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The acquisitions of cognitive skills as a function of a television programme

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6.6.1 Child Care Centres:

In Western Coloured Township Dorkas Crèche provides facilities for 100 children. It is the only creche serving preschoolers from this township although there are a few other day-care centres. Unlike the day-care centres where a few women simply look after the children while their parents are at work, the crèches adhere to certain basic educational principles providing various projects to occupy children in various age groups. 50% of the children who go to Western come from the richer neighbouring suburb Bosmont and as has already been noted, Bosmont's adult population is made up of professional or highly skilled workers with high incomes. The other 50% of the children come from Western and Newclare, and draw from families ranging from fairly high income groups to very low income groups. Low income group children, form about 15% of the school population, are usually illegitimate and have poorly educated mothers. School fees help to subsidise a child from the very poor areas. Children are accepted from three years onwards and are placed in three age groups, namely the three to four year olds, four to five year olds and five to six year olds. Activities range from out door play to indoor rings with singing, paper crafts, painting.

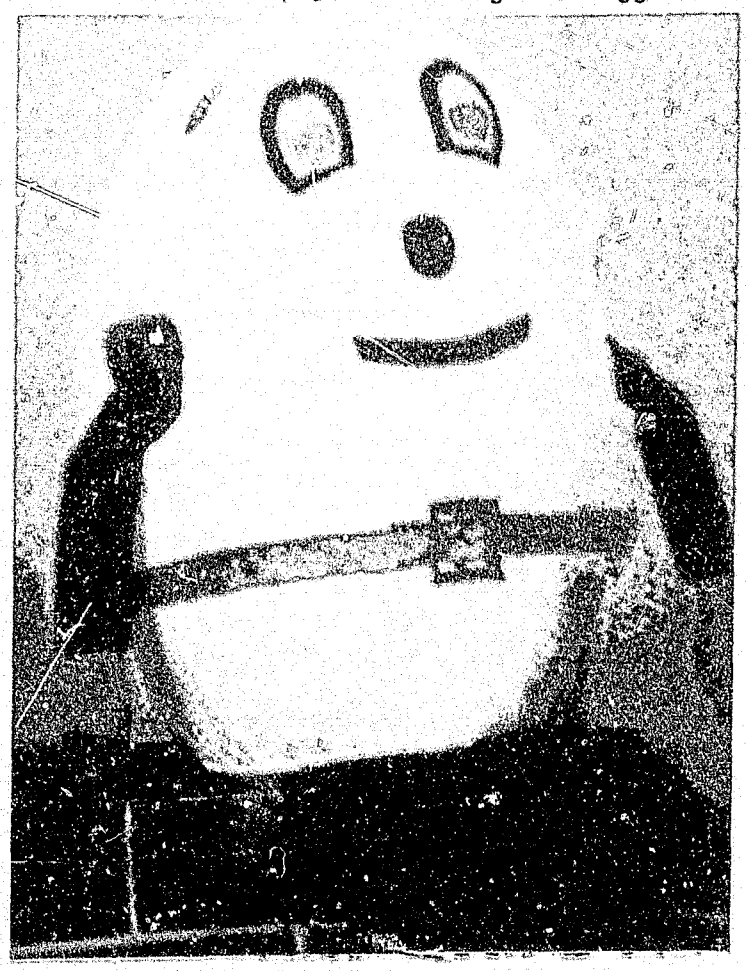
Jubilee Crèche situated in Eldorado Park Extension 6, has facilities for 100 children. It is the oldest crèche in Eldorado Park and was established in 1970 by Mr. J.E. Roux. It has a daily programme involving art discovery, make believe, paper work, song and recitation rings and countless other activities. Most of the children come from Extensions 2, 4 and 6 of which 60% are middle-lower class and 40% are lower class. (Supervisors estimate 1978). A few children

come from Extension 3 which is regarded as the luxury area and a few from Extension 1, the oldest and poorest of the areas. (See Appendix D.

The Holy Rosary Nursery School in Eldorado Park Extension 4 established in 1974 is run by the Good Shepherd Sisters with facilities for 90 children. As a nursery school it claims to provide more intensive preschool education than does a creche, although equipment facilities and activities are similar. However, as in both of the abovementioned creches, it provides perceptual skill stimulation including letter and number recognition through the medium of play. At neither the creches nor the nursery school is formal instruction used to introduce cognitive skills. All learning occurs through the medium of the games the children play. Approximately 60% of these children come from middle working class families and 40% from lower working class families (Supervisors estimate 1978).

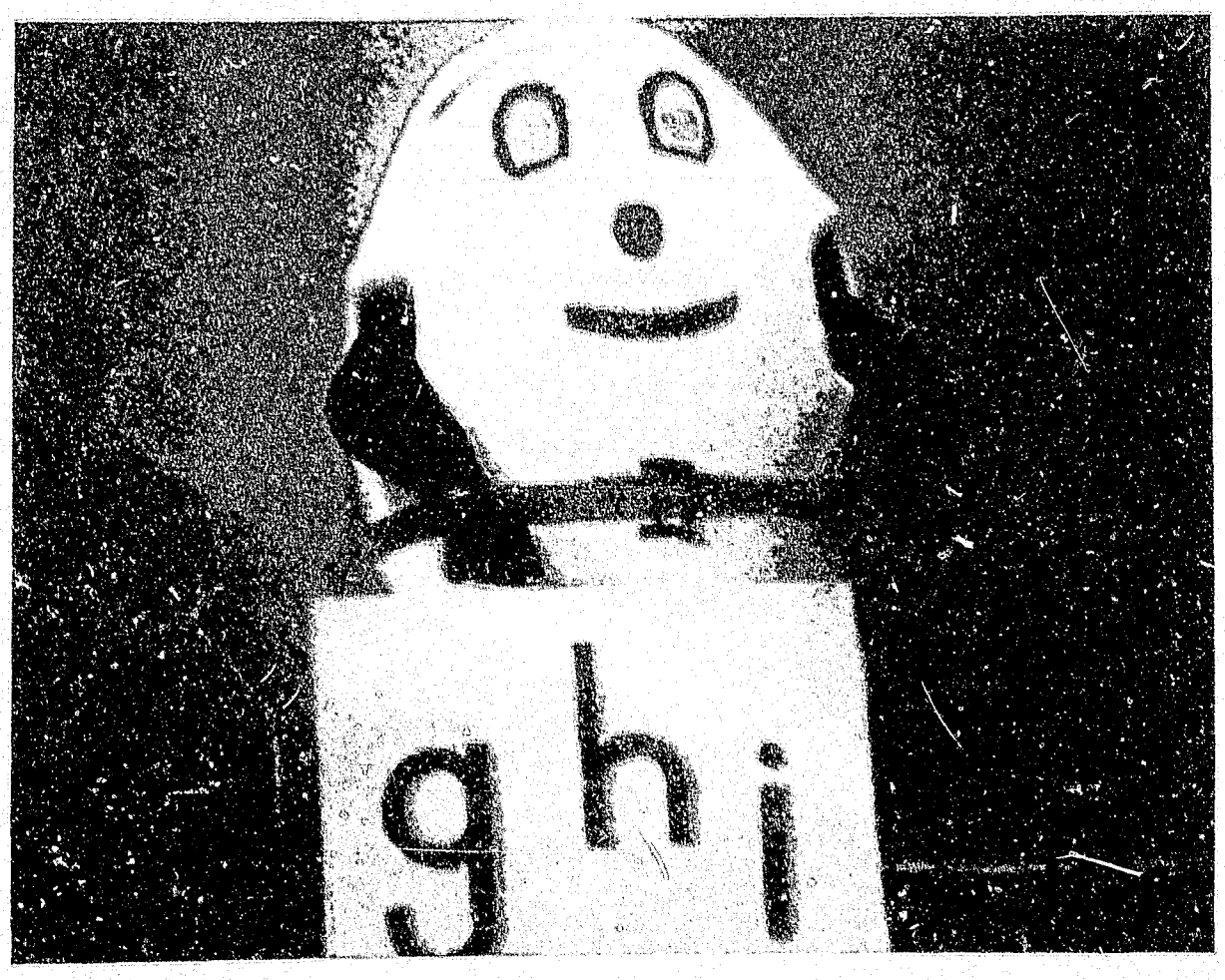
In this chapter, television in South Africa was investigated, and it appears that it is an important medium for all races in that it can help provide insights into the problems besetting the various population groups. The introduction of a television programme teaching cognitive skills might likewise be valuable for disadvantaged children to help close the gap of cognitive deficit. The characteristics of the sample children and the creches they attend were also presented in the context of their home environments to help understand the need for an educational television programme. The next chapter discusses the production of the television programme and the methodology behind the adoption of the test of cognitive skills.

'Humpty Dumpty was a large old egg



Humpty Dumpty shook
his left, then his
right leg
He threw his arms up
to the sky
Thinking he would be
able to fly
But Humpty Dumpty
had a great fall
From off his place on
the wall
And all the kings
horses and all the
kings men
Couldn't put Humpty
together again.'

'I want to tell you about some of my friends G, H and I.'

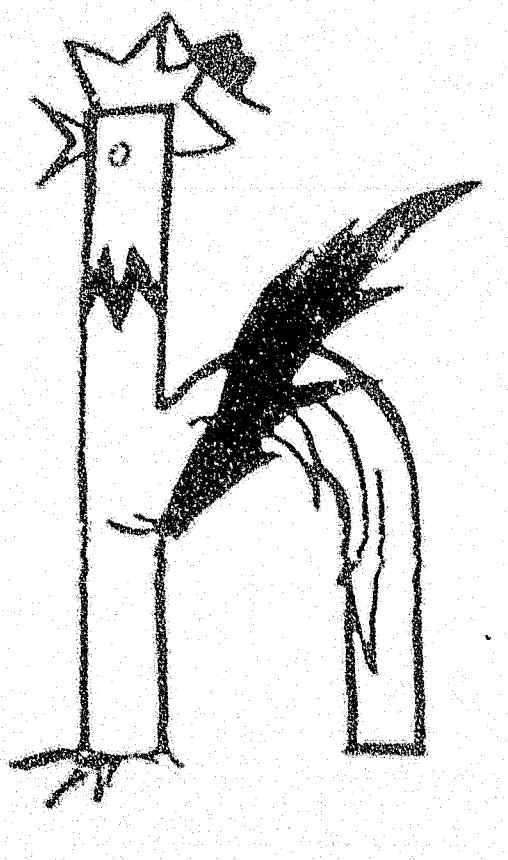


'Hello, my name's General G.'



'Hi, I'm Helen Hen.'

h



CHAPTER 7

PRODUCTION METHODOLOGY

7.1 Introduction:

In the present study a television programme was produced to teach a range of cognitive skills to preschool children in an entertaining way. As was noted in Chapter 5 a successful television programme will depend on its attraction for the child. It must be able to catch, direct and hold the child's attention, and involve the child through his participation. The producer of a children's programme must thus employ techniques which will maintain the child's attention throughout.

7.2 Catching and Holding Attention:

In the United States and Britain the child who switches on television has many programmes from which to choose. So the problem is how to get the child to watch an educational programme ins..ad of something else. In South Africa where an"over choice problem" does not exist, one is still concerned with maintaining the child's attention and preventing him from moving off into some other interest area. Although television has not been broadcast in South Africa for very long,children have become accustomed to watching television that is relatively well produced. They see adult programmes and adverts which are of high quality in visual appearance and form if not in content. Commercial advertisements only recently broadcast on South African television,contain those effects necessary to get a viewers attention immediately

and to hold it for the short duration of the advert. Animation appealing music, varied sound effects, humour and the use of the unexpected are some of the effects that were used in the production of Sesame Street to attract and hold the attention of the young child (Lesser 1972).

Noble (1975) criticises these techniques as gimmicky devices which are

> "unashamedly used as a vehicle for adult jokes and purely the rote learning of numbers and letters without teaching children how to count any real objects" (p 96).

Despite this critical view, Bogatz and Ball (1971) and Salomon (1975) have found that children do learn from this programme and that rote repetition is in fact one vehicle on the young child's road of learning.

Noble (1975) considers that the British programme Blue Peter is exemplary as an entertaining and educative production since it encourages active involvement with materials and ideas presented in the programme.

In the production of the present programme Bright Rides, the production techniques of both Sesame Street and Blue Peter were utilized for purposes of educating while entertaining, attracting attention and holding it, and involving the child in activities which he might do alone or with peers, when the TV set was turned off.

7.2.2 Music and Sound Effects:

According to Lesser (1972) and Gattegno (1969) music and sound effects seem to play an especially important role in entertaining and attracting childrens attention. Whilst music may function as an

accompaniment to action and dialogue, for adults, it plays more essential roles for children. Music evokes physical participation. Since children often rock and sway to simple melodies and sometimes dance if the tune is bouncy and gay.

Music may signal the appearance of a familiar appealing character or episode. According to Lesser (1972) when children view television, they tend to drift in and out of visual attention. Whilst the child may be attending totally or partially to auditory effects, music and sound effects serve to signal that an uninteresting sequence has ended and that a new character or episode identified by a regular signature tune has begun (Lesser 1972). Music also functions as an aid to memory in learning material in sequence. Lesser maintains that children more easily sing the alphabet than recite it, count and recall the days of the week easily when put into rhythmic and musical form. Music was used in this way as an aid to learning the alphabet and numbers in Bright Rides.

Sound effects may be used as a direct means of teaching basic skills. In Sesame Street, auditory discrimination skills including sound identification is taught by associating sounds with familiar objects or animals, e.g. mooing and cow, hooting and car. This technique is also used in Bright Rides.

Lesser notes that music and sound effects will be effective only if integrated carefully with the programme's visual content. If the visual elements are static, for example, a stationery folk singer accompanying herself on the guitar, no matter how appealing the

music is, the childs attention will wander. According to Lesser the synchronising of sight and sound to provide cross-modal reinforcement is vital. This is in contrast to the views of Broadbent (1958) and Travers (1964, 1970) on information processing, who maintain that messages fed simultaneously through two modalities will tend to interfere with each other. However, this argument seems to apply to the presentation of words and pictures both presented visually. In the latter case, the learner is flooded with more information than he can handle, and so interference occurs. Nevertheless, sight and sound may provide cross-modal reinforcement rather than interference, if they support rather than cancel or interfere with each other.

7.2.3 Repetition:

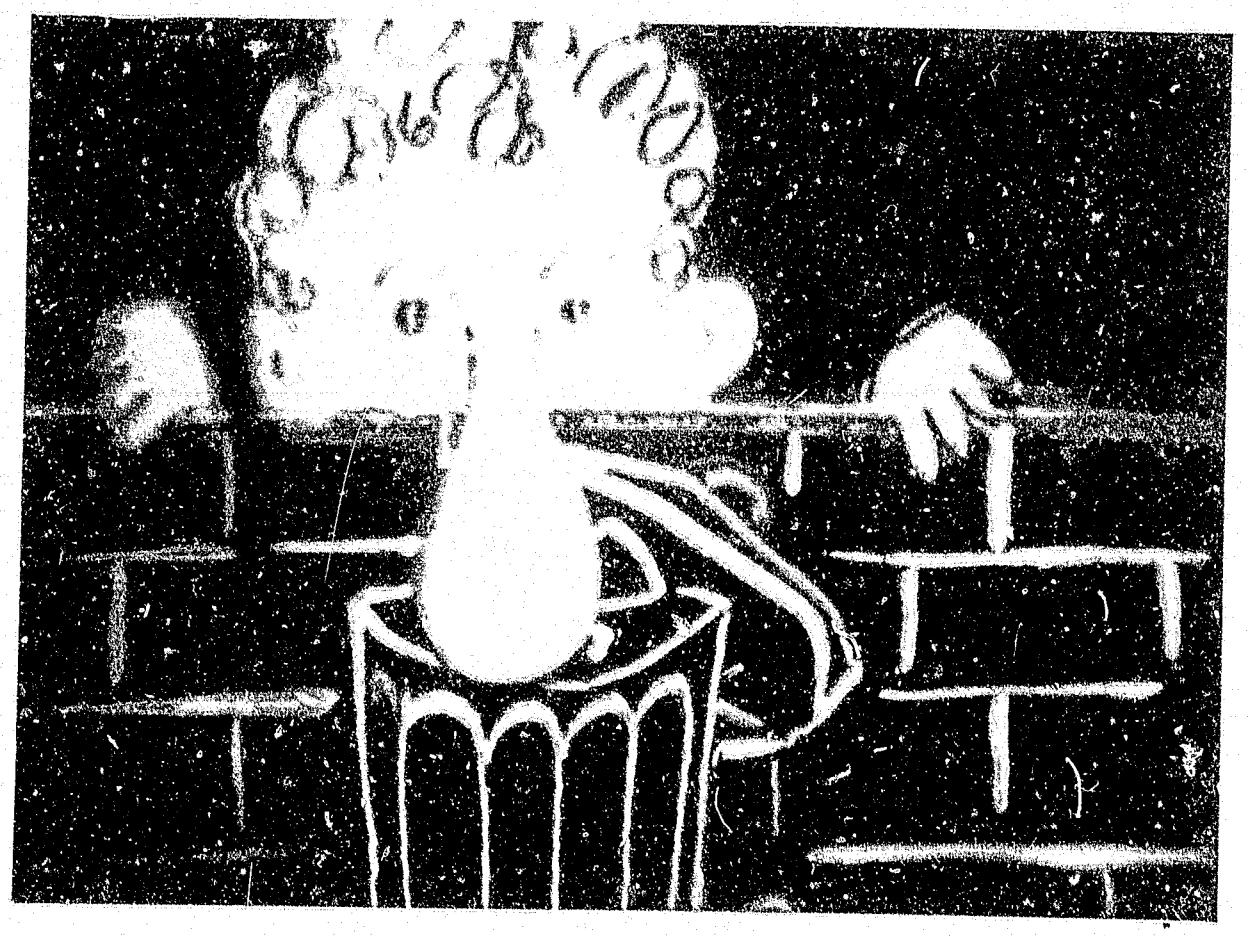
The reappearance of a familiar character episode or format may recapture the childs attention if it has drifted away. Repetition also provides opportunities to practise tasks as they become familiar, for example whilst the children viewed Bright Rides, it was observed that they would count letters and numbers with the television presentation. Repetition is a technique of film literacy, teaching television format and conventions, which facilitate learning. It also provides the bridge from familiar to new and unfamiliar concepts. According to Lesser, repetition allows the child another look at relatively complex concepts or situations which he might not easily understand from a single exposure.

Sesame Street uses a particularly effective form of repetition.

Bill-Nose: 'I enjc/ smelling things like flowers and roses.'



'But I don't like bad smells like this garbage can'



The content is kept constant but is repeated with varied formats. For example, the letter "W" appears sometimes as a three dimensional object, sometimes as a line drawing and sometimes as a cardboard cut-out. The object of this approach is to provide a child with different formats so that he learns to generalise what he has learned across several different forms of appearance. In Bright Rides, this idea is also used effectively in showing a cardboard cut-out square and then various square objects that appear in everyday life. Another form of repetition is to hold the format constant while varying the content.

Lesser (1972) cautions however, that repetition should not be used, arbitrarily. Whilst some television formats are enhanced through repetition, others suffer badly when repeated. The length of the segment seems to be an important factor. Longer segments generally do not maintain attention as well with repetition as shorter ones. Complexity of sequences is another factor. A complex segment may be repeated to allow the child more time to explore different facets of the material. However, simple material which injects no new elements will become boring and tedious.

7.2.4 Surprises and Incongruities:

A child's attention will be drawn toward a surprise event that violates his established expectations about the order of his world. According to Day and Berlyne (1971), Kagan (1970, 1971) and Piaget (1952), the child in his first year of life is motivated to confronting irregularities in the environment in order to re-establish a sense of order and regularity.

Television provides various types of surprises and incongruities. Slow motion and fast action show people and objects moving at unaccustomed speeds. Sesame Street uses the "pixilation" technique which produces the kind of speeded-up comic movements characteristic of the silent movies. Other surprise techniques include stop-action and running video tape backwards. Stop action is seen when for example, a horse jumping in mid-air is stopped, surprising the child through the novel experience of watching a jumping animal suddenly frozen in space, and also allowing him the opportunity to observe more closely the characteristics of a jumping horse. Running video-tape backwards runs people and events backwards providing other strange and unexpected visual experiences (Lesser 1972).

The use of close-up shots provides a look at unexpected characteristics of common objects like looking closely at the skin of an orange or the dew on a leaf. Long-shots allowing views from great distances, also evoke surprise at the unusual. As Lesser (1974) notes the view of the earth as seen from an astronaut on the moon is quite awe-inspiring for all human beings let alone for children.

Observing adults and other characters making mistakes which children can easily identify also provides surprise and novelty, as children in their early years are led to believe that everything adults say and do is correct. On Sesame Street, for example, Buddy and Jim are two adults who cannot work out the solutions to simple problems. These mistakes provide an unusual situation for the child who is often drawn into participating as he shouts out the correct answers to the characters on the programme. When

puppets make mistakes, children also react to their incorrect responses. In Bright Rides, Fuzzy Joe tells a story about walking during the day when "the moon was shining bright". After a short pause the other puppet Tort corrects him, confirming the viewing child's suspicion that Fuzzy Joe was talking nonsense.

Animation is another technique for providing the incongruous. In animation, anything can turn magically into anything else and children love it for the illogic that is a visual equivalent of their nursery rhymes, jingles and word games (Kael 1970). Unfortunately sophisticated animation facilities were not readily available in the production of Bright Rides. Nevertheless animation was introduced where possible. At one stage a child tells the story of a tortoise who sticks his head and legs out, one by one. The effect is attractive since the appendages emerge quickly and unexpectedly on what appears to be an ordinary line drawing.

7.2.5 Action:

Segments in which single characters face the viewing audience and deliver monologues are not likely to hold childrens' attention, unless these segments are interspersed with action segments (Lesser 1972). Action is a key ingredient in childrens television and it appears in many forms and styles. One form of action commonly used on Sesame Street is slapstick comedy, that often displays one person harming another. Controversy exists as to the useful effects of slapstick. The producers

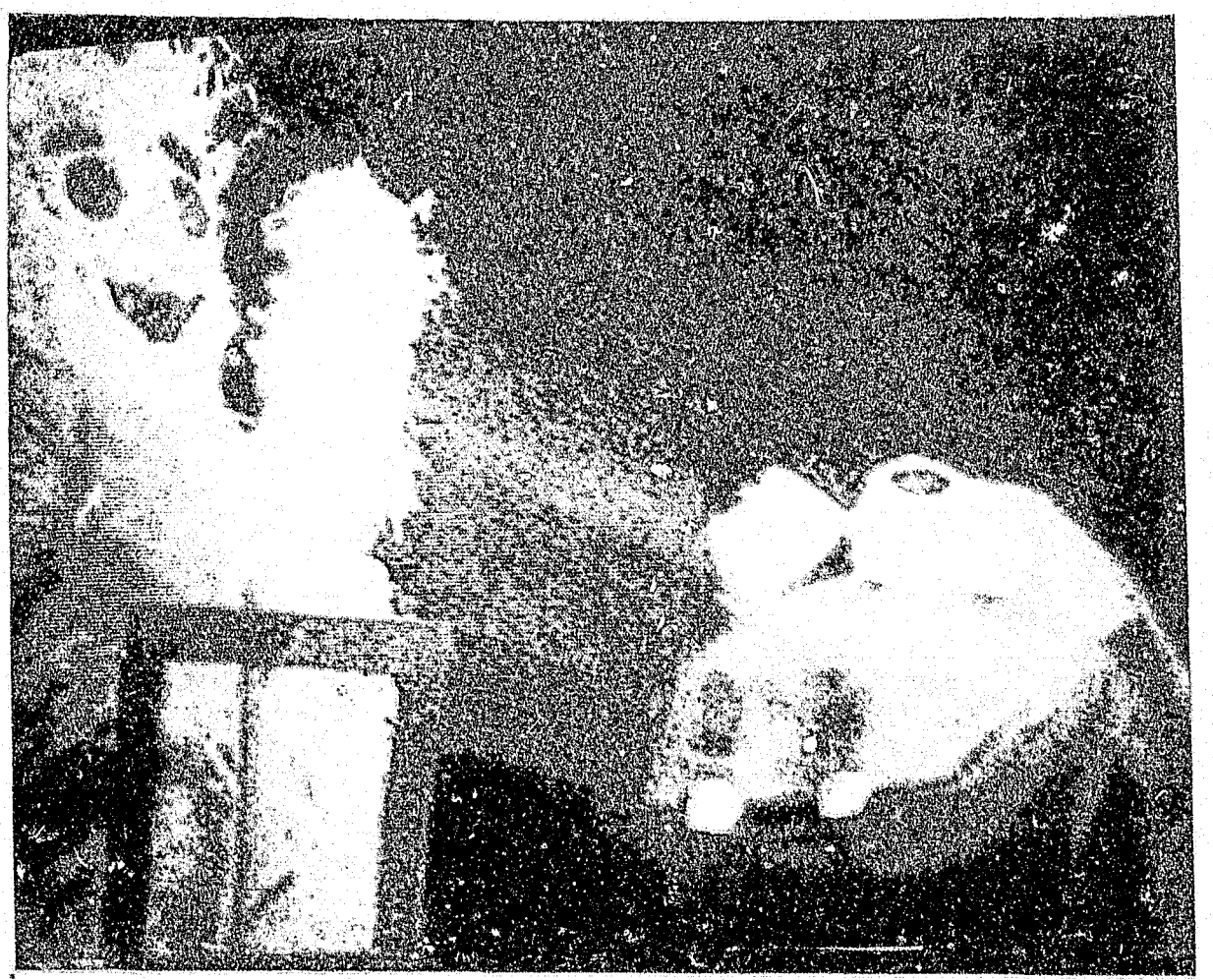
of Sesame Street maintain that this type of humour and comic harm are inseparable and that absurd comedy with or without harm elements has strong appeal for children. The presumption is that the appearance of slapstick lies mostly in its incongruity and surprise and not in its harmful outcomes. (Lesser 1972)

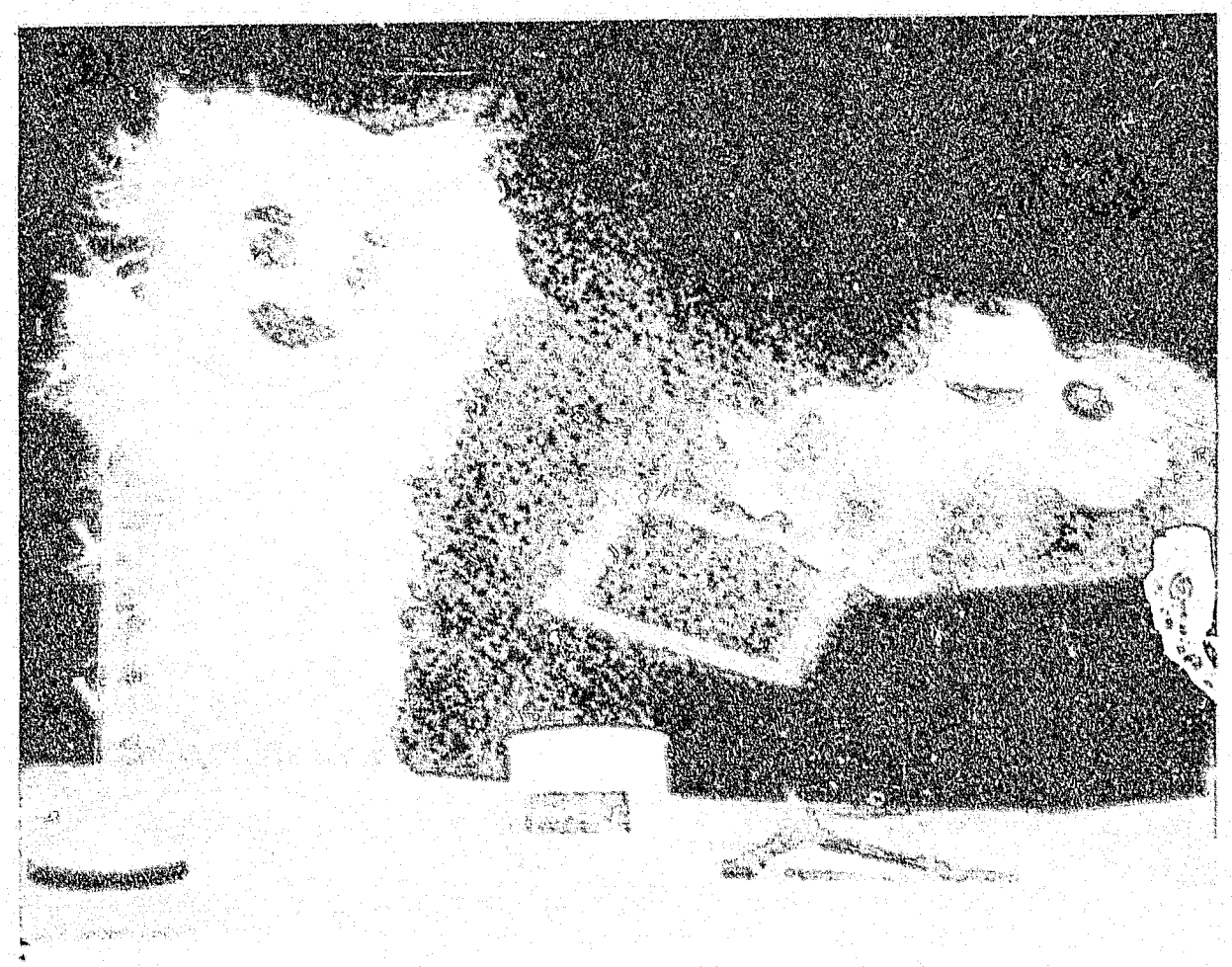
Noble (1975) contends that the use or slapstick comedy is just another attention-getting device used unwisely as a vehicle for adult jokes. Noble claims that producers of children programmes conceive of the young child as a mature adult who should appreciate adult humour but who should not be able to appreciate the reality of life. The controversy continues. The Sesame Street producers say that slapstick does in fact reflect an aspect of world reality - it shows how truly nonsensical the world can often be. Noble maintains that television should be primarily a window into the real world - in which nonsense plays an insignificant role.

In producing Bright Rides, slapstick was introduced as comic relief after serious episodes. After a sequence demonstrating a number of Piagetion Conservation of Liquids tasks, discussed and enacted by the children, a puppet Tort Short dives into a deep trough and again into a tall thin cylinder. He gets hopelessly stuck in the tall thin vessel and this demonstrates once again the difference between a wide and a narrow container but more importantly provides a moment of relaxation and laughter.

Trickery is one element of slapstick comedy where one person cunningly takes advantage of another. In Sesame Street, the

My name's Big Problem - and I like making
big problems - think i'll take a bite.





producers aimed at teaching a more advanced type of morality by providing a form of justice very appealing to children, in which the underdog turns the tables. Here the character who is trying to take advantage of another through trickery ends up being tricked by his own cunning. In Bright Rides "Big Problem", a tough and nasty puppet, crushes Fuzzy Joe's square and mockingly challenges Fuzzy Joe to fix his problem. With putty, Fuzzy Joe fixes the square which accidentally has turned into a triangle. He is victorious in that he can now teach his viewers yet another concept, a triangle instead of a square.

7.2.6 Other Types of Humour:

Waiting for the incongruous to occur is another source of humour for children. Sesame Street uses this method with great effect. In teaching children to count backwards from ten, a countdown to a rocket blast off is used with a number of comic endings. One ending has the rocket blasting off prematurely and another shows the launch director himself blasting off. When a successful laungh occurs, it is greeted by cheers and waving banners. This straight version itself now becomes comic since the success is incongruous after a number of failures.

7.2.7 Language:

Language often provides humour for children. However, puns or plays on words, divorced from action, are not effective (Lesser 1972). Alliteration and rhyming have special comic attraction. In Sesame Street a story is told with fifty repetitions of the

sound of the letter W. "This weird story of Wanda the witch, is brought to you, courtesy of the letter 'W' " (Lesser 1972 p 262). Similarly in Bright Rides, the letter "H" (an animated hen-type H) says "Hello, I'm Helen Hen ... this is my head and this is my hat ..." (Appendix A1).

Rhyming was also used in Bright Rides - Two Puppets, Fuzzy Joe and Big Problem have an animated dialogue with rhyming words -

Fuzzy Joe : "The night is right for a fight".

Big Problem : "I'll strike a light and show him my might" (boxes Fuzzy Joe).

Fuzzy Joe : "Ooo .... that was a hefty blow alright".

Humour in childrens programmes serves another function apart from that of attracting young viewers attention - it also attracts parents and other siblings to share young children's viewing. Television has the potential to provide shared experiences within families, although this is generally not expedited. Sesame Street uses various forms of humour including verbal humour, the parodying of family television shows, soap operas and so on. However, Lesser (1972) notes that Sesame Street does not include items solely to attract this older audience and nothing is shown which depends entirely upon their participation with the young child.

7.2.8 Diversity:

Children seem to lose interest when the programme dwells too long on one subject or goes on for too long at one pace or in one style (Reeves 1971). Reeves cites examples of Sesame Street

programmes in which maintaining a "story line" throughout a programme led to loss of attention in the viewers.

Diversity of characters also activates interest and attention. The characters including adults, children, puppets, animated figures and animals, should be appealing to children and display a variety of distinctive and reliable personalities. Sesame Street uses many diverse muppet puppets, each with its own consistent personality, including Oscar, the Grouch, Big Bird, Kermet the Frog, Monster, etc. For the production of Bright Rides a set of puppets were created, many of which appeared frequently. These included :

i) Fuzzy Joe: A friendly fellow, who was always keen to point out something interesting to learn.

ii) Big Problem : the tough guy who always used his strength to prove a point, often breaking or damaging things.

iii) Tort Short and Paul Tall : A short and a tall puppet respectively who played games to confuse Fuzzy Joe, and who tried building ladders, and swimming pools, usually without much success.

iv) Humpty Dumpty : A clumsy yet friendly and innovative character who thought up and enacted many of his own rhymes.

Puppets provide sources of amusement diversity and appeal.
Beside puppets and animated figures, children seem to prefer watching and listening to other children rather than adults. They enjoy hearing the televised childrens voices, and attentively watch them play, often helping to solve problems.
Bearing this in mind, the production of Bright Rides included many segments where children participated in or imitated the ongoing action.

Lesser notes that televised children are most effective when they display distinctive and reliable personalities, but this is often hard to achieve. Sponteneity and naturalness also seem to be important attributes of these characters. However, when televised children do respond freely and spontaneously, their behaviour is often unpredictable and not necessarily distinctive. Nevertheless Lesser feels that spontaneity and naturalness must take precedence over distinctiveness. He maintains that the cast of Sesame Street is now learning to respond to childrens spontaneity with spontaneity of their own, even when this forces a radical departure from the planned script.

Watching and listening to adults seems to be far less appealing than watching other children. However, attention to adults can be sustained if pictures of what he is speaking about are shown, or if the adult makes mistakes which the children can correct. If the adult is on the screen with children, attention is held, whereas if an adult is on the screen by himself, children interpret this as part of adult television, not intended to be understood by them (Lesser 1972).

The production of Bright Rides used adults on their own for very brief introductory segments. Usually however, adults appeared with children, participating in an activity with them or commenting on what the children were doing.

7.2.8 Diversity of Pace and Mood:

Diversity of pace and mood are as critical in sustaining attention as are diversity in characters, content and style. The appeal

of any sequence is tied closely to the effects of the preceding and following episodes. Both fast-paced and slow-paced material will hold childrens attention but a slow episode will be more appealing when followed by a fast piece than by another slow-moving episode. Contrast is thus most important. An episode will attract interest if it looks and sounds different and moves at a contrasting speed to the preceding segment. As Lesser (1972) notes, contrasts do not mean that action must always be frenetic to be effective. Instead the pace must be varied.

7.2.9 Duration of Programme:

According to Kagan and Kagan (1970) a programme for children below five years should be of short duration. Sesame Street was designed to be an hour long, in order to have sufficient time to provide educational benefit. Although the producers started off with misgivings that this would be too long, they found that young children's attention was maintained, when there was sufficient diversity in character content, style, mood and pace. Each episode of Bright Rides was however, only ten minutes long, since a short programme with diverse production elements was considered the optimal time to attract and maintain the attention of preschoolers.

7.2.10 Intimacy and Familiarity:

In producing Blue Peter, the producers felt that children should first feel familiar with the programme. To do this the first and last item was always filmed with the same backdrop so that the young viewer would recognise the programme at the start and the end

of transmission.

Furthermore, the same presenters were employed weekly and appear at the beginning and end of each programme. Thus a constant and familiar setting exists into which any new item can be introduced. Bright Rides was produced bearing in mind the importance of familiarity. At the beginning and end of the programme, the viewer sees a young child on a push cart wheeling his way around a cemented play area. Furthermore, as in Blue Peter, the same presenters were used continuously allowing children to acquaint themselves well with the presenting people.

The producers of Blue Peter note that children feel secure when familiar faces and sets are maintained since they are then ready to take any surprise offered to them (Noble 1975).

7.2.11 Participation and Involvement:

One method of involving a child in active participation is through inducing anticipation. On Sesame Street a letter appears, there is a pause, and then it is named. Lesser notes that children spontaneously name the letter when they see it and the television then confirms or corrects the child's identification of it. Bright Rides used this method in teaching numbers and letters. Verbal and physical participation was induced in the teaching of the alphabet and numbers and the recitation of the alphabet was thus included for its involving effect on young viewers.

Educational television aims at inducing high participation responses from its viewers. However, certain children will not

display an active verbal or physical response, however compelling the inducement may be. According to Lesser,

> "this is part of television's nonpunitiveness; the child may respond less energetically and enthusiastically than we hope, but each child is free to decline the invitation without fear of punishment or of attention of any kind". (Lesser 1974 p 123).

However, as Lesser notes, the television characters who cannot see the response of the children, may congratulate them on their correct responses and so muddle the child who has not found the solution, or who has chosen an incorrect one. It also could confuse the child who has not participated at all (Lesser 1974).

7.3 Bright Rides and Television Techniques:

As has been discussed, Bright Rides used many varied techniques to attract and hold the young childs attention. In each of the ten minute long programmes, animation, appealing music, humour, diversity, familiarity, to name but a few techniques, were used. The programme aimed at educating in an entertaining fashion and a programme is reproduced in Appendix A1 to illustrate the way the above-named effects were written into the script. In addition the educational goals of the programme can be found in Appendix E2.

Whilst an attempt was made to simulate the effects of a well produced programme, high in quality and visual appearance, the producer was restricted to simple techniques; these being the only ones available in the existing television studio. Editing of the video tape was also undertaken with limited facilities and so the desired effects were not always achieved.

However, despite many production limitations the programme was appraised enthusiastically by a group of nursery school teachers, psychologists and television producers.

In addition, it should be noted that the production of a programme such as Bright Rides is only one step in the search for a range of entertaining educational television programmes suitable for South African preschoolers.

7.4 Formative Research:

7.4 Formative Research

The production of Bright Rides is experimental and the research into its audience effect is formative. Formative research has been applied to American television programmes like Sesame Street, the Electric Light Company, Mister Rogers and so on. (Palmer 1974). Formative research is unlike summative research which aims to test the validity of a theory or the measurable impact of an educational product or practice. The main objective of formative research is to develop a product or procedure and not necessarily to establish the validity of that procedure which is the function of summative research. (Palmer 1974). The question that then arises is how is formative research undertaken? Important objectives are first clearly identified, then systematic audience tests are carried out to evaluate progress toward their achievement during the actual course of a programme's production. The programme is then modified according to the research findings in order to approximate more closely the predefined objectives.

In the production of Bright Rides and the subsequent research

on this programme, the producer set her objectives at the teaching of a number of cognitive skills including the encouragement of language and prereading skills, an introduction to numerical and mathematical skills, problem solving reasoning, and perceptual development. In addition it was hoped that the programme would have appeal, be comprehensible and elicit activity from its viewers.

The learning of cognitive skills was tested by means of a test of cognitive skills called the M-test while the effects of appeal, comprehensibility and activity eliciting potential were observed but not empirically tested. The M-test was adapted from a test developed by the Educational Testing Service (ETS) which aimed to evaluate the educational goals of Sesame Street and achievement of three to five year old children in these goal areas. It is thus of methodological interest to follow the development of the ETS test through its planning stages and to note its use in the modification of Sesame Street.

7.5 Methodological Basis for the Adaptation of the M-Test:

During 1968, the first year of the evaluation of Sesame Street, a battery of tests was developed and a pilot test was performed. ETS personnel then went into the field and sampled 1 200 preschool-age children in five geographic areas in America. The general technique employed in testing involved showing graphic representations to the child, and then asking the child questions about the pictures, which he could answer by pointing to the correct picture. The child's response was never dependent on his own interpretation of any picture unless this interpretation itself was being tested. And the child's response was not dependent on his ability to

verbalise unless the goal being assessed specified verbalisation (Bogatz and Ball 1971).

The tests developed for the first year evaluation were subjected to tentative development procedure. Reviews and a try-out on five trial Sesame Street Shows, resulted in substantial revisions in the test construction and minor revisions in certain subtests (Bogatz & Ball 1971).

The second year's evaluation grew out of the first with new items included to assess new goals of the show. Of the 63 specific goals of the show, tests were developed to measure achievement in 29 goal areas.

Revisions and additions to the show were again subjected to review and pilot testing. New areas requiring considerable work were attitude assessment and emotions expression. Although not specifically stated as a goal of that show, an implied objective underlying the production of Sesame Street was to prepare children for school in cognitive, social, emotional and attitudinal areas. Whilst the first year evaluation had focussed on cognitive effects, in the second year, attitudes to school and school related activities, and emotional expressions, were also investigated. A detailed description of each test an subtest including the emotions and attitudes test are to be found in Appendix E1.

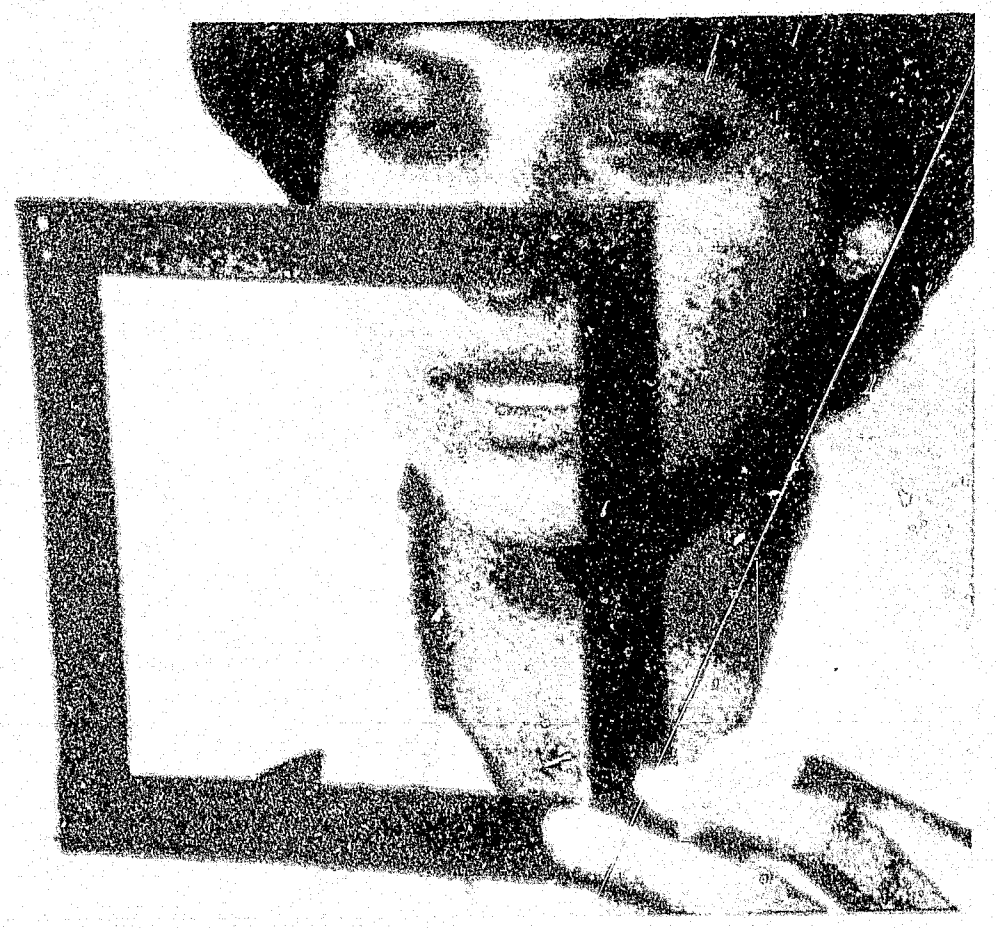
Bogatz and Ball (1971) note that they used inexperienced testers which was a factor to be borne in mind throughout the test construction. Thus formats were kept simple; each test, its manual and answers sheet were colour coded; and packaged in two files to facilitate

handling of materials and to reduce manipulation of materials during the testing. Thus testers were able to concentrate on the child taking the test rather than on the mechanics of test administration (Bogatz & Ball 1971). From this test, the present test, or M-test developed.

It would appear that Sesame Street tests are no longer available. Nevertheless Ball (1976) has suggested that an adaption of these instruments would be necessary in any case to test the specific goal areas of Bright Rides. In accordance with this advice, certain items were included which were relevant to the present programme. The M-test which takes three quarters of an hour to administer is considerably shorter than the two hour long ETS test. The M-test can be administered in three quarters of an hour. A detailed description of this test is to be found in Appendix E2. It should be noted that although the M-test was not validated against the original ETS test, reliability co-efficients have been found for sub-tests of the M-test and these are to be found in Appendix C1.

In addition the Peabody Picture Vocabulary Test (PPVT) and the Draw a Person Test DAP were utilised. These tests as well as the reasons for their use are described more fully in Chapter nine.

Avril: 'Here is a square.'



'And here is a circle.'



CHAPTER 8

THEORETICAL RATIONALE OF THE STUDY

8.1 Introduction:

In order to integrate aspects of the preceding chapters a summary of the theoretical basis for the present study will be presented along with an explanation of the aims and the pertinent questions.

8.2 Theoretical Overview:

This study investigates the use of television as an educational facility in South Africa and attempts to ascertain whether children who watch an educational television programme will learn cognitive skills from it.

The few American studies in this regard indicate interest in investigating the effects of television on the minorities and the poor, since as Bower (1973) notes, television is very important in the lives of these communities and can serve as an important medium to disseminate information to them. In a study, Bogatz and Ball (1971) found that disadvantaged Blacks and Whites both made great gains on a cognitive skills test after viewing the American programme Sesame Street. Advantaged children also benefited from viewing the programme (Bogatz and Ball 1970) but the researchers consider that Sesame Street can help close the gap between advantaged and disadvantaged children. The present study focuses on the effects an educational programme

will have on a group of preschoolers who live in the Coloured townships on the outskirts of Johannesburg. These children are members of a minority group and often live under conditions of poverty. According to Brindley (1976), they usually lack parental instruction and mediation which as Feuerstein (1975) notes is necessary for perceptual and cognitive growth. Their language is usually primitive and restricted and concept development is poor as a result of inadequate mediated learning experiences. For this reason they are termed culturally disadvantaged.

In an attempt to stimulate cognitive growth in these children, a television programme called Bright Rides was produced and presented to children in the child care centres of Eldorado Park and Western Coloured Township. However, the programme was not introduced to replace or compete with existing educational experiences available in the centre or home, but to complement whatever else the child has available.

Bright Rides attempts to teach a number of cognitive skills, including the naming and recognising of letters, numbers, body parts and geometric forms. Since this programme intends to entertain as well as educate, the skills are presented by means of humour and various attention-holding techniques, known to be effective in commercial advertisements (Lesser 1974).

8.2.1 The Acquisition of Cognitive Skills:

The acquisition of cognitive skills may depend on media literacy abilities or the extent to which the child understands the codes or formats of the television programme (Salomon 1974). Thus children

who are regular viewers of television are likely to show greater cognitive advancement on viewing Bright Rides than children who are not regular televiewers.

The acquisition of cognitive skills may also depend on the age of the child. Using the developmental stages of Piaget and Bruner, Noble (1975) has shown how the viewing behaviour of the child changes as he grows older. For instance, the child's understanding of story line improves and his concentration span lengthens, as he matures, enabling him to grasp and recall increasing amounts of televisual stimulation.

The sex of the child may also influence the manner in which he learns from a television programme, since boys and girls develop cognitively at different rates. However, Bogatz and Ball (1971) indicate that sex did not affect televiewing or cognitive skills acquisition amongst the boys and girls who watched Sesame Street.

Another factor influencing viewing behaviour and skills acquisition is socio-economic status. Noble (1975) has shown that middle class children usually understand the content of a television film at an earlier age than working class children. The factor of socio-economic status is not however controlled in the present study. Instead children of both middle-working class and lower-working class families are interspersed among the sample population, and differences in scores are investigated between children from Dorkas Crèche, Jubilee Crèche and Holy Rosary Nursery School. A difference between the scores of children from different centres might thus depend on socio-economic status or on different types of instruction.

The acquisition of skills learnt from the programme might also be affected by the language background of the child, for whilst the programme is presented in English, the children draw from English and Afrikaans speaking backgrounds.

8.2.2 The Testing of Cognitive Skills:

To test whether the programme has an educational effect on the study sample the study compares the acquisition of cognitive skills between a control group who do not view the programme and an experimental group who do. The learning of cognitive skills is tested by means of the M-test, a test adapted from the Sesame Street test originally devised by the Educational Testing Service of New Jersey. In addition two standardised tests the Peabody Picture Vocabulary Test and Draw a Person test are administered to provide measures of verbal and non-verbal intelligence. The research is formative in that it tries to indicate the potential for teaching effectively by means of a television programme Bright Rides, but acknowledges that the programme and test are likely to require modification and revision.

8.3 Aims:

The present study aims generally to establish whether intervention via an educational television programme is beneficial to culturally deprived children. More specifically the study aims

i to produce a television programme that is both educative and entertaining;

ii to test whether the programme "Bright Rides" is effective in teaching cognitive skills. To fulfil this aim the scores of cognitive skills acquisition are compared between a control group (who do not see the programme prior to posttesting) and an experimental group (who see the programme prior to posttesting);

iii to investigate whether experimental group

i children from one child care centre learn more skills than children from another child care centre;

ii children of one age group learn more skills than children of another age group;

iii male or female children learn more skills;

iv English or Afrikaans speaking children learn more skills;

v children who view national television regularly or children who view rarely or never, learn more skills.

8.4 <u>The Major Questions of the Study</u>:

In the light of the above aims, the following major questions are asked.

1) Is the programme Bright Rides educative and entertaining?

2) Is there a significant difference in scores on the M-Test

between children who see the programme "Bright Rides" (experimental group) and children who do not see the programme? (Control group).

3) On which subtests does most learning take place?

4) Which children learn more cognitive skills and which learn less from viewing Bright Rides?

(a) Do older or younger children learn more skills?

(b) Do children from one creche learn more skills than children from another creche?

(c) Do male or female children learn more skills from the programme?

(d) Do children who speak English or children who speak Afrikaans learn more skills.

(e) Do children who see the national service television regularly or children who rarely see such television learn more skills?

CHAPTER 9

METHOD

9.1 Stage 1 - Production of the Television Programme:

In order to answer the questions posed in Chapter 8, a television programme was produced in the first half of 1977 to develop a range of cognitive skills. A series of twelve ten-minute programmes was written by the present author and produced in conjunction with the staff of Witsvision, the television studio of the University of the Witwatersrand (a sample programme is included in Appendix A1). In writing and producing this show, the intention was to entertain and simultaneously educate and special use was made of puppet performances, animation, singing, humour and story-telling. The programme was filmed in black and white and contains in-studio video-taped segments as well as outdoor filmed segments. Editing was conducted in an unsound proofed room with limited facilities since the television studio was closed for renovation at this stage. Thus imperfections in the programme were often a result of imperfect conditions for editing.

The programme was presented in English by Coloured and White adults and children. The decision was made to employ the performance of Coloured presenters (both adults and children) since the programme intended to provide familiar models for the Coloured pre-schooler.

The following cognitive skills formed the televisual curriculum; naming parts of the body and its functions; recognising simple geometric forms; identifying community members and places like the postman and post office; matching pictures by form, identifying letters and

numbers; identifying relational terms for example showing relationships of size (big or small) amount (most or least) or position (near or far); classifying objects according to their size, form, number or function; sorting objects, for example choosing items that did not belong with others; constructing a whole object out of disjointed parts; identifying emotions and finally discussing emotional attitudes to self, family, friends and school.

9.2 Stage 2 - Pilot Testing:

Twenty children from the three child care centres under study were pretested using the M-test to ascertain whether this test could adequately measure the skills that would be taught in Bright Rides. These children were then posttested two weeks later to ascertain whether the posttest was measuring the same skills as the pretest without duplicating items which could be memorised and thus interfere with the learning of skills from the programme.
Having ascertained that the M-test was adequately measuring the cognitive skills to be taught, and that a significant improvement was not made between pretesting and posttesting the following research was conducted.

9.3 Stage 3 - Testing:

To evaluate whether cognitive skills were learnt from viewing Bright Rides the following procedure was followed - The sample children were randomly divided into a control and an experimental group. Each child was tested twice on three tests, namely, the

M-test (pretest and posttest); the Peabody Picture Vocabulary Test (Form B and Form A); the Draw a Person Test (Two drawings). All testing took place in the three child-care centres. The following is the order in which the research occurred -

(i) Children in the control group were pretested, and posttested five weeks later.

(ii) Children in the experimental group were pretested one week after the control group was posttested.

(iii) Children in both groups then saw the television programme which was shown three times a week for four weeks. The programmes were shown on a Monday, Wednesday and Friday mornings at various times, until twelve o'clock noon. The programme was presented on a scattered schedule. For example, if it was shown in Jubilee Crèche at 9.30 on a particular morning, it was shown at Dorkas at 9.30 the next day, and at 10.30 at Jubilee in order to eliminate the possibility that children at a particular creche might benefit due to viewing the programme at the best time of the morning.

(iv) The experimental group was then posttested, a five week interval having lapsed since the pretest.

Note: This design is an unusual one in terms of traditional experimental and control group comparisons. The usual procedure is to pretest both groups at the same time, provide treatment to the experimental group and no treatment to the control group, and finally to posttest both groups at the same time. However, such an approach

was not practical for the present study since a number of contamination effects were expected to occur. For example, the experimental subjects might relate the contents of the television programme to their control group friends; or else jealousy might arise between viewers and non-viewers, introducing an ethical issue and creating a host of uncontrolled variables.

The present design ascertains that contamination effects of the kind mentioned will not occur. A time difference is the only variable preventing identical comparisons since the experimental group was pretested five weeks after the control group had been pretested, and the experimental group was posttested five weeks after the control group had been posttested. A time lapse of this length is however, not considered crucial in terms of childrens' development stages and this tends not to create significant differences in scores.

The following is a diagrammatic representation of the present design.

FIGURE 1 TIMING OF PRETESTING AND POSTTESTING

Time in weeks	1	2 3 4 5	6	7 8 9 10	11
	Control pre-testing	no intervention	Control Posttesting Exp. Pretesting	TV programme intervention	exper post-testing

9.4 The Testers:

Relatively inexperienced testers were employed. They were second year psychology students whose practical testing experience was minimal.

According to Bogatz and Ball (1971), it is practicable to employ people inexperienced in testing procedures to work with young children since testing of this kind has to be done in a short space of time and on many children. Furthermore tests have to be given individually and this necessitates the employment of many testers.

In the present study, a short training session was held in which sixteen testers were instructed in the use of the tests prior to their going out into the field. Each tester was responsible for pretesting ten children and posttesting the same ten children. In this situation, testers might have been subject to the expectancy that posttest scores would be better than pretest scores, an effect which would contaminate the results. However, precautions were taken to minimise this problem since testers were kept unaware of whether they were testing control group or experimental group subjects. Thus expectancy levels should have been the same for both groups.

Testing was carried out at the child's nursery school or creche for the following reasons:

1) The television programme was shown at the nursery school or creche, and thus testing conditions were similar to televiewing conditions.

2. ...ol provided a familiar environment unlikely to create ...nexpected anxiety conditions.

3) It was practical to test children at the school or creche since they could be called with ease.

9.5 <u>The Subjects</u>:

The subjects were 140 Coloured preschool children from ...ownships

on the outskirts of Johannesburg. There were 73 males, and 67 females. The children came from three age groups ranging from three years three months to six years seven months. The sample initially comprised 160 children but 10 control group subjects and 6 experimental group subjects dropped out during the course of testing due to absence from school. The scores of 4 children were randomly withdrawn from the experimental group so as to equalise the number of subjects in the control and experimental groups.

Children from Eldorado Park, Kliptown and the neighbouring suburbs attended Jubilee crèche and the Holy Rosary Nursery School situated in Extensions 4 and 6 of Eldorado Park respectively. Children from Western, Newclare, Bosmont and other neighbouring suburbs attended Dorkas crèche situated in Western Coloured township.

These child care centres were chosen at random from a sample of ten centres for Coloured preschoolers, in the Transvaal. For testing purposes, subjects were randomly divided into two groups, a control group and an experimental group. In each of these two groups the following independent variables were investigated - child care centre differences, age differences, sex differences, language group differences, and television viewing differences. Each of these difference groups will be discussed in detail.

9.5.1 Child Care Centre Groups:

At the start of the testing the number tested in each centre group was 25 control and 25 experimental group children. However, after

a number of children had fallen out due to absence from school at the time of testing, the number of children in each group was the following:

TABLE 1 NUMBER OF CHILDREN IN EACH CHILD CARE CENTRE

	Control Group		Experimental Group	
Child Care Centres	Number	% of control group	Number	% of Experimental group
Jubilee Crèche	25	35,71	24	34,29
Dorkas Crèche	23	32,86	21	30,00
Holy Rosary Nursery School	22	31,43	25	35,71

Children in each centre were compared with children in the other centres on scores attained in pretesting and posttesting. It was proposed that a difference in scores might occur between children of the three child care centres and that these differences could be attributed to the socio-economic status configurations of children in each centre. In addition test score differences might have been attributed to differences in teaching methods or to the full-day or half-day programme offered by the centres.

9.5.1.1 Socio Economic Status:

Although the concept of social class has been criticised as false or useless and difficult to define (Loevinger 1940), McCandless (1967) has noted that however defined, social class has been shown

> "to be associated with important differences in the types of learning experiences to which a given child is exposed, the degree of economic security he possesses, the way he is introduced to school, and the way in which fighting and sexuality are introduced to him". (p 542).

Social class is said to have an effect on intelligence since environmental opportunities have a great influence over intellectual development (Jones 1954). Social class also has an effect on television viewing habits, in that lower class children watch more often than children of higher socio-economic status. (Greenberg & Dominick 1969). Noble (1975) has reported that children of higher economic status learn to comprehend the story of a television programme before the same age children of lower socio-economic status. Reasons for these phenomena have been presented in Chapter 3 above.

In the present study socio-economic status does not comprise a separate independent variable. It is investigated only to understand why differences between child care centre groups appear. Each of these groups is analysed according to the proportion of lower to middle to upper working class children. The allocation of children to these socio-economic groups, however, applies only to the Coloured community since limitations in occupational mobility and restrictions in choice of living areas, affords a measure of social class sui generis to this population group. Different factors would be important if social class configurations of the African or White groups were being investigated.

Although a rigorous assessment of social class standing was not conducted, an indication of class structure was gained by inspecting the occupations of parents of children attending the centres.

According to this assessment, the following figures emerged -

Table 2 presented below is a summary of the data obtained when parents occupations were examined. A detailed table with an explanation of class divisions is provided in Appendix D.

TABLE 2 SOCIO-ECONOMIC STATUS ACCORDING TO PARENTS OCCUPATIONS

Socio-economic Class levels	Dorkas %	Jubilee %	Holy Rosary %
Upper	42,50	35,83	27,01
Middle	27,50	31,55	29,31
Lower	20,00	28,88	28,74
Total	90,00	96,26	85,06

The remaining percentages of people in each group were either disabled, on pension, unemployed or housewives.

9.5.1.2 Teaching Methods:

Both crèches and the nursery school have daily programmes involving paint and paper work, make-believe song and recitation rings, outside play and many other activities. No formal tuition takes place since the medium of play is the method of learning. No qualitative difference in activities and method of directing play were perceived between the crèches and nursery school. However, it was reported (John Vianney 1978) that the nursery school provides more intensive preschool education than do the crèches. Whilst a difference was not observed, variability in the scores on the tests performed might indicate that qualitatively, different education indeed takes place.

9.5.1.3 Full day versus Half day Programmes:

Both crèches have full-day programmes catering for the mother who works the whole day. The nursery school, however, has only a half-day programme and thus children are fetched by an adult at midday. A difference in scores on the tests might thus be attributed to the difference in length of school programme, since the child who spends the whole day at school might acquire more skills than his counterparts who spends half as much time in the school environment.

9.5.2 Age Groups:

The children in the sample ranged from three years, three months to six years, seven months. Three age groups were then formed for purposes of the data analysis. The number of children in each age group and its percentage in the control or experimental group is indicated in Table 3 below.

TABLE 3 NUMBER OF CHILDREN IN EACH AGE GROUP

	Control		Experimental	
Age	Number	% of control group	Number	% of Exp. group
3,3 to 3,4 years	20	28,57	18	25,71
4,5 to 5,5 years	28	40,00	25	35,72
5,6 to 6,7 years	22	31,43	27	38,57

Children of these ages were chosen since it has been shown throughout the development of child psychology that the early years are of vital importance to the child's future mental health (Freud 1933, Erikson 1945, 1956, Bowlby 1961, Gesell 1966). Gesell (1966) points out the importance of the preschool period in saying

> "the earliest periods of development are always times of most intense and fundamental growth" (pp 12 and 13)

Age is an important factor in considering television viewing behaviour. The preschool child is an avid televiewer (Liebert et al 1973). Von Feilitzen (1976) noted that from the age of three to six, Swedish children watch daily for about one and a half hours a day, while American first graders watch for about two and a half hours a day. In South Africa it appears that preschoolers watch for three quarters of an hour to an hour (Shmukler 1976). As previously noted the response of children to television changes dramatically as they grow older (Noble 1975). The six to seven year old comprehends the story of a television programme, whilst the three to four year old still sees unrelated segments. In the light of the study by Noble (1975) it was proposed that older children would learn more from viewing Bright Rides than would younger children.

9.5.3 Sex Groups:

Since American girls from the first to the sixth grade generally watch more television than boys in the same grades (Lyle & Hoffman 1972), the question was asked as to whether the television programme "Bright Rides" was equally effective for preschool girls

and preschool boys.

Bogatz and Ball (1971) investigated whether Sesame Street was effective for both sex preschoolers. They found that while girls scored slightly higher at pretest, no statistically significant gain was made by them after seeing the show. In the present study it was proposed that male and female children would benefit equally from viewing Bright Rides. The numbers of males and females in the experimental and control groups are presented in Table 4 below.

TABLE 4 NUMBER OF MALES AND FEMALES IN THE SAMPLE

	Control Group		Experimental Group	
Sex	Number	% of Control group	Number	% of Exp. group
Female	31	44,29	36	51,43
Male	39	55,71	34	48,57

9,5,4 Language Groups:

English speaking and Afrikaans speaking children watched the programme "Bright Rides" which was presented in English. The question was asked as to whether English speaking children would benefit more than Afrikaans speaking children after watching the programme. It was proposed that English speakers would understand more of the programme context and thus would learn more skills than their Afrikaans speaking counterparts.

Each child was tested in the language in which he seemed most proficient, but the decision to test the child in English or Afrikaans was left up to the tester.

Children were placed in the language groups as indicated in Table 5.

TABLE 5 NUMBER OF CHILDREN IN EACH LANGUAGE GROUP

	Control Group		Experimental Group	
Language	Number	% of Control group	Number	% of Exp. group
English	50	71,43	47	67,14
Afrikaans	20	28,57	23	32,86

The sample was thus predominantly English speaking with a smaller percentage forming the Afrikaans speaking sector.

9.5.5 Television Viewing Groups:

According to Salomon (1972) children who view television regularly are likely to acquire media literacy skills which facilitates the development of a range of cognitive skills.

In the present study, the question was asked as to whether children who viewed television regularly in their homes would score higher on the "Bright Rides" or M-test than children who did not see television at all. The variable of regular viewing meant that a child watched television at least four times a week. Children who seldom watched or did not watch at all formed the

comparison group. In the light of Salomon's (1972) theory, noted above it was proposed that regular televiewers would learn more cognitive skills than would rare televiewers.

The allocation of children to the regular or rare viewing groups was made by asking the children whether they saw TV every day or only once or twice. Whilst it was recognised that young children might not be reliable reporters of their own viewing frequencies, the testers reported that children could substantiate their responses by relating which programmes they watched each day. From these responses an estimate of the number of regular and rare televiewers could be made, although these group allocations are only tentative in the absence of the corroborative remarks of an observant adult. Table 6 presents the number of children in each televieving group.

TABLE 6 NUMBER OF CHILDREN IN EACH TELEVIEWING GROUP

	Control Group		Experimental Group	
Televiewing Frequency	Number	% of control group	Number	% of Exp. group
Regular viewers	50	71,43	46	65,71
Rare viewers	20	28,57	24	34,29

9.6 Apparatus:

9.6.1 A Television Programme:

A television programme called Bright Rides, which has been described above.

9.6.2 The Test Material:

9.6.2.1 The M-Test:

This test, the M-test was administered in two forms, namely a pretest and a posttest. Pretest and posttest questions were similar yet not identical to prevent memorisation from affecting the results. Both pretest and posttest forms were made up of 66 questions divided into 12 subtests. The reliability of these subtests is provided in Appendix C1 . These included the following -

1) Naming body parts and body functions (20 items)
2) Naming and recognising geometric forms (6 items)
3) Identifying community members and places (8 items)
4) Matching pictures or letters by form or letter (4 items)
5) Identifying letters, reciting the alphabet, and other letter knowledge (27 items)
6) Recognising and naming numbers, counting, making number correspondence and other number knowledge (28 items)
7) Identifying relational terms of size, amount and position (8 items)
8) Classifying objects according to size, form, number or function (6 items)
9) Sorting objects which do not belong with others (3 items)
10) Identifying a whole object representing the sum of its parts (4 items)
11) Identifying and naming emotions (2 items)
12) Expressing personal attitudes towards the self, friends and family, school and learning (8 items)

A description of the test procedure for each subtest is to be found in Appendix E2.

9.6.2.2 The Peabody Picture Vocabulary Test (PPVT):

(Appendix F1 & F2).

Two forms of the PPVT were also administered. This test provides an assessment of a subject's verbal intelligence through a measure of his vocabulary. The PPVT was included in this study since verbal intelligence is directly related to many cognitive skills on the M-Test and is an important factor of school adjustment. In addition, it was proposed that a change in scores from pretest to posttest might occur which would indicate that measured verbal intelligence had altered during the research process.

The test was standardised in Nashville, Tennesse in 1958 on English speaking White American children between the ages of two years, six months and eighteen years. Thus norms applicable to the American sample may not be likewise suitable for the present sample of Coloured preschoolers. Various factors relating to the child's cognitive deprivation, or culture bias of the test may cause the Coloured child to score lower than the expected norms. However, the PPVT still provides a range of verbal intelligence suitable for the present study. Differences in cultural bias will affect both pretest and posttest scores so that any change between those scores must be as a result of factors other than cultural bias.

The test is easily administered and may be completed in 15 minutes or less. In addition it has the following added advantages : it has high interest value and is therefore a

good rapport establisher; scoring is completely objective and quickly accomplished in one or two minutes; it is not timed and so is a power test rather than a speed test; no oral response is required; alternate forms of the test are provided to facilitate repeated measures and the test covers a wide age range. (Anastasi 1970).

The PPVT consists of a series of 150 p s, each containing four pictures. Each page is presented to the subject, the tester names one of the pictures and the subject points to the picture on the page best illustrating the meaning of the stimulus word.

According to Anastasi (1970), alternate forms reliability coefficients range from 0,67 to 0,84 and moderate concurrent and predictive validity exists between the PPVT and academic achievement tests. Brittain (1968) notes that the PPVT has been used successfully to assess the effectiveness of preschool enrichment programmes for culturally deprived children. Measurements obtained from this test were utilised side by side with various other measures of intelligence.

9.6.2.3 <u>The Draw a Person Test (DAP)</u>:

(Appendix G)

The DAP was used to obtain a measure of non-verbal intelligence. This test also provides an estimate of general mental development and is recommended as a valuable supplement to other tests (Anastasi (1970).

Children were asked to draw a picture of a person and the detail

and skill with which a child was able to draw a person (man, woman, boy or girl) indicated the stage he had reached in perceptual and motor control (Hildreth, Griffiths, and Gauvran 1965).

The DAP was used to supplement the Peabody Vocabulary Test in order to obtain a non-verbal as well as a verbal assessment of intellectual functioning. In addition it is held to be a relatively culture free test. Intelligence was not a crucial variable in this study since the intention was to test whether children of all intellectual levels could benefit from the television programme. Thus it was not deemed necessary to use a more complex method of assessing non-verbal intelligence. The test was also not used as a clinical tool and so, criticisms in terms of its effect as such are not important here.

According to Anastasi (1970) the reliability of this test is 0,68 (retest) and 0,89 (split-half). Rescoring reliability of the identical drawings by a different scorer yielded a scorer reliability of 0,90. Furthermore, re-administration of the test to preschool children on consecutive days revealed no significant difference in performance on different days. The effect of art training in school was also found to be negligible.

Construct validity correlates of 0,50 or more were also found between the DAP and a number of other intelligence tests, although it appears that the test measures different functions at different ages. The DAP correlates highest with tests of reasoning, spatial aptitude and perceptual accuracy with fourth grade children, whilst motor coordination has a negligible correlation with the DAP, at these ages.

For kindergarten children, the DAP correlates higher with numerical aptitude and lower with perceptual speed and accuracy than it does for fourth grade children (Harris 1963).

The DAP has been used in studies on different cultural and ethnic groups and has revealed a great dependence on difference in cultural background than was originally assumed (Anastasi 1970). According to Dennis (1966) the greater the amount of experience with representational art within the culture, the better the performance on the DAP. Mean scores were also found to increase significanly with higher socio-economic level in studies in Nigeria (Bakare 1972) and in Turkey (Uçman 1972). However, as Goodenough and Harris (1950) note -

> "the search for a culture-free test, whether of intelligence, artistic ability, personal-social characteristics, or any other measurable trait is illusory' (p. 399).

In this study this test was used as a comparative tool with the cognitive skills test, and it is here that cultural differences may play a part. However, the DAP was also used to indicate whether non-verbal intelligence improves after children have viewed the television programme and in this sense it should be unaffected by Western cultural norms.

9.6.3 Scoring:

9.6.3.1 The M-Test:

Score sheets are to be found in Appendix E4 and E5

Scoring of the M-Test was quick and objective. Credit was given for all correct responses to questions which required a right or

wrong answer. Questions which required an attitude response were marked as happy or sad and a total of happy or sad responses were found. Subtest scores were available in 12 areas. The maximum score for each subtest is indicated in brackets.

i. Body Parts (20); ii Geometric Forms (6); iii Identification (8); iv Matching (4); v Letters (36); vi Numbers (49); vii Relationships (8); viii Classificarion (6); ix Sorting (3); x Parts of whole (4); xi Emotions (2); xii Attitudes (8);

A total of all the subtest scores were also calculated (146). This total does not include the subtest of attitudes since this test required an emotional response rather than a cognitive one.

9.6.3.2 The Peabody Picture Vocabulary Test:

Scoring for the PPVT was also simply achieved since items were scored right or wrong. Score sheets are to be found in Appendix F1 & F2. A basal point was found when an error was made after eight consecutive correct responses. Testing continued from the point of the first error until the subject made 6 errors in any 9 consecutive presentations. The last incorrect item was the ceiling. The total new score was the number of correct responses. All items below the basal point were assumed correct; all items above the ceiling item were assumed incorrect. To get the total raw score, the errors were subtracted from the number of the last item presented, or ceiling item. A standard score indicating an intelligence quotient was found in Table 4 of the PPVT manual Part II, pages 13 -18. The raw score and chronological age of the child

appear in columns corresponding to an intelligence quotient.

9.6.3.3 The Draw of a Person Test:

The DAP was scored according to Florence Goodenough's(1926) scoring rules (See Appendix G). Whilst these rules provide invaluable aid, scoring is more complicated and subjective on this test than on the previous two, since the scorer must ultimately use his own judgement in assessing the drawings. Because subjectivity was a factor in scoring on this test two independent scorers, marked each drawing separately without knowledge of the other's score total. Scorer reliability correlations were found to be 0,92.

CHAPTER 10

1 . . ta Analysis:

The data were analysed by the following statistical computations.

10.1. A Content Analysis was conducted to describe the amount and percentage of total programme time devoted to the teaching of each cognitive skill and to ascertain which presentation techniques were predominantly used. These figures may be found in Tables 7 and 8.

10.2. Frequencies of subjects in child care centre groups, sex groups, age groups, language groups and televiewing groups were found in order to provide a descriptive analysis of the sample and may be found in Tables 10, 11, 12, 13 and 14.

10.3. Means, standard deviations and ranges were calculated on pretest and posttest scores of all tests in the control group and the experimental group and can be found in Table 15 and Appendix A3 and A4.

10.4. Factor Analysis was conducted to investigate if the range of subtests could be grouped into a smaller group of factors in the cause of scientific parsimony. According to Kerlinger (1964) factor analysis "reduces the multiplicity of tests and measures to greater simplicity", and tells us "what tests or measures belong together" (p 659).

Child (1970) notes that factor analysis may be used as a

descriptive tool and it may be used in the testing and creation of hypotheses. For purposes of this study, factor analysis will be used in a descriptive capacity only, to identify the common factor responsible for the grouping of subtests into particular factor groups. See Tables 16.1, 2, 3; 17.1, 2, 3; 18.1, 2, 3; 19.1, 2, 3 and 20.

10.5. In order to provide some evidence for the relationship between Pretest M-test scores, Pretest Peabody IQ scores and Pretest Draw a Person Mental Ages, Appendix C2 includes a correlation matrix for the control group. This table indicates how subtests of the pretest correlate with the Pretest Peabody intelligence quotients and with the Draw a Person Mental Ages.

10.6. t-tests for independent groups were conducted between the pretest scores of all subtests for experimental and control subjects to ascertain whether a significant difference existed at pretest level. If the difference was insignificant, an assumption could be made that subjects were randomly drawn from the same sample. See Table 21.

10.7. t-tests for independent groups were also conducted between the differences of pretest and posttest scores on the experimental group and the differences of pretest and posttest scores on the control group. This test was conducted to demonstrate a difference in simple gain scores between experimental and control groups. Gain scores have the advantage of being clearly and readily understood and the interpretation of such results is immediately obvious (Bogatz and Ball 1971, Huck & McLean 1975). See Table 21.

10.8. Analysis of Covariance (ANCOVA) was conducted on all posttest

scores with pretest scores as covariates to determine whether viewing the television programme was more effective than non-viewing. (See Table 22). This is the major test of the study since it answers the most important questions relating to the effects of viewing versus non-viewing of Bright Rides. Whilst ANCOVA provides similar results to those provided by the t-test for gain scores, covariance was employed, since it is a more sophisticated statistical technique than the t-test and results in a more sensitive and rigorous test of possible differences among treatments (Huck & McLean 1975). Furthermore the error term in analysis of convariance is usually smaller than the gain score error term and for this reason the convariance approach results in a more powerful test. (Huck & McLean 1975).

However both the t-test and ANCOVA were utilised in this study since the former provides easily understandable and interpretable results, whilst the latter is a powerful test and provides a rigorous in depth analysis. In addition ANCOVA determines what proportion of the variance of the criterion (posttest) existed prior to the experiment in the form of age, sex differences and so on (Covariates), and eliminates such variance from the final analysis (Roscoe 1969). The t-test can be used to investigate whether there is a significant difference between pretest scores and obviates the use of ANCOVA if a significant difference is found since ANCOVA may not be used if scores at pretest diverge significantly.

10.8.1 <u>The Covariates</u> in this study were pre-test scores on all subtests, as well as the pretest scores of the M-test total, Peabody intelligence quotient scores and Draw a Person mental ages. See Appendices B1.1, B1.2, B2.1, B2.2 and B3.

10.8.2 The Dependent Variables were posttest scores on all subtests including the M-test total, Peabody IQ scores and Draw a Person mental ages.

10.8.3 The Independent Variables used in ANCOVA are listed below and may be found in Tables 23 and 24.

10.8.3.1 Experimental versus Control Treatment Groups:

The children were assigned to two groups - a control group which did not view the programme Bright Rides prior to posttesting and an experimental group which saw the programme prior to the posttesting. Experimental and control group scores were then compared.

10.8.3.2 Child Care Centre Groups:

The children came from three different child care centres, and these groups were investigated separately and compared with each other.

10.8.3.3 Sex Groups:

Male and female children were compared according to their sex groups.

10.8.3.4 Age Groups:

Children of three age groups were tested and their scores compared.

10.8.3.5 Language Groups:

Children who spoke English or Afrikaans were allocated to two groups for comparison.

10.8.3.6 Other Television Viewing Groups:

Children who were regular televisvers, either at home or at friends were compared with children who rarely or never saw television.

CHAPTER 11

RESULTS

11.1 Content Analysis:

An analysis of the content of Bright Rides was conducted for this study. Each of the 12 programmes were broken down into their component sections and a judgment made as to the skill being taught for each section (Table 7) and the television technique used to teach that skill. (Table 8) (Subsections of programmes were easily identified from the editing process. See Appendix A2).

TABLE 7 CONTENT ANALYSIS ACCORDING TO TREATMENT COMPOSITION OF SKILLS

SKILL	TIME	PER CENT	TREATMENT
Body Parts Total	3'7"	2,88	
Recognising	1'7"	1,07	Presenter & Puppets
Labelling	1,30"	1,25	Animated puppets; Presenter
Functions	40"	0,56	Film
Geometric Forms Total	7'36"	6,34	
Recognising	2,23"	1,99	Puppets
Labelling	5'13"	4,35	Presenter & children:puppets
Identifying Community Places & Things Total	15'35"	12,99	
Natural Environment	10'16"	8,56	Film, Presenter & Child
Man-made Environment	5'19	4,43	Film, Presenter & Child
Matching Objects Total	3'27"	2,88	Puppet & Child Presenter & Child

TABLE 7 CONTD

SKILL	TIME	PER CENT	TREATMENT
Letters Total	28'40"	23,90	
Recognising	8'00"	6,67	Presenter & Pictures
Labelling	9'04"	7,56	Puppet & Pictures
Initial Sounds of Words	7'10"	5,98	Puppets & Pictures
Alphabet	4'26"	3,69	Animation & Song
Numbers Total	21'51"	18,23	
Recognising	3'00"	2,5	Presenter & Pictures
Labelling	3'22"	2,81	Presenter & Pictures
Reciting 1 - 10	3'22"	2,81	Animation & Song
Reciting 1 - 20	3'15"	2,71	Animation & Song
Counting Strategies	4'02"	3,36	Presenter & Child
Numerical Correspondence	2'28"	2,06	Presenter & Pictures
Addition & Subtraction	2'00	1,67	Film
Equality	22"	0,31	Puppets
Relational Terms Total	11'26"	9,53	
Size	3'07"	2,59	Puppets
Quantity	2'37"	2,18	Presenter & Children
Position	1'12"	1,00	Presenter
Opposites	4'30"	3,75	Puppets & Pictures
Classifying Total	7'44"	6,44	
Class	2'25"	2,01	Presenter, Child, Song
Property Identification	3'12"	2,67	Puppet & Child
Form	1,00	0,83	Presenter, Child & Song
Function	1'07"	0,93	Presenter, Child & Song
Sorting Total	5'11"	4,33	
Picture Sequening	2'08"	1,78	Presenter, Child & Pictures
Class	2'33"	2,13	Puppets, Presenter & Child
Function	30"	0,42	Puppets
Parts of Whole Total	1'34"	1,31	Presenter, Child & Pictures
Emotions Total	1'45"	1,46	
Recognising	25"	0,35	Presenter & Child
Labelling	1'20"	1,11	Presenter & Child

TABLE 7 CONTD

SKILLS	TIME	PER CENT	TREATMENT
Attitudes Total	4'20"	3,62	
Towards self	1'06"	0,92	Presenter
others	1'14"	1,03	Children
Social interaction	2'00	1,67	Puppet & Child
Other Perceptual Discrimination Total	7.18	6,09	
Rhyming	2'54"	2,42	Puppets & Children
Sound Discrimination	1'52"	1,55	Child & Film
Smell-Taste Discrimination	2.32	2,12	Presenter
Entertainment Total	15'51	13,21	Film, Song & Puppets

TABLE 8 CONTENT ANALYSIS ACCORDING TO SKILL COMPOSITION OF TREATMENT TECHNIQUES

Treatment: Puppets		Treatment: Presenter & Puppet	
Skill	Percent	Skill	Percent
Geometric Forms	4,34	Body Parts	1,07
Numbers	0,31		
Relational Terms	2,59		
Sorting	1,55		
Entertainment	3,00		
	11,79		
Treatment: Puppet & Child		**Treatment: Presenter & Pictures**	
Skill	Percent	Skill	Percent
Matching	2,0	Letters	6,67
Classifying	2,67	Numbers	5,31
Attitudes	1,67	Numbers	2,06
Perceptual Discrimination	2,42	Total	14,04
	8,76		
Treatment: Children		**Treatment: Presenter & Child Pictures**	
Skill	Percent	Skill	Percent
Attitudes	1,03	Sorting	1,78
Identifying	1,00	Parts of Whole	1,31
	2,03		3,09
Treatment: Film		**Treatment: Animation**	
Skill	Percent	Skill	Percent
Body Parts	0,56	Body Parts	1,25
Identifying	7,56	Letters & Song	3,69
Identifying	3,34	Numbers & Song	5,52
Numbers	1,67	Total	10,46
Perceptual Discrimination	2,69		
Entertainment	10,21		
	26,12		
Treatment: Puppet & Pictures		**Treatment: 2 Presenters (in dialogue)**	
Skill	Percent	Skill	Percent
Letters	7,56	Perceptual Discrimination	3,26
Letters	5,98	Attitudes	0,92
Relational Terms	3,75	Total	4,18
Total	17,29		

TABLE 8 CONT.

Treatment : Presenter & Child		Treatment: Presenter	
Geometric Forms	2,00	Relational Terms	1,00
Identifying	2,00	Emotions	0,35
Matching	0,88	Total	1,35
Numbers	3,36		
Relational Terms	2,18		
Classification(song)	3,77		
Sorting	1,00		
Emotions	0,35		
	15,54		

11.1.1 Frequency of Skills Presentation:

Table 7 indicates the amount of time and percentage of time each skill area was observed in Bright Rides during the month when the twelve programmes were shown. The skill area occupying the most programme time was Letter Knowledge which is necessary for prereading. It was treated 23,90% of the time. Numbers knowledge, a basis for numerical ability was treated 18,23% of the time. Thus numbers and letters accounted for 42,13% of the show. Entertainment on the programmes during which other skills were being taught accounted for 13,21% of the time. Entertainment was considered a crucial component of this programme. Identifying people, places and things in the natural and man-made environment was treated 12,99% of the time. The remaining time (44,88% was spread over the rest of the cognitive skills namely Body Parts (2,88%) Geometric Forms (6,34%), Matching 2,88%), Relational Terms (9,53%), Classifying (6,44%), Sorting (4,33%), Parts of Whole (1,31%), Emotions (1,46%), Attitudes toward self and others (3,62%) and other skills like Perceptual Discrimination (6,09%).

11.1.2 Treatment Technique:

Table 8 indicates the techniques used to present the abovenamed skills

and the per cent of time spent on each skill area. Film which occupied 26,12% of programme time was involved in presenting five skills, and a great deal of entertainment, (10,21%). Puppets and Pictures were the primary means of presenting letters and relational terms (17,29%). Whilst a presenter alone was seldom used (1,35%), a presenter and pictures (14,04%) were used to present skills dealing with geometric forms, identifying, matching, numbers, relational terms, classification, sorting, emotions and letters. Puppets alone were also used to present five skills (11,79%), namely geometric forms, numbers, relational terms, sorting and entertainment. Animation was the primary technique used in teaching counting and the alphabet (10,46%). Puppets with children were used substantially (8,76%) to present matching, classifying, attitudes and perceptual discrimination. A presenter and child were used for eight skills (15,54%) and for the remaining 10,37% of treatment time, the following techniques were used; 2 presenters in dialogue or play, a presenter with child and pictures, children alone and a presenter and puppets.

11.2 Results from Testing:

Having ascertained how much programme time was spent teaching each skill and which techniques were used to present them, it is necessary to investigate whether the sample children learnt any cognitive skills from viewing Bright Rides. As a first step in this investigation a descriptive analysis is provided of the number and percentage of children in the experimental and control groups, in each child-care centre, age group, sex group, language group and televiewing group since these groups form the independent variables for further analysis.

The results presented in this section reflect the scores of 140 pre-school children from crèches in Western Coloured Township,

Eldorado Park and Kliptown. The children were three to four and five to six year olds who had never watched Bright Rides, the present programme. However, 68,57% of the sample had seen television and see it regularly at home or at friends.

11.2.1 Detailed Description of Subjects:

Experimental and Control Groups

Children in the sample were divided into two groups, experimental and control with 70 children in each group. The control group did not see Bright Rides prior to posttesting whilst the experimental group did view the programme.

Child-Care Centre Groups

Children in this study attended two crèches and one nursery school. It was considered that differences in scores would occur between the three centres since a number of unseen variables might have pervaded the study. If differences in scores did occur, it was considered that type of teaching programme, length of daily programmes, or socio-economic class might be the variables affecting the results. Qualitative differences were not perceived in the daily routine of the three centres but whilst the two creches conducted full day programmes, the nursery school had a half day programme. To ascertain whether social class was the variable affecting scores an investigation was conducted into the social class configurations in each child care centre group.

It appears that children from the three centres came from slum to upper working class backgrounds with the following frequence. (In order to understand how these frequencies were calculated see Appendix D).

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