0,07 | 0,07 | 1,00 | ≥0,10 |
| Shape of angles: | | | | |
| Sharpened angles | 0,20 | 0,15 | 1,30 | >0,10 |
| Rounded angles | 0,00 | 0,18 | 0,00 | >0,10 |
| Perceptual rotation | 0,33 | 0,14 | 2,36 | 0,05* |
| Retrogression and Simplification | 0,47 | 0,13 | 3,62 | 0,01** |
| Fragmentation | 0,07 | 0,07 | 1,00 | >0,10 |
| Perseveration | 0,13 | 0,13 | 1,00 | ≥0,10 |

Retrogression and simplification are two characteristics which are strongly reflected in the cerebral palsied children's drawings ($p = 0,01$). Problems are also experienced with regard to perceptual rotation ($p = 0,05$). These disorders among the experimental group are due to brain damage in the cerebral palsied individuals. These findings support the previous results in the SSAIS and HSPQ, in that the brain damage in the cerebral palsied group causes them to think concretely with a lack of abstraction.

The $Ho_6$ that there is no difference between the results of the experimental and control groups with regard to the BVMGT, is rejected seeing that they do differ with regard to retrogression, simplification and perceptual rotation.

## 5.7 Interpretation of Results

Rejection of the various null hypotheses necessarily leads to a closer interpretation of the results, in order to make meaningful recommendations. Thus, a group of cerebral palsied children is depicted, who have urgent needs as reflected by the results.

There is, therefore, the need to:

1 increase the child's vocabulary and experience
2 limit his problems with regard to concentration, inhibition and perception
3 guide his interests to suit his various abilities
4 help him to form healthy social contacts in order to avoid negative behaviours such as aggression, withdrawal and egocentricity and to prevent negative relationships
5 overcome feelings of inferiority and passivity in order to assert himself
6 overcome feelings of depression and guilt
7 be able to cope with demands put to him
8 enable the cerebral palsied individual to develop more positive future aspirations
9 do further research on aspects such as the possibility of the existence of suicidal inclinations and negative feelings with regard to mother-daughter relationships, marrying and aging

## 5.8 Summary

In this chapter the results of the various tests have been given and the various hypotheses have been tested. The results give a global view of a group of cerebral

palsied children showing the effects of retrogression, simplification, lack of concentration and perception and the inability to think abstractly, due to brain damage.

The main personality characteristics are those of passivity, submission, introversion and resignation. These characteristics are related to low self-esteem and a lack of self-acceptance.

Behavioural disturbances of excitability and overactiveness occur and are associated with brain-damage. Other behavioural problems are egocentricity and aggressiveness, which are common signs found among cerebral palsied children according to literature.

The cerebral palsied child has a tendency towards using defense mechanisms, as has been seen in the study of the literature. The defense mechanisms which may be found in this group are compensation, denial and withdrawal, as reflected by the HSPQ.

High weights assigned in the TAT show that the boys experience depression and may possibly have tendencies toward suicide, while the girls reflect negative attitudes towards mother-daughter relationships, marriage and aging.

On the whole the null hypothesis with regard to there being no difference between the experimental and control groups, is rejected. A closer interpretation leads

to the recognition of various needs with regard to the cerebral palsied individual.

In the next chapter the needs are considered and recommendations are made as based on the results and hypotheses of the present chapter.

# CHAPTER 6

This chapter expounds the recommendations based on the needs, results and hypotheses of the previous chapter and it also refers to the cerebral palsied child's view of the future.

## 6.1 Recommendations on Satisfying the Cerebral Palsied Child's Needs

The most important goal is to help the cerebral palsied child to overcome his tendency to passivity. By doing so, a number of "needs" may be satisfied. Various situations and attitudes may be developed or manipulated in order to achieve satisfaction of the child's needs.

### 6.1.1 Play

Although the researcher has not used play, as such, in the empirical study, it is evident from literature that play is important in the development of a child. As Fewell (1982:61) points out, observing the play of young children is one way of learning about their progress in socialization and often such observations can be used to predict later development. In retarded children social development is slowed down because they tend to spend more time playing alone.

The researcher maintains that play is one of the most important ways of satisfying some of the child's most urgent needs. It satisfies the need to develop various interests, the need to form healthy social contacts and the need to overcome the child's passivity.

Play can be of utmost importance in stimulating the child's interest. As Schonell (1957:77) points out, if the interest and motivation cultivated during play is great enough, the child will persevere to overcome discomfort associated with his handicap and frustration due to failure. If play can be organized on a co-operative basis, it helps the child to develop a sense of his own ability to do and think for himself. It is therefore, advisable to provide play materials within the limit of his powers, but so as to enable him to exercise his ingenuity and muscles. The researcher is of the opinion that two needs can be satisfied in this way, viz. that of developing and guiding the cerebral palsied child's interest to suit his various abilities and that of overcoming his passivity by allowing him to assert himself.

The researcher feels that cerebral palsied children should be encouraged to play with other children more often, in order to satisfy the need to form healthy social contacts. Interacting with others helps to develop positive social behaviours. It also helps these children to realize their self-sufficiency, to be aware of their social impact and to learn the requirements for appropriate self-control (Haney, 1971:186).

Play is also important in its emotional cathartic effect of playing out. In this way the child gets rid of some of his stress and anxiety. The latter may be caused by feelings such as frustration, due to his disabilities and tension, due to his inability to cope with demands.

Play is very important in satisfying the cerebral palsied individual's need to overcome this passivity. It helps him to assert himself and thereby to overcome feelings of inferiority and lack of confidence, caused by his disabilities and lack of normal experiences. Thus, play develops self-esteem and self-acceptance.

According to Poonsamy (1984:158-159), play can also be of therapeutic value in that games, for example, will improve the cerebral palsied individual's spatial orientation and it can also help in the development of concentration. In this way this need can be met. Furthermore, if the material used for instruction is made available to the child during free play, what he learns will apply to everyday life (Morgenstern, 1968:44).

### 6.1.2 Success

The need to overcome passivity and develop interest can also be met by creating success situations.

Creating situations in which the child is successful is vitally important in developing motivation and interest in the child. If he sees that he is successful in a certain skill or situation, it gives him confidence to persist and develop the skill. This can be very important in the development of skills for a future occupation or interest.

When success situations are created for the child, he must be trained to be critical of his own efforts and be satisfied only with the best of which he is capable. This teaches him valuable self-discipline and allows him to learn to evaluate his efforts and control emo-

tional outbursts in the face of failure (Schonell, 1957:177). The researcher feels that this is very important in developing self-acceptance and thereby self-esteem. For this to be possible, it is necessary for the educator to assess the child's level of competence and to build from a basis on which the child has already experienced success (Cruickshank, 1968:51).

### 6.1.3 Creativity

Stimulating creativity is an effective means of helping the individual to overcome his passivity and to assert himself. It stimulates the child's interest, motivates him and gives him a sense of satisfaction. It also develops self-confidence.

Schonell (1957:175) poses that free activity, or the ability to express himself creatively, helps the individual to overcome aggression, to control his emotions, to attack new situations with confidence and to gain a sense of personal worth.

### 6.1.4 Developing Opportunities for Normal Experiences

One of the biggest problems found among cerebral palsied children is the lack of normal experiences. The researcher maintains that the cerebral palsied child should be encouraged to acquire as many "normal" experiences as possible, despite his disabilities. It is necessary to develop opportunities for normal experiences for the cerebral palsied child in order to help him to live as "normally" and happily as possible.

Experiencing normal experiences helps the cerebral palsied child to satisfy most of his needs, viz. to increase his vocabulary, to develop interest, to form healthy social contacts, to overcome passivity, to overcome depression, to cope with demands and to form positive future aspirations.

Allowing the child to take part in "normal" experiences, teaches him "normal" vocabulary. Should he be denied the experiences, his vocabulary becomes limited seeing that he has made no contact with certain situations and the vocabulary used in them. Thus, the greater his opportunities for normal experiences, the greater his knowledge of normal situations and the vocabulary related to these situations.

Developing opportunities for normal experiences, stimulates the cerebral palsied child to take interest in "normal" activities.

The need to form 'healthy' social contacts is satisfied by experiencing normal experiences. It assists in the development of positive social relations and co-operation and in this way it develops self-confidence. The cerebral palsied child should be given ample opportunities to interact "normally". Play can be of invaluable assistance here. Normal social interaction will help the child to overcome his fears of others, as well as his tendency to introversion and withdrawal. It will also help him to acquire experience. Acceptance of others, however, is largely based upon self-acceptance. The latter will be discussed in more detail later in this chapter.

By means of normal experiences the child learns to overcome his uncertainties and thereby his tendency to passivity. This teaches him to be independent and also leads to self-confidence

Opportunities for normal experiences help the individual to overcome depression which may be caused by uncertainty and the inability to cope with environmental demands. When the child has had normal experiences, he knows what is expected of him and the self-confidence he acquires by his knowledge helps him to overcome his depression. Furthermore, by experiencing "normal" experiences, he has less time to brood about his disabilities and therefore, he has less time to 'foster' depression.

As the cerebral palsied child learns to know what is expected of him by experiencing normal experiences, he learns to cope with certain demands and he acquires experience in certain situations. This also promotes self-confidence. In this way it is possible for him to form more positive future aspirations.

By denying the cerebral palsied child the experiences that normal children have, we deny the "normal" development of his mentality, which results in unfair assessment (Gratke, 1947:169). Lack of normal experience leads to a restrictive view of everything, narrowing personal qualities and causing inability to cope in problem situations (Phelps, 1974:7).

It is of importance that the child should also be disciplined just as normal children are disciplined, as part of normal experience. Furthermore, he should not be overprotected because this could lead to the child becoming spoilt, self-centred and selfish (Erlank, 1984:42, 59 & 60).

### 6.1.5 Individualization

In the need to limit the child's various problems, such as lack of concentration, distractibility, disinhibition, lack of ability to think abstractly and lack of perception, it must be remembered that we have to do with individuals. The researcher wants to emphasize that due to the complexity of cerebral palsy, the problems experienced are individual to different children. The child may have one or more, or all of these problems. The disorders do not influence all the children in the same way, as has been reflected in the literature study. For this reason, each child must be considered as an individual with individual problems affecting him in an individual way, if assessment is to be of value.

Lack of concentration and distractibility may, for instance, be partly solved by creating an environment modified to meet the needs of the task at hand, e.g. the absence of material which can possibly distract the child's attention, such as no objects or books on the table, or no pictures and bulletins against the wall (Poonsamy, 1984:66). Classroom modifications will vary according to individual needs. Some will need no modifications, whereas others may need minor adjustments (Gearheart & Weishahn, 1980:105).

### 6.1.6 Self-acceptance

A high correlation between diagnosis of handicap and likelihood of children taking more positive or negative views of themselves appears to be clinically and statistically significant (Harvey & Greenway, 1982:113).

The researcher regards the creation of self-acceptance as the most important factor in the development of the individual's adjustment. The development of self-acceptance diminishes the sense of insecurity, self-consciousness and sensitivity toward interpersonal relationships which are the results of his disabilities.

The results of the TAT reflect denial of the demands of reality. As has been previously mentioned, denial is a defense mechanism employed when the individual cannot cope with environmental demands. The same is true of compensation and withdrawal reflected by the HSPQ. These defense mechanisms are closely associated with a discrepancy between the ideal and the perceived self. If the person were to develop self-acceptance, the discrepancy between the ideal and the perceived self would be smaller and defense mechanisms would be smaller and defense mechanisms would, therefore, prove unnecessary.

The cerebral palsied child needs to develop self-awareness and body-awareness in order to know his handicap. Knowledge of what he is able to do may lead to gradual accepatance of that of which he is not capable (Oswin, 1967:71).

The child must be encouraged to have patience with his own efforts, to keep his self-confidence and self-respect despite disappointments and to have the same reasonable ideals as a normal child, within the level of his ability (Gratke, 1947:174).

Maturity in the cerebral palsied individual can only be reached through a realisation of his powers and defects and unless the child is enabled to concentrate on his abilities and minimise his defects, he will always experience failure (Rabinowitz, 1968:49). The researcher regards this to be the basis in the development of self-acceptance.

Self-acceptance enables the individual to face the world with self-confidence. As previously mentioned, the latter can be developed by creativity and creating normal opportunities and experiences. It can also be stimulated by allowing the individual to make his own decisions and thereby creating a sense of responsibility. This allows the child to experience a sense of personal independence and with encouragement, the child is able to develop a reasonable level of expectation and a sense of worth.

### 6.1.7 Other Interests and Attitudes

The DAP test reflects the presence of a large amount of guilt in the cerebral palsied group. This is probably due to the conflict between the desire to be independent and the inability to escape from his disability which makes him dependent upon others. On one

side he is strongly dependent upon others, but on the other side he resents his dependence. This conflict can lead to guilt and is a possible explanation for the negative attitudes toward the mother-daughter relationships, marriage and aging.

The researcher maintains that the conflict leading to guilt will, however, be minimized if the child is taught to realize his limitations, but he is allowed to experience a certain amount of independence by stimulating his self-confidence and sense of worth, as previously mentioned. Negative attitudes can also be eliminated by developing a healthy ego-identification in the child.

Ego-identification is very difficult to the handicapped child because usually the person with whom he identifies is normal. This often causes problems. However, if the child has been taught to provide for his needs and has acquired a sense of independence and higher ideals, it is possible to develop in him the ability to distinguish between external and internal values of life. In this way appearance is of minor importance. The ability to separate himself from external characteristics despite his handicap and to acquire a healthy ego-identification is a certain basis for a healthy and effective social adjustment (Nel, 1955:106).

Stimulating the individual to take interest in certain activities and acquiring experience will help him to overcome problems of excitability, overactiveness, egocentricity and aggressiveness, where

his motor disability allows it. Collection and sifting of material to interest him can be of help here. As schonell (1957:184-187) points out, the cerebral palsied adult has a great need for an absorbing interest on which to spend his long leisure hours. Therefore hobbies and interests should be stimulated during childhood. These may include keeping pets, gardening, reading and collecting. Reading can introduce many interests which are usually out of reach for cerebral palsied children. Furthermore, those cerebral palsied children who cannot collect their own specimens often find it very interesting to watch others doing so. This enables them to visualize settings should they read articles or encyclopaedias.

Although the researcher found an indication of the existence of suicidal tendencies among cerebral palsied boys, according to the high weights in the TAT, she could not determine a valid enough reason for this inclination to be there. The researcher, therefore, feels that the field concerning negative attitudes and specifically the possibility of the existence of a suicidal inclination, can lend itself to further research. She suggests that a comparison of the children's background and environmental influences be considered in such a study in order to throw more light upon this subject.

## 6.2 The Cerebral Palsied Child's Attitude towards the Future

Cerebral palsied children reflect a hesitation in regarding the future. However, the cerebral palsied

child can be stimulated to help him overcome at least some of his behavioural problems, to accept himself in view of his abilities and to adapt a more positive view of the future. But the researcher agrees with Botha (1965:G-5) who stated at the Third National Conference for Cerebral Palsy, that when the child reaches puberty he already bears the impression of his education. Establishing constructive attitudes should, therefore, begin early in childhood.

## 6.3 Summary

In this chapter recommendations for satisfying the cerebral palsied child's needs are followed by a discussion of his attitude toward the future.

The most important goal is to help him to overcome his passivity and by doing so, to gratify his needs. This may be done by means of play, creating success situations, stimulating creativity, developing opportunities for normal experiences, allowing for individualization, creating self-acceptance and creating other interests and attitudes.

Despite a hesitation concerning the future, the cerebral palsied child can be stimulated to cope with his problems, to accept himself and to adapt to a positive view of the future. This should, however, begin early in childhood.

ABSTRACT

This research has been conducted to partly fill the void existing in personality assessment of the cerebral palsied child. The symptomatology of the cerebral palsied child has been analyzed at a physical and psychological level. From the results certain recommendations for a therapeutic programme have been considered.

The research in literature gives an overview of the terminology and background of cerebral palsy which is a non-progressive motor disorder. Before the nineteenth century it was classified either aetiologically or clinically. After the nineteenth century three major classifications developed, viz. the clinical and neuroanatomic classifications and the classification based on pathological factors.

Knowledge of the intelligence and personality aspects of the cerebral palsied child is of importance to acquire a global assessment. Important aspects included in this study are interest, self-concept, activation and conflict.

Two groups have been used in an empirical comparison: 15 cerebral palsied children from the West Rand School for Cerebral Palsied Children in Krugersdorp and a control group of 15 children from the Monument High School in Krugersdorp. The following instruments were used: the SSAIS, the CV, the HSPQ, the TAT, the DAP and the BVMGT.

The results give a global view of a group of cerebral palsied children showing the effects of retrogression, lack of concentration and perception and the inability to think abstractly. The main personality characteristics are those of passivity and introversion related to low self-esteem. Behavioural disturbances include excitability, egocentricity and aggression.

The most important goal is to help the cerebral palsied child to overcome his passivity and by doing so, to gratify his needs. This may be done by play, creating situations for success and creativity which stimulate interest, motivation, confidence, satisfaction and a sense of worth and which help to overcome aggression.

It appears from the study that there are aspects on which there is no clarity as yet, such as negative

attitudes and depression and the researcher feels a need for further research here.

Finally, the cerebral palsied child can be stimulated to cope with his problems, accept himself and adapt a positive view of the future.

OPSOMMING

Met hierdie navorsing word daar gepoog om die gebrek aan psigologiese navorsing by die serebraalgestremde kind aan te vul. In besonder word daar gelet op sy persoonlikheidsbeeld. Die simptomatologie word op fisiese- en psigologiese vlak ontleed om sodanig aanbevelings te maak vir 'n terapeutiese program.

'n Oorsig van die terminologie en agtergrond word gegee en daaruit blyk dit dat serebraalgestremdheid 'n nie-progressiewe motoriese versteuring is. Voor die 19de eeu is dit of etiologies of klinies geklassifiseer. Na die negentiende eeu ontstaan drie klassifikasies, nl. klinies, neuro-anatomies en die klassifikasie gebaseer op patologiese faktore.

Die kennis van aspekte van intelligensie en persoonlikheid by die serebraalgestremde kind is belangrik om 'n globale beeld te kry. Die belangstelling, selfbeeld, aktivering en konflik van sodanige kinders word hier betrek.

Twee groepe word in hierdie empiriese vergelyking gebruik: 15 serebraalgestremde kinders van die Wesrandse Skool vir Serebraalgestremde Kinders in Krugersdorp en 'n kontrolegroep van 15 kinders van die Hoërskool Monument in Krugersdorp. Die meetinstrumente was: die SSAIS, die CV, die HSPV, die TAT, die DAP en die BVMGT.

Die resultate lewer 'n globale beeld van 'n serebraalgestremde groep wat retrogressie, gebrek aan konsentrasie en persepsie en die onvermoë tot abstrakte denke toon. Passiwiteit en introversie a.g.v. 'n lae selfbeeld is die hoof persoonlikheidseienskappe. Gedragsprobleme soos prikkelbaarheid, egosentrisiteit en aggressie kan voorkom.

Die hoofdoel is om die serebraalgestremde kind te help om van sy passiwiteit ontslae te raak om sodanig sy behoeftes te bevredig. Dit kan bewerkstellig word deur spel, geleenthede tot sukses en kreatiwiteit, wat dan belangstelling, motivering, selfvertroue en tevredenheid koester en ook help om aggressie te bekamp.

Uit die navorsingsresultate blyk dit dat 'n leemte bestaan t.o.v. sekere aspekte soos negatiewe houdings en depressie. Die navorser wys op 'n behoefte aan navorsing hier.

Ten slotte is dit moontlik vir die serebraalgestremde kind om gestimuleer te word om sodoende sy probleme die hoof te bied, homself te aanvaar en 'n positiewe toekomsblik te ontwikkel.

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