

SURVEY AND ANALYSIS OF PATTERNS
OF STUTTERING AMONG ZAMBIAN SCHOOLCHILDREN

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(1)

A B S T R A C T

A survey of stuttering among Zambian (Lusaka) schoolchildren indicated that the incidence of the disorder is approximately the same as that reported in Western literature (i.e. .97% of the total school population) and that it is also significantly related to factors such as age, sex, level of education, and housing conditions. However, the predicted increase of incidence from primary to secondary school level was not evident, and the possibility of the existence of a process which filters out the stutterers at school entry and secondary selection level was discussed. No significant relationship was found between incidence and first language of the speaker. Secondary symptoms of the disorder showed no deviations from previous reports. Apart from stuttering, it was found that .42% of the population under consideration were suffering from various other speech defects.

An analysis of patterns of stuttering among a sample of 40 stutterers indicated that the frequency of stuttering is significantly related to the position of a word in an utterance but is not affected by whether first language or English is being spoken. Comparing the vulnerability of different sounds, the results did not support the bulk of previous evidence which suggests that consonants are more stutter-prone than vowels.*

There was no evidence of a significant relationship between stuttering and left-handedness or between stuttering and intelligence. Also there was no evidence that stuttering adversely affects school

(ii)

performance. Most stutterers in the sample claimed to stutter more frequently at school than in any other situation.

(*See Appendix E)

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CHAPTER ONE
I N T R O D U C T I O N

1. Definition and Symptoms

Stuttering can be described as "an interruption in the normal rhythm of speech caused by either repetition, prolongation or blockage of sound". (Andrews and Harris, 1964, p.1)

Stuttering can affect simultaneously or separately all the movements involved in speech, such as respiration, phonation, articulation, facial expression and gesture. Bloodstein (1959) was one of the first to suggest that stuttering follows a normal course of development, and as the disorder develops the following disturbances can be identified. At first, there is usually a primary clonic repetition which is joined at a later stage by secondary tonic inhibitions in the form of prolongations and silent blocks. As the disorder progresses, these symptoms tend to be complicated with the development of parakinetic body movements and a wide variety of compensatory or suppressing actions of adjustment.

The initial early repetitions are often confused with the normal repetition observed in many children during early speech development, but in the latter, not only sounds but whole words are repeated. On the other hand, stuttering involves mainly repetition of a single sound or syllable alone. This symptom tends to dominate until the age of six or seven years, when gradually the speech disturbance also takes the form of prolongations of certain sounds and blockage - where emittance of the sound is delayed. In the English language, the prolongations are more often initiated by vowel sounds and

continuous consonants. In contrast, the silent blocks are frequently associated with plosive consonants and are often accompanied by considerable tension and effort to release the sound. Release usually involves an exaggerated or explosive utterance of the "reluctant" sound.

In addition to these main symptoms, there are also more general disturbances of speech patterns. For example there is often a tendency to breath pushing, too frequent breathing, reduction in phonation time, and various inappropriate respiratory movements. Speech may be less rythmical than normal with a significant reduction in word output. Also, the tendency to avoid "dangerous" words encourages circumlocution, resulting in a characteristic telegraphic form of speech.

If the disorder persists, such speech abnormalities are eventually accompanied by a wide variety of motor symptoms, for example, facial grimaces, head jerking, shoulder lifting, foot stamping, eye-brow raising, swallowing, to mention but a few. Apparently, these secondary symptoms initially serve the purpose of a "starting mechanism" to trigger off the problem sound, or alternately as an avoidance device.

2. Age of onset and persistence of the stutter

Speech development of the stutter is usually delayed, though the age of onset of the stutter itself can vary between individuals. According to most of the literature (Western) approximately 50% of stutters experience symptoms before the age of five years, 90% before

the age of eight or nine years and 99% before the age of thirteen years. Andrews and Harris (1964) identify three main kinds of stuttering which are related to age of onset and duration of the disorder. Firstly, is what they describe as Transient Developmental Stuttering which begins between the age of two and four years, or at the time of development of speech and is relatively short-lived. Secondly, the Benign stutterers, usually develop symptoms at a later stage (four/five years to eleven years) and remit spontaneously after a relatively short period of time (one or two years). The final group is that of the persistent stutterer who maintains the symptoms into puberty and adulthood. Usually, the longer the symptoms persist, the more severe and complex they become.

3. Incidence of Stuttering

The incidence of stuttering in Western societies has been found to be in the region of 1% of the total population. However, it has been noted by some investigators that there tends to be an increase in frequency from East to West. For example, Seeman (1959) (cited in Luchsinger et al., 1959) in a Czech study found only .55% of stutterers among 25,850 elementary and intermediate Prague school-children compared to McAllister (1937) (also in Luchsinger et al., 1959) who found 1.1% in London and 1.52% in New York City.

Although it has been suggested that the incidence of this disorder is relatively low in more underdeveloped societies, the evidence in this area appears fairly contradictory. For example, Aron (1959) screened the total population of Bantu school-children

(6,581) in a Johannesburg township and recorded an incidence of 1.26%, which is very similar to the reported Western rate. In contrast, McCallien (1956) in a preliminary investigation of speech defects among 3,988 school-children in Accra found an incidence of 3.5% stutterers. These studies, however, represent urban African populations alone and, as yet, there are no detailed studies of any rural populations where it is possible that the incidence may be considerably less, as has been indicated in studies of some rural Indian and Polynesian societies (Snidecor, 1949; Lemert, 1952). For example, Bullen (1945) describes extensive work among the Navaho of New Mexico where only three cases of stuttering were found in a community of 492.

4. Causal Factors

In the early part of the century, psychological explanations of the phenomenon of stuttering were favoured and it is still considered by some to be largely an expression of a psychoneurotic condition or as a symptom of emotional maladjustment. However, there is little concrete evidence that relates stuttering to neuroticism or maladjustment and there appears to be no basic differences between the personality of stutterers and non-stutterers.

The limitations of this thesis make it desirable to exclude any detailed description of the current theories of the aetiology of stuttering, and although the literature on this topic is extensive it still remains inconclusive and for the most part contradictory. According to Onge (1963) it is difficult to judge which is the more

confusing; the disorder itself, as it is encountered, or the literature dealing with it. Nevertheless, despite such a pessimistic opinion, from the abundant literature (contradictory or otherwise) one can trace three basic viewpoints which will be given brief consideration here. These cover the genetic, environmental and linguistic approaches to the problem of causation, though it should be noted at this point that although certain factors may be mentioned under any one of these headings this does not exclude the possibility of interaction with other variables, or the possibility that such a factor could also be legitimately included in one of the other groups. For example, although sex is included as a genetic variable it could also fit in as an environmental influence, as the sex of a child usually affects parental attitudes and child-rearing techniques which in turn can have significant effects on language development.

(a) Genetic Influences

Some theorists consider stuttering as a symptom of a complex organic disorder with a hereditary basis and there is sufficient evidence of a familial disposition to stuttering to warrant such a claim. For example, Wepman (1939) (cited in Andrews and Harris, 1964) is but one of many investigators whose evidence points to a genetic basis for stuttering. In an extensive study he found that 69% of the families of stutterers contained at least one other member who stuttered compared with only 16% in the control families (a matched non-stuttering group). As yet, it is unclear whether the defect is transmitted by a dominant gene or is the result of multi-

factorial inheritance, but most evidence suggests that either factor can operate (Andrews and Harris, 1964).

Another factor which it has been suggested could be related to genetic endowment is that of the sex of the individual. There is a wealth of evidence which points to a strong relationship between sex and the tendency to stutter, with the male being considerably more stutter-prone than the female. For example, Nadolezny (1929) (cited in Luchsinger et al., 1959) in his study of 1000 cases found a male-female sex ratio of 3:1. However, whether or not this tendency can be attributed to an inherited disposition or more to environmental or social pressures will be discussed later (see Section 5, Chapter 3).

Again, possibly related to heredity, is the theory (with supporting evidence) that there is some relationship between intelligence and stuttering, with the incidence of stuttering decreasing with increasing intellectual level. This relationship will be considered in some detail in Chapter 6 in addition to the suggested relationship with cerebral dominance, though evidence of the latter appears now to be rather shaky.

(b) Environmental Influences

The environmentalist position covers a wide variety of influences which range from the more restricted physical and family environments, to the broader cultural setting. (The latter will be given more consideration in the next section of this chapter). It is felt by some theorists that the home itself can exert a variety of influences

which result in stuttering though investigators such as Andrews and Harris (1964) hold that even then some genetic pre-disposition to the disorder must also almost invariably be present. Such influences which include adverse home conditions, attitudes to language development, child-rearing practices, multi-lingualism, and education will be discussed further in Section 5 of this chapter, Chapter 3, Chapter 5 and Chapter 6. Although there is also evidence that other variables such as position in the family can affect the tendency to stutter, (for example Rotter, 1939 found significantly more only children and fewer middle children among stutterers than among a non-stuttering population) the design of this study does not permit such investigation. Moving from general background to more specific events which occur within the environment, one meets the viewpoint that stuttering is a developmental disorder of childhood which represents a reaction to specific situations encountered by the child during early development. In this respect perhaps one of the more easily traceable causes of stuttering are in those cases where the disorder has been directly precipitated by sudden trauma or shock. (Such cases were frequently observed in shell-shock victims of World War II where the stutter can be described as a stress reaction.) Similarly direct causation can be seen in the cases where stuttering is related to organic damage as caused by environmental events such as birth injury or infectious disease.

However, whether the cause is inherent in the environment or is directly attributable to some specific event, it is suggested that any of these influences can disturb learning patterns of speech

and result in disorders such as stuttering. This, here, links up with the learning theories of stuttering where it is held that stuttering is more of a complex learned habit or learned mode of verbal behaviour where anticipatory struggle symptoms are described as an avoidance reaction associated with apprehension. Proponents of a learning theory explanation of the disorder point out that one can identify all characteristics of a typical learned response in a stutter. For example, various studies do in fact indicate that a large proportion of stutterers exhibit certain phenomena of the learned response such as spontaneous recovery. This can be seen in the study by Sheehan and Martyn (1966) who, analysing the incidence of recovery from stuttering in 5,138 students of the University of California, found 4/5 ths had recovered spontaneously.

(c) Linguistic Influences

In addition to the genetic and environmental approaches mentioned, some of the literature focusses on the relationship between stuttering and language itself. Although the kind of sounds, syllables and words which have been found to be "stutter-prone" varies between individuals and within the same individuals in different circumstances and at different times, most of the evidence reduces the occurrence of the stutter to four major speech determinants, namely, the nature of the sound itself, the length of the word, the position of the word in the utterance, and, finally, its grammatical function. In general, in the English language, stuttering appears to affect consonants (particularly plosives) more than vowels, and

motorically difficult sounds such as [s] [l] and [r]. Statistical evidence (Soderberg, 1966) has shown that longer words are more stuttered on than shorter ones, and initial more than middle or final sounds are likely to be affected. Although there is a certain amount of evidence which suggests that the grammatical function of the word can be critical, Soderberg, 1962 (cited in Andrews and Harris, 1964) has produced data which seems to question the significance of function. To summarise, from all the available evidence, it would seem that, at least in the English language, stuttering tends to occur more frequently on long words, particularly those beginning with consonants and which occur at the beginning of an utterance.

Unfortunately, not all instances of stuttering can be reduced to such direct causes and although the symptoms of the disorder may be similar across stutterers, it would seem more than likely that it can be the result of any one of a combination of several different factors. The theories of the causes of stuttering which have been mentioned here are by no means all-inclusive but no attempt will be made to mention them in further detail. However, from consideration of all the current evidence including the results of the present study, I would tend to support Onge (1963) who is not alone in suggesting that it is possible to identify different kinds of stuttering in terms of different aetiology (which can be related to some of the above-mentioned theories). One main group he described as the specifically inherited stutterers where a congenital language disability first manifests itself in delayed language development and which, if aggravated by an unfavourable environment can develop into

stuttered speech. Another major group mentioned by Onge are the symptomatic stutterers whose disorder arises directly from organic lesions of brain. Yet another group are the psychological stutterers whose disorder he suggests arises when normal childhood non-fluency or hesitations which deteriorate into secondary pathological stuttering when forceful attempts are made to suppress such infantile hesitations or repetitions.

The same author argues that inconclusive, inconsistent and contradictory evidence on the nature of stuttering arises mainly from the fundamental error of studying what he considers are several basically different diseases as a single entity, simply because they share a common symptom. He claims that the assumption of a single disorder has resulted in both studies and treatment which ignore the syndrome concept.

5. Cross-Cultural Research

Before completely departing from a consideration of causation it would be appropriate at this stage to consider theories put forward by various cross-cultural researchers which in some cases throw further light on those already mentioned. As this study is intended primarily as a cross-cultural comparison of stuttering this area is of particular interest. Stewart (1971) has examined the universality of stuttering as a problem of human communication by studying data from various cultural groups and he has made the following generalisations. Firstly, he points out that stuttering does not seem to occur in groups where no term exists in the language, and

that it does not occur in groups which are more permissive in their child-rearing practices and do not pressurise the natural course of language development in the individual child. Although the latter would not be an easy factor to measure or compare across groups, there is in fact some degree of evidence in favour of the former. For example, Snidecor (1949) in a study of the Bannock and Shoshone Indian tribes found no cases of stuttering (he also notes that no word exists for the disorder in either of the languages) and suggests that one of the major causative factors is the fact that during infancy, parents exert very little pressure on the child to speak.

Other work among the Northern American Indians has precipitated further interesting theories. Much of the research in this region has been carried out by Lemert (1952, 1953, and 1962) who is a strong supporter of the notion that attitudes of the society towards the disorder can significantly affect its incidence and severity. He points out that in those tribes where stuttering is present, stringent demands are made on the growing child till adolescence. In contrast, in those tribes where no cases of stuttering could be found, child-rearing practices are relatively permissive. In an analysis of all the comparative data available, Lemert found that attitudes towards stuttering in different societies ranged from tolerance, pity and condescension to serious disapproval and the incidence in these groups seemed to be positively related to degree of pressure on the stutterer. For example, in a study of two Polynesian societies (1962) he suggests that the very low incidence

is related to Polynesian cultural values and social organisation. Polynesians believe that an individual suffering from stuttering is born that way and thus no disapproval or punitive measures are taken against him. This is in marked contrast to the Japanese who lay considerable emphasis on correction of any speech disorders (even to the extent of establishing stutter-correcting schools) and where, as predicted by this theory, the incidence of stuttering is exceptionally high (Lemert, 1962).

Unfortunately, comparative African evidence is virtually non-existent, although Aron's (1959) study, already cited, does make brief reference to parental attitudes which are generally sympathetic with only very slight disapproval. However, Aron makes no serious attempt to relate incidence to attitudes and does not consider this factor as a critical influence.

Scanning all the available literature, it would not seem unreasonable to conclude that societies where stuttering is socially penalised and where there is concern about speech development are a breeding ground for the disorder. Although such evidence could be used to support an environmental or learning theory of stuttering, it could in fact suggest more of an interactionist, holistic explanation. Even in societies where stuttering is not known to exist, one would expect that there are individuals who are pre-disposed to the disorder (e.g. organic damage) but it would seem that in spite of a weakened disposition, the defect does not develop in isolation and is only precipitated by adverse external conditions which could include societal pressures.

In this Lusaka study no attempt has been made to consider any possible relationship between stuttering and attitudes. However, from informal questioning among a small cross-section of Zambians (including parents of stutterers) it would seem that attitudes here are very similar to most Western societies i.e. largely sympathetic and tolerant, and I would suggest that they are probably not extreme enough to have any positive (or negative) effects on the incidence of stuttering.

Although it was hoped that there would be a variety of literature to make some cross-linguistic comparisons of patterns of stuttering, this aspect had to be limited to comparisons between the Zambian languages and English as other available studies did not deal with this in sufficient detail or depth.

6. Aims of the Project (see Chapters 2, 4 and 6 for more detailed description of aims)

The form of this study can be divided into four stages.

Stage 1 - the survey was intended firstly to establish the incidence of stuttering in both primary and secondary school-children in the Lusaka urban area. From the data obtained it was hoped to determine whether there is any relationship between the incidence of the disorder and factors such as age, level of education, sex, home environment and first language. Apart from stuttering, the survey would also be used to obtain information on the nature of all other forms of speech defect present in the same population.

Stage 2 - the analysis of patterns of stuttering in three languages, namely, English, Nyanja and Bemba. This involved taking speech recordings of a selected sample of stutterers. This analysis was intended to clarify the following:-

1. Does a bi-lingual (multi-lingual) Zambian school child stutter more in his first language or in English.
2. Is the frequency of stuttering related to the following factors in Nyanja and Bemba, as other evidence has shown in English:-
 - (a) Position of word in the utterance
 - (b) Length of the utterance
3. Are any particular sounds in these two Zambian languages more vulnerable to stuttering than others. In other words, is the frequency of the stutter related to the nature of the language itself.

Stage 3. Laterality Test - this test was administered immediately prior to the speech recording and combined with teacher information was aimed at determining handedness to establish whether or not there is any relationship between stuttering and left-handedness, as suggested by earlier evidence.

Stage 4. The selected sample, were required to fill in a questionnaire (see Appendix A) identical to one which was also issued to class teachers. The aims of the questionnaire were to investigate the following:

- (a) No. of children in family
- (b) Position in family

- (c) Age of onset of stutter
- (d) Age of starting to speak
- (e) Whether there are any other relatives who stutter
- (f) Which hand the child writes with
- (g) In which situations he stutters more/less
- (h) The intellectual level of the child (from position
in class and teacher rating)
- (i) Whether the disorder appears to be having any
adverse effects on academic progress

(As some of the information obtained from this questionnaire was considered too inaccurate or unreliable for statistical analysis, no serious attempt was made to interpret this data, and results and discussion in Chapter 6 will be limited to items (f) to (i).)

C H A P T E R T W O

SURVEY OF THE INCIDENCE OF STUTTERING IN LUSAKA (URBAN)

SCHOOLCHILDREN: AIMS AND METHOD

1. Background

The Lusaka Urban area covers a radius of 20/25 miles and includes 52 primary and 10 secondary schools. The survey was started in February, 1974 and completed in October of the same year. Total school enrolment in 1974 was 60,782 i.e. 54,170 primary and 6,612 secondary schoolchildren. The average number of children in each primary school was 1,200, and in the secondary schools was approximately 600. Prior to this survey, no investigations had been made to determine the extent of speech disorders in this region (nor anywhere else in Zambia).

The main Zambian language in the Lusaka area is Nyanja, largely because of extensive migration from Nyanja-speaking areas of Eastern province in the past. It should be noted that this language includes more than one dialect, though no differentiation was made in this study. However, as the city's inhabitants are drawn from all part of Zambia, which boasts a total of more than 73 languages, (though, whether or not these can be described as languages or dialects is a matter of controversy) many other local languages are currently in use in the area (particularly Tonga and Bemba (see map, Appendix B). From the primary level upwards, the language of instruction in the schools is English, but, as most children speak their native language usually in the home and socially, a high level of competence and fluency is not

achieved until the higher grades of primary school. This excludes those Zambian children in schools where there is a significant proportion of English-speaking expatriates and also those children who come from homes where English is spoken.

Although initially it was intended to select a small sample from the schools, as innumerable variables would have had to be balanced in such a selection, and also as some unknown influences could have been unaccounted for by this method, it was decided that the survey would cover the entire population. This, did in fact prove to be a wise choice, as certain schools showed an exceptionally high incidence of stuttering, a trend which might not have been evident if sampling methods had been used (see Chapter 3, Section 8).

2. Aims of the Survey

The specific aims of the survey were as follows:-

(a) To establish the incidence of stuttering in the Lusaka (Urban) school population.

(b) To determine whether the incidence of stuttering increases or decreases from the primary to secondary level. From the figures obtained - combined with information from teachers - it was also hoped to deduce to what extent (if any) stuttering is proving a handicap in preventing a child from maximally benefitting from available education.

(c) To establish whether there is any relationship between the incidence of stuttering and age.

(d) To establish whether there is any relationship between the incidence of stuttering and level of education.

(e) To establish whether there is any relationship between the incidence of stuttering and sex.

(f) To establish whether there is any relationship between the incidence of stuttering and home environment i.e. in terms of housing conditions.

(g) To establish whether there is any relationship between the incidence of stuttering and language i.e. whether there is any significant difference in incidence of stuttering between Nyanja, Bemba, Tonga and Lozi speakers. (These are usually considered the four major language groups in Zambia, see Map - Appendix B).

(h) To ascertain the nature and extent of any other speech problems in the population under consideration.

3. Method of Survey

(a) A preliminary visit was made to all 62 schools in the Lusaka Urban area to explain the project to headteachers and to distribute brief questionnaires to classteachers asking for names of children with any form of speech difficulty, no matter how minor. It was felt at this stage that it would be inadvisable to rely on diagnosis of stuttering by the teacher, so that by including children with any speech problem, there was less chance of any stutterers being overlooked.

(b) The second visit to each school involved interviewing and screening all the children who had been referred by teachers (1,265 in all) to establish the following:-

- the nature of the speech defect (if any)

- if the child was stuttering, what was the level of severity
- his age, residential address and occupation of father
(or mother). In cases of uncertainty about the former two, the class register was checked.

The screening test was carried out by myself (an English-speaker with only a very limited understanding of Nyanja and Bemba) and Mrs. P. Nguluwe, a Zambian Nyanja-speaking Research Assistant who was also familiar with the other three local languages involved. This interview, or test, took the form of presenting the primary schoolchildren with a colourful wall picture of a market scene (one used in the current English Medium Course which is followed in all Government primary schools) and asking questions about it. For example, "What is the woman selling?" "What are those men standing round the table doing?" - or the child was asked to describe what was happening in the picture generally. This test was deliberately unstructured so as to encourage as much free conversation as possible.

This was followed by questions about the child's family etc. - again to stimulate free conversation and also to elicit the required background details already mentioned.

As the pictorial stimulus was considered too elementary for secondary schoolchildren, this was substituted with more general questions about hobbies, interests, careers etc. In some cases, the child was very keen to talk about his stuttering and related problems and this was not discouraged. Although, this procedure for the secondary schoolchildren represents a deviation from that of the primary, it was felt that as this stage of the study was

primarily aimed at filtering out stutterers from non-stutterers, a standard, structured test was unnecessary.

The average length of each interview was approximately seven minutes, though usually longer in cases where the symptoms of stuttering were very infrequent. The interview was conducted in the first language of the child, unless he was found to be more familiar with Nyanja. Where parents of any of the subjects came from two different language groups, first language was determined by which language was spoken in the home.

(c) Severity of stuttering, in terms of frequency, was judged independently by myself and the research assistant according to the following scale.

Low - communication only very slightly impaired and only up to 5% words stuttered.

Moderate - communication noticeably impaired with up to 20% words stuttered.

High - communication grossly impaired with from 20 to 80% words stuttered.

Severe - communication extremely difficult - for example, in some cases, blocks were so prolonged and distressing to the subject that the interview had to be terminated. In such cases, essential information was obtained from the classteacher.

Where there was any uncertainty or discrepancy between ratings, the approximate mid-point classification was given (i.e. Low/Moderate; Moderate/High; High/Severe) In fact, out of the total number of 589, only 86 were given these mid-point ratings and many

of these were given, not because of any difference between raters but because they hovered round the borderline between two classifications.

When the survey had been completed revealing a total of 589 stutterers, as this number was considered too large for any detailed analysis of the nature of the stuttering itself, it was decided to select a small representative sample from this group. The procedure for this second stage of the project will be described in Chapter 4.

C H A P T E R T H R E E

SURVEY: RESULTS AND IMPLICATIONS

In the following chapter, the results of the survey have been presented according to the following sub-divisions.

1. Incidence; total population
2. Incidence: primary versus secondary
3. Incidence and age
4. Incidence and education
5. Incidence and sex
6. Incidence and Home Environment (Housing Conditions)
7. Incidence and First Language
8. Severity
9. Secondary Symptoms
10. Other speech defects.
11. Summary of Results.

A discussion of these results will be included within each of these sub-sections rather than at a later point. Items 1 to 6 were chosen for analysis to determine whether the reported Western trends are present in the Zambian population. Item 7, namely the relationship of stuttering to first language has been included as there is some indication that the incidence of stuttering is related to the nature of the language itself. With regard to Item 8, it was felt that as the children referred for testing were those suffering from any form of speech defect, it would be useful to make a record of all

cases, particularly those where treatment might be necessary. Any such cases would be referred to the school health authorities.

1. Incidence: total population

Out of a total school population of 60,782 primary and secondary schoolchildren, 1,265 were screened and of these 589 were found to stutter in varying degrees of severity. This represents an incidence of .97% of the total school population which is very similar to the approximate 1% incidence reported in Western studies (see Chapter 1.) Although this figure includes 44 non-Zambian (not indigenous) stutterers (see Table I), these have been included in the analysis because the Ministry of Education data for 1974 (i.e. at the time of writing this report) did not include a breakdown of school enrolment according to nationality - which, if known, would have reduced the 60,782 total. However, it was not felt that inclusion of the non-Zambians would significantly affect the results. Also, it was found that almost 50% of these (of African origin) had been born in Zambia and were fluent in Nyanja. In fact many of them came from families resident in Zambia for many years, and are probably well socialised into the urban Zambian way of life.

TABLE I

DISTRIBUTION OF NON-ZAMBIAN STUTTERERS

	<u>S. AFRICAN</u>	<u>RHODESIAN</u>	<u>E. AFRICAN</u>	<u>INDIAN</u>	<u>ENGLISH</u>	<u>TOTAL</u>
PRIMARY	10	10	1	3	3	27
SECONDARY	1	3	0	10	3	17
TOTAL	11	13	1	13	6	44

2. Incidence: Primary versus secondary

As all Western evidence has indicated a clear-cut increase in the incidence of stuttering from younger to older children, the results here were broken down into the two major school groups, i.e. primary and secondary.

TABLE II

DISTRIBUTION OF STUTTERERS: PRIMARY VERSUS SECONDARY

	<u>NO. OF STUTTERERS</u>	<u>TOTAL ENROLMENT</u>	<u>% STUTTERERS</u>
PRIMARY	522	54,170	.96%
SECONDARY	67	6,612	1.01%
TOTAL	589	60,782	.97%

From Table II it can be seen that there is an increase of approximately .05% in the incidence of stuttering from primary to secondary level. This increase, however, is only marginal and unlike the Western trend is not significant (by chi-square test). For example, Andrews and Harris (1964) in reviewing various Western studies note that there is a difference in the incidence of stuttering related to age with an approximate incidence of 1 at the junior (primary) level and 1.6% at the secondary level. The proportion is presumably swollen by the addition of those stutterers whose age of onset is around puberty.

The Zambian results, where the incidence is almost equal in both school groups could indicate that stutterers are being penalised for their handicap and are somehow being filtered out in the secondary selection process which occurs at the end of primary school. It is of course possible that the age of onset of most Zambian stutterers is in the childhood period, which would explain the evenness of distribution, however, as all evidence to date from many different cultures points to a second peak in incidence during puberty, it is highly unlikely that there is an exception in Zambia. From these results it does seem possible that the chances of the stuttering primary schoolchild proceeding to secondary school are less than those of the non-stutterer. However, this particular point, which is obviously of critical importance will be dealt with later (see Section 3 of this Chapter and Chapter 6, Sections 2 and 3) when these figures can be combined with the data from the questionnaires.

Before leaving this section, however, it should be noted that the figures quoted are not necessarily an accurate indication of the incidence of the disorder in the total school-age population, that is including all those children who have been unable to enrol in any school. According to Ministry of Education data for 1973, the percentage of children in this group (for the total Lusaka Urban area) was 34.9% (from Ministry of Education Survey, October, 1973). It is possible that within this unschooled 34.9% the incidence of stutterers is considerably greater than the reported .97% in the school-going population. This suggestion is being made mainly because of one particular incident where a primary school headmaster admitted repeatedly refusing admission to a child (who was at the time of the survey 11 years old) on the grounds that his stuttering was too great a handicap for him to benefit from any schooling. Unfortunately, this only happened towards the end of the survey, so it is not known whether this is a common practice in primary school selection, but it does suggest the possibility that there are many children suffering a similar plight. As has already been pointed out, there is some possibility of a filtering out process, to the disadvantage of the stutterer, at the end of primary school, and from the case cited it seems possible that there is a similar filtering process at the primary enrolment level.

However, returning to previous evidence of an increasing trend from primary to secondary, it is not clear whether or not this is a function of age or of education - or of both. From the Western data, as almost all children begin their education at the same age, it would

be difficult to separate these two factors. In contrast, in Zambia, children of the same age group have not necessarily reached the same level of education. For example, it is not uncommon to find a 17 or 18 year-old completing his Grade 7 with children of 12 or 13 years. Thus, because of this divergence between age and education, it was felt that it might be useful to consider them separately and perhaps determine which factor is the most critical in relation to incidence of the disorder.

3. Incidence and age

According to Western data, there is a significant relationship between the incidence of stuttering and age with a marked increase from childhood to adolescence. It would appear that although one of the main determinants of stuttering is language development itself, one of the other critical phases of development namely puberty can also reduce resistance to or precipitate the disorder in individuals who have apparently resisted it at the earlier stage.

An analysis of the distribution of stutterers according to age in this study was limited to the primary school population as it was felt that the secondary school group was not (because of the selection process) sufficiently representative of the population, and inclusion would probably have had a distorting effect.

TABLE III

DISTRIBUTION OF PRIMARY SCHOOL STUTTERERS ACCORDING TO AGE

	<u>UNDER 7 TO 8 YRS</u>	<u>9 TO 10</u>	<u>11 TO 12</u>	<u>13 TO 14</u>	<u>14 PLUS</u>
NO. OF STUTTERERS	39	105	157	153	68
PRIMARY ENROLMENT*	14,301	14,621	11,917	10,401	2,925
% STUTTERERS	.27%	.72%	1.32%	1.47%	2.32%

TABLE IV

BREAKDOWN OF LUSAKA URBAN PRIMARY ENROLMENT (ACCORDING TO AGE
GROUPS) INTO SAME PROPORTIONS AS COMBINED URBAN/RURAL ENROLMENT

(taken from Ministry of Education Table 1/1/05, 1974)

	<u>UNDER 7 TO 8 YRS</u>	<u>9 TO 10</u>	<u>11 TO 12</u>	<u>13 TO 14</u>	<u>14 PLUS</u>
LUSAKA URBAN/ RURAL PROPORTION OF TOTAL ENROL- MENT	26.4%	27.0%	22.0%	19.2%	5.4%
URBAN ENROLMENT TRANSFORMED INTO SAME PROPORTIONS AS URBAN/RURAL	14,301	14,626	11,917	10,401	2,925

*These numbers are only approximate, as the Ministry of Education enrolment figures for 1974 did not separate the Urban and Rural enrolments in terms of age groups and gave combined (Urban/Rural) figures only. The figures above have been calculated by taking the combined Urban/Rural proportions (Table IV) and dividing the total urban enrolment of 54,170 into similar proportions.

The results in Table III gave a Chi-Square of 181.26 (Critical Ratio of 174.193) which was found to be significant at the $p < .001$ level. The probability level due to linear regression was $p < .001$ but the departure from the regression line was found not to be significant, thus showing a strong linear trend (Table V).

TABLE V

ANALYSIS OF AGE TREND

	<u>DEGREES OF FREEDOM</u>	<u>CHI-SQUARE</u>	<u>PROBABILITY LEVEL</u>
OVERALL VALUE	4	181.263	$p < .001$
DUE TO LINEAR REGRESSION	1	174.193	$p < .001$
DEPARTURE FROM REGRESSION LINE	3	7.070	N.S.

These results indicate that there is a significant linear relationship between the incidence of stuttering and age, relating increasing age to increased proportion of stutterers.*

Consequently, unlike the results in the primary/secondary analysis (see Section 2 of this Chapter) these results give strong support to

*The Primary enrolment figures in Table III are not absolutely accurate (see explanatory footnote below that table) and they assume that the proportion of children in each age group in the urban schools is the same as in the urban/rural combined. However, as in many rural schools the average age is usually much higher than in the urban schools, these pro-rata figures probably exaggerate the number of older children in the urban schools. Nevertheless, even correction for this factor would not alter the direction of the results and would in fact make the reported age trend even more pronounced.

the reported previous evidence. They indicate that around the age of puberty and early adolescence, as in the West, there is an increased tendency to stutter in this Zambian population. However, as this increase in incidence is not apparent when comparing the primary and secondary school groups these results could support my previous suggestion that the stutterer is being filtered out in the secondary selection process. If there is no significant difference between the intelligence of the stutterer and the non-stutterer (see Chapter 6) then the proportion of stutterers should be significantly greater in the secondary group, though this would be assuming that teacher ratings of intelligence are closely related to Grade VII selection results (a condition which has not been established here).

With regards to my suggested filtering process at secondary selection, if such selection involves only the official written examination, then this hypothesis would have little support. It is perhaps possible, however, that particularly in the case of handicapped children some other report is also given - though this is not official policy and may not be the case at all. It is also possible, however, that some Grade VII stutterers could be discouraged from proceeding to secondary school, for example, by pressure from teachers or parents, or even from self choice. Thus although the data does seem to point to some form of "weeding out", it is not at all clear how in fact this process operates, and could involve any of the above factors or other of which I am not aware.

Returning to Table III, the 68 stutterers in the 14 plus group comprised the following:-

41 15 years old

19 16 years old

8 17 years old

However, as no enrolment figures were available for each of these separate age groups, it is not clear whether this decreasing trend represents a reduction in the incidence of stuttering after the age of 15 (quite feasible in terms of the reported puberty peak) or is

merely related to a reduction in the number of children in the total enrolment for these age groups.

Having established that there is a significant relationship between the incidence of stuttering and age, the distribution of stutters according to level education will now be presented and analysed.

4. Incidence and level of education

In Zambia, primary school education comprises seven Grade classes (Grades 1 to 7), and the age of entry, (with the exception of expatriate children) is a minimum of seven years. In the past, the age of entry among Zambian schoolchildren varied enormously and ranged from five years to the teens, and consequently it wasn't unusual to find Grade 7 "children" in their twenties. As the controlled age entry has not yet been operating long enough, during the survey it was found that the ages of children within any one class covered a fairly wide range, with ages ranging from 6 years to 17 years in the total group.

At secondary level, there are five classes (Forms 1 to 5) and the age range of the children interviewed in this group was from 12 to 21 years. However, an analysis of Grade trend was again limited to the primary school population as the secondary group were not considered suitably representative. The results were as follows:-

TABLE VI

DISTRIBUTION OF PRIMARY SCHOOL STUTTERERS ACCORDING
TO LEVEL OF EDUCATION

	<u>GRADE 1</u>	<u>GDE 2</u>	<u>GDE 3</u>	<u>GDE 4</u>	<u>GDE 5</u>	<u>GDE 6</u>	<u>GDE 7</u>
NO. OF STUTTERERS	31	63	79	68	104	80	97
TOTAL ENROLMENT*	9,263	8,830	7,530	7,367	7,421	7,042	6,717
% STUTTERERS	.33%	.71%	1.05%	.92%	1.40%	1.14%	1.44%

*See explanatory footnote below Table III.

Ministry of Education statistics did not include separate enrolment figures for Grades for Urban schools alone so the total urban enrolment has again been divided in the same proportions as for the combined Urban/Rural groups (see Table VII).

TABLE VII

BREAKDOWN OF LUSAKA URBAN PRIMARY ENROLMENT (ACCORDING TO GRADE)

INTO SAME PROPORTIONS AS COMBINED URBAN/RURAL ENROLMENT

(taken from Ministry of Education Table 1/1/05, 1974).

	<u>GRADE 1</u>	<u>GDE 2</u>	<u>GDE 3</u>	<u>GDE 4</u>	<u>GDE 5</u>	<u>GDE 6</u>	<u>GDE 7</u>
LUSAKA URBAN/ RURAL PROPORTION OF TOTAL ENROL- MENT	17.1	16.3	13.9	13.6	13.7	13.0	12.4
URBAN ENROLMENT TRANSFORMED INTO SAME PROPORTIONS AS URBAN/RURAL	9,263	8,830	7,530	7,367	7,421	7,042	6,717

When the Grade results were analysed statistically (Table VIII) they gave a Chi-square of 78.236 (Critical Ratio of 174.193) which was found to be highly significant (p .001). Probability due to linear regression was also highly significant (p .001) but as the departure from the regression line was significant (p .025) the indicated trend was not so linear as the age trend reported in the previous section. (Also, the primary enrolment figures in Table VI are not absolutely accurate (see footnote below that table) and they assume that the proportion of children in each grade group in the urban schools is the same as in the urban/rural combined. But as in many rural schools there is no upper primary section (no Grades 5, 6 and 7) the number of upper grade children is probably less than it should be in Table VII. If this is the case and the numbers in the older groups should in fact be greater this would have the effect of reducing any linear trend. However, this should not be distinct enough to alter the overall significance of these results.

TABLE VIII

ANALYSIS OF GRADE TREND

	<u>DEGREES OF FREEDOM</u>	<u>CHI-SQUARE</u>	<u>PROBABILITY LEVEL</u>
OVERALL VALUE	6	78.236	p .001
DUE TO LINEAR REGRESSION	1	63.854	p .001
DEPARTURE FROM REGRESSION LINE	5	14.382	p .025

To summarise, from these results one can conclude that there is a significant relationship between the incidence of stuttering and level of education (in this particular Zambian population) with the proportion of stutterers in general increasing from Grade 1 to Grade 7. The only deviations from this progressive increase occur at the Grade 4 and Grade 6 levels (see Table VI) but these are not significantly deviant.

Comparing these results with the previous section on age, it seems that both age and education are critical factors influencing the incidence of stuttering in this Zambian population. Of the two, age would appear to be the most influential, but as the two factors are impossible to separate completely (even in the group under consideration, where age and level of education are not closely matched) there must exist considerable interaction between the two and one cannot conclude that either factor is operating in isolation. These results do indicate some form of relationship between stuttering and level of education and one could hypothesise that the school situation itself - where greater demands are made on the child's verbal skills than in the home - is fertile ground for the development of the disorder in a vulnerable individual. One could suggest that the "Benign" stutterers described by Andrews and Harris (1964) (see Section 2, Chapter 1) whose age of onset coincides with the age of school attendance are children whose defect is largely related to the school situation. As the child proceeds through school, obviously the curriculum is going to make increasing demands on his intellectual capacities (including verbal) and

consequently it is not surprising that an increasing number of children should fall by the wayside and succumb to speech disorders.

For many children, the school situation can represent a stressful situation, particularly in a country like Zambia where competition for even primary school places is very keen, and it is not surprising therefore that, as these results suggest, certain stress reactions like stuttering are precipitated (see Chapter 6, Section 3 for related discussion). In the Zambian system of education, although English is introduced in the first Grade, a high level of competence is not demanded until the later grades, and thus these increasing demands of a second language could be a main causative factor of the reported linear trend. Unfortunately, however, many of these hypotheses cannot be tested with the present data and one can only conclude that although both age and level of education are significantly related to the incidence of stuttering in the primary school population under survey, it is not clear which particular elements in the school situation are critically involved in this relationship.

5. Incidence and Sex

Perhaps the most clear-cut trend in all the current stuttering literature is the relationship between sex and the tendency to stutter. That is, there are more male than female stutterers, usually in the region of 3:1 or 4:1. The results of this study proved similarly conclusive with significantly more male than female stutterers. Out of a total male population of 31,087 the number of stutterers was

461. In other words, 1.5% of the male population suffered from the disorder, whereas, in contrast, out of a total female population of 29,695 only 128 stutterers were identified which represents only approximately .4% of the population. Thus, the ratio of male to female stutterers is in the region of 3.8 to 1 which is very similar to all previous evidence (Table IX). For example Reid (1946) (cited in Luchsinger et al., 1959) found in an analysis of all the current American data that the average ratio of male to female ranged from 4.4:1 to 10:1. This trend has received undisputed and considerable support from all other sources.

The reason for this sex difference is not very clear though several theories have been put forward. One of the most popular explanations is that the female sex has a better language endowment than the male (Luchsinger et al., 1959). It has been found in many studies of child development that girls tend to speak earlier than boys, they usually speak with greater facility, and their linguistic development is generally much faster. It is suggested that because of this difference in rate of speech development, boys may encounter more obstacles and frustrations in verbal situations than girls. Consequently, as Schuell (1946/7) (cited in Luchsinger et al., 1959) suggests, such delay and inhibition, when aggravated by environmental situations can foster the primary stuttering reaction. In support of this theory, Schuell points out that many stutterers do learn to speak only with relative difficulty which could reflect innate inhibitions of language development.

Another explanation is that there are basic organic differences in cerebral maturation and again, other investigators (for example West et al., 1939, cited in Andrews and Harris, 1964) have suggested that girls have greater resistance to the hereditary pre-disposing factors of the disorder. However, to date there is no conclusive evidence in support of these theories. Yet another viewpoint is that in many societies there are more social pressures on boys to attain fluent speech which could cause anxiety over any non-fluency, resulting in further aggravation of the problem (see Chapter 1). Johnson (1956) holds that the critical difference between the child who begins to stutter and the non-stutterer may be found in the reactions of parents to the way he speaks, i.e. typically anxious with unreasonable expectations of speech performance. There is some evidence in support of this latter theory. For example Glasner (1949)(cited in Wolman, 1965) found in an investigation of the background of 70 stuttering children that in general they came from backgrounds characterised by overprotection and pampering and parents who were overanxious and perfectionist.

In the Zambian situation, although from the data it is not possible to determine whether there is any relationship between stuttering and parental attitudes, one can consider the previously mentioned theory (see Chapter 1, Section 5) which suggests that the male child in many societies is subject to more pressures than the female to attain fluent speech. Here, attitudes towards male children have always been very favourable and it is possible that more emphasis is placed on the healthy development of skills for

boys (including language). However, this is by no means a marked or obvious practice and it would be presumptuous to suggest that this could account for the high male to female ratio, until Zambian childrearing techniques have been studied in detail.

Although from all the evidence to date this male vulnerability to stuttering persists at all ages, the proportion of male to females has been found to vary at different ages. For example Schuell (1946) (cited in Luchsinger et al., 1959) investigating the sex relationship with regard to age found that around 30 years of age, differences in sex distribution of stutterers were at their highest i.e. as much as 10:1. This could suggest that a much greater proportion of females than males either spontaneously recover or are more amenable to curative therapy or that there is a continuing increase in stuttering among males. However, as the present study was limited to school-children, it is impossible to show whether the ratio increases in adulthood. In comparing the ratio of the primary and secondary groups, however, the following results were obtained:-

TABLE IX

RATIO OF MALE TO FEMALE STUTTERERS: PRIMARY AND SECONDARY

	<u>AVERAGE AGE</u>	<u>% MALE STUTTERERS</u>	<u>% FEMALE STUTTERERS</u>	<u>RATIO MALE TO FEMALE</u>
PRIMARY	12 YEARS	1.5%	0.4%	3.8:1
SECONDARY	16 YEARS	1.2%	0.7%	1.7:1
PRIMARY AND SECONDARY	14 YEARS	1.5%	0.4%	3.8:1

From these results, it would seem that the trend is the reverse of that reported above and that with age the proportion of girls is increased. From the data it would be impossible to arrive at any firm explanatory conclusions but one can postulate that some of the following factors could be operating. In a society where until fairly recently boys were given priority in education it is possible that Zambian girls find the demands of secondary school more stressful than boys. It is interesting to note, however, that out of the twenty female secondary school stutterers, thirteen of them (i.e. 65%) come from one school (see Table X). In other words 1.5% of the total population of this particular school (A) stutter compared with .5%, .2%, .4% and .4% in the remaining schools. (There are four secondary schools for girls only and one mixed).

TABLE X

DISTRIBUTION OF FEMALE STUTTERERS IN SECONDARY SCHOOLS

	NO. OF STUTTERERS	TOTAL ENROLMENT (FEMALE)	% STUTTERERS
SCHOOL A (ALL GIRLS)	13	845	1.5%
SCHOOL B " "	3	622	.5%
SCHOOL C " "	1	508	.2%
SCHOOL D " "	2	497	.4%
SCHOOL E (MIXED)	1	222	.4%

Is School A more competitive than the others? Is more emphasis laid on verbal skills? Is the atmosphere more anxiety-laden for the teenage child? Seven of these thirteen girls began stuttering after puberty, so it is not impossible that many of them may be suffering from a reactive kind of stuttering in response to a stressful situation. However, only a detailed comparative study of the various schools would reveal whether these speculations are valid.

The percentage of stutterers in each of the six secondary schools for boys was fairly evenly distributed.

6. Incidence and Home Environment (Housing Conditions)

In general, it has been found that stuttering is significantly related to the emotional aspects of the home environment (i.e. unhappy or stressful home conditions encourage a higher incidence.) For example, Andrews and Harris (1964) study indicates that stuttering occurs more frequently when there is "social pathology" in the home environment (e.g. broken home, deprivation of parental care). These authors report other similar findings by Monar, (1951) and Johnson, (1959) who both found that stuttering was more prevalent in homes where "family relationships were disturbed". Yet again, other studies have attempted to relate stuttering to social class with some degree of success. For example, Morgenstern (1965) (cited in Andrews and Harris, 1964) in a Scottish survey found the incidence of stuttering significantly higher in Social Class IV (where the wage-earner is semi-skilled).

Although here it would have been useful, from a causative point of view, to probe into a potential relationship between the disorder and specific conditions in the home, as such a line of enquiry would have alone reached mammoth proportions, it was felt to be beyond the scope of this study. Also, as the social welfare facilities in Zambia are not yet so highly developed as in the West where adverse home conditions are more likely to come to the notice of the authorities it would have proved extremely difficult (if not impossible) to establish, or to measure different aspects of the so-called "social pathology". In fact, on examining the data obtained, the only environmental variable (crude though it may be) which could be measured with some degree of confidence was the type of housing in which the child was living. This particular variable was found by Andrews and Harris (1964) to be positively related to the incidence of stuttering, but it was also found that poor housing correlated significantly with a one-parent home, disturbed relationships with the extended family group, mothers poor school record, and, in the child, with aggression, temper tantrums, low intelligence and low reading quotient. In this Lusaka study, however, no attempt has been made to correlate housing conditions with any factors other than stuttering, but as standards of housing in Lusaka cover a wide range (from the lowest to the highest extreme), it was decided that such an approach might be worthwhile.

Type of housing was divided into three main groups namely shanty compound; official low-cost housing; medium/low density housing. This form of categorisation was chosen as data giving the proportion

of school age children attending school had been grouped accordingly by the Ministry of Education (from "Children Attending School", Ministry of Education Survey, October, 1973).

Like many African countries, one of the problems of rapid urban development in Zambia has been the emergence of the shanty compound, situated generally on the fringes of the city. Lusaka is no exception and migration of large numbers of people from the rural areas (usually in search of employment and a higher standard of living) has led to the mushrooming of numerous shanty compounds, within and surrounding the city. Paradoxically, many new immigrants find themselves living in conditions far inferior to those of the village they have left behind, and the typical features of the shanty compound are inadequate or non-existent sanitation, no electricity or running water, with poorly ventilated dwellings made of a variety of materials ranging from cardboard, scrap wood, metal, mud, to home-made bricks. Such houses are at the mercy of the seasonal weather changes and can be stifling hot in summer, freezing in winter, and damp and leaking during the rainy season. Most of them comprise one room only which can house an entire family and consequently gross overcrowding is not uncommon. Socio-economic status of the shanty compound inhabitant is usually at the lower end of the scale and includes ex-peasant farmers and various categories of unskilled and semi-skilled workers, many of whom remain permanently unemployed.

The second type of housing, considerably superior to the shanty dwelling, is what is described in the Ministry Report already mentioned as official low-cost housing. This includes houses which

were built by the council many years ago and are common to many of the Lusaka suburbs, and the more recently built houses and flats including those of site and service schemes. The latter involves provision of basic facilities including plot, drainage, water and electricity by the council, while the tenant is responsible for building the dwelling according to certain minimum specifications. Most houses in this category are typically two to four-roomed, usually on a relatively small scale, and built fairly close together. However, unlike the shanty dwelling, they tend to be soundly built (with the exception of some of the older-type which are gradually being replaced) and provide relatively reasonable living conditions for the average family which compare favourably with conditions in the village. Socio-economic status of this group covers a wide range and like the shanty compound includes a large proportion of unskilled and semi-skilled workers but also more skilled and white collar workers. In this group, however, there are probably less unemployed and standards of living in general are noticeably higher than the former. Unfortunately, at present, there are no available data which break down the Lusaka population according to socio-economic status related to housing, and because of this the data were not analysed in this direction.

The third grouping combined both medium and low density housing. As the wording implies, this refers to houses which are respectively relatively spacious, and well spaced in relation to each other, unlike the low cost housing which is frequently referred to as high density housing. Both medium and low density houses are substantially built

with all the usual amenities. The former, however, are usually smaller in size (fewer and smaller rooms) than the latter. The socio-economic status of inhabitants of the medium density house is in the middle range while the low density area usually houses the upper class businessman, executive, government official or professional worker.

It should be noted that even in the latter two groups, overcrowding by Western standards is not uncommon as one of the practices of traditional Zambian society which has continued (though perhaps to a decreasing extent) into modern urban Zambia is that of support of the needy members of the extended family by the more "prosperous" ones. Many homes are in fact teeming with relatives, close or distant, who are being supported by the wage-earner and consequently, although a house may be situated in the low density area, this does not mean a similarly low density household population.

Having briefly considered the nature of the three groups of housing, to return to the method of the survey, each child was classified in terms of these three groupings according to his residential address, obtained during the interview. If there was any uncertainty about grouping - for example, suburbs such as Matero contained housing of all three classes - then more information was obtained from the child.

Results

Table XI shows the incidence of stuttering across the three groups. Also included in the Table under the heading "Other" are

those children living outside Lusaka - mainly in semi-rural areas - but as the Ministry of Education total enrolment figure of 650 for this group does not specify the exact nature of the housing, this group has been omitted from the statistical analysis. Also, this analysis is again limited to the Primary school population for reasons similar to the ones given in the previous section.

TABLE XI

DISTRIBUTION OF STUTTERERS ACCORDING TO HOUSING CONDITIONS

	SHANTY COMPOUND	OFFICIAL LOW-COST HOUSING INCLUDING SITE AND SERVICE	LOW /MEDIUM DENSITY	OTHER
NO. OF STUTTERERS	206	275	25	8
TOTAL ENROLMENT*	14,247	26,922	12,351	650
% STUTTERERS	1.45%	1.02%	.20%	1.2%

*As no enrolment figures were available for 1974, these figures have been obtained by transforming the 1973 proportions. (See "Children attending School", Ministry of Education Survey, October, 1973.)

From these results, one can see a marked decrease in the proportion of stutterers from the shanty compound upwards. Analysis of this data (Table XII) gave a Chi-square of 112.579 (Critical Ratio 107.075) which was highly significant ($p < .001$). Thus these results imply that

stuttering is significantly related to class of housing, with the incidence increasing inversely with housing standards.

TABLE XII

ANALYSIS OF HOUSING CONDITIONS

	<u>DEGREES OF FREEDOM</u>	<u>CHI-SQUARE</u>	<u>PROBABILITY LEVEL</u>
OVERALL VALUE	2	112.579	p .001

This strong relationship between incidence of stuttering and housing conditions is perhaps one of the most interesting findings of the survey and deserves some consideration, though it should be pointed out that the percentage of children attending school from the squatter areas is only 37.3% of the total school age population against an average of 50% for all other areas (Ministry of Education Survey, 1973).

What factors which are present in the shanty compound, and apparently absent in the medium/high cost housing situation, are responsible for this trend? Unfortunately, it would be impossible to identify such factors with any degree of confidence and again one is reduced to speculation. Anyhow, to proceed with some tentative suggestions - even the casual observer could list many potential adverse influences in the shanty compound which could have deleterious effects on the developing child. To name but a few:-

- overcrowding
- poor health arising from insanitary living conditions
- greater chance of brain damage at birth due to lesser access to good medical care
- perhaps a stressful discordant atmosphere in the home because of parental reaction to the unsatisfactory conditions, unemployment etc.
- perhaps undue parental pressure is placed on the child to do well at school and better his condition
- excessive noise, little privacy resulting in poor sleep etc
- the atmosphere of instability and insecurity fostered by the frequent temporary nature of the home could obviously cause considerable anxiety in the child
- as many new arrivals from the rural areas begin town life in the shanty compound, many of the children may be suffering from a kind of "cultural" shock and reactions such as stuttering could be one of its symptoms.

One could also relate these results to bi-lingualism and hypothesise that the lower class child will have more difficulty in acquiring a completely new language, learning of which is not consolidated in the home, as parents of the shanty compound child are frequently uneducated and their knowledge of English is usually very limited or non-existent. In contrast, at the other end of the scale, acquisition of English for a child from a better class home is facilitated by frequent use of English in the home and the surrounding neighbourhood. From this one could predict that shanty-compound

children would stutter more in English than their mother-tongue. However, as the data in the Linguistic Analysis (Chapter 5) is not sufficiently detailed to consider this, it is not clear whether or not this is the case.

Returning to the reported trend (low standard of housing = high incidence of stuttering) the possible explanations are inexhaustible, but the main issue arising from these results is the fact that in one way or other, life in the shanty compound is obviously having deleterious effects on the young child. There is no reason to suppose that such adverse effects are limited to stuttering, and it is likely that comparison of the incidence of childhood behavioural disorders, maladjustment etc. would reveal a similar preponderance in the poorer housing areas.

According to the data in Table XI the difference between Official low-cost housing and shanty compound (i.e. .43%) is not so marked as that between the former and Medium/Low Density housing, (i.e. .82%). It would seem that conditions in the latter are highly unfavourable to the development of stuttering whereas certain conditions common to the two lower types of housing groups would appear to provide fertile ground for the occurrence of disorder. However, again, to identify these particular conditions would be an almost impossible task, ~~and~~ not within the bounds of this particular project. One can suggest that perhaps the relative success of the medium/low house dweller creates a stable well-cushioned home atmosphere in contrast to the two other groups who are well down on the ladder of success and whose ambitions for advancement (perhaps unrealistic) may place

undue strain on the family. Or again, life in both the shanty compound and low-cost areas is relatively crowded and noisy in contrast with the medium/high cost areas, which could be stressful to a sensitive child. Similarly, the child of the lower class householder is more likely to be malnourished and in poor health than his better class counterpart. Or perhaps one of the critical variables is socio-economic class and its concomitants and as Morgenstern (1965) (already cited in this section) found, the incidence of stuttering is greater among the semi-skilled. These are but a few of the adverse conditions which are noticeable in the first two groups and less so in the latter, but whether or not they are critically involved in precipitating stuttering in a vulnerable individual is not clear. Although it would have been invaluable in terms of prevention and therapy to isolate such determining factors, this has not been possible here, but it is hoped that some future depth analysis in this area will be attempted.

7. Incidence and First Language

It has been suggested, though with little supportive evidence, that the prevalence of stuttering could be related to the nature of a language itself. As there are many local languages in Zambia, it was decided to pursue this suggestion further. However, although on scrutinising the data it was found that the stutterers came from a total of 28 different Zambian language groups, as most of these groups represent a very small minority of the population, it was felt that only subjects whose first language was one of the four

major languages (i.e. Nyanja, Bemba, Tonga, Lozi) would be included in this particular analysis.

TABLE XIII

INCIDENCE OF STUTTERING ACCORDING TO FIRST LANGUAGE

	<u>NYANJA</u>	<u>BEMBA</u>	<u>TONGA</u>	<u>LOZI</u>
NO. OF STUTTERERS	223	98	88	22
TOTAL ENROLMENT*	22,209	10,292	7,584	2,709
% STUTTERERS	1.02%	.96%	1.04%	.82%

(*These figures have been extrapolated from 1969 group proportions which represent the most recent figures available - see Serpell, 1970, p.5)

From the results tabulated above, although there is some difference in incidence among the different language groups, this was found not to be significant. It would appear, therefore that the incidence of stuttering in Zambia is not greatly affected by the first language of the speaker. However, as Serpell (1970) points out, there is a certain kinship between many of the Zambian languages with strong structural similarities in grammar and a certain amount of shared vocabulary. Consequently, if such strong similarities do exist across the above languages, this would weaken any test of the hypothesis that incidence is related to first language. This would have been more valid if the different groups were more clearly unrelated

8. Severity

Moving away from the relationship of different variables with the incidence of stuttering, the following section focusses on factors relating to the severity of the stutter, that is in terms of frequency of primary symptoms.

Although there is some evidence which suggests that girls tend to be milder stutterers than boys (Andrews and Harris, 1964) in this survey there appeared to be no significant relationship between sex and severity of stuttering. In addition, from such sources as the Newcastle on Tyne study (ibid) it would seem that more girls than boys spontaneously recover from the disorder indicating that girls again suffer more from the less severe form (this time, in terms of transiency) than do boys. Looking again at Table IX where the ratio of male to female stutterers according to age is as follows:-

	<u>Average Age</u>	<u>Ratio Male to Female</u>
PRIMARY	12 years	3.8:1
SECONDARY	16 year	1.7:1

these results do not seem to support the reported trend. However, although it is possible that this decreasing ratio with age does indicate more spontaneous recovery among the male population (particularly, as no form of therapy is offered) one could also hypothesise that perhaps fewer boys than girls initially begin stuttering in adolescence, which again could account for this decrement.

TABLE XIV

INCIDENCE OF STUTTERING IN TERMS OF SEVERITY

	<u>LOW</u>	<u>LOW/MODERATE</u>	<u>MODERATE</u>	<u>MODERATE/HIGH</u>	<u>HIGH</u>	<u>SEVERE</u>
PRIMARY	216	50	127	30	64	35
SECONDARY	42	4	7	2	7	5
PRIMARY & SEC.	258	54	134	32	71	40
% OF TOTAL STUTTERERS	44%	9%	23%	5%	12%	7%

From this table, one can see that more than half the total number of stutterers (53%) were classified as only Low or Low/Moderate (i.e. with communication only very slightly impaired and only up to 5% words stuttered) (see descriptive scale Chapter 2, Section 3c).

It is interesting to note that of the Primary School group, approximately 50% were in this mild range, whereas almost 70% of the secondary stutterers were rated as such. Although the implications of this are not very clear, it could indicate that individuals who do not develop a stutter until puberty are more likely to experience it in a milder form than those who have started at a much earlier age.

As regards the need for therapy, if one were to limit this to the Moderate/High, High and Severe groups (where the disorder considerably impairs communication) this would involve 24% of the total stuttering population, i.e. almost 20% of the secondary school stutterers and over 25% of the primary group.

On analysis of the severity of stuttering within each school it was found that the incidence was fairly similar from school to school with the proportions fairly closely in line with the total percentages in the above table. This was however, with one notable exception (School X) which will now be considered in more detail.

TABLE XV

BREAKDOWN OF INCIDENCE ACCORDING TO SEVERITY: SCHOOL X

	<u>LOW</u>	<u>LOW/MODERATE</u>	<u>MODERATE</u>	<u>MODERATE/HIGH</u>	<u>HIGH</u>	<u>SEVERE</u>
NO. OF STUTTERERS	6	0	7	0	3	8
% OF TOTAL STUTTERERS	25%	0%	29%	0%	13%	33%

Total School Population - 1,226

In most other schools the incidence of stuttering ranged from 9 to 16 (out of an average school population of 1200 - in the primary schools). In School X, the incidence of 24 is well above the norm. Similarly, in all schools combined, the frequency of cases of severe stuttering was relatively low, namely 7% of the total stuttering population (see Table XIV) whereas in School X, 33% of the stutterers fell within this category.



TABLE XVI

NUMBER OF STUTTERERS ACCORDING TO SEVERITY OF STUTTER:
SCHOOL X VERSUS AVERAGE OF ALL OTHER SCHOOLS

	<u>SEVERITY/LOW TO HIGH</u>	<u>SEVERITY/SEVERE</u>	<u>RATIO</u>
SCHOOL X	16	8	2:1
AVERAGE OF ALL OTHER SCHOOLS	9	.5	18:1

In the above Table XVI a comparison between School X and the average has been made (in distribution of stutterers according to severity of stuttering.) It can be seen that there is considerable difference between the ratio of Low/High to Severe stutterers in School X and the average school (i.e. 2:1 as compared to 18:1. Chi-squared analysis of the data indicated that the difference was very significant ($p < .005$) and therefore merited closer scrutiny.

In an attempt to determine which particular elements in the School X situation might be responsible for this exceptional difference, several factors were considered including size of school, home background, and location of school. Only the latter two proved to be noticeably different to other schools. With regard to location, the school was situated just within an army barracks, and in fact the school and camp shared a common entrance manned by an armed guard and sentries. Visitors to the school, including myself and Mrs. Nguluwe, were stopped at the entrance and had to explain the purpose of our visit to the soldiers on duty. Frequently the headmaster would be

sent for to establish one's identity. The children themselves were allowed to move freely in and out of the gate.

As regards family background, although exact figures were not readily available, according to the headmaster, approximately 75% of the children lived in the barracks (father or close relative was a soldier).

From this information, one could speculate that the type of stuttering experienced by children in this particular school is probably more of a reaction to a potentially stressful environment. Although no studies have been done in this area, one would imagine that life in an army barracks is not the ideal place for a child and that the atmosphere of regimentation and discipline combined with the constant exposure to all the paraphanelia of military routine could have deleterious effects on the home atmosphere.

Looking for schools with which to compare School X, the nearest in proximity (School Y) was situated at the other side of the barracks, but entry was separate from the barracks itself. Here, however, according to the Deputy Headmaster, the percentage of children from the camp was only about 14% and the frequency of severity was in no way remarkable (apart from being below average) as shown in Table XVII.

TABLE XVII

BREAKDOWN OF INCIDENCE ACCORDING TO SEVERITY: SCHOOL Y

	<u>LOW</u>	<u>LOW/MODERATE</u>	<u>MODERATE</u>	<u>MODERATE/HIGH</u>	<u>HIGH</u>	<u>SEVERE</u>
NO. OF STUTTERERS	4	0	0	0	1	0
% OF TOTAL STUTTERERS	80%	0	0	0	20%	0

Total School Population - 1,168

If the sole factor determining the high incidence in School X was home background, one would expect that as School Y does take 14% of its children from an army environment, the incidence and severity of stutterers would be somewhat higher than in most schools. This, however, is not the case and in fact the incidence in terms of frequency and severity of stuttering is exceptionally low compared with most other primary schools. Comparing the School X and School Y figures, one could hypothesise that although home environment is probably an important factor in influencing the incidence of stuttering, location of the school would also appear to play a significant role. As has been pointed out, School X was dominated by the barracks which made itself felt at all times. For example, soldiers were even strolling up and down outside classrooms while classes were in progress, whereas although School Y was also on the fringes of the barracks, entrance was separate, and, within the school confines, the proximity of the barracks was not so obvious.

The only other school which could be included in this comparison was School Z, situated outside the city, on the fringes of police and paramilitary camps. Like School X, the majority of children came from within the camps with parents/relative being either soldiers or policemen. Here, the incidence of stuttering was found to be slightly below average (7), but as the total school population was also below average (967) one could consider the incidence within the average range.

TABLE XVIII

BREAKDOWN OF INCIDENCE ACCORDING TO SEVERITY: SCHOOL Z

	<u>LOW</u>	<u>LOW/MODERATE</u>	<u>MODERATE</u>	<u>MODERATE/HIGH</u>	<u>HIGH</u>	<u>SEVERE</u>
NO. OF STUTTERERS	4	2	1	0	0	0
% OF TOTAL STUTTERERS	57%	29%	14%	0	0	0

Total School Population - 967

From the above Table it can be seen that like School Y, the severity of stuttering in School Z is relatively low. Unlike School X, although the majority of children came from backgrounds with a fair degree of similarity (if one can validly draw parallels between army, paramilitary and police camp life) the children in School Z showed no particular tendency to stutter. In location, School Z was clearly separate from the camps.

Thus, looking at both the School Y and Z results combined, one would be inclined to place lesser emphasis on home environment influences and give more weight to the school environment which is

unique to School X. On the six occasions that I visited the school, I was struck each time by the atmosphere of the school which I did not find in other schools (though here as in most other schools staff/pupil relationships seem normal and the headmaster was extremely pleasant and co-operative). This I felt was directly related to the presence of soldiers within and near to the school compound, the continual passage of heavy vehicles with their accompanying noise and other concomitants of army routine.

Whether or not this environment affects other areas of the child's functioning and development would be interesting to find out. For example, how does academic performance compare with other schools; what is the comparative incidence of behavioural disorders, emotional disturbances etc.? However, these questions must at present remain unanswered, but if location of this school is the critical factor in adversely affecting the language competence of so many children, perhaps the situation could be improved simply by sealing off the school from the barracks and giving it a separate entrance (as in School Y).

9. Secondary Symptoms

In common with the majority of stutterers, the Zambian group showed typical secondary symptoms of effort, struggle and contortion which either accompany or precede the disturbed speech. Although Aron (1959) described the secondary symptoms of his South African sample as more "unrefined, bizarre or unsophisticated" compared to European stutterers, the symptoms observed in the

present study seemed no more exaggerated than those reported in Western literature. These include facial grimaces, raised eyebrows, mouth distortions, swallowing, blowing, shoulder raising, hand banging/clapping, and less frequently gross movements of the legs and arms. As described in other studies, these symptoms seemed either to act as a "triggering" mechanism and apparently helped to release the first blocked sound or served to keep the stutter "at bay". Also, as predicted, such symptoms were less evident in the younger stutterer and seemed to increase in frequency and complexity as the stuttering became more entrenched.

Among the more interesting examples was one child who substituted all "danger" sounds with a very loud "teeth rattle". When questioned, following the test, he said that this response gives him confidence and allows him to carry on with an utterance.

In addition to such symptoms of "avoidance", several children used the fairly common device of turning a sentence round, or abbreviation (omitting certain words - a kind of telescopic speech) in order to avoid sounds they anticipated as being stutter-prone. For example one stutterer said that "Ati" in Nyanja and "When" in English were particularly "dangerous" and that he deliberately avoided them.

10. Other Speech Defects

As the questionnaire distributed to teachers in the first part of the survey asked for names of children with any form of speech difficulty, it is possible to make a brief summary of speech abnormalities (other than stuttering) which were discovered during the initial interviews.

Of the 1,265 children referred by teachers with reported speech defects, it was found that 378 did not have any apparent speech problems but further enquiry revealed that the majority of these had either learning problems, were described as "very nervous" or withdrawn, or suffered from specific behavioural disorders.

TABLE XIX

NATURE AND FREQUENCY OF SPEECH DISORDER (EXCLUDING STUTTERING)

<u>DISORDER</u>	<u>FREQUENCY</u>
Lisping	41
Hesitating	37
Very slight repetition (not frequent enough to be classified as "Low" Stuttering)	36
Poor articulation	26
Gruffness	21
Very quiety/softly spoken	21
Speech very slow	18
Hoarseness	12
"Babyish" speech	10
Speech very rapid (cluttering)	10
Nasality	10
Mouthing words before speaking	7
Infrequent whole word repetition	5
Tongue protruding when speaking	4
Jerky, clipped speech	2
Doesn't use tongue when speaking	2
Curls lip over when speaking	1
TOTAL	<hr/> 264

It was found that the majority of these defects were only relatively mild and only a handful of children appeared to be in any way significantly handicapped by their impediment. Of the remaining referrals (excluding stutterers),

- 12 children were found to be merely reluctant to speak and when they did so, speech was normal
- 16 children had merely problems with spoken English and were fluent in their mother tongue
- 2 children had specific reading difficulties
- 4 children had no speech at all.

As some of the children in the above groups also exhibited other symptoms suggestive of subnormality or emotional maladjustment, the names of these children were forwarded to the Ministry of Education for further assessment. Table XX summarises the final classification (following screening) of all 1,265 children who had been referred by teachers as suffering from speech defects.

TABLE XX

FREQUENCY OF VARIOUS SPEECH DEFECTS (IF ANY) IN REFERRED POPULATION

<u>TYPE OF DISORDER (IF ANY)</u>	<u>FREQUENCY</u>
STUTTERING	589
MISCELLANEOUS SPEECH DEFECTS (see Table for details) XIX	264
OTHER LANGUAGE DIFFICULTIES (non-defective)	34
NO APPARENT SPEECH PROBLEM	378
TOTAL NUMBER SCREENED	1,265

As almost twice as many children were found to stutter compared to all other speech disorders combined (see Table XIX) this, as the most common speech disorder seems most worthy of attention should the health services run to speech therapy in the future. At the time of writing, although the University Teaching Hospital has a speech and hearing centre, therapy here is almost entirely devoted to the deaf and there is no speech therapist available for school children as a whole.

11. Summary of Results

As the implications of the various findings from this survey have been discussed within each section, no further comments will be made at this point and closing of the chapter will be confined to a summary of results.

a. Incidence; total population. It was found that out of a total school population of 60,782 primary and secondary school-children 589 were classified as stutterers. This represents an incidence of .97% of the total school population in the Lusaka Urban area.

b. Incidence: Primary/Secondary/Age. When the results of the present study were analysed it was found that although, as predicted from previous evidence, there was a marked increase in the incidence of stuttering with age, there was no such significant trend when comparing the primary and secondary groups and the increase observed was only a marginal .04%. From these conflicting results it was concluded that the stutterer was probably being

penalised for his handicap by a filtering out process at the secondary selection level.

c. Incidence and Level of Education. Further analysis of the primary results did indicate however that level of education appears to be a critical factor influencing the incidence of stuttering as there was a significant increase in incidence from Grades 1 to 7, though to what extent age and education are interacting is not clear.

d. Incidence and Sex. Sex was the most strongly related variable to stuttering and (following the universal trend) there proved to be significantly more male than female stutterers at all age levels (average ratio male to female being 3.8:1).

e. Incidence and Home Environment (in terms of housing conditions). Here again there was a strong relationship with stuttering, and results showed a marked increase in the incidence of stuttering with lowered standards of housing. The better the housing conditions, the lower the incidence, and vice versa. However, from the data it was impossible to determine exactly which factors are critical in causing this trend.

f. Incidence and First Language. No significant relationship was found between stuttering and first language of the speaker. However, as some of the Zambian languages are very closely related (in structure, vocabulary, pronunciation etc.) it was felt that these results do not necessarily indicate that there is no relationship between stuttering and the nature of a language.

g. Severity. The results of this study gave no support to the suggestion that degree of severity of stuttering is related to the sex of the stutterer, although, compared to previous studies the ratio of boys to girls decreases with age, indicating the possibility of more spontaneous remittance among the former. It was found that over half the total number of stutterers were only experiencing symptoms in a mild form but that 24% were stuttering to such an extent as to grossly impair normal communication. Although the incidence and range of different degrees of severity of the disorder was fairly similar across schools, there was one striking exception which was discussed in more detail, with particular emphasis on causation.

h. Secondary Symptoms. The secondary symptoms exhibited by the subjects of this study were in no way different to those described in the literature generally. They included the various symptoms of effort, struggle and contortion associated with the more advanced stages of the disorder and which apparently served the purpose of either "releasing" speech or avoidance.

i. Other Speech Defects. A brief summary was made of all other speech defects which were identified during the survey. Although these covered a wide range with lisping being the most frequent, the total number of children suffering from such disorders was only 264, i.e. an incidence of .42% of the total school population.

C H A P T E R F O U R

ANALYSIS OF PATTERNS OF STUTTERING IN THREE LANGUAGES:

AIMS AND METHOD

As this project was primarily intended to be a cross-cultural study of stuttering, it was decided that in addition to the survey, a more detailed analysis would be made of the stuttered speech of a selection of the total stuttering population already identified. This analysis would be limited to English and the local languages Nyanja and Bemba as according to a 1968 survey (Serpell, 1970) these latter represent the 2 major language groups in Lusaka and accounted for (at that time) approximately 60% of the primary school population.

1. Aims of the Analysis

a. It was hoped to establish whether the frequency of stuttering of a bi-lingual Zambian child differs in his first language and in English. In other words, is a Zambian stutterer stuttering more in his first language or in English (or is there no difference between the two languages). One could also hypothesise that children less competent in English (in the lower grades) would perhaps stutter more in this language than their more fluent counterparts in the upper grades - and thus attention will also be given to this problem.

b. The analysis was also aimed at determining whether the frequency of stuttering in Nyanja and Bemba is related to the position of the word in the sentence i.e. whether initial words in a sentence are more frequently stuttered on than any others

as indicated in other studies.

c. Finally, the analysis was intended to find out whether any particular sounds in Nyanja, Bemba and English are more stutter - prone than others. Western literature shows that certain sounds such as plosive consonants are particularly vulnerable to stuttering in English speakers.

Although in this particular study it was originally hoped to make direct comparisons between the three languages, this proved impracticable when it was realised that many of the sounds are not exactly identical across the languages. (For example, in English the plosive "p" does not necessarily involve aspiration e.g. pill (with aspiration)

spill (no aspiration)

whereas in Bemba the /p/ is usually soft. (Kashoki, 1968)

Consequently, the analysis was limited to a within language comparison, to determine whether there are any identifiable patterns of stuttering in each of these languages.

2. Method

a. Selection of Subjects. In selecting a sample of 40 out of the 589 stutterers, the following criteria were used:

- Subjects would be limited to those whose first language was Nyanja or Bemba. In those cases where parents came from different ethnic groups, first language was taken as the language the child was most familiar with, or language spoken in the home.

- There would be 10 subjects in each of the following age groups:

Group A - Ages 8/9 years

Group B - Ages 10/11 years

Group C - Ages 12/13 years

Group D - Ages 14/15 years

It was felt that inclusion of balanced age groups would be valid solely on the grounds that the patterns of stuttering would be more truly representative of the total population, as it has been claimed that stuttering symptoms change in the course of development (see Chapter 1, Section 1)

- Within each group, 5 subjects were Nyanja speaking and 5 Bemba speaking
- Subjects in the Low and Moderate ranges of severity were eliminated from selection which was confined to the Moderate/High and High groups. This selection was made on the basis that the frequency of symptoms of the former groups would be insufficient for analysis. In addition, subjects in the High/Severe and Severe groups were excluded as it was felt that obtaining sufficient speech for analysis would be extremely time consuming (e.g. in cases of acute prolongation and blockage) and that also the testing situation might cause a severe stutterer undue distress.

b. Selection of Speech Sample. After selection of subjects, the next problem involved decisions regarding the type of speech to be recorded. From earlier studies, it has been found that a stutterer will stutter more "normally" in free conversation, but that the frequency of stuttering is considerably reduced when he is required to read out loud (Andrews and Harris, 1964). Here, it was felt that use of free conversation alone would be unsatisfactory as one could not then guarantee that each subject would use the same words or sounds, and, as part of the analysis was concerned with the frequency of stuttering in terms of sound, a more controlled sample of speech was required.

As reading itself, apart from having the proven "disadvantage" of reducing the stutter, also presents problems of reading ability, this method too was considered unsatisfactory. It was finally decided that the only method which avoided the disadvantages of free conversation and reading and which provided a controlled sample of speech was one where the subject was required to repeat sentences from a spoken text.

The Nyanja texts were written by the research assistant involved in the survey, Mrs. P. Nguluwe, a Nyanja speaker, and Bemba texts were written by another research assistant Mr. B.G.M. Chikopela and Mrs. R. Mumbi, a secondary schoolteacher. These texts were then submitted for scrutiny to linguistic scholars at the Institute for African Studies and from their comments a few alterations were made, namely word substitution. Although one of the major criticisms was that the texts were in "town vernacular"

rather than the original pure form, as the sample of children were reared in town and did not originate from the rural areas, and consequently, as it was felt that they would be more familiar with the "impure" town version of their mother tongue, no attempt was made to substantially alter the texts (see Appendix C for texts).

In order to standardise administration, this text was pre-recorded and consisted of the following

- (i) 200 word text for Lower Grades (Grades 1, 2, 3, 4)
 - i) in Nyanja
 - ii) in Bemba
 - iii) in English
- (ii) 200 word text for Middle Grades (Grades 5, 6)
 - (in the three languages separately, as above)
- (iii) 200 word text for Upper Grades (Grade 7 and Form I)
 - (ditto)
- (iv) 200 word text for more advanced Secondary (Forms 2 to 5)
 - (ditto)

The texts were each approximately 200 words in length, as such a small segment of speech has been found to give an adequately representative sample of speech (Young and Prather, 1962 in Andrews and Harris, 1964).

The four levels of texts were in increasing difficulty in terms of vocabulary, sentence structure and syllabic length and were geared to level of education, for the most part being based on readers in use in the schools. Each 200 word text was divided into sentences of varying length (e.g. shorter sentences for the lower grades and vice versa).

Although, at first attempts were made to match the word lengths in each sentence across languages, this proved impossible and was eventually abandoned as too complex a task, particularly when discrepancies arose as to where a "word" begins and ends in the two Zambian languages. Finally, it was decided that matching across the three languages would be restricted to the following:

- The initial sound of each sentence was matched as closely as possible (at each age level) as in some cases, sounds were not exactly identical
- The syllabic length of each utterance was the same across languages.

(Full texts are given in Appendix C).

c. Recording Procedure. The vernacular texts were recorded by two of the Zambian authors already mentioned, but although initially I had intended to record the English versions myself, I decided on further consideration that as all the primary schoolchildren would be far more familiar with Zambian pronunciation of English, there would be less problems of understanding if this too were read by a Zambian.

Care was taken that the speed of each utterance was similar across languages and although this was slower than in ordinary speech, it was not so slow as to appear unnatural.

Brief instructions were included at the beginning of each recording as follows:

"I am going to say something in English (Nyanja, or Bemba).
Listen carefully.

When I have finished, you repeat what I have said".

Two practice sentences were given to ensure that instructions were understood. Each sentence was recorded twice followed by a long pause in the recording to allow adequate time for the subject's response. This response was simultaneously taped on another recorder.

d. Record of Response. In addition to taping the subjects' response, a written record was also made. This was done on record forms where each utterance had been broken down into syllables to facilitate accurate notation of where in each sentence the stutter occurred. There was also space for noting any secondary symptoms or other behaviours.

This dual method of recording responses was used for the following reasons:

- As all the recording would have to be done by myself alone (for practical reasons) it was felt that this method would serve as a double check and increase the reliability of the scoring
- If the speech had only been tape recorded, it would have been impossible to register any silent responses (e.g. blocks, secondary symptoms) or other behaviours
- Similarly, if the scoring had been limited to the written record, many stutterers could have been missed while distracted by secondary symptoms etc. or more particularly in cases where stuttering was very rapid and frequent. This did in fact prove to be the case in some instances when the tape revealed stutters

which had been omitted on the record form of subjects with an exceptionally high stuttering frequency.

e. Testing Procedure. Testing was carried out in a sound proof laboratory and procedurally, as has been described above, with subjects being tested separately. The order of presentation was counterbalanced, in other words, half the subjects were presented with the English text first, followed by their first language text, and for the other half, this order was reversed.

f. Problems of Procedure. Although, on the whole this part of the study was carried out without any major hitches, I did come up against some procedural difficulties which had not been anticipated. For example, when selection of subjects had been made according to the criteria mentioned, it was found in fact that only 63 of the 589 stutterers were eligible for selection. In other words, 526 subjects were excluded from selection for the following reasons:-

- if his first language was neither Nyanja or Bemba;
- if he was younger or older than the specified age range (8 years to 15 years);
- if his severity of stuttering fell within the Low, Moderate and Severe ranges.

40 of the remaining 63 were then chosen randomly from a total of 33 primary schools and 4 secondary schools. The final sample included 36 primary schoolchildren and 4 secondary schoolchildren. Although, as has already been noted, subjects were selected from the groups where the frequency of stuttering was relatively high, it was found that 12 of the subjects had to be rejected because the

frequency of stuttering in the testing situation was well below what was required and was in fact only at the Low rating level.

Why had these subjects been stuttering with high frequency in the initial interview and were no longer doing so? There were two possible explanations:

- As the interview was largely free conversation, the symptoms would probably be more at their normal level than in the more artificial testing situation, where repetition only was required. In such a situation, (as in reading), the stutterers would probably find it easier to "steady" himself, or "hang on" to the presented words. This negative *effect on the stutterer did in fact disappear when* following the test, subjects were asked "open" questions about personal history etc. (Stage 4) which involved more freedom of response. The frequency of stuttering was then similar to that noted in the initial interview.
- A second possible explanation is related to the following evidence where investigations on therapy (Bloodstein, 1949). have shown that two of the conditions which can reduce the frequency of the stutterer are firstly, situations where there is the minimal negative reaction to the stutterer and secondly, conditions of unusual stimulation generating fear. Both of these conditions could be said to potentially exist

in the speech recording situation, though from observation, only a small number of subjects showed any anxiety or fear reactions to the testing conditions. However, there was certainly minimal negative reaction to the stutterer.

Whatever the cause, as the frequency of stuttering of these 12 subjects was insufficient for analysis, 12 other subjects were selected. Again, out of these, 3 had to be eliminated for similar reasons but fortunately the final substitutes proved satisfactory.

Another subject was also rejected, this time because the testing situation seemed to have the reverse adverse effects and increased the frequency of his repetitions and the severity of his blocking to the extent that it took him almost five minutes to repeat the first sentence. Again, a substitute was found from the remaining small unselected but suitable sample.

All of the problems connected with selection of the text have already been mentioned and were mainly centred round "matching" of languages. However, combined, they meant that the scope of the linguistic analysis was considerably reduced.

C H A P T E R F I V E

ANALYSIS OF PATTERNS OF STUTTERING IN THREE LANGUAGES:

RESULTS AND IMPLICATIONS

Before presenting the results of this section, it should be noted that any comparative study involving English and Bantu languages gives rise to a variety of problems. In this particular study, for example, although it was initially hoped to test the hypothesis that the frequency of stuttering is significantly related to the length of the word, when confronted with the question of Bantu word division, this line of enquiry had to be terminated. Comparative linguistic studies by investigators such as Guthrie (1948, 1967) indicate that word division in most Bantu languages does not follow clearly defined rules (as in English) and that different types of word division can be practised within any one language. Similarly, considering the phonetical aspects of the analysis, many sounds which exist in English do not have any identical counterparts in the four Bantu languages, and vice versa. Consequently, in this respect it was ~~not possible~~ to make any direct comparisons across the languages and the phonetic work was restricted to a cross-sound comparison within each language group.

These are only two of many fundamental linguistic differences which cannot be discussed here, but of whose existence the reader should now be aware.

The results of the analysis have been divided into four sections in which the frequency of the stutter is considered in relation to specific variables. (See Chapter 4, Section 1). They will be presented as follows:-

1. Frequency of stuttering: First language versus second language
2. Frequency of stuttering: First words versus other words
3. Frequency of stuttering: Cross-sound comparison within each language group.
4. Summary of Results.

As in Chapter 3, a discussion of the results will be included in each section rather than later.

1. Frequency of Stuttering: First Language versus Second Language

Before comparing the frequency of stuttering in these bi-lingual (multi-lingual) children in terms of first language versus second, it would be appropriate at this point to briefly consider the broader issue of incidence of stuttering and bi-lingualism. To date, evidence in this area is very limited and in fact only one study could be found which was specifically directed to this problem. This was conducted by Truiss et al. (1937) and involved a survey of public schools in East Chicago, Indiana, U.S.A. 4,827 school-children were interviewed with ages ranging from 4 to 17 years. Of these 2,399 were English-speaking mono-linguals, 2,322 were bi-lingual (English and one European language) and 89 were polyglots (three to five languages). Examination of the children took the

form of a reading test and the results revealed proportions of stutterers in each group as follows:-

<u>Percentage of Stutterers</u>	<u>Group</u>
1.80%	Mono-lingual
2.80%	Bi-lingual
2.38%	Multi-lingual (Polyglot)

To summarise, it was found that there were significantly more stutterers among bi-linguals than English-speaking mono-linguals. However, the authors do point out that this trend may not be entirely due to bi-lingualism, and they suggest that other factors such as economic insecurity and emotional instability which are not uncommon in an immigrant population may be critical influences.

From such evidence, one could speculate that the incidence of stuttering among the Zambian population under consideration would probably be less if the children were not required to acquire such an alien language as English and that bi-lingualism could account for a significant proportion of stutterers. It is likely that knowledge of more than one related Bantu language has far less adverse effects on language fluency than the introduction of a totally unrelated language. However, such statements can only remain speculative until the nature of multi-lingualism in Zambia (as compared with the U.S.A. and elsewhere) has been explored more thoroughly. In the present study, it would have been impossible to find a Zambian matched control group of mono-linguals to assess the effects of bi-lingualism (multi-lingualism) on language fluency.

Any comparison with the small mono-lingual group of schoolchildren in Zambia (mainly English-speaking) would have been invalid as this particular group is by no means representative of the total population from which its members originate and is in fact a highly selected group in terms of class and home environment (factors alone which could affect the incidence). Consequently, although any proven relationship between stuttering and bi-lingualism would be of vital importance and usefulness, this line of enquiry is not practicable at the present time.

Finally, as the incidence of stuttering among Zambian bi-lingual (multi-lingual) children is approximately the same as that among Western mono-lingual children, it would seem that if there is a similar adverse relationship to that reported in the study by Truiss et al. (1937), its effects are much less extreme. The present results could also be tentatively interpreted as support of the view that Truiss' data reflects socio-economic rather than linguistic variables.

However, focussing in from the wider issue of incidence to the frequency of the stutter itself, although I could find no studies of a similar nature, I felt it would be useful to explore the possibility that the frequency of stuttering varies according to which language is being spoken (in a bi-lingual or multi-lingual person). In other words, from my contact with stuttering in the general survey, it seemed possible that the frequency of stuttering was not the same when the child was speaking in his first language as when he was speaking in English.

Such a line of investigation could possibly throw further light on the problem of bi-lingualism. It was anticipated that the bi-lingual child would probably experience more anxiety when expressing himself in English than in his own language which could in turn result in an increase of stuttering symptoms when speaking in English. (It should be noted at this stage that the languages used in this present study interact as a variable with certain socio-linguistic factors such as where the language has been learnt i.e. home versus school). However, turning to the results, although the overall trend was not as predicted and the frequency of stuttering in English was less than in the other (first) languages combined, this difference was only very slight and not significant (see Table XXI).

TABLE XXI

TOTAL NUMBER OF SYLLABLES STUTTERED: ENGLISH
VERSUS FIRST LANGUAGE

	<u>ENGLISH</u>	<u>FIRST LANGUAGE</u>
NO. OF SYLLABLES STUTTERED	1060	1091
<hr/>		
% SYLLABLES STUTTERED	8.18%	8.56%

Here one could hypothesise that although the English-speaking situation may be more stressful because of unfamiliarity, non-fluency etc., the first language could be more emotion-laden (more emotional associations) and could similarly affect the frequency.

Thus one would counteract the other and the frequency in both cases would tend to be the same.

Interestingly, when the data ~~were~~ broken down further with the English divided into two groups (English-Nyanja; English-Bemba) and the first language groups being considered separately, the trend was contradictory when comparing the two groups (see Table XXII).

TABLE XXII

TOTAL NUMBER AND % OF SYLLABLES STUTTERED: FIRST LANGUAGE VERSUS
SECOND LANGUAGE: NYANJA SPEAKERS VERSUS BEMBA SPEAKERS

	<u>FIRST LANGUAGE</u>		<u>%</u>	<u>ENGLISH</u>		<u>%</u>
NYANJA SPEAKERS	550	=	8.79%	475	=	7.33%
BEMBA SPEAKERS	541	=	8.32%	585	=	9.03%

From the above Table XXII it would seem that Nyanja speakers tend to stutter more in their own language than Bemba speakers whereas Bemba speakers stutter more when speaking English. However, a 2 x 2 Analysis of Variance of the above results indicated that these differences were not significant (at the .05 level) and consequently, one can only conclude that the frequency of stuttering symptoms is not significantly affected by whether a bi-lingual Zambian stutterer is speaking in his mother tongue or in English. These results were also supported by replies from the older subjects in the survey who were asked (informally) which language they stuttered in most. The majority of replies indicated that there was no difference between languages. Similarly, although in Chapter 4, Section 1d, it

was hypothesised that children less competent in English (in the lower grades) would stutter more in this language than their more fluent counterparts, a comparison between children in the lower and upper grades showed no difference in this respect. Again, this would suggest that acquisition of a second language does not increase the frequency of stuttering symptoms, though as has already been pointed out, this does not rule out the possibility that in some cases the disorder itself is initiated by the demands of bilingualism.

2. Frequency of Stuttering: First Words versus Other Words

It is generally held that one of the major determinants within language itself which significantly affects the frequency of a stutter is the position of a word in an utterance. According to all available evidence it appears that initial word in any utterance are more vulnerable than any others. However, as all such evidence has been obtained from English-speaking mono-lingual stutterers it was decided to assess the patterns of stuttering in this Zambian multi-lingual sample to determine whether initial words are similarly prone to speech disturbance - both in first language and in English.

The results of this analysis are tabulated below.

TABLE XXIII

FREQUENCY OF STUTTERING: FIRST WORDS VERSUS OTHER WORDS*

	<u>MEAN PERCENTAGE OF WORDS STUTTERED</u>	
	<u>FIRST WORDS</u>	<u>OTHER WORDS</u>
NYANJA	28.91	17.85
BEMBA	24.03	20.76
ENGLISH (NYANJA SPEAKERS)	24.15	8.95
ENGLISH (BEMBA SPEAKERS)	27.64	10.92

*For explanation of why this analysis involved "words" rather than syllables, see Appendix D.

It is clear from Table XXIII that the frequencies in all four groups follows the predicted trend. T Tests of the data indicated that this difference between First Words and Other Words was significant in all cases but the Bemba group, and particularly in the English-speaking groups.

TABLE XXIV

<u>LANGUAGE GROUP</u>	<u>T STATISTIC</u>	<u>DEGREES OF FREEDOM</u>	<u>LEVEL OF SIGNIFICANCE</u>
NYANJA	1.7791	38	$p < .1$
BEMBA	0.4609	38	NOT SIGNIFICANT
ENGLISH (NYANJA GROUP)	3.2502	38	$p < .01$
ENGLISH (BEMBA GROUP)	2.7333	38	$p < .01$

As there is no discrepancy between these results and previous evidence no detailed discussion is necessary. From observation it is evident that one of the major problems for the stutterer is the inability to "trigger off" speech and once speech is successfully initiated, this is often followed by relative fluency. These results indicate that this problem is particularly pronounced when speaking a foreign language, which could suggest some form of anxiety block (possibly related to lack of confidence) which disappears when speech has been released. Wingate (1967) hypothesises that the initial sound is the most frequent locus of stuttering because it is a focal point of attack requiring the energising of motor function, often from a state of inactivity. This pattern could be identified most strikingly in four of the subjects who only stuttered on initial words of each utterance and were 100% fluent on all other words.

3. Frequency of Stuttering: Cross-sound Comparison within each Language Group

Although in the past, most investigations into the phenomenon of stuttering have emphasised the existence of considerable variations among individual stutterers as regards the cue sound (or word) which evokes a stutter, it has been generally observed that consonants (particularly plosives) are more stutter-prone than vowels (Bloodstein, 1959). Various suggestions have been made to explain this trend and among the most popular is the one by Bloodstein (1959) who argues that the problem probably lies in the

fact that consonants (unlike vowels) involve both a greater measure of articulatory tension and impedance of the airstream.

However, more recent investigations into the phonetic influences on stuttering (Soderberg, 1962; Quarrington et al., 1962) have raised some doubts about the reliability of these earlier statements. For example, Soderberg (1962) criticises previous phonetic studies for not controlling known critical variables such as grammatical function, position of word, and word length, and also the fact that factors such as frequency of occurrence of words in the English language and reading ability of subjects were not taken into account. In his own study, which attempts to establish the relationship of stuttering and the phonetic characteristics of a word, having controlled all the above-mentioned variables, he compared vowels and two kinds of consonants (voiced and voiceless). The results indicated that there was no significant difference among vowels and voiced/voiceless consonants with regard to mean frequency of stuttering instances and mean duration of stuttering instances. These findings did not support previous studies which had found significantly greater frequency of stuttering associated with consonants rather than vowels.

Although in the present study not all the same variables were controlled (as in the Soderberg study), the problem of reading ability was eliminated by the repetition method used and the syllabic length of each utterance was controlled. It would have been impossible to match frequency of word or sound usage within each language group, but this factor will be taken into consideration later in this chapter.

a. Results

As predicted, there was considerable variation among individuals as to which kind of sound initiated a stutter. For example, one subject only stuttered on [e] and [ʌ], whereas another found nasal onsloughs (see Section c for definition) his only stumbling block.

The phonetic analysis of the results can be seen in Table XXV which lists sounds which were most frequently stuttered on in each of the three languages. Sounds which were stuttered on with a frequency of less than 15% (of total frequency in the text) have been omitted.

TABLE XXV

SOUNDS MOST FREQUENTLY STUTTERED: PERCENTAGE OF TOTAL NUMBER
IN EACH SOUND GROUP (15% PLUS) *

<u>NYANJA</u>	<u>BEMBA</u>	<u>ENGLISH</u> <u>(NYANJA-SPEAKERS)</u>	<u>ENGLISH</u> <u>(BEMBA-SPEAKERS)</u>
[nd] - 28%	[kw] - 64%	[e] - 35%	[e] - 40%
[f] - 19%	[e] - 40%		[ʌ] - 33%
[u:] - 18%	[ŋg] - 33%		[ai] - 20%
[e] - 15%			[h] - 15%
	[nj] - 28%	[ʌ] - 21%	[kw] - 15%
	[a] - 18%	[kw] - 20%	
	[o] - 18%	[k] - 17%	
	[nd] - 17%	[ch] - 17%	
	[t] - 16%	[ʃ] - 15%	

(* See Appendix E for comment on vowels)

Below is a guide to phonetic symbols in the above Table which are not self-explanatory. The English reference words are based on a "Standard English" pronunciation.

KEY TO PHONETIC SYMBOLS

NYANJA

u: almost as in "soon"

BEMBA

a similar to in English (e.g. hut)

ə similar to : in English (e.g. saw)

ENGLISH

e as in "let"

as in "hut"

as in "box"

ai as in "high"

b. Vowels

Looking at the above results, perhaps the most striking finding is that vowels are so prominent, particularly in the English-speaking groups. It would appear that both Bemba and Nyanja-speakers, when speaking English, have most difficulty with vowels rather than consonants. In both groups the vowels e and are stuttered on more frequently than any other sound. Although it was impossible to pinpoint reasons for this unexpected trend there are various possible explanations which either separately or combined

could account for it.

- (i) Neither of these vowel sounds exist (in an identical form) in either of the Bantu languages and could therefore present problems to the Zambian speaker. However, as this applied to many English phonemes (which do not appear in the above lists), this alone could not account for e and being particularly vulnerable.
- (ii) Both of these vowels are short compared to most vowels in Nyanja and Bemba which are held for longer periods of time.
- (iii) Another possible reason for the apparent frequency of stuttering on vowels is that they may be phonetically preceded by a glottal stop and that the stuttering is not on a vowel at all but on the glottal stop which is a consonant (see Appendix E). This hypothesis could only have been tested by detailed scrutiny of the tape recordings which were unfortunately not available when this line of enquiry was suggested.
- (iv) Another possible explanation (which could also apply to most other sounds in the Table) is the frequency of occurrence of the sounds in the language. As Soderberg (1962) has pointed out, the familiarity of a particular sound could be critical for the

stutterer and it seems that the rater the sound (in a language), the greater the tendency to stutter.

Although I could not locate any literature which lists sounds in terms of frequency in the different languages, as, in the present study, the texts had been compiled as typical samples of speech, the sounds will be considered in relation to their frequency of occurrence in the text (which hopefully reflects approximate frequency of occurrence in the languages.)

Frequency was rated according to the following scales:-

- Low - Frequency of less than 3% of total number of sounds in text.
- Moderate - Frequency of 3% to 6% of total number of sounds in text.
- High - Frequency of 7% plus...

TABLE XXVI

MOST FREQUENTLY STUTTERED SOUNDS* AND THEIR
FREQUENCY OF OCCURRENCE IN THE TEXT

<u>NYANJA</u>	<u>BEMBA</u>	<u>ENGLISH</u> <u>(NYANJA-SPEAKERS)</u>	<u>ENGLISH</u> <u>(BEMBA-SPEAKERS)</u>
[nd] - moderate	[kw] - low	[e] - moderate	[e] - moderate
[f] - low	[e] - low	[ʌ] - low	[ʌ] - low
[u:] - high	[ŋg] - low	[kw] - low	[ai] - low
[e] - low	[nj] - low	[k] - low	[h] - low
	[a] - high	[ch] - low	[kw] - low
	[o] - moderate	[ɔ] - low	
	[nd] - low		
	[t] - high		

(*See Appendix E)

From Table XXVI, it can be seen that 15/23 (65%) of the sounds occur relatively infrequently in the text (i.e. are rated as low). [e] and [ʌ] which have been under discussion rated respectively moderate and low in English, and [e] is rated low both in Nyanja and Bemba. Only 3/23 sounds occurred very frequently. Looking at the dominant trend, one could hypothesise that if these texts are fairly representative samples of the languages from which they originate, then frequency of stuttering appears to be inversely related to the frequency of occurrence of a sound in the language, with rarer sounds being more prone to stuttering.

c. Nasal Onslought

Returning to Table XXV, another prominent finding is that sounds which involve a combination of [n] or [ŋ] and a consonant (known as nasal onsloughts) appear to present difficulty for the Zambian stutterer (particularly, Bemba speakers). [nd] is the most stutter-prone of all sounds for the Nyanja speaker (28%) whereas although it does present problems for the Bemba speaker (17%), he seems to have more trouble with [ŋg] (33%) and [nj] (28%). Looking at these sounds in terms of frequency of occurrence in the language, none of the nasal onsloughts have a high frequency of occurrence. In Nyanja, [nd] has been rated as of moderate frequency and in Bemba all three nasal onsloughts are in the low category.

It is also possible that motor movements involved in the formation of these sounds could contribute to their vulnerability for the stutterer. One would imagine that the complex combination of movements of the various parts of the mouth would be much more difficult to execute than single consonants alone and that anyone with a speech impediment could readily be inhibited in their pronunciation. Also as consonant clusters (successive consonants) do not exist in the Bantu languages (apart from nasal onsloughts and consonants followed by semi-vowels such as [w] and [y]) their rarity could possibly partly account for this trend.

d. [kw]

Again, as with the nasal onslought, the consonant cluster (kw) seems to provide difficulty for both groups, and again, in particular the Bemba speakers for whom it represents the most

difficult sound of all (64%). (Although [kw] does not appear in the Nyanja list, it only just fell short at 14%.) This sound also appears to present a problem for both groups when speaking English. As before, I can only put forward tentative explanations for the vulnerability of this sound:-

- like the nasal onslought, there is possibly some motor difficulty in combining the [k] and [w] sounds
- again, the problem could be one of relative unfamiliarity as this sound occurs very infrequently in all the texts (see Table XXVI)
- also, as has already been pointed out, consonant clusters are relatively rare in the Bantu languages. Although this theory could have been tested still further, theft of the raw data (see Appendix D) prevented such an analysis being made.

e. Plosive Consonants

As in Soderberg's (1962) study, the present data does not give any firm support for earlier "plosive-vulnerability" theories. No pure plosives occur in either the Nyanja or English-speaking (Bemba) lists, and in the other two, only [t] (16%) and [k] (17%) appear. Thus, these results would indicate that plosive consonants are not significantly more stutter-prone than vowel sounds and that in fact, the reverse is probably more likely. (The other four plosives [p], [b], [d], [g], do not appear in any of the lists). It is interesting that both [t] and [k] are what is known as "voiceless" plosives, (as

opposed to their 'voiced' counterparts [d] and [g] respectively) and it is not impossible that this factor contributes to their difficulty for the stutterer.

Although several other sounds are included in the lists, as they only occur in relative isolation, no detailed comments will be made on them individually. Most of these sounds are vowels; [a], [o], [u], and the remaining two consonants [f] and [ch] present problems for the Nyanja speaker only.

Before summarising the results, I must emphasise that although the findings in this particular section have in some ways proved unusual or unexpected compared to previous studies, it is not within the scope of this particular study to comment in more depth on causation. A full scale linguistic study would have to be made before any concrete inferences could be drawn. However, at least these results do support Soderberg's (1962) doubts about the vulnerability of the consonant for the stutterer, and in fact they seem to indicate that particularly when speaking English, vowels present more of a problem for the Nyanja/Bemba-speaking Zambian stutterer.

5. Summary of Results

The results of the analyses of patterns of stuttering in Nyanja, Bemba and English can be summarised as follows:

a. An analysis of frequency of stuttering comparing first and second languages indicated that frequency of symptoms is not significantly affected by whether a bi-lingual Zambian stutterer is speaking in his first language or in English. In other words, with

the population under consideration, there was no significant relationship between stuttering frequency and language spoken.

b. In comparing the relationship between frequency of stuttering and the position of a "word" in an utterance, it was found that this relationship was significant. As predicted by previous evidence, initial words/sounds in an utterance were more frequently stuttered on than those situated in any other position in the utterance.

c. The cross-sound comparison within each language group did not clearly support the bulk of previous evidence which underlines consonants as being more stutter-prone than vowels, and it was found that vowels seemed to be equally, if not more problematic for the stutterer, particularly when speaking English. Various tentative suggestions were put forward to account for this unexpected trend; notably relative infrequency of the vulnerable sounds in the different languages; non-existence of particular sounds in the Bantu languages; motor problems involved in emittance of certain sounds and the possibility of glottal stop rather than vowel stuttering (see also Appendix E). The scope of this part of the analysis did not permit more definite conclusions.

C H A P T E R S I X

LATERALITY: INTELLIGENCE (ACADEMIC PERFORMANCE):

SITUATIONAL ENVIRONMENT

Prior to the speech recording described in Chapter 4, each child was given a laterality test and required to answer a questionnaire relating to personal history and school performance (see Appendix A). Classteachers were also required to fill in the same questionnaire as it was felt that in many cases, information from the child was too unreliable.

1. Laterality

In the past, stuttering was believed to be related to incomplete cerebral dominance and there was a supposed causal relationship between ambidexterity, change of handedness and stuttering. However, more recent systematic studies have found no correlation between stuttering and laterality disorders and it has been generally shown that the handedness of stutterers does not significantly vary from that of non-stutterers. Nevertheless, as most current studies of stuttering still include some measure of laterality and as I could find no similar attempted correlation in the African literature, a laterality test was also included in this project.

According to Western statistical data (British and American) approximately 5 to 6% of the population is left-handed (Binley, 1958, cited in Verhaegen and Ntumba, 1964). Other studies (e.g.

Dennis, 1958, cited by same authors) have, however, indicated that the frequency of handedness varies from area to area. In Africa, in fact, from the limited amount of evidence it would seem that the frequency of left-handedness is considerably lower than that of the West. For example, Verhaegen and Ntumba (1964) in a study of handedness among 1047 schoolchildren in Katanga (ages ranging from 6 to 13 years) found that only .5% of the children were left-handed.

It has been hypothesised that the more permissive the society the greater the proportion of left-handers. For example, Dawson (1972) describing the Eskimos and "their extremely permissive socialisation" points out that approximately 11.3% of the population are left-handed, whereas, in contrast the Chinese Hakka who have a tradition of much harsher socialisation have a left-handed population of around only 1.5%. A similar explanation is put forward in the Katanga study where the authors suggest that left-handedness is possibly very rare because African parents train their children to become right handed and punish them if they use the left-hand for eating, shaking hands etc. From informal enquiries among Zambian parents, a similar practice is also prevalent in Zambia where use of the left-hand in certain situations is also discouraged from an early age. In addition, as Zambia and Katanga are so closely related (ethnically and geographically) one would anticipate that the proportion of left-handers is very likely to be similarly low in Zambia. Unfortunately, however, to date there has been no large scale study of handedness in Zambia so it would be impossible here to estimate whether the direction of handedness in this sample of

stutterers is typical of the population as a whole. Nevertheless, if such a general survey is carried out at a future date, it would be possible to make some comparison with these results.

Laterality Test

The Laterality Test was of a fairly standard form (see Table XXVII) and involved eight different tasks which are usually carried out with the dominant hand. Classification of direction of handedness was determined as follows:

Right-handed (Score 6/8-8/8 in favour of right hand)

Left-handed (Score 6/8-8/8 in favour of left hand)

Ambi-dextrous (Scores 3/8; 4/8; 5/8)

TABLE XXVII

LATERALITY TESTS: FREQUENCY OF RESPONSE (RIGHT HAND VERSUS LEFT)

<u>TASK</u>	<u>RIGHT-HAND RESPONSE</u>	<u>LEFT-HAND RESPONSE</u>
1. WRITE NAME	40	0
2. CATCH PAPER BALL	40	0
3. THROW PAPER BALL	40	0
4. COMB HAIR	40	0
5. USE SCISSORS	40	0
6. TURN DOOR KNOB	27	13*
7. UNSCREW BOTTLE	36	4
8. RE-SCREW BOTTLE	37	3

*It should be noted that the door handle was situated on the right hand side of the door and its position was much more convenient for use with the left hand. In fact, observation of other visitors to the room showed that the majority used their left hand when opening and closing this door. This would indicate that this particular test was weighted in favour of the left-hand and has possibly invalidly increased the left-hand scores.

The results from Table XXVII can be interpreted as follows:-

27 subjects scored 8/8 (right hand) i.e. 67% performed all tasks	with right hand
9 subjects scored 7/8 (right hand) i.e. 27% performed all tasks	except turning door handle*
	with right hand
1 subject scored 6/8 (right hand) i.e. 3% turned door handle*	and unscrewed bottle with left
	hand
3 subjects scored 5/8 (right hand) i.e. 8% turned door handle and	unscrewed and rescrewed bottle
	with left hand.

In other words, out of the sample of 40, no child was classified as left-handed, and 37 (92%) were clearly right-handed. Although it is possible that 3 of the subjects were ambi-dexterous, because of the bias of one of the tasks and the fact that the majority of the tasks were performed with the right hand, the reliability of this

figure is uncertain and it is possible again that these children were right-handers.

To summarise, no child out of this sample of 40 stutterers could be described as left-handed if the criteria is that performance of more than half the items in the above laterality test in one direction indicates handedness. Thus the frequency of left-handers in this sample was zero, however, as the sample was extremely small, one cannot say whether this is the trend in the stuttering population as a whole. However, if the incidence of left-handedness is at all similar to that of Katanga (i.e. 5/1047) it would be expected that in a sample of 40 no left-handers would be found. (One would predict .2 in every 40). However, to conclude, whatever the frequency in the general population, from these results it would seem that there is likely to be no significant positive correlation between stuttering and left-handedness.

2. Intelligence and Academic Performance

Although it is claimed that there is a relationship between intelligence and frequency of stuttering, the evidence in this area is somewhat contradictory and not always in the same direction. Most of the data obtained from clinical experience indicates that stuttering occurs more frequently among those of above-average intelligence, but Andrews and Harris (1964) offer a plausible explanation of this trend (which they consider invalid) in that this group are more frequently from homes where parents place high value on the ability to communicate efficiently and who would therefore

be more likely to seek treatment. Thus, they suggest that stutterers who take advantage of available therapeutic amenities do not represent the total stuttering population, and, in fact, there is limited but consistent evidence that the incidence of stuttering is greater at the lower end of the intellectual scale - particularly from educationally subnormal downwards. Consequently, although in any large sample of stutterers there may be a fair proportion of stutterers of high intelligence, the average intelligence of the group will generally be below normal. For example, in Andrews and Harris (1964) Newcastle-on-Tyne study, in the group of 80 stutterers it was found that in comparison to the non-stuttering control group, general level of intelligence was lower. The difference in intelligence (as measured by the Wechsler Intelligence Scale for Children) between the stutterers and non-stutterers was found to be significant and it was concluded that stuttering is more common among children with an intellectual deficit.

In this present study, no systematic assessment of intelligence was made (to date there is no Zambian standardised test of intelligence and intellectual level was rated in terms of academic performance. The questionnaire (Appendix A) issued to classteachers included the following:-

13. Judging from his marks on tests etc., what position does he hold in class (e.g. 10th out of 45 children

14. In intelligence would you describe him as:-

Above Average

Average (tick the most appropriate)

Below Average

The results of the 36 completed questionnaires (to the above questions) were as follows:-

TABLE XXVII

REPORTED LEVEL OF INTELLIGENCE

	<u>BELOW AVERAGE</u>	<u>AVERAGE</u>	<u>ABOVE AVERAGE</u>
FREQUENCY	6	14	16
PERCENTAGE	16%	41%	43%

(Class enrolment ranged from 40 to 50)

It was found that there was no contradiction between reported position in class and teacher ratings.

According to Table XXVIII, it might seem as if the trend here is the reverse of that predicted by previous evidence (i.e. that among stutterers, there more children of high than of low intelligence). However, one must bear in mind that (as has already been mentioned) primary education in Zambia is still not universal and involves a process of selection. Parents from more prosperous homes are more likely to value education more highly than those from poorer homes and to be more persistent in their attempts

to register their children at school. Also, most children who are clearly sub-normal will probably have more difficulty in gaining admission to normal primary schools. Consequently the current school population can not be said to be totally representative of the school age population in intelligence, though this does not of course explain why stutterers include more children of high intelligence relative to the school-going population. Another alternative explanation is on the basis of sex; that is, as there were a larger proportion of boys in the sample and as the trend in Zambia at present seems to be that boys tend to do better than girls at school, then more academically above average might be expected in the sample.

To conclude, as the sample is so small, is not fully representative of the population from which it originates and as the methods of rating intelligence were based only on reported academic performance, a much larger and more systematic study would be necessary to arrive at firmer conclusions. It is interesting, however, that from these results it would seem that in this sample, stuttering does not appear to be having any marked effects on school performances. This conclusion was supported by the data from Question 12 (see Questionnaire, Appendix A):

"Is the stuttering having any bad effects on his progress at school?"

The results were as follows (from a total of 32 completed questions).

TABLE XXIX

EFFECTS OF STUTTERING ON ACADEMIC PROGRESS

	<u>NO EFFECTS</u>	<u>ADVERSE EFFECTS</u>	<u>MINIMAL ADVERSE EFFECTS IN SPECIFIC SITUATIONS ONLY*</u>	<u>UNSURE</u>
FREQUENCY	16	10	4	2
PERCENTAGE	50%	32%	12%	6%

*Example - "affects oral reading ability only."

Thus, from both Tables XXVIII and XXIX it would seem that Stuttering does not adversely affect school performance in general, in the majority of cases (and consequently there would be no justification for any filtering out of stutterers at secondary selection (see p.30)). In fact, in some cases, is it possible that the disorder can enhance progress and performance? Perhaps a clue to the higher level trend lies in one of the teacher replies:

"No, it is not having any bad effects on his performance.

I think that it makes him try harder to catch up with his friends".

This comment was written of a stuttering child who was consistently 1st in a class of 50 and one could suggest that, with the exception of severe case of stuttering where there is a marked reduction in the ability to communicate, the stutterer possibly makes extra efforts in school in order to compensate for his disability.

3. Frequency of stuttering across different situations

Another area of investigation which was briefly touched on in the Questionnaire was related to frequency of stuttering and situation environment. Question 10 of the Questionnaire (Appendix A) required the child to say whether he stutters more, less, or the same in 3 different situations, namely "At home", "At school" or "With friends". The results were as follows:-

TABLE XXX

FREQUENCY OF STUTTERING IN DIFFERENT SITUATIONS

	<u>STUTTERS MORE</u> <u>AT HOME</u>	<u>STUTTERS MORE</u> <u>IN SCHOOL</u>	<u>STUTTERS MORE</u> <u>WITH FRIENDS</u>	<u>NO DIFFERENCE:</u> <u>SAME IN ALL</u> <u>SITUATIONS</u>
FREQUENCY	4	16	1	15
PERCENTAGE	11%	44%	3%	42%

These results indicate that almost half the group stutter more frequently at school than in the other situations, though almost the same proportion experienced no difference in any of the situations. These results are in the same direction as those of the Newcastle-on-Tyne study (Andrews and Harris, 1964) where when the children were asked which situation they found particularly difficult for speech, gave replies falling into two main categories, namely:

20% found speaking to parents at home the most difficult situation.

80% said speaking to the teacher at school was the most difficult situation.

The authors comment on the fact that there is a surprising lack of identification of other "difficult" situations.

Returning to the results in Table XXX, it is not surprising that the school situation with its greater demand on oral competence would represent the more stressful situation to the stutterer. As the study by Bloodstein (1949) (mentioned already in Chapter 4,

Section f) indicates, those situations where there is maximum negative reaction to the stutter can increase its frequency. The school environment could be described as such a situation, as apart from the verbal demands of the classroom, from remarks made by many of the subjects it seems that they are subject to a certain amount of mockery from classmates and other children at school. This is probably not the case with their close friends who could probably be attributed with a more minimal negative reaction (causing reduction in frequency) and similarly, at home. This could account for the relatively low frequency (3% and 11% respectively) in these latter two situations.

No attempt has been made to either comment on or analyse any of the other data from the questionnaire as much of this information was considered too unreliable - without verification from other sources (Questions 3, 4, 5, 6, 7, 11). These questions were initially included in case the project was to be expanded to include home visits etc.

C H A P T E R S E V E N

GENERAL SUMMARY

As the results of the survey and speech analysis have already been summarised separately in Chapters 3 and 5 respectively, the overall results need only be presented here in an abbreviated form.

The main findings from the Survey were that:-

- the incidence of stuttering is approximately the same (in the population under consideration) as that reported in Western literature;
- as predicted by previous evidence, the incidence of stuttering varies significantly according to age and level of education, but the predicted increase from primary to secondary level was not evident;
- there were significantly more stutterers among the male population, as predicted;
- there was an inverse relationship with standard of housing;
- in comparing stutterers from the four main Zambian language groups there proved to be no significant relationships between stuttering and first language of the speakers;
- severity of stuttering was not found to be significantly related to the sex of the individual;

- secondary symptoms were as described in previous literature;
- .42 of the school population were found to be suffering from various other speech defects.

The results of the speech analysis on the sample of forty indicated that:-

- frequency of stuttering symptoms is not affected by whether a bi-lingual Zambian stutterer is speaking in his native tongue or in English;
- as predicted, frequency of symptoms is significantly related to position of a word/sound in an utterance;
- the cross-sound comparison indicated that consonants are possibly no more stutter-prone than vowels and that from the data, the reverse seems possible (but see Appendix E).

From the laterality test and questionnaire described in Chapter 6, it was found that:-

- there was no evidence of a significant relationship between stuttering and left-handedness;
- there was no clear-cut evidence of a significant relationship between stuttering and intelligence;
- stuttering does not appear to adversely affect school performance;
- most stutterers in the sample claimed to stutter more frequently at school than in any other situation.

To conclude, the results of this study into the disorder of stuttering provide in certain respects (already mentioned), supportive evidence for previous findings, whereas for other aspects of the problem the results here have proved either contradictory or novel. However, it should be borne in mind that the population and sample under scrutiny were not totally representative of the entire Zambian population as they were drawn from the capital only. Whether or not similar results would be obtained on a Zambian rural population is unknown. For example, the evidence in Section 6, Chapter 3, which offers support to the environmentalist position (Section 4b, Chapter 1) indicates that home environment can significantly affect incidence and would suggest the incidence of the disorder might be different in the rural areas. However, it should be emphasised that this evidence does not necessarily exclude genetic or organic influences and that it is likely that certain individuals are more vulnerable or prone to the disorder than others.

Finally, another issue which has arisen from the results of this study is the one related to whether the stuttering child is being denied an equal chance of education as the non-stutterers in the present educational system. As has been discussed in Chapters 3 and 6, it seems possible that there could be some filtering-out process both at the point of initial school entry and secondary school selection, which deserves further investigation. The results here have indicated that there is probably no great difference between the stutterer and non-stutterer in terms of level of intelligence, and consequently there is no reason why they

should not have equal educational opportunities.

In closing, it is hoped that this study has at least shown that stuttering does exist as a fairly sizeable problem in urban Zambia and that the stutterer's predicament will be given some consideration by the health and education authorities in the not too distant future.

APPENDIX A

To the classteacher concerned

I would be grateful if you could fill in the following information (if known) about..... In some cases the child himself may be able to supply information, but if you are in contact with his parents, perhaps you can ask them.

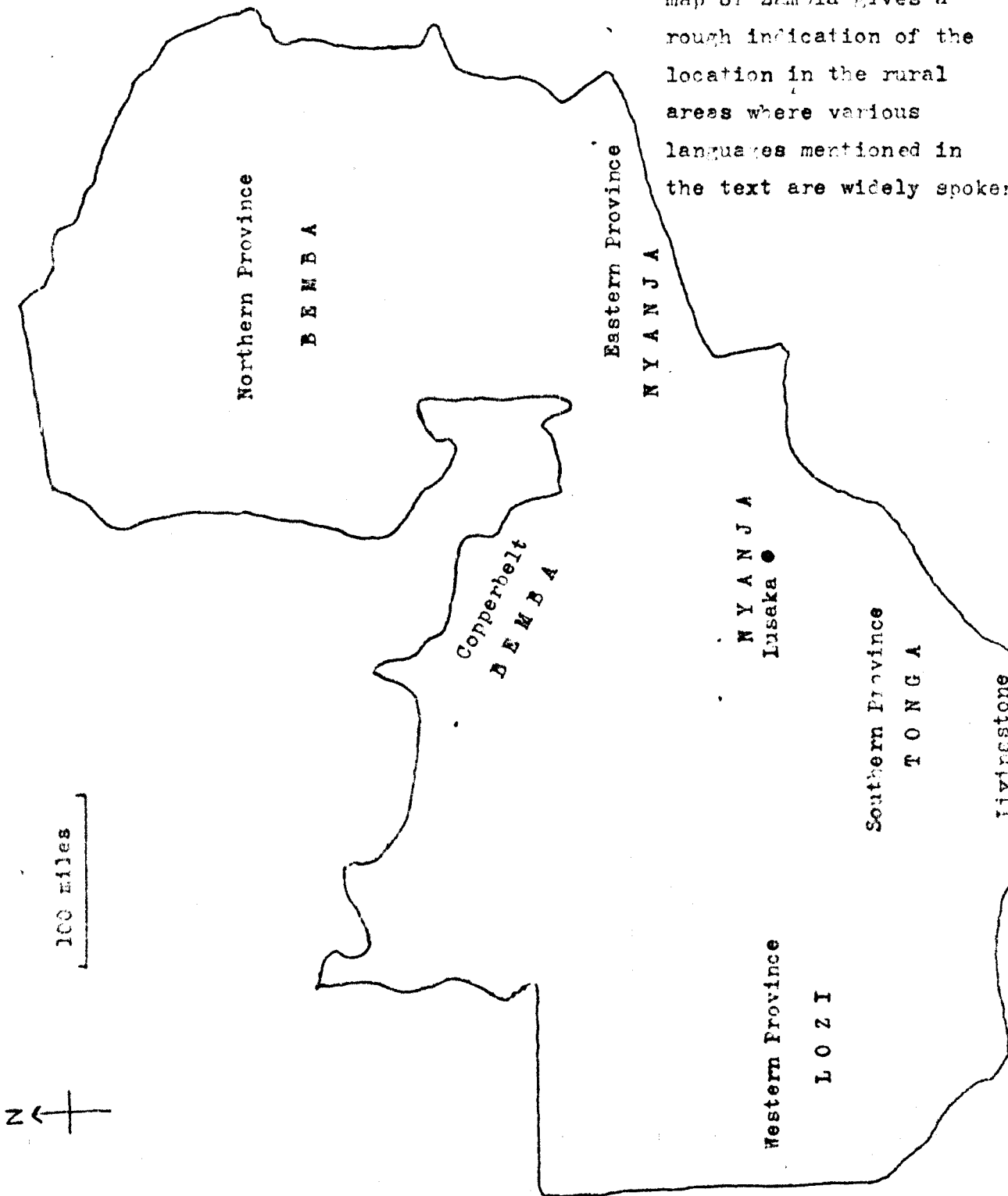
1. DATE OF BIRTH
2. HOME ADDRESS
3. NUMBER OF CHILDREN IN FAMILY
4. POSITION OF CHILD IN FAMILY (e.g. 2nd born)
5. OCCUPATION OF FATHER (IF ANY)
OCCUPATION OF MOTHER (IF ANY)
6. AT WHAT AGE DID THE CHILD BEGIN TO STUTTER?
7. ARE THERE ANY OTHER MEMBERS OF THE FAMILY WHO STUTTER?
IF SO? WHAT RELATIONSHIP ARE THEY TO THE CHILD?
8. DOES THE CHILD WRITE WITH HIS RIGHT OR LEFT HAND?
9. HAS THE CHILD SUFFERED ANY SERIOUS ILLNESS? IF SO,
AT WHAT AGE?
10. ACCORDING TO THE CHILD? DOES HE STUTTER MORE (OR LESS? OR
THE SAME) IN THE FOLLOWING SITUATIONS: AT HOME
AT SCHOOL
WITH FRIENDS
11. DID THE CHILD START TO SPEAK AT THE NORMAL AGE OR WAS HE LATE?
12. IS THE STUTTERING HAVING ANY BAD EFFECTS ON HIS PROGRESS IN
SCHOOL?
13. JUDGING FROM HIS MARKS ON TESTS? ETC. WHAT POSITION DOES HE
HOLD IN CLASS (e.g. 10th out of 45 children)
14. IN INTELLIGENCE, WOULD YOU DESCRIBE HIM AS:-

ABOVE AVERAGE
AVERAGE
BELOW AVERAGE

(tick the most appropriate)
15. HAVE YOU ANY OPINION AS TO WHY THIS CHILD IS STUTTERING?
16. ARE THERE ANY OTHER COMMENTS YOU WISH TO MAKE? IF SO,
PLEASE WRITE OVERLEAF

APPENDIX B

This very simplified map of Zambia gives a rough indication of the location in the rural areas where various languages mentioned in the text are widely spoken



LOWER GRADES (NYANJA)

Ine ndisowela
Buku langa ndi labwino
Funani kuli buku
Cenjelani ndi a galu
Roda ndi mwana wanga
Kanzeni abwele kuno
Ha ndili odabwa
Ona atate
Penya pabwalo
Dunda ndiye munzanga
Ulemu ndi wabwino pali tonsefe
Galimoto ya muganda
Ine ndinari pano
Naminso pitani kunyumba
Limba mutima
Thandizo ili ndilabwinodi
Welenga buku
Tiyeni tione wa mphanvu ndani
Muno muli anthu ophunzila
Lolani ana adze kwa ine
Lemekeza atate
Valani zovala zoyelazo
Ombani m'manja mfumu ibwela kuno
Ena anthu sadziwa kumenya mu pila
Jelita ndi mwana wanga ndipo ndi mukonda ndithu
Shadireck ndiye munzanga
Satha kusenya mabuku pa mutu
Oipa akaniza kudya
Azimai afunsa inu
Anthu ena adya nsima mumadzulo
Ife tonse tikhala pamodzi
Dunda ali ndi menso ace
Yayandikila nthawi ya kudya

MIDDLE GRADES (NYANJA)

Iyi mbale ili pa mulilo
Buku langa ili ndi labwino
Fulumiza kudya tipite kwathu
Bola izayamba ndi nthawi ya m'mawa
Roda ndi mwana wanga
Koma ngati upita ku sukulu undilindile
Haa Osalola kuti abwele
Ona atate
Pepani sindinakuoneni
Dunda ndiye munzanga
Uyu ndi mungono wanga
Galimoto izabwela kuno
Iai musbwele
Naomi bwela
Landilani alendo aku mudzi
Thandizo ili ndilabwinodi
Wina anali muno munyumba
Tiyeni tione wa mphanvu ndani
Maphunzilo athu azatha pa Sabata
Lolani an adze kwa ine
Vinani ndi mtima okondwela pa ukwati
Onvatu njala aphike nsima
Ena anthu sadziwa kumenya mupila
Jelita ndi mwana wanga ndipo ndi mukonda ndithu
Shadireck ali ndi mbiya ya madzi
Satha Kusenza mabuku pa mutu
Onani izi wacita ndi mkulu wace
Ana anali pano kufunsa anzace
Anthu ena adya nsima mumadzulo
Ife tonse tili ndi menso anthu
Dunda ali ndi menso ace
Yayandikila nthawi ya kudya

UPPER GRADES (NYANJA)

Munthu dzina lace Adam wa bwela
Thawani mudzaona zodabwitsa pa mudzi pano
Eda analufunsa zo dabwitsadzo
Shii! Anganve zimene tili kukamba
Kaya ena sananve zokambazo
Galu wanga wapita
Roda akhala ndi atate wace
Pano pa mudzi pali anthu akulu akulu
Funani kumene kwapita atate
Welengani nyumba zonse zili pano pa mudzi wa Njoka
Mayeso osankha wa nzelu ayamba pa Monday
Haa Ha! Kodi mwanva kuti anabwela
Sindidziwa kuti anthu ali kuthawa
Delesi langa ndinaligula ndi ndalama zanu
John anapita ku mudzi kwao
Tiyeni tione waluwiro ndani pa ife tili pano tonse
Hara ndi munyammat wodziwa kukambadi
Thandizo landalama linacokela kwa a mfumu
Basi yathu yatifela pano kaa!
Onani zimene wacita watenga lamba
Ine ndipita kwa amai
Bvumbwe anali pano posacedwa wa pita tsono
Uyu mwana sanvela zokamba anzace
Landilani alendo anu
Welengani mabuku ao
Yayandikila nthawi ya kudya
Nonse mufike ku musonkano wa caka

SECONDARY (NYANJA)

Indetu ndi nena kwa inu
Ana amatsiku ano sanvela zokamba makolo
Ena anyozela makolo ao
Belita iye pena apanda amai ace
Dongosolo losesa munyumba alibe
Nanunso makolo phunzitsani
Welengani ndi kulemba makalata mudziwe
Makhalidwe abwino apa banjapo
Fufuzani kwa anzana munve zofunikila pakhomo
Ana anali pano kufunsa za akulu wao
Pepani tifunika kwa amfumu
Haa koma cino caka kuli njala ku mudzi zolima zinakana
John ananva kuti anthu anaphedwa kuchile
Sindingaetse kupita kuchile opandatu munzanga
Onani m'kango ubitsala umu mu zitsambazi
Uyu ndi mwana wace wamkango nda mupeza alila make
Tele lelo methengo mulibe zabwino cifukwa mikango ndiyo kwiya
Ruth wapita kukafuna mungono wace ku town lelo
Bvumbwe anakuwadi atanva anthu akukamba
Koma anthu ena akonda mpila ku posa kudya
Lolani ana abwele
Tiyende pamodzi ndi mutima umodzidi
Yankani mafunso amene ndafunsa
Inendine mwini wa nyimba ija yobeledwayo
Galimoto izabwela kuno
Shadireck ali ndi mbiya ya madzi

LOWER GRADES (BEMBA)

Isakuno bwangu
Balalyo bowa nga bwapy
Fwaka ta wama ku pepa
Chali abane cumfwila
Lucelo-celo baya
Kale abantu balelwa sana
Shikala panshi we!
Onse alatesha
Panse pa fita
Ndinensala sana
Ulelolesha uko uleya
Ng'anda yaba mama isuma
Aisa kumo Bwalya
Naumfwa ukulila kwambwa
Lelo aleya
Ntono tesabi ilyawama ukulya
Willa napasa
Tande nao alefwaya ukuyako
Mwaiseni mayo, mulekosa?
Leta bwalya afwale
Mfumu yaume mbila ukwita bantu
Owesha bwalya tuleya kuku pepa
Endesheni tuyemonako amangalo
Njebeni tufwaye umuntu atutungululeko
Shi kangwa emwine motoka
Sambwe bwangalo ubusuma sana
Onka bwangu ndeya kubowa
Shonse nkuni ewa citeba
Abaice baleyangala bwino mwee
Aisa kuku bulba mayo
Ndeya nshashale iyo lelo
Yandee ne mwine badetelako

MIDDLE GRADES (BEMBA)

Imbwa nga ilesuma mwipaye
Banamayo abengi baletwa
Fwayeni umuntu untu alubile
Bwalya nababiye bali nobulendo
Lucelo-celo baya
Katwishi bamayo ngabaleisa bwangu lelo mwandi
Chanda ali ku bafyashi bakwe
Onse alatesha
Pakwenda alaicebawila
Ndinensala sana
Ulempako ubwali
Ng'anda pe shilya yapya nomba éee
Iæeni kuno bonse
Naiisa kale
Lombe, talya mani bali mulesha
Ntongo tesabi ilyawama ukulya
Wiyesha kuleta bosali
Tande nao alefwaya ukuyako
Mulenga nangu aya aleti taishibako
Lombe nakabili naisaako
Mfumu yaume mbila onse aye kwi sano
Opaa nomba ngali cindamako
Endesheni tuyemonako amangalo
Njebeni tufwaye umuntu atutungululeko
Shingwe mulendo kuno talaishibako
Sambwe bwangalo ubusuma sana
Onka icikumo lyonse kwati kaice
Changwe banyina balemufwaya baye
Abaice baleyangala bwino mwee
Imbila ya mushi taba yankula

UPPER GRADES (BEMBA)

Munankwe ngosa ewaletefya kulya
Twaleni umwana kuli basokulu eo beshile
Eshile eka ukufum kukulima
Shimwalule euleshindike mfumu
Katwishi ngaleya mwishiba lelo
Ng'anda yapwa nomba ee.
Landa ifyounjitile ndeya
Papitile nshita inono nao aisa kwifwe
Fwayeni umwana bwangu tuyeko mwe!
Winyuka mpapa taulafyala, ule cenjeshe fumo
Mumbi nao eko ali ilyo Ulubuli lwayambile
Chalo naciwama cilifye tondolomwe
Saleni abaleya tubeshibe naifwa
Ndenda umwingi lelonshabalamo ne icabipefi
Njitileniko Chomba ese kuno
Toteleni mfumu pa muchinshi yamupa mwebe kala calo
Chalo mu kunku tacisalilwaumo iyo
Acilabefi nga nshasumine ukuti bamusende
Bwalya na Mbale baisa kuno pamo
Ombelaumo ombela kutemwakobe
Iseni mwafweko munenu
Umwani mukulu litukilo tefyo
Laala ukesaya mailo
Wiyesha kuyoko kwishilya
Yandee ne mwine bandetelako
Naciba nayako nomba tabaliko
Ndeya nshashale iyo lelo
Yandee ne mwine bandetelako

SECONDARY (BEMBA)

Iseni twangale bane
Abana nabaya kwifwe mykowa bonse balaisa
Endesheni tubasange balatusha
Bwali aciba entungulushi pe bumba
Ndekeni nemwine nkaimwene ku ng'anda
Naya Mulenga kale kwi shilya
Wilatuma bakalamba musalula sana
Mumba taba nga babiye ukukana
Fungwe abapo nga acitwala bawishi mu mpanga ku kutema
Chanda walubuli sana lyonsefyekuma babiye
Pakwisa undeteleko inyanje
Chalwe pamo no mwina mwakwe bakesa kuno mushi kukutandala
Njasukileniko, mutile talip naya kumbi
Sakuleni nabwing mumufwike naka neti ku mutwe
Ombela umo ombela amenso yabantu tayalya
Umwani kulu kwa mpombo takulinda palwino mailo kuya
Talení pembeni Mwamba ese amutwale kuli banakulu muyebamona
Lali-lali tawama pantu afufye milimo ilingi line
Mfwa nayo tayawama pantu isenda abacine pacalo
Katwishi bamayo ngabaleisa bwangu lelo mwandi
Lemba kalata mupele
Tatwele kalata kuntu bamutumine iyo
Ng'anda pe shilya yapya nomba eee.
Shingwe mulendo kuno talaishibako

LOWER GRADES (ENGLISH)

It is raining today
Boys and girls are going to school
Fish are very good to eat
Chickens are running in the road
Run Mulenga run quickly
Can you put the pots on the table
Here are some bananas
Oranges as well
Put them in the bag
Don't put them on my books
Under the tree I can see a crocodile
Give the bicycle to Mulenga
I can see a policeman
The policeman has a blue uniform
Now mother is washing the baby
Let me sweep the floor
What are you doing?
Today I am playing with Jelita
Mother is cooking nsima in the pot
Look at the children eating
Very soon it is time to go to bed
Every morning the children run quickly to school
On Sunday father plays football with Mulenga
Jelita likes to cook but Mulenga likes to kick the ball
She likes to cook vegetables
Sometimes she cooks cabbages and potatoes
On the table are some tomatoes
Her father likes to eat meat and bread
And her brother likes coca cola and fanta
I like chocolate, sweets and oranges
Do you like vegetables and fruit?
Yes say all the children in the classroom

MIDDLE GRADES (ENGLISH)

In the morning the children go to school
Before school the children eat their porridge
Far away they can hear the school bell ringing
Be quick says Jelita or we will be late for school
Run Mulenga run quickly
Can you help me to carry something Mulenga, asks Jelita
Here are bananas for you to carry
Oranges as well
Put them in my bag says Mulenga
Don't put them on my books
Under the yellow box please
Give the suitcase to me says Jelita
I will carry them all
No says Mulenga
Let me carry the books and the bananas
The children run very quickly to school
We are not late now says Jelita
Today the lesson is about Livingstone
Mulenga's teacher talks about the Victoria Falls
Listen carefully he says to the boys and girls
Very soon it is time for Arithmetic and English
On Sunday father plays with Mulenga
Every morning mother sweeps the house and cooks the food
Jelita likes to cook but Mulenga likes to kick the ball
She likes to cook meat and fish and vegetables
Sometimes she cooks cabbages and potatoes
Other days she cooks tomatoes, onions and mealie meal
Her father likes to eat plenty of meat and bread
And her brother likes coca cola and fanta
I like chocolate, sweets and oranges
Do you like vegetables and fruit?
Yes, say all the children in the classroom

UPPER GRADES (ENGLISH)

Mr. and Mrs. Banda live in Livingstone
They have two beautiful children, a boy John and a girl Ana
Every Saturday Mrs. Banda stays at home
She digs her garden then she carefully plants seeds
Cabbages grow very well in her garden
Green maize is her favourite
Rape, cauliflower and tomatoes
Planting takes a long time and makes Mrs. Banda feel very tired
Fertiliser helps to make the plants grow quickly
When the vegetables have grown Mrs. Banda takes them to the market
Mr. Banda is a porter at Livingstone railway station
He rides to work each day on his yellow bicycle
Sometimes the children go to watch the trains arriving
Down at the station Ana likes to watch the ticket collector
John likes to count the number of carriages
Today Mr. Banda feels sick because he has malaria and a bad headache
He says that a big mosquito has bitten him
At the clinic the doctor gives him an injection and some pills
Before going to work he must take the medicine
On Sunday the family go to the Victoria Falls
It is a very beautiful sight
Very soon an aeroplane flies over the Zambesi River
Under the trees they can see a crocodile sleeping
Let's eat our food says Mrs. Banda
Would you like some biscuits and fanta?
Yes, say the children who eat hungrily
Not yet, says Mr. Banda, I will eat later

SECONDARY (ENGLISH)

It was the middle of winter

As Bill carefully opened the door the wind nearly blew him over

Everything was freezing and the cold air cut through him like a knife

Bill looked across to the tops of the nearest range of mountains

During the summer months he used to climb the mountains

Now, however, this was not possible

Work must come first and everyone worked hard on his fathers farm

Mister Jones, Bills father had no machinery

For most of the heavy work he depended on his seventeen horses

Horses can work without using petrol or electricity

Peter was the name of Bill's favourite horse

He had ridden him often to the nearest town, 70 kilometres away

Just outside the town is a stream where they rest, so Peter can drink

Sometimes, however, during the hot season there is no water, just mud

On such days Bill takes Peter to the back of the green grocers shop

Under the window there is a tap and Peter drinks the water greedily

The kind shopkeeper usually gives the horse some cabbage leaves
or other vegetables

Reaching up his head Peter can also eat the leaves from a nearby tree

Very soon he is satisfied and ready to move on his way

Come, says Bill grandmother and grandfather are waiting to see me

Let me tie you up for a while

Taking the reins, he leads the horse to the shade of a tree

You must stay here until I return says the boy

Immediately the horse settles down comfortably to rest

Good says Bill, you are so obedient

Shaking his head the horse keeps the flies from his eyes

A P P E N D I X D

The scope of this project had to be narrowed in some respects (mentioned in the text) because of theft of much of the raw data including tapes. However, fortunately, when this happened the bulk of the thesis had been completed and in general only slight modifications had to be made. For example the analysis of Section 2, Chapter 5 was originally intended to be first sound versus other sounds, but as I had only reached the first word versus other words stage by the time of the theft, only the latter has been presented. Similarly, the texts in Appendix C do not include several minor alterations made before the speech recordings were started. For example, a few sentences had to be re-written so that the syllabic length matched across all languages: one or two initial words were changed to make closer matching of initial sounds

A P P E N D I X E

It should be noted that it is possible that although phonologically many of the vulnerable sounds began with a vowel (and have been classified as vowels in the various tables in Chapter 5, Section 3b) phonetically they could have been preceded by a glottal stop. Consequently, what has been rated "vowel stuttering" could in reality have been "glottal stop" and therefore "consonant stuttering" which would be more in line with previous evidence. Unfortunately, this possibility only came to light late in the project, when it was no longer possible to analyse the tape recordings from this point of view, otherwise it would have been possible to be on the alert during the tape recording, and to differentiate between the above.

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