It can be seen that the intercorrelations of the experimenter's ratings are consistently high, and that the correlations of the experimenter's ratings and those made by the judges are of the same order as between the judges themselves. The correlations of the experimenter's ratings on the two groups of recordings are slightly lower than those for the judges, which could possibly be due to greater familiarity on the part of the experimenter with the severity scale.

From the results it would appear that the experimenter's ratings are highly correlated with each other and are satisfactorily in agreement with the five judges. These ratings can therefore be considered as a reliable measurement of the severity of stuttering. This finding also supports Sherman's observation that a single observer is sufficient to make reliable ratings of the severity of stuttering (115).

B. COMPARISON OF THE ELEVEN FACTORS OVER THE FIVE PERIODS OF THE STUDY

A correlation of the eleven factors for all subjects (Africans included) to observe the nature of the relationship between the measurements themselves was carried out. The matrices for each period are presented in Tables 6 - 10. The means and standard deviations for the respective periods are included alongside the relevant matrix. Although it may have been more convenient to refer to one table representing the five periods the exact nature of the correlations would not have been evident as the scores would have differed due to trends over the five periods.

Partial correlations were calculated for each period between the experimenter's severity rating (factor 3) and reading rate (factor 9) eliminating any joint correlation with the frequency count of stuttering moments (factor 8). This was done in order to establish whether the reading rate or the frequency count influenced the severity ratings made by the experimenter.

/As ...

As there are eleven factors correlated and comments can therefore be made about an array of figures, the discussion of results will follow an outline where each factor in turn will be discussed. This scheme will mean that some observations and remarks will be repeated, but it should provide a convenient frame of reference. In addition to supplying data on the inter-relationship of the measurements, the correlation matrices appear to offer information on the measurements themselves, especially in regard to our understanding of the stuttering problem. The matrices appear on the following five pages.

DISCUSSION

Experimenter's Three Severity Ratings (factors 1, 2, 3)

The three ratings are highly correlated extending from .93 to .98. There is a tendency for the correlations to increase from the first period to the fifth period. There is a steady decline in the means from the first to the fourth period (.48 to .42), and a decline in the standard deviations from 2.0 to 1.5 which indicates that the spread of the scores narrowed. These results may indicate progressive facility with the use of the scale on the part of the experimenter and/or familiarity of the subjects with the experimental situation. On the other hand both the means and the standard deviations are increased during the fifth period. The increased standard deviations are probably due to the greater variability between the subjects during the last period of the study. The increased mean scores may also be due to this variability within the subjects, or to a worsening in the stuttering condition as the medication periods had passed.

The severity ratings correlate highly with reading rate ratings from .79 to .92. The correlations are also high with the two frequency counts which range from .46 to .71. The range of correlations of the experimenter's ratings with the rating made for conversation declines steadily from .71 to .46 - the correlations however are still significant

/(significance ...

TABLE 6

CORRELATION MATRIX INDICATING THE RELATIONSHIP BETWEEN THE ELEVEN FACTORS FOR THE FIRST PERIOD OF THE STUDY FOR FORTY-SIX SUBJECTS. THE MEAN SCORES AND STANDARD DEVIATIONS FOR EACH FACTOR ARE INCLUDED

Factors	Experimenter's severity Ratings			Conversation	Subjects' Severity Ratings		Frequency Counts		Reading Rate	Subjects' Rating for day	IPAT Anxiety Battery
	Reading	1st Pl.b.	2nd Pl.b.		Reading	1st Pl.b.	Reading	1st Pl.b.			
	1	2	3	4	5	6	7	8	9	10	11
1	1.000										
2	0.933	1.000									
3	0.930	0.907	1.000								
4	0.696	0.681	0.660	1.000							
5	0.675	0.704	0.658	0.334	1.000						
6	0.506	0.502	0.521	0.226	0.456	1.000					
7	0.506	0.548	0.513	0.493	0.375	0.141	1.000				
8	0.552	0.688	0.508	0.480	0.480	0.111	0.899	1.000			
9*	-0.591	-0.880	-0.922	-0.607	-0.853	-0.402	-0.722	-0.704	1.000		
10	-0.003	-0.063	0.004	0.326	0.040	-0.152	0.074	0.086	0.004	1.000	
11	-0.307	-0.304	-0.307	-0.409	-0.166	-0.116	-0.085	-0.078	0.317	0.130	1.000

Significance level for correlations at 5% level = .29

*Partial Correlations between experimenter's severity rating (3) and reading rate, excluding joint correlation with frequency count = - .38

FACTORS	MEAN	STD. DEV.
1	4.891	1.853
2	4.304	1.926
3	4.846	1.988
4	4.565	1.996
5	5.035	2.081
6	6.587	2.382
7	44.196	37.529
8	43.587	37.834
9	92.300	46.682
10	3.174	0.677
11	3.973	2.517

TABLE 7

CORRELATION MATRIX INDICATING THE RELATIONSHIP BETWEEN THE ELEVEN FACTORS FOR THE SECOND PERIOD OF THE STUDY FOR FORTY-SIX SUBJECTS. THE MEAN SCORES AND STANDARD DEVIATIONS FOR EACH FACTOR ARE INCLUDED

Factors	Experimenter's severity Ratings			Conversation	Subjects' Severity Ratings		Frequency Counts		Reading Rate	Subjects' Rating for day	IPAT Anxiety Battery
	Reading	1st Pl.b.	2nd Pl.b.		Reading	1st Pl.b.	Reading	1st Pl.b.			
	1	2	3	4	5	6	7	8	9	10	11
1	1.000										
2	0.871	1.000									
3	0.[illegible]7	0.[illegible]54	1.000								
4	0.[illegible]96	0.673	0.644	1.000							
5	0.561	0.536	0.505	0.207	1.000						
	0.[illegible]54	0.[illegible]94	0.476	0.247	0.707	1.000					
	0.[illegible]19	0.[illegible]61	0.648	0.375	0.516	0.236	1.000				
8	0.641	0.635	0.658	0.363	0.516	0.[illegible]51	0.996	1.000			
9*	-0.845	-0.[illegible]62	-0.[illegible]03	-0.654	-0.505	-0.401	-0.761	-0.765	1.000		
10	-0.[illegible]17	-0.534	-0.385	-0.200	0.105	-0.173	-0.130	-0.139	0.322	1.00	
11	-0.[illegible]14	-0.194	-0.251	-0.247	-0.138	-0.258	0.059	0.044	0.271	0.102	1.000

*Significance level for correlations at 5% level = .29

*Partial Correlations between experimenter's severity rating (7) and reading rate, excluding joint correlation with frequency count = -75

FACTORS	MEAN	STD. DEV.
1	4.074	1.381
2	4.609	1.757
3	4.652	1.754
4	4.783	1.861
5	5.457	2.105
6	5.522	2.137
7	39.891	39.143
8	39.522	36.172
9	100.396	49.443
10	2.074	0.790
11	3.348	2.396

TABLE 8

CORRELATION MATRIX INDICATING THE RELATIONSHIP BETWEEN THE ELEVEN FACTORS FOR THE THIRD PERIOD OF THE STUDY FOR FORTY-SIX SUBJECTS. THE MEAN SCORES AND STANDARD DEVIATIONS FOR EACH FACTOR ARE INCLUDED

Factors	Experimenter's severity Ratings				Subjects Severity Ratings		Frequency Counts		Reading Rate	Subjects' Rating per day	IPAT Anxiety Battery
	Reading 1	1st Pl.b. 2	2nd Pl.b. 3	Conversation 4	Reading 5	1st Pl.b. 6	Reading 7	1st Pl.b. 8	9	10	11
1	1.000										
2	0.969	1.000									
3	0.956	0.984	1.000								
4	0.562	0.540	0.550	1.000							
5	0.684	0.731	0.697	0.218	1.000						
6	0.590	0.598	0.583	0.257	0.751	1.000					
7	0.658	0.693	0.707	0.405	0.517	0.243	1.000				
8	0.656	0.696	0.711	0.403	0.516	0.249	0.999	1.000			
9*	-0.583	-0.579	-0.900	-0.633	-0.687	-0.526	-0.736	-0.738	1.000		
10	0.036	0.038	0.020	0.025	0.211	0.050	0.071	0.057	0.005	1.000	
11	-0.034	-0.020	-0.072	-0.185	0.129	0.001	0.038	0.032	0.203	0.400	1.000

Significance level for correlations at 5% level = .29

*Partial Correlations between experimenter's severity rating (3) and reading rate, excluding joint correlation with frequency count = -.79

FACTORS	MEAN	STD. DEV.
1	4.436	1.747
2	4.457	1.798
3	4.391	1.732
4	4.848	1.813
5	5.478	2.383
6	5.413	2.427
7	33.783	34.207
8	33.674	34.172
9	106.276	50.690
10	2.935	0.772
11	3.565	2.354

TABLE 9

CORRELATION MATRIX INDICATING THE RELATIONSHIP BETWEEN THE ELEVEN FACTORS FOR THE FOURTH PERIOD OF THE STUDY FOR FORTY-SIX SUBJECTS. THE MEAN SCORES AND STANDARD DEVIATIONS FOR EACH FACTOR ARE INCLUDED

Factors	Experimenter's severity Ratings				Subjects' Severity Ratings		Frequency Counts				
	Reading	1st Pl.b.	2nd pl.b.	Conversation	Reading	1st Pl.b.	Reading	1st Pl.b.	Reading Rate	Subjects' Rating for day	IPAT Anxiety Battery
	1	2	3	4	5	6	7	8	9	10	11
1	1.000										
2	0.961	1.000									
3	0.945	0.969	1.000								
4	0.519	0.366	0.498	1.000							
5	0.521	0.564	0.612	0.078	1.000						
6	0.460	0.441	0.472	-0.022	0.714	1.000					
7	0.461	0.565	0.592	0.336	0.520	0.155	1.000				
8	0.455	0.558	0.587	0.332	0.520	0.148	1.000	1.000			
9*	-0.785	-0.821	-0.827	-0.467	-0.532	-0.360	-0.638	-0.637	1.000		
10	-0.084	-0.066	-0.062	0.161	0.185	0.073	-0.029	-0.033	0.107	1.000	
11	-0.138	-0.125	-0.140	-0.095	0.064	-0.065	0.166	0.111	0.113	0.203	1.000

Significance level for correlation at 5% level = .29

*Partial Correlations between experimenter's severity rating (3) and reading rate, excluding joint correlation with frequency count = -.73

FACTORS	MEAN	STD. DEV.
1	4.217	1.489
2	4.283	1.587
3	4.152	1.460
4	4.196	1.668
5	5.130	2.867
6	5.174	2.184
7	25.239	28.678
8	25.109	28.828
9	104.883	38.285
10	2.761	0.822
11	4.043	2.867

TABLE 10

CORRELATION MATRIX INDICATING THE RELATIONSHIP BETWEEN THE ELEVEN FACTORS FOR THE FIFTH PERIOD OF THE STUDY FOR FORTY-SIX SUBJECTS. THE MEAN SCORES AND STANDARD DEVIATIONS FOR EACH FACTOR ARE INCLUDED

Factors	Experimenter's severity Ratings				Subjects' Severity Ratings		Frequency Counts			Subjects' Rating for day	IPAT Anxiety Battery
	Reading	1st Pl.b.	2nd Pl.b.	Conversation	Reading	1st Pl.b.	Reading	1st Pl.b.	Reading Rate		
	1	2	3	4	5	6	7	8	9	10	11
1	1.000										
2	0.874	1.000									
3	0.844	0.967	1.000								
4	0.463	0.444	0.446	1.000							
5	0.513	0.552	0.574	-0.097	1.000						
6	0.370	0.393	0.419	-0.130	0.761	1.000					
7	0.565	0.570	0.556	0.172	0.456	0.104	1.000				
8	0.563	0.568	0.554	0.172	0.448	0.109	1.000	1.000			
9*	-0.611	-0.796	-0.820	-0.427	-0.458	-0.284	-0.841	-0.838	1.000		
10	0.448	0.227	0.312	0.289	0.321	0.324	0.079	0.075	-0.110	1.000	
11	-0.095	-0.008	-0.071	-0.128	-0.002	-0.057	0.136	0.138	0.194	-0.011	1.000

Significance level for correlations at 5% level = .29

*Partial Correlations between experimenter's severity rating (3) and reading rate, excluding joint correlation with frequency count = -.75

FACTORS	MEAN	STD. DEV.
1	4.174	1.596
2	4.217	1.604
3	4.370	1.638
4	4.522	1.709
5	4.870	2.391
6	4.870	2.572
7	25.500	32.833
8	25.543	33.151
9	113.027	41.887
10	2.935	0.712
11	4.043	2.431

(significance = .29). The experimenter's severity ratings correlates comparatively poorly with the subjects' severity ratings of their own speech - ranging from .37 to .70. This is to be expected as the standards used by the experimenter and by the subjects must differ due to the element of subjectivity present on the part of the stutterers.

The partial correlations calculated for each period between the experimenter's severity rating (factor 3) and the reading rate, excluding the joint correlation with the frequency count, indicate that the actual speed of reading is an important element in the severity ratings made. The partial correlations are all high extending from .72 to .88.

Thus it appears that the experimenter's severity ratings are most highly correlated with the reading rate and the frequency counts of stuttering moments. The latter two factors are regarded in the literature as being fairly accurate measures of stuttering behaviour, and the satisfactory correlation with the experimenter's severity ratings in this study, not only supports the fact that severity ratings can be objective, but also indicates the relative closeness between these three forms of stuttering measurement.

Experimenter's severity ratings of stuttering based on conversation (factor 4)

As pointed out above the correlations between the ratings based on conversation and on the reading of the passage decline steadily to the fourth period, whereas the means of ratings based on conversation show no such trend - they rise from 4.6 in the first period to 4.8 in the second and third periods, falling to 4.2 in the fourth period, and then rise to 4.5 in the fifth period. This was not accompanied by any increase in the standard deviations - on the contrary, they declined from 2.0 to 1.7 between the first and fourth periods, with a slight rise in the fifth period.

It is possible, that because no set amount of conversation (or topic) was required from each subject, the choice of topic, the manner of expression, and the amount spoken might

/have ..

have influenced the experimenter from period to period. In this regard it would obviously have been better to set the subjects a particular topic of conversation during each period, which could be recorded, transcribed from the recordings, and then rated for severity. This is what Johnson (65) did with his "Job" task where the subjects were asked to talk about aspects of their employment. The time consumed in such a procedure however, would have been beyond the scope of the present study. Further, as has been pointed out (supra, Chapter 3, Section V) any recording of conversation would have reduced the subject's spontaneity and would have made the situation more structured than the experimenter wanted it to be.

Subjects' severity ratings of their own speech on reading (factors 5 and 6)

The correlations between the subjects' ratings of their speech on reading and that based on the recording for the five periods are .49, .71, .78, .71, .76 (all significant). The low correlation in the first period is not surprising, since the subjects were not at this stage familiar with the routine of the experiment and this was their first introduction to it. In addition some subjects had rarely, if ever, heard their stuttered speech from a recording (particularly in the case of five African subjects).

The correlations of the subjects' ratings and the experimenter's ratings of severity are also comparatively low with a wide range from .37 to .70. The low correlation of .37 occurs in the last period. The role of possible subjectivity on the part of the subjects has been discussed in the previous section.

The correlation with reading rate (an objective measure) is also low, extending from .22 (not significant) to .65. An interesting observation is that the correlations of the subjects' ratings based on the recording (factor 6) with that of reading rate, is always lower than the correlation between the subjects' ratings on their original reading and

/reading ...

ading rate. This indicates that the stutterers rated subjectively and were probably influenced by their feelings about their speech, especially when hearing the recordings.

The subjects' severity ratings of their speech on reading and on the recording correlate very poorly with their own ratings for their speech for the same day prior to the interview - they range from .04 to .32 The latter (.32) occurs in the fifth period and is just significant. No other correlations were significant. These results are not surprising since the subjects' speech on reading (while recording) in a clinical setting can be expected to be different (probably worse) from what they experienced during the "normal" day before attending the interview.

All correlations between the subjects' severity ratings and the IPAT Anxiety Battery (factor 11) are extremely poor, none achieving significance. This may be due to an inability on the part of the subjects to evaluate their speech consistently owing to their feelings about stuttering. On the other hand, the anxiety battery may assess an element of anxiety that is different from that experienced by the stutterers when rating their speech (presuming that some anxiety was felt).

Frequency counts of the moments of stuttering (factors 7 and 8)

The correlations between the two counts taken on the frequency of stuttered moments are extremely high, ranging from .995 to 1.00. This indicates that there was little discrepancy between the two counts taken for each subject, which implies that any visual cues present in the first rating were at a minimum and had little influence on the frequency of the stuttered moments counted.

The correlation between the frequency counts and reading rate rose from -.70 to -.76 between the first and second periods, and then declined steadily to -.64 in the fifth period. This was accompanied by a steady fall in the mean frequency counts from 43 to 25 over the five periods.

/On ...

On the other hand the reading rate showed an irregular increase rising from 92 to 107 words per minute between the first and third periods, dropping to 105 words per minute in the fourth period, and rising to 113 words per minute in the fifth period. The reading rate is affected by both the frequency of stuttering and the length of the blocks, and the frequency counts by the number of blocks only. The decreasing correlations, together with the fact that the mean number of frequency counts had fallen to a little more than half the original value, may suggest that the shorter blocks tended to be eliminated. Following on from this it can be interpreted that the reading rate, towards the end of the experiment, tended to be influenced more by the length of the blocks than by the frequency with which they occurred. This is corroborated by the decline in the partial correlation between the experimenter's severity ratings and reading rate, where the joint correlation with the frequency counts was eliminated - the range was from .88 to .72 over the five periods.

Reading Rate (factor 9)

This factor has already been discussed in terms of its correlation with the above eight factors. However, the most important aspects will be repeated briefly. Reading rate correlates highly with the experimenter's severity ratings (ranging from .79 to .92) and comparatively poorly with the subjects' severity ratings (ranging from .22 to .65). The correlations of reading rate with frequency counts were all significant and ranged from -.64 to -.76.

The partial correlations carried out for each period between the experimenter's severity rating (factor 3) and the reading rate (where the joint correlation with the frequency count was eliminated) indicate that the speed of reading influenced the experimenter's severity ratings to a large extent in the first period, but they declined towards the fifth period. The correlations are all high and extend from .88 to .72.

/Subjects' ...

Subjects' Severity Rating for their Speech for the Same Day Prior to the Interview (Factor 10)

This rating bears little relationship to the measurements taken. Its inclusion was only to provide a rough indication of whether the ratings made on conversation during the interview corresponded with the subjects' report of their stuttering during the same day of the interview. No relationship was found - the correlations range from .03 to .23, none of which is significant. As was pointed out, the form of speech exhibited in the clinic situation is expected to differ from the type of speech produced outside this situation. In addition many extraneous factors could influence the subjects to make different assessments from the experimenter - e.g. the stutterers' subjective attitude towards speech, the experimenter's practice in making severity ratings.

IPAT Anxiety Battery (Factor 11)

The scores obtained for European subjects for this Battery are included in the tables in Appendix D and were converted to sten scores for the purpose of these correlation matrices. (The sten score is a standard score system with ten units). As can be seen from the above tables, the correlations are very poor. As a result of these poor correlations a further analysis was carried out where correlations were made between the changes in the sten scores from period to period and changes in the reading rate and frequency counts. The results of this analysis are contained in the following table.

TABLE 11

Correlations Between the Changes in the IPAT Anxiety Battery Sten Scores with Changes in Reading Rate and Frequency Counts for thirty-seven European Subjects.

FACTORS	PERIODS			
	1st-2nd	2nd-3rd	3rd-4th	4th-5th
IPAT vs Reading Rate	-.06	-.05	-.13	-.08
IPAT vs Frequency Counts	.11	0	.03	-.09

Significance at 5% level = .32

/From ...

From Table 11 it can be seen that the correlations are very low between any of the changes considered. The correlations of the Battery with the ten factors over the five periods are also low (Tables 6 - 10). The Battery correlates highest with the experimenter's severity ratings and reading rate, but in both cases the correlations are poor. With the experimenter's severity ratings the range is from .30 (significant) in the first period to .16 in the fourth period, and .07 in the fifth period. With reading rate the scores correlate from .32 (significant) in the first period to .11 in the fourth period and .20 in the fifth period. The fact that the correlations persist (some being just significant) through the five periods, infers that for this sample of stutterers, some relationship with the anxiety Battery and the other factors measured exists.

The correlations of the IPAT Anxiety Battery scores with the frequency counts are low and may possibly be due to random fluctuation. However the relationship of these low correlations is of theoretical interest and may possibly provide an important lead to the study of anxiety and stuttering. The correlation tends to increase from -.07 in the first period to .13 in the fifth period. This, together with the earlier observations concerning the decrease in the correlation between reading rate and frequency counts, suggests that the anxiety measure scores may be more closely connected with the factor that causes prolongation of stuttering moments rather than frequency. Should similar results be borne out by future research we may be in a better position to define the role of anxiety in the stuttering syndrome. Anxiety appears, from the results of this study, to be more closely related to the severity of the individual blocks (possibly duration) rather than the frequency with which they occur. This hypothesis could be tested by correlating IPAT scores with the mean length in time of stuttering moments. Those blocks or moments over two seconds duration, or those over five seconds duration, etc., could be compared for significance with anxiety measure scores by applying a "t" test.

The mean scores (Appendix D, Table II) for the IPAT Anxiety Battery for the various groups of subjects are

/interesting ...

interesting. They are reproduced in Tables 12 and 13

TABLE 12

Means of IPAT Anxiety Battery Raw Scores for the five Periods for Groups A (drug in second period).

Period	European Males N = 15	European Females N = 3	All Europeans N = 18
1	6.40	6.08	6.38
2 -a	5.33	5.67	5.39
3	5.25	5.33	5.26
4	5.60	6.00	5.67
5	5.77	5.33	5.69

TABLE 13

Means of IPAT Anxiety Battery Raw Scores for the five Periods for Groups B (drug in fourth period)

Period	European Males N = 15	European Females N = 3	All Europeans N = 18
1	6.46	7.00	6.50
2	5.73	6.33	5.83
3	5.60	6.00	5.67
4 -a	6.53	5.90	6.43
5	5.80	5.98	5.82

The scores of the Anxiety Battery are slightly lowered for the males during the drug period for Group A but rise to their highest for Group B. For the females in Group A there is no particularly outstanding score for the drug period, but for Group B the means are obtained during the drug period is the lowest of the five periods. The combined mean scores for Group A indicate a comparatively lowered score during the drug allocation and a comparatively higher score is obtained for Group B when the drug was given in the fourth

/period ...

period. It is obvious that subject differences will weight the mean scores for the groups. There is some overall tendency, however, for the scores to be lower during the drug administration. The mean scores obtained for all the subjects lie within the mid-range of all possible scores. From the table provided by Scheier and Cattell (108) the raw scores range from 0 to 14.0. The range of mean scores obtained for the two groups in this study are from 5.25 to 7.00.

COMMENT

It is apparent that most of the factors showed improved scores from the first period to the fourth and fifth period - the IPAT Anxiety Battery scores are one of the exceptions. There is also a decrease in the standard deviations over the five periods. This indicates that the subjects might have possibly become familiar with the environment of the assessment-interviews, and possibly familiar with the reading passage. The improvement is clear from the examination of the means for the factors. The element of adaptation in regard to the reading passage has been taken into account and will be discussed below.

C. CONSISTENCY OF THE EXPERIMENTER'S SEVERITY RATINGS OF STUTTERING

The consistency with which the experimenter rated the severity of stuttering over the five periods for each subject was taken into consideration. The ratings considered here were made on reading (factor 1), first playback of the recording (factor 2) and the second playback of the recording ten days later (factor 3).

A three-way analysis of variance of subjects x ratings x periods was carried out. A mixed model was postulated in which the subjects were regarded as a sample from a population of possible stutterers, while periods of the study ratings were treated as fixed effects, i.e. to this particular experiment. This model required subjects mean square to be compared with the re- in

/square ...

square. The period and rating mean squares are also required to be compared with the subject x period, and subject x rating interaction means squares when testing for significance.

This analysis relates to the consistency or origin of the severity rating scale and results should indicate whether the experimenter tended to rate more severely on some occasions and more leniently on others. It is possible to rate subjects inconsistently, although the same scale is being used on all occasions. This would be reflected in the ratings over subjects for each period. Thurstone pointed out that one may not necessarily succeed in making intervals subjectively equal (122 p. 185).

TABLE V

Analysis of Variance Applied to the Experimenter's Severity Ratings of Stuttering to Indicate Consistency of Ratings

Source of Variation		Sum of Squares	Degrees of Freedom	Variance Estimate (Means Square)	F Ratio
A	Periods	39.39	4	9.85	5.90*
B	Ratings	.01	2	.004	-
C	Subjects	1645.77	45	36.57	288.00*
AB	Periods x Ratings	1.73	8	.22	1.70
AC	Periods x Subjects	300.34	180	1.67	13.10*
BC	Subjects x Ratings	15.19	90	.17	1.32
	RESIDUAL	45.74	360	.13	
	TOTAL	2048.17	689		

* Significant at 1% level

DISCUSSION

Significant differences can be noted between the

/subjects ...

subjects and the subject x period interaction. This is no doubt due to the usual inter-subject differences. It could also be due to possible differences between the drug and placebo reactions. The period effect is significant and this may indicate the effect of adaptation towards the experiment and reading passage (the effect of adaptation will be discussed in a separate section below).

The severity rating effect is not at all significant, which indicates that the experimenter did not rate more severely on some occasions than others, i.e. during reading, first playback of the recording or second playback of the recording. There was consistency in the severity ratings between subjects as there is no significant effect in the subjects x rating interaction. There was also no significant effect between the period x rating interaction, which indicates that the experimenter was consistent from period to period. In addition, the correlations between the severity ratings were consistently high which can be seen from the intercorrelation matrices in Tables 6 - 10.

D. CONSISTENCY OF THE SUBJECTS' SEVERITY RATINGS OF THEIR STUTTERING

These ratings concerned the subjects' severity rating on the reading and their severity ratings made after hearing the tape recordings of their reading. A three-way analysis of variance was carried out using a mixed model as described in the previous section which dealt with the consistency of the experimenter's severity ratings.

/Table 15 ...

TABLE 15

Analysis of Variance Applied to the Subjects' Severity Ratings of Their Stuttering to Indicate Consistency of Ratings

	Source of Variation	Sum of Squares	Degrees of Freedom	Variance Estimate (means square)	F Ratio
A	Periods	101.99	4	25.50	6.26*
B	Ratings	13.18	1	13.18	12.90*
C	Subjects	1204.23	44	27.37	59.10*
AB	Period x Ratings	7.97	4	1.99	4.32*
AC	Period x Subjects	716.21	176	4.07	8.80*
BC	Subjects x Ratings	44.92	44	1.02	2.21*
	RESIDUAL	81.43	176	.46	
	TOTAL	2169.93	449		

* Significant at 1% level

DISCUSSION

All the interactions are highly significant. The significant subject x rating interaction indicates that the subjects evaluated their speech inconsistently and did so in different directions and amounts. The significant period effect infers the possible result of adaptation or some similar trend in the ratings. The significant subject x period interaction is to be expected due to the usual variation between subjects. The ratings x period interaction is significant and is due to either inconsistency in the subjects' self-ratings from period to period, or to the influence of the drug and placebo.

The high significance of all main effects and interactions shows that there is very great variation between subjects in the way in which they rate themselves, great inconsistency in their self-ratings from period to period, and

/also ...

also between their ratings on reading and the playback of the recording. These results are affirmed by the results obtained from the intercorrelation matrices (Tables 6 - 10) where there is relatively poor agreement between the subjects and the experimenter, and between the subjects and other factors.

E. CARRY-OVER EFFECTS OF DRUG AND PLACEBO

It was important to establish if there were any significant carry-over effects from the drug and placebo into the non-medicated periods. Welch's modification of the "t" test for significance was applied to the difference between the means of the two groups - Group A, representing those subjects who received the drug in the second period and the placebo in the fourth period of the study; and Group B, representing those subjects who received the drug during the fourth period and the placebo in the second period of the study. The scores were derived from the means in Appendix B, Table II. The scores from the third period were subtracted from the scores of the first period for each group - this eliminated a major part of the inter-subjects differences. The scores from the fifth period were treated similarly. The mean scores of nine factors were considered here. The first two experimenter's severity ratings were eliminated (factors 1 and 2) and the third rating was utilised (factor 3) - this rating was considered satisfactory in view of the aforementioned findings of the high correlations between the three ratings (Tables 6 - 10). No scores were available for the IPAT Anxiety Battery for the African subjects as this test was not administered to them. Tables 16 and 17 appear on Page 116.

DISCUSSION

The results show no significant differences in either the third or the fifth periods. There is one isolated significant result - factor 10 for African male subjects (Table 17). The fact that this is the only significant result tends to indicate that it is due to chance and can be ignored. However, as will be discussed below (Section II), an interesting sidelight is that some African subjects reported that they tended to "feel" the effects of the drug during the

/early ...

TABLE 16

"t" Tests Applied to Differences of Means to Detect Carry-over Effects of the Drug and Placebo for European Males and Females - Groups A and B

Factors	Drug during Second Period				Drug during Fourth Period			
	MALES N=16		FEMALES N=3		MALES N =16		FEMALES N=3	
	$\bar{A} - \bar{B}$	t	$\bar{A} - \bar{B}$	t	$\bar{A} - \bar{B}$	t	$\bar{A} - \bar{B}$	t
3	.38	.51	-.33	-.64	-.05	-.10	0	0
4	.50	1.15	1.33	1.26	-.33	-.70	0	0
5	-.18	-.25	-1.33	-1.05	-.52	-.57	-1.33	-1.07
6	.33	.44	-1.67	-1.34	.23	.25	-3.83	1.41
7	4.72	.85	-3.33	-.35	-5.52	-.81	-19.00	-1.97
8	4.34	.82	-1.33	-.15	-6.00	.91	-17.00	-1.94
9	-12.10	-1.47	-9.52	-.72	1.11	.11	10.53	.46
10	.28	1.28	-1.33	4.26	.41	1.38	-1.00	-.80
11	.27	.71	-.35	-.59	-.07	.22	-.41	-.74
	$t_{.025} = 2.05$		$t_{.025} = 2.78$		$t_{.025} = 2.05$		$t_{.025} = 2.78$	

TABLE 17

"t" Tests Applied to Differences of Means to Detect Carry-over Effects of Drug and Placebo for African Males and Total Subjects for Groups A and B

Factors	Drug during Second Period				Drug during Fourth Period			
	AFRICAN MALES N=2		TOTAL SUBJECTS N=21		AFRICAN MALES N=6		TOTAL SUBJECTS N=25	
	$\bar{A} - \bar{B}$	t	$\bar{A} - \bar{B}$	t	$\bar{A} - \bar{B}$	t	$\bar{A} - \bar{B}$	t
3	0	0	-.05	-1.38	-.50	.37	-.35	-.80
4	1.00	1.23	.10	.46	.07	.51	-.30	-.77
5	-1.67	.89	-.95	-1.63	-2.50	1.28	-.97	-1.35
6	-.83	.49	-.32	-.54	-1.33	.79	-.83	-1.18
7	-3.33	.30	2.66	.53	-6.00	.32	-9.16	-1.07
8	-2.00	.16	2.96	.62	-5.33	.27	-8.91	-1.67
9	16.96	1.16	-5.37	-.87	22.73	.93	-10.58	-1.26
10	-.53	2.73*	-.18	-.70	-1.67	2.17	-.09	-.31
	$t_{.025} = 2.45$		$t_{.025} = 2.08$		$t_{.025} = 2.45$		$t_{.025} = 2.02$	

early stages of the non-medicated periods. This was not borne out by statistical analyses for other factors, but the Africans' rating of stuttering for the same day prior to the interview (factor 10) tends to support the observation made. On the whole, however, there appear to be no carry-over effects of the drug or placebo into the non-medicated periods.

1. ADAPTATION TO THE READING PASSAGE

PART 1

As with carry-over effects of the drug and placebo discussed above, the problem of the subjects' adaptation to the reading passage must be taken into account. Both these aspects, unless known, would confound the final results concerning the effects of a drug on stuttering.

In view of what is known about adaptation, it was hypothesized that growing familiarity with the 200-word passage would improve performance - i.e. the frequency count of stuttering would lessen with each reading. The 110-word passage was included during the last two periods of the study, in addition to the usual 200-word passage, in order to test for the presence of adaptation.

A three-way analysis of variance on subjects x periods x passage was carried out where the scores for the fourth and fifth periods were used. African subjects were included in the total. A mixed model was assumed in which the subjects were considered as a sample from a population of possible stutterers. The period and reading passage were considered as fixed effects, i.e. relative only to this study. The nature of the model determines the form of the significant tests, and in this case it requires that, while the between-subjects' means square is tested against the residual mean square, the passage and period mean squares must be tested against the subject x passage, and subject x period interactions respectively. This analysis appears in Table 18.

/An ...

An additional analysis (Part II of this section) concerning adaptation was carried out, comparing the frequency count on the 200-word passage in the first period with the frequency count on the 110-word passage in the fourth period, when it was first introduced. This would determine, to some extent, increased familiarity with the experimental situation itself in addition to the subjects' response towards the reading passage.

TABLE 18

Analysis of Variance Applied to Establish the Presence of Adaptation to the Reading Passage

Source of Variation	Sum of Squares	Degrees of Freedom	Variance Estimate (means squares)	F Ratio
A Passage	.0348	1	.0348	20.00*
B Period	.0001	1	.0001	1
C Subjects	4.7502	43	.1105	44.00*
AB Passage x Period	.0007	1	.0007	1.75
AC Passage x Subjects	.0737	43	.0017	4.25*
BC Subject x Period	.1071	43	.0025	6.25*
RESIDUAL	.0158	43	.0004	
TOTAL	4.9822	175		

* Significant at the 5% level

DISCUSSION

The subject effect is highly significant, which is expected, as the ordinary variation in subjects would cause differences. There is no significant period result which indicates that there was some effect caused by the drug or placebo, or by some effect due to the termination of the experiment - e.g. familiarity with the experimental situation.

/The ...

The reverse is noted for the subject x period interaction where the effect is highly significant. This also suggests a possible difference between the effects of the drug and placebo, or differences in the subjects' responses to the final stages of the experiment. However, it must be pointed out that these three effects reported are not relevant to adaptation as such, but merely describe a portion of the analysis in the table.

The significant passage effect indicates that adaptation had taken place. The significant subject x passage interaction indicates differences between the subjects in the degree of adaptation. The non-significant interaction of passage x period is probably due to little adaptation taking place on the second repetition of the 110-word passage as compared to the familiar 200-word passage.

Thus there appears to be a distinct adaptation effect which varies for different subjects (passage x subject interaction) but does not appear to vary between the two periods (fourth and fifth periods). This last fact suggests that what is being interpreted as adaptation may be a difference in the difficulty of the two passages. However, the presence of adaptation appears to be supported by the steady increase in reading rate over the five periods for the group as a whole (refer to Appendix D, Table II). Again however, this progressive improvement may be due to familiarity with the experimental situation itself and not necessarily with the reading passage. This aspect will also be included in the discussion following Tables 19 and 20 (Part II) where the frequency counts are compared for the first and fourth periods.

PART II

Tables 19 and 20 depict the "t" test for significance between the frequency count on the 200-word passage in the first period with the frequency count on the 110-word passage in the fourth period. The frequency count here represents the scores obtained on the playback of the recording (factor 8). The purpose of this analysis was to determine whether the frequency counts on the first reading of the 110-word

/passage ...

passage were any higher than those on *the first* reading of the 200-word passage. A significantly higher figure for the former would suggest that the 110-word passage was more difficult - a point raised above. This would indicate that the significant difference between the two passages in the three-way analysis of variance reported above in Table 18 could be as well attributed to difference in difficulty, or to a learning effect.

TABLE 19

"t" Test Applied to Differences in Frequency Counts on the 200-word and 110-word Passages for Eighteen Europeans in Group A (Drug in 2nd Period).

Frequency on 200-word P. in 1st Period	Frequency on 110-word P. in 4th Period	Frequency per 100 words on 2 passages P_1	P_2	Difference $d = P_1 - P_2$
5	2	.03	.02	.01
43	5	.22	.05	.17
54	17	.27	.16	.12
2	2	.01	.02	-.01
6	3	.03	.03	.003
16	4	.08	.04	.04
9	24	.05	.22	-.17
23	11	.12	.10	.02
5	6	.03	.05	-.03
9	1	.05	.01	.04
25	16	.13	.15	-.02
47	12	.24	.11	.13
34	15	.18	.14	.04
32	9	.16	.08	.08
46	12	.23	.11	.12
157	80	.79	.73	.06
20	13	.10	.12	-.02
31	11	.16	.10	.06
Mean difference = .03		t = 1.88	t at 5% level of significance = 2.1	

/Table ...

TABLE 20

"t" Test Applied to Differences in Frequency Counts on the 200-word and 110-word Passages for Eighteen Europeans in Group B (Drug in 4th Period)

Frequency on 200-word P. in 1st period	Frequency on 110-word P. in 4th Period	Frequency per 100 words on 2 Passages P_1	P_2	Difference $d = P_1 - P_2$
24	15	.12	.14	-.02
10	5	.05	.05	.01
61	10	.31	.09	.21
34	13	.17	.12	.05
7	2	.04	.02	.02
35	27	.18	.25	-.07
28	10	.14	.09	.05
36	20	.18	.18	-.00
70	32	.35	.29	.06
87	39	.44	.35	.08
24	13	.12	14	-.02
16	4	.08	.04	.04
154	69	.77	.62	.15
112	57	.56	.52	.04
59	52	.30	.47	-.18
54	19	.27	.17	.10
42	16	.21	.15	.07
42	10	.21	.09	.12
Mean difference = .04	t = 1.95	t at 10% level of significance = 1.7		

DISCUSSION

The results suggest that the 110-word passage was not more difficult than the 200-word passage, if anything the reverse. Group B (who received the drug in the fourth period) showed significantly fewer stuttering moments on the first reading of the 110-word passage than the 200-word passage. This can be seen from the following summary:

	200-word Passage	110-word Passage
Group A - Mean number of stuttered moments per 100 words	15.7	11.7
Group B - Mean number of Stuttered moments per 100 words	26.6	20.9

/Group ...

Group A (who received the placebo in the fourth period) showed a tendency in a similar direction but the difference did not reach significance level.

The familiarity with the experimental situation was possibly not so great since more frequency counts were noted in the 200-word passage than in the 110-word passage. From the above two tables it thus appears that adaptation occurred and this effect must finally be taken into account when discussing the effects of Amylozine on stuttering.

G. EFFECTS OF AMYLOZINE ON STUTTERING - PART I

In order to test whether the drug per se so produced any response, the ratings made for subjects while under placebo administration were subtracted from the ratings made while these subjects were on the drug. The possible adaptation or learning effect was eliminated by having half the sample receive the drug during the second period of the study, and the other half during the fourth period. Thus the reduction in the response for the first group, possibly due to adaptation, would be offset by the enhancement of the response for the second group. It must be pointed out here that the effects of adaptation were eliminated from the means, but not from the differences between the subjects - this aspect will be considered in Part II of this section.

The "t" test of significance was applied to ascertain if the same mean differences differed significantly from zero. This was done for all eleven factors for:

European females
European males

All Europeans
African males

All Males
Total subjects

The data are derived from the mean scores in Appendix

/D ...

D, Table II. The results are depicted in Tables 21 - 26.

TABLE 21

"t" Test to Ascertain the Effect of
Amylozine on Six European female Stutterers

Factors	$\bar{X}$	S	t	df
1	.16	.75	.55	5
2	0	.16	0	
3	.17	.48	1.00	
4	-.17	.98	-.42	
5	.17	1.17	.35	
6	.33	1.37	.60	
7	2.33	20.09	.35	
8	...	15.13	.0	
9	-4.82	15.75	-.75	
10	0	1.26	0	
11	-.76	.92	-2.02	
Critical Value of t = 2.57				

TABLE 22

"t" Test to Ascertain the Effect of
Amylozine on Thirty European Male Stutterers

Factors	$\bar{X}$	S	t	df
1	-.30	1.25	-1.31	29
2	-.30	1.00	-1.64	
3	-.40	1.25	-1.75	
4	-.23	2.36	- .55	
5	-.53	2.12	-1.38	
6	-.60	1.72	-1.91	
7	-5.77	16.88	-1.87	
8	-5.93	16.49	-1.97	
9	6.95	31.86	1.19	
10	-.17	1.12	- .82	
11	.18	1.39	1.31	
Critical value of t = 2.05				

/Table ...

TABLE 23

"t" Test to Ascertain the Effect of Amylozine on Thirty-six European Stutterers (Male and Female)

Factors	$\bar{X}$	S	t	df
1	-.25	1.16	1.53	35
2	-.28	.92	-1.80	
3	-.31	1.24	-1.92	
4	.22	1.36	-1.00	
5	-.42	1.10	-1.32	
6	-.44	1.33	-1.44	
7	-4.42	19.76	-1.37	
8	-5.00	17.30	-1.73	
9	5.53	29.84	1.11	
1	-.14	1.22	-.69	
2	.14	1.22	.69	
Critical value of t = 2.03				

TABLE 24

"t" Test to Ascertain the Effect of Amylozine on Four African Male Stutterers

Factors	$\bar{X}$	S	t	df
1	-.25	.50	-1.00	3
2	0	.58	0	
3	-.25	.50	-1.00	
4	-.75	1.71	-.88	
5	-.75	2.22	-.68	
6	0	.58	0	
7	-2.00	3.42	-1.17	
8	-2.25	5.56	-.81	
9	.85	13.27	.13	
10	.25	.50	1.00	
Critical value of t = 3.18				

/Table ...

TABLE 25

"t" Test to Ascertain the Effect of Amylozine on Thirty-four Male Stutterers (European and African)

Factors	$\bar{X}$	S	t	df
1	-.32	1.17	-1.59	33
2	-.29	.99	-1.74	
3	-.38	1.19	-1.87	
4	-.29	1.45	-1.17	
5	-.56	2.10	-1.56	
6	-.53	1.75	-1.76	
7	5.32	15.91	1.95	
8	-5.50	15.59	-2.06*	
9	6.81	30.07	1.22	
10	-.12	1.14	-.89	
Critical value of t = 2.04				

TABLE 26

"t" Test to Ascertain the Effect of Amylozine on Forty Stutterers (Europeans and Africans, both sexes)

Factors	$\bar{X}$	S	t	df
1	-.25	1.23	-1.55	39
2	-.25	1.39	-1.61	
3	-.30	1.18	-1.58	
4	-.25	.87	-1.37	
5	-.45	1.99	-1.43	
6	-.90	1.52	-1.48	
7	-4.18	14.95	-1.57	
8	4.60	13.90	-1.82	
9	5.07	27.58	1.35	
10	-.10	1.19	-.81	
Critical value of t = .03				

/Discussion ...

DISCUSSION

In no case was the mean difference significantly different from zero. The All Male Group (Table 25) approached significance for the frequency counts. Amylozine, on the basis of these results, caused no significant change in stuttering, as measured by the eleven factors. On the other hand, it is apparent from the positive scores that Amylozine did not show its non-effectiveness. A further analysis concerning the effect of the drug on stutterers is presented below.

EFFECTS OF AMYLOZINE ON STUTTERING - PART II

The differences between the subjects were taken into account in a further analysis concerning the effects of the drug on stuttering. The effect of adaptation was also removed by assumption: the scores for the second period were midway between those for the first and third periods, and those for the fourth period were mid-way between those for the third and fifth periods. This was done for each European male separately as this represented the largest single group of subjects. These assumed-scores were then subtracted from the actual observations, and the differences have been termed the effect of the drug or placebo, as the case may be.

It should be noted that no carry-over effects of the drug or placebo were found. This finding was reported in Section A above and the results were presented in Tables 16 and 17. The results do not exclude the possibility that there might be some "psychological" carry-over effect due to the fact that the subjects received a treatment of some kind. This possibility had to be ignored in this particular analysis, but if it did occur, its effect would be to reduce the possibility of detecting significant differences here. As no obvious carry-over effect of the drug or placebo was found, this factor can be omitted in the present analysis.

The results shown in Tables 27 - 30 are based on three variables - experimenter's severity rating on the second playback (factor 3); frequency counts on playback (factor 8);

/and ...

and reading rate (factor 9). These factors were chosen, not only because they correlated highly with each other, but because they are considered to be the most objective measurements calculated, and as such should depict stuttering change. The means (derived from Appendix H, *Table II*) for these factors were *adjusted for adaptation*, and were taken for the second and fourth periods for the group who received the drug in the second period (Group A) and the group who received the drug in the fourth period (Group B). "t" tests for significance were carried out on the data.

TABLE 27

Means, Standard Deviations and "t" tests Applied to Factors 3,8,9, for European Male Stutterers - Group A, (N=15) to Ascertain the Effect of Amylozine

	SEVERITY		FREQUENCY		READING RATE	
	Period 2 (Drug)	Period 4 (Placebo)	Period 2 (Drug)	Period 4 (Placebo)	Period 2 (Drug)	Period 4 (Placebo)
$\bar{X}$	-.27	-.10	.90	-.83	2.92	-13.65
S	.50	.65	9.37	6.63	19.04	35.40
t	-2.09	-.60	.37	-.31	.59	-1.49
Critical value of t at 5% level = 2.15						

TABLE 28

Means, Standard Deviations and "t" Tests Applied to Factors 3,8,9, for European Male Stutterers - Group B (N=16) to Ascertain the Effect of Amylozine

	SEVERITY		FREQUENCY		READING RATE	
	Period 2 (Placebo)	Period 4 (Drug)	Period 2 (Placebo)	Period 4 (Drug)	Period 2 (Placebo)	Period 4 (Drug)
$\bar{X}$	.38	-.41	4.47	-4.13	-1.29	-3.52
S	.80	.76	8.09	8.36	9.04	13.96
t	1.72	-2.14*	2.21*	-1.98	-.57	-1.01
Critical value of t at 5% level = 2.13						

/Table ...

TABLE 29

"t" Tests Applied to the Differences Between the Means of Factors 3,8,9 for Groups A and B (European Males N = 31) to Ascertain the Effect of Amylozine

	SEVERITY		FREQUENCY		READING RATE	
	Placebo vs Drug	Drug vs Placebo	Placebo vs Drug	Drug vs Placebo	Placebo vs Drug	Drug vs Placebo
t	-2.51*	1.20	-1.14	1.32	.78	-1.06
Critical value of t at 5% level = 2.05						

TABLE 30

Means, Standard Deviations and "t" tests Applied to the Differences Between the Drug and Placebo Scores of Factors 3,8,9, for Groups A and B Combined (European Males N = 31) to Ascertain the Effect of Amylozine

	SEVERITY	FREQUENCY	READING RATE
$\bar{X}$	-.47	-3.74	6.87
S	.95	10.53	30.62
t	-2.75*	-1.98	1.25
Critical value of t at 5% level = 2.04			

DISCUSSION

For the purposes of clarity the results will be discussed according to the three factors presented in Tables 27 - 30.

Experimenter's Severity Ratings on 2nd Playback:

There appears to be a significant drug effect, since for both periods when the drug was given, the means are lower

/than ...

than the means obtained for the placebo effect for both periods (Tables 27 and 28). One of the means is significantly different from zero at the 5% level. This can be seen from the following block which is an extract from Tables 27 and 28.

	2nd Period	4th Period
Group A	(D) -.27	-.10
Group B	.34	(D) -.41*

The means in the second period are significantly different from each other (t = -2.5), but not those in the fourth period (t = 1.20). The difference between the two treatments when both groups have been combined (Table 30) is also significant. Tests for significance were also carried out on the standard deviations but none was significant. Thus, there appears to be the presence of a drug effect which has been reflected in the experimenter's measurement of the severity of stuttering.

Frequency count taken during playback:

Here the drug effect means are lower than the placebo effect means for both periods. Only one placebo effect mean is significantly different from zero (Table 28), but neither the differences between the means in each period (Table 29), nor the difference between the drug and placebo means for both groups combined (Table 30) is significant.

Reading Rate:

The pattern of results for this factor is similar to that of the frequency count. Within each period, the subjects taking the drug have better means than those taking the placebo, but none of the individual means is significant. There is also no significant result in the differences between the means for any period, nor between the drug and placebo for both groups combined.

/Discussion ...

DISCUSSION RELATING ANXIETY FACTOR TO DRUG RESPONSE

Of the three factors tested, only the experimenter's severity ratings indicate that a significant drug effect took place. It is possible that some change in the behaviour of the subjects was detected by the experimenter which reflected differences in severity. The experimenter was not aware at the time when the ratings were made (in this case ten days after the recordings had been made) that any particular changes had taken place. No reference was made to data collected from each period until the complete experimental period had terminated.

This result is most noteworthy in the light of the correlations between the IPAT Anxiety Battery scores and the experimenter's severity ratings. This aspect was discussed previously in Section B. The correlation of the Battery with the severity ratings of the experimenter, although fairly low, was the best correlation of any factor with the Battery. A decrease was noted in the correlations of the Battery with reading rate and frequency counts. This suggested that the anxiety measure scores may be more closely connected with severity. As was mentioned previously, the length of the stuttered moment may be decreased due to a reduction in severity and it was suggested that future research should be conducted on this aspect, where the duration of stuttered moments is measured in seconds to be compared for significance with scores derived from anxiety measures.

These results throw an important light on the nature of stuttering in terms of the role of anxiety. It is reasonable to expect that a drug that reduces anxiety and tension will indirectly have a greater influence on the "severity" of stuttering than on the frequency with which it occurs. The reduction in tension may bring about less struggle reactions accompanied by a lessening in the feelings and worry about speech, and these reactions may have been perceived by the experimenter which led her to rate the severity somewhat lower in some instances as compared to others.

/Stuttering ...

Stuttering is largely learned behaviour and as such it will continue to occur despite any improvement in the attitudes of the stutterer towards speaking situations. The results of psychoanalysis and psychotherapeutic procedures with stutterers bear this out - any improvement in the feelings of the stutterer has little effect in reducing his stuttering unless the speech itself receives attention, i.e. the stutterer must be shown how to modify his speech symptoms in terms of unlearning the undesirable aspects of his speech.

The frequency with which stuttering occurs is commonly referred to in the literature as representing one measure of the severity of stuttering (14, 68, 149). The finding in this study suggests that we should differentiate more clearly between the terms "frequency" and "severity" of stuttering. There is no doubt that the amount or frequency of stuttering will contribute to an impression of its severity, but it would appear that frequency as such cannot be regarded as an independant and accurate measure of severity.

Bloodstein (16) maintains that anxiety is not necessarily associated with all phases of the development of stuttering. In the last phase when stuttering reaches its apex, he states that anxiety about stuttering can become chronic. His conclusions are based on observations of children aged two to sixteen years, and it is therefore possible that his comments do not strictly apply to adult stutterers. Adults, conceivably, become more aware of the penalty of stuttering (irrespective of the severity of their symptoms) when meeting the social and employment demands, and exerting their authority as befits adults. Bloodstein feels that the apparent failure of tranquillizing drugs to "reduce stuttering in any outstanding way" supports his inference that anxiety about stuttering is not necessarily present *in most* stutterers. It may be argued that, in view of the findings presented in this section, Bloodstein's observation concerning tranquillizers is made in terms of the frequency of stuttering and not its severity. This seems apparent since in most studies on drugs and stuttering, reduction in frequency was taken as the variable depicting change, rather than any measure of severity as such.

/Section ...

SECTION II - VERBATIM REPORTS

The comments made by the subjects to the experimenter during the three-weekly interviews concerning their reactions to the drug, experiment, etc., were written down and formed the verbatim material of the study. Towards the end of the experiment, the subjects were asked to write a brief summary concerning their speech for the last week or two weeks of the study (depending on the time of their last appointment); the general state of their speech during the fifteen weeks of the study compared with the early part of the year; and a comparison of their speech during the two "drug" periods of the study (one "drug" period consisted of the placebo administration unbeknown to the subjects.) These summaries were included in the verbatim reports for each subject. Six representative reports are included in Appendix F.

The following aspects will be considered in this section:

A. Categories of Change in speech based on the Verbatim Reports.

B. Descriptive Terms Used by the Subjects Indicating their Response to the Drug and Placebo.

C. Side-effects of Amylozine as Reported by the Subjects.

D. Comparison of Categories of Change Based on the Verbatim Reports with the Drug Response According to Reading Rate.

E. Severity Ratings of Stuttering Against Categories of Change Based on the Verbatim Reports.

F. Comparison of Scores Derived from the Minnesota Multiphasic Personality Inventory with Categories of Change Based on the Verbatim Reports.

A. CATEGORIES OF CHANGE IN SPEECH BASED ON THE VERBATIM REPORTS

The verbatim material was screened and categorized by the experimenter and judges into the following:

/Slight ...

Slight Improvement
Improvement
Much Improvement
No Change
Worse

Table 31 depicts the response to the drug, while Table 32 is an account of the reaction towards the placebo, with the drug response given alongside for reference. In both tables the identity numbers of the subjects are given. The African subjects are denoted by an "A", and the females by an "f" in parentheses.

TABLE 31

Categories of Change in Speech in Response to the Drug Based on the Verbatim Reports

Category of Change in Speech	Drug during 2nd Period	Drug during 4th Period	Total	Percentage
Slight Improvement	16, 20, 33 N = 3	14, 17, 31 N = 3	6	13.04
Improvement	3(f), 11, 15, 25, 30 43(A), 44(A) N = 7	1(f), 2(f), 8, 10, 13, 35 40(A) N = 7	14	30.43
Much Improvement	9, 37 N = 2	19, 26, 36, 39(A), 42(A), 45(A), 46(A) N = 7	9	19.56
No Change	4(f), 7, 12, 22, 29, 38(fA) N = 6	5(f), 18, 21, 23, 24, 27, 32, 41(A) N = 8	14	30.43
Worse	6(f), 26, 34 N = 3	-	3	6.52
TOTALS	21	25	46	99.98

/Table ...

TABLE 32

Categories of Change in Speech in Response to the Placebo (with reaction to the drug given) based on the Verbatim Reports

Category of Change in Speech	Placebo in 2nd Perion	Reaction to drug	Placebo in 4th Period	Reaction to Drug	Total
Slight Improvement	5 (I)	No Change	15	Improvement	
	17	Slight Improv.			
	35	Improvement			
	19	Much Improv.			5
Improvement	41 (A)	No Change	7	No Change	
	13	Improvement	11	Improvement	
	28	Much Improv.	25	Improvement	
	39 (A)	Much Improv.			
	46 (A)	Much Improv.			8
Much Improvement	-		-		-
No Change	13	No Change	4 (I)	No Change	
	21	No Change	12	No Change	
	23	No Change	22	No Change	
	24	No Change	29	No Change	
	27	No Change	38 (A)	No Change	
	32	No Change	16	Slight Improv.	
	14	Slight Improv.	20	Slight Improv.	
	31	Slight Improv.	3 (I)	Improvement	
	1 (I)	Improvement	30	Improvement	
	2 (I)	Improvement	43 (A)	Improvement	
	8	Improvement	44 (A)	Improvement	
	10	Improvement	9	Much Improv.	
	40 (A)	Improvement	37	Much Improv.	
	16	Much Improv.	6 (I)	Worse	
	42 (A)	Much Improv.	26	Worse	
	45 (A)	Much Improv.			31
Worse			33	Slight Improv.	
			36	Worse	2

/Discussion ...

DISCUSSION

The total percentage of subjects who improved from slight to much improvement amounts to 63.03, which indicates a good response to the drug. Of these, 30.43% were placed in the improved category, while 19.56% were placed in the much improved category. A fairly large group (30.43%) reported that there was no change in speech while on the drug.

The female stutterers are dispersed among the categories. The African subjects are also dispersed, but the majority were considered much improved. The element of suggestion, as applicable mostly to the Africans, cannot be ruled out although it can be seen from Table 32 that the placebo reaction with these subjects is not marked. It is felt that they might have been inclined to overemphasize the importance of any improvement, and have tended to exaggerate their response to the drug more than the European subjects. It would be remiss to interpret these results any further, as the number of Africans is comparatively small.

There appears to be little difference in response to the drug when it was administered either in the second or the fourth periods, except that the group who reported much improvement was relatively larger when they received the drug in the fourth period. No particular explanation can be offered for this. The response might possibly be due to randomization of subjects to the drug allocation.

From Table 32 it can be seen that the majority of subjects (67.39%) did not react positively to the placebo. Three subjects did, however, report the reverse reaction. Their speech improved with the placebo but no change in speech was reported with the drug. These three subjects have varying degrees of severity and no particular conclusion can be drawn. The remaining ten subjects improved with the placebo as well as with the drug. On examination of the raw scores for these subjects in Appendix J, Table I, their severity ratings on reading ranged from 2 - 9, and on conversation from 3 - 7, so that their reaction does not appear to be associated

/with ...

with the severity of stuttering. Apart from the element of suggestion, the only other explanation that can be offered is that the improved stuttering might have been part of a natural cycle or variation of their stuttering, and the improvement noted might have been incidental to the response to the drug; an aspect which the subjects themselves may not have been able to discern.

B. DESCRIPTIVE TERMS USED BY THE SUBJECTS INDICATING RESPONSE TO THE DRUG AND PLACEBO

It would be relevant to reproduce some of the phrases used by the subjects when describing the changes in their speech and feelings due to the drug or placebo response. Typical remarks were selected from the verbatim reports and are as follows:

Phrases used during drug response

Concerning Speech	Concerning general state
Not holding back so much	More relaxed and calm
Less fear about speaking situations	More confident
Not looking for crutches	Mood happier
Not as afraid to speak	Lazy
Stuttering less severe	Heavy, saggy
Blocks less tense	Placid
Blocks shorter in duration	Reduced tension
Less frequent stuttering	Less tense
More fluent	
Substituting less	

/Phrases ...

Phrases used during placebo response

Concerning Speech	Concerning general state
Not so worried about speech	More relaxed
Speech controlled with small sticks	Less worried
Improvement when reading	Mood better
Less embarrassed *about speech*	Less *tense*
Frequency less, blocks are bad	More tensio
Tense feeling in stomach gone	happy mood
Not certain of any change	
Worse speech	

DISCUSSION

The kind of *comments* made by the subjects when receiving either the drug or placebo are *very* similar. The mood general state as described is very [illegible] same for both medications, although the drug response appears to carry more positive *descriptions* of improved [illegible] about improvement or change in speech also appear to be more definite or detailed during the drug response. Subjects reported less fear about speaking situations, and not shame concerning *the severity itself*. Improvement in speech, however, was noted for the placebo response, and occasionally reference was made to specific aspects, e.g. "Tense feeling in stomach gone"

It was noted that three American subjects reported continued *improvement* in speech during the non-medication period immediately following *drug* administration. Two were convinced that the drug had in fact *helped* the stuttering. It was only after a period of time (approximately *ten days*) *that the improved* effect wore off. This observation was reported previously (*supra*, Section I B) and it was pointed out that the ratings made by these cases for their speech for the same day prior to the interviews supported *their* verbal *comments*.

/from ...

From a perusal of the verbatim material it was noted that the changes that were said to have taken place while the subjects were on the placebo, occurred predominantly when the placebo was administered in the second period - i.e. the first medication period of the study. It would seem then that the placebo reaction does carry with it some "potent" reactions as was described in Chapter 2, Section VII. The presence of side-effects will be discussed below, but the apparent absence of obvious side-effects and the relatively mild action of the drug itself, would cause the subjects to treat both medication periods in a similar manner. Side-effects in the first drug medication would presumably cause subjects to become more aware in the second period of medication that the drug is "different" in terms of the quality of change.

The phrases used to describe general states appear appropriate when considering general reactions to tranquillizers. The "heavy" or "placid" terms used are probably related to the tiredness or sleepiness experienced by a number of subjects, which is no doubt due to the presence of amylobarbitone. The phrases describing changes in speech or attitude towards speech suggest that the subjects experienced less worry, tension or anxiety about their speech symptom. Several of the subjects reported that they attempted more fearful speaking situations than usual while on the drug. The writer has the impression that the daily schedules could have influenced the subjects in this regard by suggesting that they enter into feared situations. It is possible that the daily schedules obscured the true reaction of the drug in several of the subjects. This would be an important consideration when using similar measuring devices in future drug research with stutterers.

C. SIDE-EFFECTS OF AMYLOZINE

The predominant side-effect of Amylozine was tiredness, sleepiness or drowsiness. This was reported by fourteen subjects and occurred usually in the mornings, although several reported tiredness in the afternoons. Most reported that this

/passed ...

passed after about one week. One subject complained of extreme tiredness at night and felt it was interfering with his medical studies. He was taken off the evening Spansule after ten days. He was the only subject who complained of a second side-effect, namely that the pupils of his eyes were extremely dilated and he felt that this was due to the drug. The doctor administering the drugs for this study, felt that the side-effect reported was probably associated with some factor other than Amylozine.

Some subjects reported that they were sleeping better at nights while taking the drug. In most cases the remarks describing tiredness or sleepiness during the day were made while the subjects were on the drug and not the placebo.

One subject reported that she menstruated earlier than usual during the drug period. She said that she had not experienced this change in her menstrual cycle for some years. However, it is noteworthy that this particular subject announced her engagement during this stage. All female subjects were asked to comment on their menstrual cycles before the study began and to indicate on the daily schedules the relevant dates. No other reactions were noted except for two subjects who reported that they had experienced less pain and tension during the drug administration. Examination of the daily schedules showed that these subjects were receiving the drug during this time, and not the placebo.

The lack of serious or disturbing side-effects with low dosages of Amylozine in this study confirms the evidence in the literature. Two subjects reported that they felt they would have benefited more if dosages had been increased. One of these subjects took a Spansule (drug in this case) in the early hours of the morning, and forgetting that it was designed to extend over twelve hours, took a further one six hours later. He reported that his speech was "wonderful" during the morning despite the tensions and high pressure associated with a Saturday morning at his office. Manipulation of the dosage was not practical in this study, as discussed previously, but it would be reasonable to expect that increased dosage would have greater benefit on stutterers.

/D. ...

D. COMPARISON OF CATEGORIES OF CHANGE IN SPEECH BASED ON THE VERBATIM REPORTS WITH THE DRUG RESPONSE ACCORDING TO READING RATE

It would be pertinent to note if the reported improvement based on the verbatim material has a relation to any positive response to the drug represented by an objective measure taken at the three-weekly assessment-interviews. Reading rate was chosen as it appears to be the most objective measurement. No significant results were obtained for this factor when the data were examined for a drug response, but the means did show an improvement compared with the placebo response (supra, Section I F). On the basis of the scores obtained for the reading rate (Appendix D, Table I), the subjects were formed into three groups - Responding, Doubtful, and Not Responding. Due to the presence of adaptation to the recording passage and the possible increase in familiarity with the experimental situation, subjects who had the drug in the second period were ranked separately from those receiving the drug in the fourth period. Only after this separation had been made were the groups combined and divided into the three groups mentioned.

These results were classified into a two-way table of response to the drug and the categories based on the verbatim reports. The results were subjected to the chi-squared test. As the expected values tended to be on the small side, the chi-squared value (χ^2) was transformed according to Nass (95). The original tables from which the chi-squared values are derived are reproduced in Appendix G.

/Table ...

TABLE 33

Drug Response Based on Reading Rate Compared with Categories of Change Based on the Verbatim Reports for European Males, using the chi-squared test with Nass's transformation of X^2. (Expected Values are Given in Parentheses)

Response based on Reading Rate	Categories of Change based on Verbatim Reports				
	Worse	No Change	Slight Improv.	Improv.	Much Improv.
Responding	1 (.65)	3 (3.22)	1 (1.94)	4 (2.58)	1 (1.61)
Doubtful	0 (.65)	3 (3.22)	5 (1.94)	1 (2.58)	1 (1.61)
Not Responding	1 (.71)	4 (3.55)	0 (2.13)	3 (2.89)	3 (1.77)

$N = 31 \quad X^2 = \sum_{i=1}^{15} \left[\frac{(oi - ei)^2}{ei} \right] = 11.55 \quad df = 8 \quad X^2_{8, .05} = 15.51$

Nass's transformation $X^2_T = 13.28 \quad df = 9 \quad X^2_{9, .05} = 16.92$

TABLE 34

Drug Response Based on Reading Rate Compared with Categories of Change Based on the Verbatim Reports for All Groups (Europeans and Africans), using the chi-squared test with Nass's transformation of X^2. (Expected values are given in Parentheses)

Response based on Reading Rate	Categories of Change Based on Verbatim Reports				
	Worse	No Change	Slight Improv.	Improv.	Much Improv.
Responding	1 (1.00)	4 (4.33)	1 (2.00)	6 (4.67)	3 (3.22)
Doubtful	0 (.87)	4 (3.76)	5 (1.73)	2 (4.04)	2 (2.60)
Not Responding	2 (1.13)	5 (4.91)	0 (2.27)	6 (5.29)	4 (3.40)

$N = 45 \quad X^2 = \sum_{i=1}^{15} \left[\frac{(oi - ei)^2}{ei} \right] = 12.25 \quad df = 8 \quad X^2_{8, .05} = 12.25$

Nass's transformation $X^2_T = 14.31 \quad df = 10 \quad X^2_{10, .05} = 18.31$

DISCUSSION

Both the original and transformed values of chi-squared for European males and all the groups have a non-significant result. This indicates that there is no particular relationship between the response to the drug as measured by reading rate and the categories of change in speech based on the verbatim reports. This is not entirely unexpected since the drug response based on reading rate was not clearly defined as discussed above (supra Section I F). In addition, subjective attitudes on the part of the subjects would determine their evaluations as to whether the drug was having any effect. The non-significant results here, however, do not mean that no relation exists between the drug response based on reading rate and the verbatim reports. The size of the sample in this study is relatively small and therefore a significant relation between these two aspects may not have been statistically evident. However, from an examination of the original tables in Appendix G for all groups, it can be seen that 10 subjects reported degrees of improvement where their results based on reading rate showed that they were responding to the drug. Seven subjects reported no change or a worsening in the speech condition, where reading rate indicated that these subjects were in fact not responding to the drug. Nine subjects reported degrees of improvement where the response to the drug on reading rate was doubtful. On the whole it would appear that subjective evaluations of improvement do not necessarily tie up with a relatively objective measurement. A relevant point that must be raised here is that stuttering fluctuates from day to day and the measurement of reading rate (as with the other measurements) taken once in three-weeks does not faithfully reflect the average state of the stutterers over a three-week period. The remarks made in the verbatim reports represent the subjects' evaluations over a period of three weeks.

/E. ...

E. SEVERITY RATINGS OF STUTTERING AGAINST CATEGORIES OF CHANGE IN SPEECH BASED ON THE VERBATIM REPORTS

It would be important to consider whether any association can be made between severity of symptom and the reported response to the drug. Table 35 depicts the severity ratings against the categories of change based on the verbatim reports. The severity ratings made during the first period were used since ratings from other stages of the experiment might have been influenced by medication and familiarity with the reading passage and experimental situation. The rating based on the playback of the recording (factor 3) was chosen as it was found to be reliable.

TABLE 35

Severity Ratings made on a 9-point scale (factor 3) Against Categories of Change in Speech Based on the Verbatim Reports. (The Number of African Subjects is Inserted in Parentheses.)

Categories of Change	Severity Ratings								
	1	2	3	4	5	6	7	8	9
Slight Improv.		1		3	1		1		
Improv.		1	2	2	1	(2) 6	1		(1) 1
Much Improv.	1			2	(1) 1	(1) 2	(2) 2	1	
No Change		2	3	(1) 5	1		(1) 1		2
Worse		1			1	1			
TOTALS	1	5	5	12	5	9	5	1	3

/Discussion ...

DISCUSSION

No special conclusion can be drawn from Table 35, in that there does not appear to be any outstanding association of severity with reported change in stuttering due to the drug. One feature can be noted which concerns six (out of a total of 9) African stutterers whose severity ranges from 6 - 9. These subjects reported that their speech had either improved or much improved, whereas only seven Europeans (out of a total of 37) whose severity ranges from 6 - 9 reported similar improvement. It would appear that the African subjects are either exaggerating their reaction, or in fact, did respond to the drug positively in view of their severe speech. A further feature noted concerns the relatively mild stutterers (severity ranging from 2 - 4) who tended to report no change in their speech while under the drug. This finding is not unexpected since relatively mild stutterers can be considered to experience less anxiety about their speech than severe stutterers (an observation made by Bloodstein, 16), and as such detected little or no change in their speech. This also supports Ayd's (5) observation that the greater the anxiety, the more effective is a tranquillizing agent (trifluoperazine).

1. COMPARISON OF SCORES DERIVED FROM THE MINNESOTA MULTIPHASIC PERSONALITY INVENTORY WITH CATEGORIES OF CHANGE BASED ON THE VERBATIM REPORTS

When this experiment was first envisaged it was thought pertinent to administer a personality inventory in order to detect whether any type of personality characteristic was evident in those subjects who responded to Amylozine. The Minnesota Multiphasic Personality Inventory was administered to the European subjects. The information derived is of little relevance to the problem of stuttering without a control group of non-stutterers, but is of general interest in terms of the drug response.

/Parker ...

Parker (99) suggested to the writer that diagnostic groups from the inventory should not be defined for the purpose of this experiment. The main reason for this is that there is no normative data for the MMPI in this country. In addition, the sample of subjects is rather small. He recommended that the inventory should be used as the dependent variable against independent variables such as the response to the drug. The group data could then be compared which might lead to an indentification of personality characteristics associated with the type of drug response. This procedure was adopted so that the comparisons became statistical rather than impressionistic. The means and standard deviations were obtained for each scale of the MMPI against the categories of change based on the verbatim reports - slight improvement, improvement, much improvement. The fourth category used was the combination of "worse" and "no change". The data from the verbatim reports were used as it was felt that the subjects' own evaluation of the effects of the drug would be more relevant to a comparison with personality characteristics than information based on other results obtained in this study. As so few European females took part, the scores for the European male subjects only will be considered in the analysis.

An analysis of variance was carried out where the F ratio was obtained for testing the differences between the means of each scale with the categories based on the verbatim reports. The T scores for each of the scales appear in Appendix H, together with the L (lie score), F (validity score) and K (correcting factor) scores. Table 36 contains the results of the ten scales of the MMPI as compared with the categories of change in speech based on the verbatim reports.

/Table 36 ...

TABLE 36

Means, Standard Deviations and F Ratios Applied to the Comparison of T Scores of the Ten Scales of the MMPI with Categories of Change in Speech Based on the Verbatim Reports for Thirty-one European Male Stutterers

Category of Change in Speech	HYPOCHONDRIASIS Mean	SD	DEPRESSION Mean	SD	HYSTERIA Mean	SD
No Change or Worse N = 12	52.25	11.26	61.00	10.41	53.00	6.15
Slight Improvement N = 6	51.67	8.14	70.33*	9.18	61.67*	9.00
Improvement N = 8	48.88	5.09	52.00	12.64	58.00*	4.57
Much Improvement N = 5	49.00	7.84	56.20	4.66	52.80	3.19
	F ratio = .31 Not Sign.		F ratio = 3.94 * Sign. at 5%		F ratio = 3.43 *Sign. at 5%	

Category of Change in Speech	PSYCHOPATHIC Mean	SD	INTEREST (MF) Mean	SD	PARANOIA Mean	SD
No Change or Worse N = 12	58.67	6.57	65.25	8.97	52.75	8.43
Slight Improvement N = 6	64.83	14.61	68.50	10.97	62.00	11.44
Improvement N = 8	61.25	8.80	64.75	8.71	53.00	10.64
Much Improvement N = 5	50.20	14.03	64.20	8.20	48.60	12.64
	F ratio = 1.98 Not Sign.		F ratio = .27 Not Sign.		F ratio = 1.75 Not Sign.	

Table 36 (contd.)

Category of Change in Speech	PSYCHASTHENIA Mean	SD	SCHIZOPHRENIA Mean	SD
No Change or Worse N = 12	58.58	11.25	55.42	9.59
Slight Improvement N = 6	71.00 *	13.93	70.83 *	18.12
Improvement N = 8	51.50	7.84	54.88	11.77
Much Improvement N = 5	55.20	4.38	55.20	4.60
	F ratio = 4.34 * Sign. at 5% (nearly at 1%)		F ratio = 2.88 * Not sign. (just below 5%)	

Category of Change in Speech	HYPOMANIA Mean	SD	SOCIAL I.E. Mean	SD
No Change or Worse N = 12	67.42	13.61	64.17	9.68
Slight Improvement N = 6	64.00	23.69	63.00	16.45
Improvement N = 8	60.25	15.10	53.25	8.08
Much Improvement N = 5	58.80	6.02	53.80	11.03
	F ratio = .52 Not Sign.		F ratio = 1.48 Not Sign.	

/Discussion ...

DISCUSSION

No significant results were obtained in terms of personality characteristics for those subjects placed in the categories of "Worse or No Change" or "Much Improvement". Those few significant results that did occur pertained particularly to subjects in the category "Slight Improvement", while one significant result was obtained for those placed in the category "Improvement". The significant results obtained for those subjects whose speech had slightly improved, concern the following three scales: "Depression", "Hysteria" and "Psychasthenia". It can be considered that perhaps the subjects falling into the category "slight improvement" are those who tend to be suggestible and who feel that they "ought" to report some improvement although they might not have been sure that the drug was having any response. These subjects, by virtue of their own evaluations might have read more into their seemingly uncertain reactions than was probably the case. The comments made by Hathaway and McKinley (56) while describing these scales in their Manual for the Inventory, tend to support the observation made about these subjects. Of the "Depression" scale Hathaway and McKinley state that a high score "indicates poor morale of the emotional type with a feeling of uselessness and inability to assume a normal optimism ... (it) is characterized by lack of self-confidence, tendency to worry" (p. 19). Subjects scoring highly on the "Hysterical" scale "are more immature psychologically than any other group ... their symptoms can often be 'miraculously' alleviated by some conversion of faith or by appropriate therapy" (p. 19). Of the "Psychasthenia" scale the authors state that "frequently a psychiasthenic tendency may be manifested merely in a mild depression, excessive worry, lack of confidence, or inability to concentrate" (p. 20). From the examination of the means of all the scales, it can be seen that, except for two ("Hypochondriasis" and "Hypomania"), the subjects falling into the category of "Slight Improvement" score the highest.

Those subjects falling into the category of improved speech obtained only one significant result, and this was for

/the ...

the scale "Hysteria". Similar remarks about these subjects could be made as for those whose speech had improved slightly and who had also scored significantly on this scale. Generally from the results of this study, there does not appear to be any outstanding personality characteristic that is associated with improvement of stuttering caused by the drug.

COMMENT ON THE VERBATIM REPORTS

The verbatim reports constitute the subjective material of this study. As already discussed (supra, Chapter 3, Section C), the statistical data derived from measurements of stuttering-change in previous drug studies, have not always shown significant results, while changes based on subjective evaluations and clinical impressions have been reported. It was argued that the subjects' own estimation of improvement must be seen in a positive light, even if statistics do not support the evaluation of improvement.

SECTION III - DAILY SCHEDULES

A total of 4,534 schedules were marked by forty-six subjects, making an average of 98.56 schedules per subject. This is a high return considering that 105 was the maximum number that each subject could complete.

The results of the schedule for each subject are given in Appendix I, Part 1. They include the means and standard deviations of the scores for each of the five periods. F ratios from the forty-six analyses of variance; degrees of freedom for the "between-categories" and the "residual" scores; and the over-all means for the five periods are also included in the results for the individual subjects. These latter aspects were included as a matter of course as a part of the particular programme-tape used with the C.S.I.R. computer

/and ...

and are included in Appendix F, Part I for convenience and for future reference. Unfortunately, the cost of the computer prohibited an analysis where scores for each question over the five periods could be considered. This would have indicated which questions were better than others. Apart from the cost, however, this would involve a detailed study in its own right.

The results of the daily schedules are presented from five points of view:

A. The over-all analysis of the lowest mean scores for the five periods.

B. Response to the drug taking into account the trend of stuttering over the experimental period.

C. Severity ratings of stuttering against the response to the drug after the trend of stuttering had been taken into account.

D. Categories of change in speech based on the verbatim reports against the response to the drug after the trend of stuttering had been taken into account.

E. Discussion on and limitations of the daily schedules.

A. OVER-ALL ANALYSIS OF THE LOWEST MEAN SCORES DERIVED FROM THE DAILY SCHEDULES FOR THE FIVE PERIODS

The following table is a descriptive summary analysis of the lowest mean scores obtained by each subject, irrespective of the periods of the study. Details of the drug and placebo allocations are also included. One subject (identity number 17) was excluded from this table as he obtained the same mean scores for three periods.

/Table 37 ...

TABLE 37

Lowest Mean Scores Obtained from the Daily Schedules for forty-five Stutterers for the Five Periods of the Study

Medication or non-medication periods	Europeans	Africans	Total	Percentage
DRUG				
* Administered in 2nd Period	5	1	19	42.22
* Administered in 4th Period	6	4		
PLACEBO				
Administered in 2nd Period	2	-	7	15.55
Administered in 4th Period	5	-		
NON-MEDICATED PERIODS				
1st	7	1	8	17.77
3rd Period - (Drug in 2nd Period)	1	2	4	8.88
3rd Period - (Drug in 4th Period)	1			
5th Period - (Drug in 2nd Period)	3		7	15.55
5th Period - (Drug in 4th Period)	3	1		
TOTALS	36	9	45	99.97

* Two subjects, one from each of the drug periods, obtained the same mean scores for one other period.

DISCUSSION

As can be seen from the above table, the largest group of subjects (19) obtained their lowest mean scores derived from the daily schedules during the drug administration. Of these, 13 received the drug in the second period.

/No ...

No particular reason for this can be offered unless it is due either to randomization of the drug and placebo allocation, or to individual differences. Seven subjects obtained the lowest mean scores for the placebo period, and five of these received the placebo in the fourth period.

Nineteen subjects obtained their lowest mean scores for the non-medication periods. Eight of these subjects had improved speech during the first period, which may be due to their participation in the experiment and the knowledge that something was being attempted on their behalf. Greater speech awareness caused by the completion of the schedule in the first period might have contributed to the improved scores. It is also possible that these subjects underestimated their problem, and only became aware of some frame of reference as the study proceeded. The seven subjects who obtained their lowest mean scores in the fifth or last period of the experiment may have been influenced by the relief felt that the experiment was shortly to be terminated. From an inspection of the scores in Appendix I, it appears that there is a trend towards smaller standard deviations in the last periods of the experiment. This might indicate that automatic marking took place with some inattention, which might be due to a lack of interest as the medication periods had passed.

In general, the means do not indicate any outstanding result apart from the consideration that 42% of the subjects responded to the drug by virtue of their lowest mean scores during the period of drug allocation.

B. RESPONSE TO THE DRUG AFTER TAKING INTO ACCOUNT THE TREND OF STUTTERING OVER THE EXPERIMENTAL PERIOD

As already indicated, stuttering fluctuates a great deal over periods of time. In terms of this study, familiarity with the experimental situation itself might tend to influence the stutterers towards better speech. In view of this it was thought essential to take into account the "trend" of stuttering for each subject over

/the ...

the five periods of the study, so that the response to the drug could be considered more objectively without the influence of the normal fluctuations of stuttering and/or familiarity with the experimental situation. In order to detect this trend of stuttering, graphs were plotted for the mean scores for each period for each subject. Points on the graphs depicting the scores for the first, third and fifth periods were joined, showing the trend of stuttering over the non-medication periods. The drug response was measured by noting the distance between the point representing the mean score for the drug period and the line that the "trend" took between the non-medication periods. This distance was measured in millimetres. Samples of representative graphs appear in Appendix I, Part II. Table 38 contains the response to the drug in terms of the distance to the nearest millimetre between the point depicting the drug response and the line taken by the trend of stuttering over two periods of non-medication. Millimetres preceded by minus signs indicate a negative response to the drug. No response to the drug at all or distances measuring fractions of a millimetre that are less than .5 are represented by the figure "0". In the same way fractions of a millimetre (less than .5) that indicate a negative response are represented by the figure "-0". Table 38 appears on the following page.

DISCUSSION

Thirty-seven subjects showed a positive reaction to the drug when the trend of stuttering over the non-medication periods was taken into account. This represents 80,43% of the total group (Africans included) which is a much higher percentage than that reported above for the lowest mean scores for the drug period (92%). The average distance of improvement from the trend for the thirty-seven subjects (taking into account fractions of millimetres from the original graphs) is 3,7 mm. Of the nine subjects who obtained negative scores during the drug allocation, three are severe and three are moderately severe stutterers with overt vocalized symptoms, and three can be described as comparatively "controlled"

/Table ...

TABLE 38

Distance to the Nearest Millimetre of the Drug Response from the Line of Trend of Stuttering Between Two Non-Medication Periods

Millimetres	Europeans	Africans	Total	Percentage
Positive Response				
14	1		1	2.17
13				
12				
11				
10	1		1	2.17
9				
8	1		1	2.17
7		1	1	2.17
6	1	2	3	6.52
5	3		3	6.52
4	7	1	8	17.39
3	3	3	6	13.04
2	4		4	8.69
1	5	1	6	13.04
0	3		3	6.52
Negative Response				
-0	4		4	8.69
-1	2		2	4.35
-2	1		1	2.17
-3	1	1	2	4.35
TOTALS	37	9	46	99.96

stutterers who allow little of their symptoms to be seen. Thus a negative response to the drug does not appear to be associated with any obvious type of symptom present (overt to covert). Three subjects who obtained positive distances, although they represented fractions of a millimetre, are compared with mild stutterers. These observations are based on the writer's clinical impression of the speech of these

/cases ...

cases, not on the reading performances during the three-weekly assessments.

The trend of stuttering over the three non-medicated periods falls into four natural and distinct patterns. One of each of these patterns is represented in the four samples of graphs in Appendix I, Part II. Fourteen subjects show a pattern similar in form to Graph I - this pattern is downward-upward in movement with the lowest point at the third period. The subjects here received either the drug or placebo in the second and fourth periods, so that the element of expectation, or even disappointment, does not appear to explain the pattern observed.

Eleven subjects showed the reverse pattern by obtaining an upward-downward trend, with the highest point reached during the third period. This pattern is illustrated in Graph 3. Again there does not appear to be any particular association with the drug or placebo allocations.

Fourteen subjects show a trend which proceeds downwards until the end of the experimental period. This pattern is represented in Graph 2. This might possibly indicate improved speech brought about by speech awareness and aided by increasing familiarity with the daily schedule and general experimental situation. It might also indicate that automatic marking of the schedules took place, especially towards the end of the experiment where the element of attention to the schedules had diminished. No particular association can be made with either the drug or placebo allocation, as both groups are represented by this pattern.

Seven subjects showed a continuous increase in scores representing worse speech. The trend of stuttering was upward in progression, and this type of pattern is represented in Graph 4. Except for three, these subjects obtained positive distances which reflected improved speech while under the drug. However, when the medicated period was completed, their speech continued to worsen. This trend is probably due to individual differences and the subjects' cyclic variation

/in ...

in stuttering.

The patterns discussed here probably represent groupings of the type of cycles that stutterers experience with their speech. It would be interesting to develop this observation further by plotting changes in stuttering based on a form of daily questionnaire, or daily interview, at selected instances over a long period of time. This may provide a picture of the type of cycle that individual stutterers have and could be considered as important information to the therapist and to the stutterer himself. The patterns of cycles eventually established might even go so far as to indicate "types" of stutterers.

C. SEVERITY RATINGS OF STUTTERING AGAINST THE RESPONSE TO THE DRUG AFTER THE TREND OF STUTTERING HAD BEEN TAKEN INTO ACCOUNT

Although the severity of stuttering was ascertained during the three-weekly assessments, some attempt will be made here to consider severity as a constant against the responses to the drug in terms of the distances measured after the trend of stuttering change had been taken into account. Table 39 represents this data. The severity rating made by the experimenter in the first period was taken as a representative rating of the subjects' severity. Ratings from any other period would have been influenced by the drug or placebo response, and by the general familiarity with the experimental situation and the reading passage. The rating made on the second playback (factor 3) was considered the most accurate.

/Table 39 ...

TABLE 39

Severity Ratings Made During the First Period Against the Drug Response Represented by the Distance in Millimetres Based on the Daily Schedules. (The number of African Subjects is placed in parentheses)

Millimetres	Severity Ratings made on a 9-Point Equal-appearing Intervals Scale								
	1	2	3	4	5	6	7	8	9
Positive Response									
14						1			
13									
12									
11									
10		1							
9									
8					1				
7						(1) 1			
6			1		(1) 1	(1) 1			
5				1		2			
4	1	1	1	3	1		(1) 1		
3		2		(1) 1		(1) 2	(1) 1		
2				2		2			
1			1	2			1	1	(1) 1
0			1	1			1		
Negative Response									
-0			1	1	1				1
-1				1					1
-2					1				
-3		1					(1) 1		
TOTALS	1	5	5	12	5	9	5	1	3

/Discussion ...

DISCUSSION

The majority of stutterers have an average severity rating of 4 - 6 and these have generally been placed along the distance scale of improvement measuring 1 - 7 mm., with one subject obtaining as great a distance as 14 mm. It appears from Table 39 that the more severe stutterers showed little or no response to the drug on the daily schedules. This result is somewhat different from that reported in Table 35 (Section II, E) where the severity of symptom was compared with categories of change in speech based on the verbatim reports.

The severe stutterers, particularly the African subjects, who had reported evidence of a drug response, were placed in the categories "Improvement" and "Much Improvement". The possibility of exaggeration on the part of these subjects, while making their verbal reports, cannot be excluded.

From Table 39 it would appear that there is a slight tendency for the more severe stutterers to show less improvement than the other stutterers. For the purpose of theoretical discussion, the opinion could be tentatively put forward that by virtue of the severity of their symptom, the severe stutterers undergo little change in speech. Stuttering could be viewed as an attempt to adjust to maladaptive behaviour, and as such it is possible that the individual showing severe patterns of stuttering are less adaptive (adjusting), and more rigid (at least in speech, possibly in personality) than less severe stutterers. These impressions are also gained from clinical experience. However, this is a generalized conjecture. The number of severe stutterers in this study is so small that it would be presumptious to draw definite conclusions concerning this aspect.

/D. ...

D. CATEGORIES OF CHANGE IN SPEECH BASED ON THE VERBATIM REPORTS AGAINST THE RESPONSE TO THE DRUG AFTER THE TREND OF STUTTERING HAS BEEN TAKEN INTO ACCOUNT

The reported change in speech due to the influence of the drug as contained in the verbatim reports should correspond with the performances in the mean scores of the daily schedules, as both items consist of subjective evaluations of speech made by the subjects themselves. Table 40 (Page 160) is a descriptive presentation of the drug response as measured by distance (to the nearest millimetre) after the trend of stuttering had been taken into account, against the categories of change based on the verbatim reports.

DISCUSSION

Those subjects who reported improvement in the verbatim reports and who obtained positive distances representing the drug response amount to 58.70%. There is one exception to this group where a reported slight improvement in speech contradicts the negative distance obtained on the graph. Those subjects who reported that much improvement had taken place with the drug are not as strongly represented on the distance scale as those whose comments indicated improvement. A number of these subjects had reported to the experimenter that, in retrospect, they had tended to mark the schedules more conservatively than was warranted. Answers on the schedule depicting "much better", "many more", etc., were regarded as ultimates and represented too great an improvement on the schedule, which caused several of the subjects to mark lower-ranking answers. Another possible explanation is that the differences from the trend are comparatively small due to the variability of stuttering itself. Of the nine subjects who were classified as "Much Improved", the trend for five subjects shows a slight or gradual change over the five periods, which would suggest that the drug response is not strongly represented on the graphs. It is also possible that these subjects exaggerated their improvement while reporting verbally to the

/experimenter ...

TABLE 40

The Drug Response Represented by Distance in Millimetres Based on the Daily Schedules Against the Categories of Change in Speech Based on the Verbatim Reports. (The number of African subjects is placed in parentheses)

Millimetres	Categories of Change in Speech based on the Verbatim Reports				
	Slight Improv.	Improv.	Much Improv.	No Change	Worse
Positive Response					
14			1		
13					
12					
11					
10		1			
9					
8		1			
7		(1) 1			
6		(1) 2	1		
5		1		1	1
4	1	2	(1) 3	1	1
3		1	(2) 2	(1) 3	
2	1	2	1		
1		(1) 3	1	2	
0	2			1	
Negative Response					
-0	1			3	
-1				2	
-2					1
-3	1			(1) 1	
TOTALS	6	14	9	14	3

experimenter.

Of those subjects who were classified under "No Change" or "Worse", 21.73% did, in fact, obtain positive responses on the daily schedules. The patterns of the trend over the non-medication periods for these subjects are varied and are not particularly distinctive.

Seven or 15.21% who were classified under "No Change" or "Worse" obtained negative results on the distance scale. Two subjects obtained negative responses on the daily schedules as opposed to the category of "Slight Improvement".

Generally a large majority of subjects (73.91%) corroborated the results of the daily schedules with their own evaluations as reported verbally at three-weekly intervals. Although it is apparent that the schedule is not sufficiently sensitive or discrete, it appears that it is a suitable instrument for the measurement of change in stuttering.

E. DISCUSSION ON AND LIMITATIONS OF THE DAILY SCHEDULE

A number of incorrectly completed schedules had to be eliminated by the experimenter in the early stages of the experiment, when some subjects appeared confused about the schedule as a whole or about specific questions. A small number of schedules were eliminated from the total when the experimental period was completed. This was caused by several subjects who had reported that for specific days unusual events had taken place e.g. minor motor accident, the announcement of an engagement, bad influenza attack.

On the whole it appeared that the majority of subjects understood the scheme of the schedule. A number of stutterers, especially those who had received previous therapy and had some degree of insight into the stuttering problem, said that the schedule appeared to have covered most aspects,

/and ...

and were satisfied that it reflected change in their symptoms and attitudes. African subjects appeared to react to the schedule in a similar manner to the Europeans, although some expressed confusion during the first part of the study about the meaning of some of the questions. Some subjects completed more than the required amount of schedules in one period (i.e. 21). This usually occurred when the medication period was protracted due to some irregularity while taking the Spansules.

The experimenter found a number of limitations in the schedule while sorting and coding, and also noted a number of comments made by subjects during the interviews. The limitations are discussed here:

1. Some subjects did not admit to "covering up" their stuttering and it is possible that they marked questions 5 and 10 (Appendix C) "same as usual" or indicated the more favourable answers. The comparatively mild stutterers reported that they never, or very rarely, substituted words for feared ones and that question 7 was redundant - they were advised to mark "usual amount" rather than omit the question. Question 9 is similar to this. It would appear, from this example alone, that not all the questions are applicable to all stutterers. It would be difficult to provide questions which would apply to all stutterers due to the individual patterns of symptomatology and degrees of severity.

2. Many of the questions appeared to be rather generalized - e.g. "How anxious did you feel while stuttering today?" (question 3), "How much fear did you have about your stuttering?" (question 8), "How embarrassed did you feel about your speech today?" (question 11). Although these questions were deliberately phrased in this way so that some colloquial meaning might be conveyed to all subjects irrespective of the type of symptom and the experience with previous therapy, it was felt that perhaps they carried too "loose" a meaning which could be misconstrued.

3. The writer was cognizant of the possibility of automatic or rote marking taking place when the schedule was

/first ...

first drawn up. Some attempt was made to forestall this by inserting answers to one question in reverse order from usual (question 9), and by randomizing the rank order of the answers for all the questions. However, it was noted that rote-marking seemed to have taken place with some subjects, especially when they became familiar with the pattern of the schedule. It was possible that some subjects did not mark the schedule each evening as instructed, but on one occasion would complete several, representing a number of days - thus rote-marking would indicate a lack of attention to the questions. It was felt that some antagonism was prevalent in two subjects (12, 17) who, from the early stages, marked the schedules in a rote manner and were defensive in attitude when this aspect was discussed with them. One subject (8) tended to have very similar scores but he pointed out, before marking any schedules, that his stuttering hardly ever changed and that this would probably be evident at the end of the experiment. The small range or non-existence of standard deviations for these subjects and others (14, 24) can be seen in Appendix I, Part 1, which is suggestive of automatic marking or lack of fluctuation in stuttering.

The problem of rote-marking could have been counteracted to some extent by drawing up several schedules containing a different order of questions with a different order of answer presentation. It must be pointed out, that despite the apparent willingness of some subjects to participate in this experiment, some lack of interest and inattention was noted, which contributed to the automatic marking. Any modified schedule to prevent this rote-marking would not necessarily counteract lack of interest and co-operation.

4. The scoring of the schedule by allocating a rank-order number to the answers, appeared to work adequately. However, a number of remarks were made to the experimenter by some subjects, that they experienced some difficulty in making a choice between, for instance, "much less tense", and "slightly less tense" and that the response they wanted to indicate lay between these two answers. For this reason,

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there should have been a series of answers along a nine-point ranking system, rather than five. This would have provided a system where the answers were more sensitive and changes in stuttering would have become more discernible.

5. An interesting, and perhaps important facet to the daily schedule was noted during the early stages of the experiment. Several stutterers reported that their speech had improved during the first week or two and they attributed this improvement to an awareness of their speech brought about by the daily completion of the schedule. Others reported an improvement in their speech but felt that the schedules had not influenced them in any way. On the other hand some subjects reported that their speech became worse when they began to mark the schedules as they were more "speech conscious". The comments made by the subjects concerning the daily schedule in the early stages of the experiment, were included in the verbatim reports.

From the results it can be deduced that the daily schedule was a suitable measure to denote change in speech and attitude towards stuttering. There is strong agreement between the results of the schedule (drug response) and the evaluation of the subjects' impression of the drug reaction as contained in the verbatim reports. Some limitations have been pointed out, although it is by no means certain that all have been considered here. The modification that should be made in any future use of the schedule, is the inclusion of a greater range of answers, so that more sensitivity of measurement will be present. As it now stands the schedule does not appear to be sufficiently discrete in indicating the degree of improvement or worsening in the stuttering condition. A further suggestion to improve the schedule concerns the construction of one standard form, divided into selected sections of questions which would be applicable to particular stutterers, depending on symptomatology. The general scheme of the schedule would remain the same, but should be devised so that the section applicable to one kind of stutterer is presented separately from the other sections. This approach would of course necessitate a preliminary symptom analysis

/and ...

and a clinical appraisal of the stutterer himself.

An interesting associated feature that arose was that some stutterers, in the early stages of the study, reported improved speech due to marking the schedule - others reported worse speech due to being more conscious of their stuttering. This implies that the utilization of such a schedule in a speech therapy programme could be helpful and instructive, both to the therapist and the stutterer. The efficacy of the schedule could be further ascertained by research workers and speech therapists who would be concerned with the changes in stuttering behaviour.

SUMMARY OF CHAPTER

I Three-weekly Assessments and Measurements

A. The intercorrelation matrix showed high reliability between the experimenter's three severity ratings of stuttering (.95 to .97). The correlations between the experimenter's ratings with those of the five judges ranged from .85 to .92 for the first recordings heard, and .86 to .93 for the second recordings. A high degree of agreement was also noted between the judges. The experimenter's ratings were considered highly reliable.

B. The intercorrelation matrices for each of the five periods showed that the experimenter's severity ratings were significantly correlated with reading rate, frequency counts, ratings based on conversation, and the subjects' own ratings. The first three factors correlated the most satisfactorily of all the factors measured.

The anxiety measure correlated poorly with the ten factors, although more satisfactorily with the experimenter's severity ratings and reading rate. It was deduced from the results that anxiety may be more closely associated with the duration of the blocks (severity) than with other aspects of stuttering behaviour.

C. The experimenter's severity ratings were found to be consistent, which suggested that ratings were not made more severely on some occasions than others.

/D. ...

D. The subjects rated themselves inconsistently from period to period and showed great variation in the way they rated themselves. Inconsistencies between their ratings on their reading and recordings were noted.

E. An analysis to detect possible carry-over effects of the drug or placebo into the non-medicated periods, was conducted. No significant results were obtained and it was concluded that no carry-over effect had occurred.

F. The effect of adaptation to the reading passage was tested by an analysis of variance and "t" tests for significance, and was found to be present.

G. Two analyses were conducted to test whether Amylozine was effective in reducing stuttering. The first analysis, where adaptation was taken into account, showed no significant result. The second analysis eliminated the between-subjects differences and adaptation. A significant result was obtained from the severity ratings made by the experimenter. The significant finding was related to the anxiety measure, and it was postulated that anxiety is more closely related to the severity of stuttering than to other factors.

II Verbatim Reports

A. The verbatim reports were classified into categories of change in speech in response to the drug and placebo. 63.03% of the subjects reported slight improvement to much improvement with the drug. The majority of subjects (67.39%) did not react positively to the placebo.

B. Typical descriptive remarks made by the subjects in their verbal reports were presented. Similar remarks were made for the placebo and drug responses, although with the drug reaction the subjects tended to make more positive comments.

C. Fourteen subjects reported that they felt tired and drowsy while under the drug, but this tended to wear off after a short period, otherwise no side-effects were noted.

D. No relationship was found when the drug response based on reading rate and the categories of change based on the verbatim reports were compared. It was pointed out that a measurement (reading rate) taken once in three weeks would not necessarily reflect any improvement that might have taken place over a period of three weeks.

E. Severity ratings of stutterers were compared with the categories of change based on the verbatim

/reports ...

reports, but no specific conclusion could be drawn. It was observed that the majority of African stutterers who were severe, improved more than the severe Europeans - the element of suggestion was considered in relation to this.

F. The significant results obtained when comparing the T scores of the ten scales of the MMPI with categories of change based on the verbatim reports, were found in those subjects who had improved slightly. The three scales that were significant were concerned with "Depression", "Hysteria" and "Psychasthenia". Only one scale reached significance for those subjects who reported improvement, i.e. "Hysteria". The question of suggestion was discussed as it pertained to these particular scales.

III Daily Schedules

A. The lowest mean scores over the five periods from the daily schedules were obtained by 42.22% of the subjects during the drug allocation. The majority of these subjects received the drug during the second period of medication. Comments were offered to explain this.

B. Graphs were plotted so that the "trend" of stuttering over the five periods could be taken into account. Of the total number of subjects, 80.43% showed improvement with the drug when distances in millimetres representing the drug response were measured - the distances ranged from 14 mm., to fractions of a millimetre, with an average distance of 3.7 mm. The various patterns of the "trend" of stuttering were discussed.

C. Initial severity ratings of stutterers were compared with the distances representing improvement with the drug after the "trend" of stuttering had been taken into account. It appeared that the more severe stutterers showed little improvement with the drug compared with the majority of stutterers whose severity ranged from 4 - 6.

D. Categories of change based on the verbatim reports were compared with distances representing improvement with the drug, after the "trend" of stuttering had been taken into account. Those who reported improvement in speech, and who also obtained positive "distances" amounted to 58.70%. Seven subjects who were categorized as "No change" also obtained negative "distances". Generally it appeared that comments made by the majority of subjects (70.91%) in their verbal reports confirmed the results from the daily schedules.

E. General comments about the daily schedules were made. Various limitations were observed and discussed, and modifications suggested. On the whole it was felt that the daily schedules were effective in depicting stuttering change.

CHAPTER 5

CONCLUSIONS

The hypothesis underlying this study is that a combination of a tranquillizer and sedative (Amylozine) will bring about a reduction in anxiety in stutterers, thereby lessening the severity and frequency of stuttering. Cognizance was taken of the shortcomings apparent in previous studies on drug therapy with stutterers. An attempt was made to execute a design that would, to some extent, eliminate some of the limitations existing in previous work. Information was obtained on as many aspects of change in stuttering behaviour as possible, which included data provided by the subjects themselves and the experimenter. It was realized that measurements taken periodically (once in three weeks) would not necessarily reflect changes that took place as a result of any positive effects of the drug. An attempt was made to counteract this by having the subjects complete a daily schedule.

As the study progressed and the analyses of data were prepared, it became apparent that a subsidiary contribution could possibly be made by this study in terms of the nature of the measurements of stuttering behaviour. In this regard a number of observations made would have to be substantiated by further research. The following seven pertinent findings concerning measurements of stuttering are put forward for consideration:

1. It was found in this study that a single investigator can make valid ratings of the severity of stuttering. This was supported by the high and significant correlations between five judges and the experimenter. The extremely high correlations between the experimenter's three severity ratings of the same reading for individual subjects taken

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at different times, would seem to indicate that visual cues displayed by stutterers while reading had little effect on the severity ratings made. It was postulated, as a result of this finding, that tensions, where physical manifestations accompanied stuttering, are reflected in the manner of speech itself, so that it can be detected from tape recordings. The majority of stutterers in this study had vocalized stuttering, although at times a number of subjects had non-vocalized symptoms dispersed in their speech. To verify this finding, it would be necessary to conduct an investigation with stutterers who have a variety of symptoms (overt vocalized, covert non-vocalized and a combination of these). Severity ratings based on readings or conversation, while the subject is present, and on the recordings of this speech played back at intervals of time, could then be made and compared in order to establish the possible influence that visual cues may have on severity ratings.

2. Frequency of the occurrence of stuttered moments is not necessarily an adequate measure of stuttering change and severity. Severity ratings of stuttering correlated most highly with reading rate, ranging from .79 to .92 (significance level being .29). The frequency counts of the moments of stuttering also correlated well, although not so highly with the severity ratings (correlations ranged from .46 to .71). The correlations between the frequency count and reading rate extended from .64 to -.76. From the results it appeared that the reading rate, towards the end of the experimental period, tended to be influenced more by the length of the blocks than by the frequency with which they occurred. This was supported by the partial correlations between the experimenter's severity ratings and reading rate (where the joint correlations with the frequency counts were eliminated) - the correlations here ranged from .72 to .88 over the five periods. It was postulated that if the severity of stuttering undergoes change within the same individual over a period of time, this would be corroborated by change in reading rate, rather than frequency. Thus it appears that frequency counts of stuttering is not a

/sufficiently ...

sufficiently reliable measure of stuttering severity when used alone.

3. It appears that a relative association exists between anxiety and the duration of the stuttering block. The severity ratings made by the experimenter appeared more closely connected with the anxiety measure used, than other factors measured, although the correlations were not high, and in some cases did not reach significance. The form of relationship between the anxiety measure, reading rate and frequency counts suggested that the duration of the stuttering block might be influenced by anxiety. This hypothesis could be tested by correlating scores from an anxiety measure with the mean length in time of stuttering blocks. This could be done over a period of time where change in stuttering is under investigation.

4. The clinical impression that stutterers are poor judges of their own speech performance was borne out by the results of this study. The subjects' severity ratings correlated significantly with the experimenter's ratings, but they were not very high and ranged widely from .37 to .70. It was originally predicted in this study that the subjects' ratings would differ from the experimenter's due to the element of subjectivity present in the stutterers. It was further predicted that their ratings based on the recordings heard would differ from, and be higher than those based on the reading itself. This again was thought to be due to the element of subjectivity and the poor attitudes displayed when subjects are confronted with recordings of their own speech. Correlations of the subjects' ratings on reading were higher with reading rate, than while making ratings based on the recordings. An analysis of variance indicated that there was a great deal of variation between the subjects in the way in which they rated themselves.

5. From the results of the scores of stutterers obtained in this study, it seems that if a passage is read several times, the adaptation effect must be taken into account, even if the periods between the readings extend over a period of three weeks. When this study was first

several times, the adaptation effect must be taken into account, even if the periods between the readings extend over a period of three weeks. When this study was first

would not be substantial over a three-week period. It cannot be clearly established whether the adaptation noted here is the result of familiarity with the reading passage itself, the result of familiarity with the general experimental situation, or due to a natural trend of improvement in stuttering in some subjects independent of the experiment. However, it can be said that adaptation did occur in terms of the passage which was read at three-weekly intervals. This, to some extent, contradicts the findings of Jamison (61) and Jones (73) who found that stuttering returned to its original strength after a four-hour or twenty-four-hour period when the same passage was read five times on the same day. This suggests that further research should still be conducted concerning adaptation to the same reading passage over varying periods of time, not only on the same day. Concurrently, the normal fluctuations in stuttering must be taken into account, as well as the familiarity of the subjects with the experimental situation.

6. The daily schedule, which is original in construction, could be used with good effect in a therapeutic programme with stutterers, or in investigations where self-evaluations on daily stuttering change are required. The schedule as it now stands should be modified, bearing in mind the limitations already discussed.

7. The "trend" or variability of stuttering behaviour should be considered in any experimental study concerning stuttering change. What is considered to be an innovation was used in this study; namely the manner in which the "trend" of stuttering over fifteen weeks was taken into account. Graphs were plotted for the mean scores derived from the daily schedules for each period for each subject. Points on the graphs depicting the scores for the first, third and fifth periods were joined, showing the trend of stuttering over the non-medicated pe[illegible] This "trend" probably represents the type of [illegible] stutterers experience with their speech. [illegible]ed that information on the cycles of stuttering [illegible] some relevance to therapists and to stutterers [illegible]ves, and an analysis of such information for a large group of stutterers may even lead to the differentiation between

/"types" ...

"types" of stutterers. Such cycles of stuttering can be obtained from the use of daily schedules which stutterers can complete, or alternatively from daily interviews where measurements can be taken. The so-called "cycles of stuttering" have been referred to in the literature although this subject has perhaps been dealt with in a cursory manner. Little attempt has been made to explore this aspect of stuttering on a scientific basis.

The positive effects of Amylozine on the speech of stutterers were noted from three sources of data - from the *verbatim* reports, the daily schedules and the severity ratings made by the experimenter, the latter being the only "objective" measure that produced significant results. The findings pertaining to each of these sources are as follows:

1. According to what the subjects themselves reported (verbatim reports), 63.63% experienced varying degrees of improvement with Amylozine. To some extent the element of suggestion was controlled by the use of the placebo in the "double-blind" technique. Thirty-one subjects (67.39%) did not respond to the placebo. The presence of suggestion, especially among those subjects whose comments were categorized into the "slight improvement" group while under the drug, cannot be eliminated. Of the nine African subjects, seven reported improved or much improved speech under the drug. The influence of suggestion among these subjects cannot be eliminated entirely

2. The lowest mean scores from the daily schedules for the drug allocation over three weeks was obtained by 42% of the subjects. This result was not considered sufficiently accurate when it was noted that stuttering varied over the fifteen weeks of the study - a variation not necessarily associated with the periods of the study.

As a result of this observation, graphs were plotted using the mean scores from each period. The distance of the mean score for the drug period was measured from the line of "trend" between two non-medication periods, and

/any ...

any positive distance represented improvement in speech brought about by the drug. Distances ranged from fourteen millimetres to fractions of one millimetre - the average distance being 3.7 millimetres. Thirty-seven (80.43%) subjects showed that they improved with the drug when the "trend" of stuttering was taken into account. This is a very large proportion of the total group, and if accurately represented, indicates that Amylozine is most effective in reducing stuttering or feelings about stuttering. The discrepancy between this finding and what was reported above for subjects when their verbatim reports were classified into categories of change, suggests that the subjects were confused when evaluating their responses over a period of time and probably misrepresented what had actually occurred when they marked the daily schedules. Obviously they could not be aware of the pattern of "trend" which their stuttering was taking at the time.

3. A significant drug effect was found with the mean scores based on the experimenter's severity ratings. In this analysis the effect of adaptation was eliminated, and the differences between the subjects were taken into consideration. When the factor of reading rate was tested for a drug response, no significant result was found although the means were lower than for the placebo group. The significant effect based on the severity ratings is of particular importance in this study and is seen in the light of the role of anxiety in stuttering.

The correlation of the severity ratings with the IPAT Anxiety Battery, although low, was the best correlation of any of the factors. A decrease in correlations was noted between the Anxiety Battery scores with reading rate and frequency counts. This suggested that the anxiety measure scores may be more closely connected with severity or with that aspect that causes blocks to become shorter. It was postulated that reduction of anxiety and tension brought about by a drug, had indirectly, a greater influence on the severity of stuttering, than the frequency with which it occurs. If reduced anxiety does affect stuttering,

/it ...

it would do so in terms of lessening the severity, by shortening the duration of the blocks and possibly reducing struggle responses. Frequency of stuttering has been referred to in the literature as one measure of the severity of stuttering. In view of the findings reported in this study, it appears that a clear differentiation should be made between the terms "frequency" and "severity" of stuttering, and that some caution should be exercised in using frequency counts of stuttering as an independent measure of the severity of stuttering.

It is surprising that, of the thirteen studies concerned with drug therapy and stutterers reviewed in this dissertation, only two considered severity ratings as well as frequency counts of the moments of stuttering. Kent and Williams (77) found no significant reduction in severity, but found that reading rate among their subjects was reduced during the drug period. This finding partly corroborates the results of the present study. Mitchell (89) also found no statistically significant results when using severity ratings, but reported that, from observations noted and from the comments made verbally by her subjects, there was "a change in the stuttering patterns tending toward easier blockings involving less struggle"(p. 77).

The finding that the reduction of anxiety brought about by Amylozine has a greater influence on the severity of stuttering than any other factor measured, is thought to be a contribution to the knowledge of stuttering behaviour. The results partially support the hypothesis that reduction in anxiety, brought about by a combination of a tranquillizer/sedative, reduces the severity of stuttering. The original hypothesis included the term "frequency" of stuttering, which no longer appears applicable. The finding presented here has been discussed in a positive light, but it is realized by the writer, that the results are barely significant with this relatively small group of subjects. If studies are conducted to verify this experiment, similar findings may not be reported with larger groups of subjects. Theoretically, however, the conclusion drawn appears plausible.

/The ...

The participation and reactions of African stutterers in this study did not indicate any outstanding differences as compared with European stutterers. The only observation noted is that some of the African subjects might have been more suggestible in terms of their very positive reactions to the drug, according to their verbal reports. On the other hand, the distance depicting improvement with the drug from the trend of their stuttering (based on the daily schedules), represented the average distance obtained by most of the subjects participating in the experiment.

The effects of a drug on stuttering cannot be detected easily by objective measurements since it appears that there are many elements that can confound the final results, such as suggestion; the normal cyclic variation of stuttering; different symptomatologies; possible differences in the range and quality of anxiety experienced by stutterers; different attitudes to the experimenter and experimental situation; and different personality structures. Information obtained from subjective evaluations has in addition many limitations, many of which apply to objective assessments.

Future investigations concerning the effects of drugs on stutterers should take cognizance of the fact that the human response cannot always be accounted for when attempting to make objective appraisals of aspects of stuttering. Nevertheless, the subjects' self-evaluations must still be regarded as representing an important dimension by which improvement can be gauged. These self-evaluations should be made as frequently as possible, not only by having stutterers complete a form of daily schedule or questionnaire, but also by asking them to submit verbal reports in which their reactions to medication are assessed.

In addition, it is recommended that future investigations should make use of daily interviews with stutterers when objective measurements concerning stuttering behaviour can be conducted, so that daily changes in speech and attitudes can be more accurately recorded. At the same time, various measures of anxiety should be taken, in an attempt to clarify

/the ...

the nature and role of the anxiety that occurs in the stuttering syndrome. This would involve physiological tests as well as pencil-and-paper inventories. The dosage of the drug should be increased or decreased according to the individual needs of the subjects. This kind of investigation would necessitate a team of workers, including a medical supervisor and psychologist, as well as the co-operation of the stutterers themselves. The results of such investigations would then justify definite conclusions being drawn on the effects of drugs on stutterers.

From the results of this study it appears that the combination of trifluoperazine and amylobarbitone (Amylozine) is beneficial in reducing the severity of stuttering. This conclusion is supported by the results of the daily schedules the verbal remarks made by the subjects at three-weekly intervals and by the significant drug effect obtained when severity ratings of stuttering were made. The absence, or in some cases the very mild side effects noted, makes Amylozine a practical drug to use with ambulatory stutterers.

The value of any findings in studies conducted on stutterers, whether they concern etiological or symptomatological aspects, must lie in their applications to therapy. The rehabilitation of the stutterer must still be considered the sine qua non in any approach to stuttering. The beneficial results of the drug noted in this study bear directly on therapeutic aspects of stuttering. The majority of subjects reported less fear and tension in speech while on the drug, and some reported that they were more able to enter feared situations than they had been previously. As pointed out in the introductory remarks, the "cushioning" effect that a drug could have on stutterers might permit them to react less adversely to the threats imposed by certain types of stuttering therapy; this would pertain especially to the initial stages of therapy, when demands are made on the stutterer that he stutters openly without recourse to the avoidance devices that are so much part of his secondary symptom. Apparently the effects of the drug on many of the subjects in this study enabled them to relinquish some of these undesirable avoidance devices

/spontaneously ...

spontaneously. It is therefore feasible to expect that the administration of a drug, in the form of a tranquillizer/sedative, would facilitate therapy, at least in the early stages; this would be applicable to those subjects who are particularly threatened by and resistant to therapy.

The three items presenting fundamental difficulties in this study, concern: the variability of stuttering within individuals; the complexity in measuring anxiety which assumes an undefined role in stuttering behaviour; and the practical problems encountered by a single investigator. The writer's recognition of these limitations has given rise to the recommendations put forward for future research.

This study is submitted in the hope that it constitutes a suitable frame of reference for future research in drug therapy with stutterers.

APPENDIX A

READING PASSAGE

READING PASSAGE

When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colours. These take the shape of a long round arch, with its path high above, and its two ends going apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond his reach, his friends say he is looking for the pot of gold at the end of the rainbow.

Throughout the centuries men have explained the rainbow in various ways. Some have accepted it as a miracle without physical explanation. To the Hebrews it was a token that there would be no more universal floods. The Greeks used to imagine that it was a sign from the gods to foretell war or heavy rain. The Norsemen considered the rainbow as a bridge over which the gods passed from earth to their home in the sky. Other men have tried to explain the phenomenon physically. Aristotle thought that the rainbow was caused by reflection of the sun's rays by the rain.

Since then physicists have found that it is not reflection, but refraction by the raindrops which causes the rainbow. Many complicated ideas about the rainbow have been formed. The difference in the rainbow depends considerably upon the size of the water drops, and the width of the coloured band increases as the size of the drops increases. The actual primary rainbow observed is said to be the effect of superposition of a number of bows. If the red of the second bow falls upon the green of the first, the result is to give a bow with a wide yellow band, since red and green lights when mixed form yellow.

APPENDIX B

FORM A FROM THE IPAT 8-PARALLEL-FORM ANXIETY BATTERY*

/ Form A ...

Questions

FORM A.

Answer each of the following questions according to what is true of you at this moment (not last week, or usually). Try not to use the middle or uncertain response any oftener than you have to, perhaps once every three or four questions. Remember, answer what is true for you now, at this moment.

1. Often I get angry with people too quickly.
   A. True B. In Between C. False

2. I sometimes get in a state of tension or turmoil as I think over my recent concerns and interests.
   A. True B. Uncertain C. False

3. I need my friends more than they seem to need me.
   A. Rarely B. Sometimes C. Often

4. I am brought almost to tears by having things go wrong.
   A. Never B. Very rarely C. Sometimes

5. I find that my interests, in people and amusements, tend to change fairly rapidly.
   A. True B. In between C. False

6. I have periods when I cannot refrain from a mood of self pity.
   A. Yes B. In between C. No

7. If I had my life to live over again I would:
   A. Plan very differently B. In between C. Want it the same.

8. I prefer to marry someone who:
   A. Commands general admiration B. In between C. Has artistic and literary gifts

9. I am always glad to join a large gathering, e.g. a party, dance or public meeting.
   A. Yes B. In between C. No

10. I can generally put up with conceited people, even though they brag or show they think too well of themselves.
    A. Yes B. In between C. No

Annoyances

FORM A

Everyone knows that some things irritate him more than others, that is, rub him the wrong way. You will be given a list of such happenings that annoy some people. For each happening, tell us whether you find it very annoying, somewhat annoying, or not annoying.

		Very Annoying	Somewhat Annoying	Not Annoying
1.	A button that comes off when you are ready to go out	___	___	___
2.	Electric appliances that go out of order	___	___	___
3.	Being asked to repeat something you just said	___	___	___
4.	Stopping for red lights or stop signs while driving	___	___	___
5.	People who keep their radios loud	___	___	___
6.	Library books that have been defaced or from which a page has been torn	___	___	___
7.	Highly seasoned foods	___	___	___

FORM A

Answer each of these questions by choosing the response that is closest to right for you.

1. How often have you been very close to large wild animals that were not in cages?
   A. Often B. Several times C. Once D. Never

   If this were to happen now, I think I would
   a. handle the situation very well c. handle the situation poorly
   b. handle the situation satisfactorily d. just go to pieces

2. How much ice skating have you had?
   A. 0 hours B. 10 hours C. 50 hours D. 200 hours

   With a little practice I think I should be
   a. Very good b. Good c. Average d. Fair

3. How much typing experience have you had?
   A. 0 hours B. 25 hours C. 50 hours D. 100 hours

   With a little practice at typing I think I could become
   a. Fair b. Average c. Good d. Very good

4. How much have you studied foreign languages?
   A. Very Thoroughly B. Fairly Thoroughly C. A little bit D. Not at all

   I think that with about three months practice studying a foreign language I could be
   a. Excellent b. Good c. Fair d. Poor

5. Have you ever tried to cut people's hair?
   A. Never B. Rarely C. Occasionally D. Often

   With some practice at cutting hair I could be
   a. Excellent b. Good c. Fair d. Poor

6. Have you ever tried to breed cats or dogs?
   A. Repeatedly B. Rather often C. Sometimes D. Never

   I think I should be successful at breeding dogs and cats.
   a. Not at all b. Possibly c. Probably d. Certainly

7. Have you ever played the drums?
   A. Yes, often B. Once in a while C. Rarely D. Never

   With some lessons, what kind of a drummer would you be?
   a. Excellent b. Pretty good c. Fair d. Poor

Do You Sometimes?

FORM A

Sometimes we do things that perhaps we should not do and sometimes we fail to do things that we should do. No one acts all the time in an ideal way but it is often hard to be honest and admit our actual behavior. Please try to answer these questions in the way which you believe is true for you. Answer only Yes or No. Answer each question.

		YES	NO
1.	At times, I have been more afraid than I would dare admit.	____	____
2.	I never let my friends down.	____	____
3.	I sometimes lose my temper over things that I eventually realize are quite trivial.	____	____
4.	I have always obeyed the law.	____	____
5.	I am always careful with the property of others, even if it belongs to someone I dislike very much.	____	____
6.	I sometimes think of things that are too bad or dirty to talk about.	____	____
7.	I have sometimes been quite mean to animals.	____	____

Comments

FORM A

Here are some statements about some past events and some events which could possibly happen in the future. It's the kind of thing you'd read about in the newspaper. There are three possible comments given on each "news item". Choose the one that comes closest to being how you'd react to this news item.

1. "Movies are getting better and better".

   a. Ad-men's lies are getting bigger and bigger. _____
   b. Ho-hum. _____
   c. I wonder what a panel of dramatic experts would say to that. _____

2. Smith won the mile race in record time.

   a. Hurray! That's a terrific honor for the school. _____
   b. His past record showed that that was likely. _____
   c. I would not like to train as hard as he had to. _____

3. A novel has recently appeared dealing with a free-love theme.

   a. Even a poor novel often sells with such a theme. _____
   b. I suppose some narrow-minded person will want to censor it. _____
   c. It's a wicked thing to stir up the imagination of the young people with filth. _____

4. Another Political Conference between nations is being scheduled.

   a. There'll be enough hot air to raise the temperature all over the world. _____
   b. It will be interesting to follow the results in the newspapers _____
   c. I hope something comes out of this one. _____

Checklist

FORM A

Each of the characteristics in the list below are things some people have more than others. For each characteristic, let us know how you stand on this characteristic. If you have it, do it, or experience it more than most people your age and sex, check "more than most". If you're average in this respect, check "average"; if below average (compared to others your age and sex), check "less than most". Don't spend a lot of time thinking about each one. The first answer that comes to mind is usually the best and most natural for you.

		Less Than Most	Average	More Than Most
1.	Moody	___	___	___
2.	Have nervous movements	___	___	___
3.	Blush or flush.	___	___	___
4.	Get drowsy.	___	___	___
5.	Have indigestion.	___	___	___
6.	Dramatize life (act a lot)	___	___	___
7.	Have headaches.	___	___	___
8.	Feel like crying.	___	___	___

Embarrassing Circumstances

FORM A

Everyone knows that some things embarrass him more than others, that is, make him blush or be uncomfortable. Here below is a list of *some happenings*. For each one tell us whether you would find it not embarrassing, somewhat embarrassing, or very embarrassing.

	Not Embarrassing	Somewhat Embarrassing	Very Embarrassing
1. At work, your boss asks you a question you can't answer.	___	___	___
2. Being the butt of a practical joke, for example, getting a "hot foot".	___	___	___
3. Purchasing a sexy magazine in a crowded store.	___	___	___
4. Forgetting your own address or telephone number.	___	___	___
5. Accidentally spraying saliva (spit) when talking.	___	___	___
6. Forgetting yourself and swearing in front of a member of the opposite sex.	___	___	___
7. Leaving a small tip when you're short of money.	___	___	___

APPENDIX C

DAILY SCHEDULE

COMMENT

The scale values of the answers accompanying the questions are provided in the schedule reproduced here. These scale values did not appear on the schedules given to the subjects.

SPEECH CLINIC - UNIVERSITY OF THE WITWATERSRAND

DAY..... NAME .....

Did you take your drug today?

Time morning: .....

Time evening: .....

PLACE A CIRCLE AROUND ONE OF THE FIVE STATEMENTS GIVEN FOR EACH OF THE FOLLOWING QUESTIONS.

"usual" or "as usual" refers to what your stuttering was like, or how you felt, before you started this study.

PLEASE COMPLETE THIS EVERY NIGHT.

1. What was your speech like today as compared with most other days?

much better	slightly better	same as usual	slightly worse	much worse
1	2	3	4	5

2. How many times did you actually avoid speaking today?

much less than usual	slightly less than usual	same as usual	slightly more than usual	much more than usual
1	2	3	4	

3. How anxious did you feel while stuttering today?

much more anxious	slightly more anxious	same as usual	slightly less anxious	much less anxious
5	4	3	2	1

4. Did you think that you felt any different today because of the drug you are taking?

felt much better	felt slightly better	felt same as usual	felt slightly worse	felt much worse
1	2	3	4	5

5. How much did you attempt to hide or cover up your stuttering today?

much more attempt	slightly more attempt	same as usual	slightly less attempt	much less attempt
5	4	3	2	1

6. About how many speaking situations occurred today that you were worried about?

many more situations	slightly more situations	usual amount	slightly fewer situations	many less situations
5	4	3	2	1

7. How many times did you use another word in place of a feared or difficult word today?

much more than usual	slightly more than usual	usual amount	slightly less than usual	much less than usual
5	4	3	2	1

8. How much *fear* did you have today about your stuttering?

much more fear	slightly more fear	usual amount	slightly less fear	much less fear
5	4	3	2	1

9. How many situations *did you manage* to enter today that you are usually afraid of and try to avoid?

many more situations	slightly more situations	usual amount	slightly fewer situations	many less situations
5	4	3	2	1

10. About how many words were you afraid to say today in case you stuttered?

many less words	slightly fewer words	usual	slightly more words	many more words
1	2	3	4	5

11. How embarrassed did you feel about your speech today?

very embarrassed	slightly more embarrassed	same as usual	slightly less embarrassed	very little embarrassed
5	4	3	2	1

12. Did you think that your stuttering was any different today from usual because of the drug you are taking?

much better speech	slightly better speech	no difference	slightly worse speech	much worse speech
1	2	3	4	5

13. How much fear did you generally feel today just before you had to speak?

much more fear	slightly more fear	same as usual	slightly less fear	much less fear
5	4	3	2	1

14. How much tension did you feel today about your stuttering?

much less tense	slightly less tense	usual amount	slightly more tense	much more tense
1	2	3	4	5

CHECK ANY DIFFERENCE IN YOUR SPEECH AND MOOD FOR THE VARIOUS TIMES

Period of Day	STUTTERING			MOOD		
	No Change	Better	Worse	Average	Better	Worse
Early morning						
Noon						
Afternoon						
Late afternoon						
Evening						

RATE YOUR STUTTERING ACCORDING TO WHAT WAS THE AVERAGE FOR THE DAY AS COMPARED WITH WHAT IT WAS BEFORE YOU COMMENCED THE STUDY:

much better	better	same	worse	much worse
1	2	3	4	5

WAS TODAY A USUAL SORT OF DAY? .....

IF NOT, EXPLAIN .....

.....

PLEASE TURN OVER

APPENDIX D

TABLE 1

RAW SCORES FOR ALL SUBJECTS FOR ELEVEN FACTORS OVER THE FIVE PERIODS OF THE STUDY

Legend:

f	-	Female
Initials	-	In subject column denotes name of subject.
-D and -P	-	Indicates drug or placebo allocation during the second and fourth periods.
Factors	-	These are listed along the horizontal line and the numbers depict the following:
1	-	Experimenter's severity rating on reading (on a nine-point equal appearing-intervals scale).
2	-	Experimenter's severity rating of reading on first playback of the tape.
3	-	Experimenter's severity rating of reading on second playback of the tape.
4	-	Experimenter's severity rating of conversation.
5	-	Subjects' severity rating on reading.
6	-	Subjects' severity rating of reading on playback of the tape.
7	-	Frequency count of stuttered moments on reading. The amount on the 200-word and 110-word passages is given separately on the right side of the column during the 4th and 5th periods.
8	-	Frequency count of stuttered moments on reading on first playback of the tape. The amount on the 200-word and 110-word passages is given separately on the right side of the column during the 4th and 5th periods.
9	-	Reading rate in words per minute.
10	-	Subjects' rating of stuttering for the same day, prior to the interview on a five-point scale.
11	-	IPAT 8-Parallel-Form Anxiety Battery a - Raw Scores b - Sten scores

/ Table 1 ...

TABLE I

EUROPEAN STUTTERERS

Subjects	Periods	1	2	3	4	5	6	7	8	9	10	11 a	11 b
	1st	4	4	4	4	5	7	42	42	117.65	3	8.19	8
	2nd-P	5	5	4	5	6	6	29	26	116.50	3	7.96	8
1	3rd	4	4	4	5	4	5	22	21	117.65	4	5.95	5
BB f	4th-D	4	4	4	3	5	5	$22=\frac{12}{10}$	$22=\frac{12}{10}$	118.47	3	5.87	5
	5th	4	5	5	4	5	5	$27=\frac{16}{11}$	$28=\frac{16}{12}$	130.07	4	6.32	6
	1st	5	5	6	5	7	8	52	54	65.57	3	6.15	5
	2nd-P	4	4	4	3	4	4	21	22	129.03	3	4.33	2
2	3rd	8	8	7	8	9	9	59	59	32.88	3	5.69	5
JF f	4th-D	5	5	4	3	5	5	$39=\frac{20}{19}$	$37=\frac{18}{19}$	98.94	2	5.49	4
	5th	4	4	4	4	4	5	$42=\frac{21}{21}$	$42=\frac{21}{21}$	123.18	3	6.03	5
	1st	5	5	5	4	7	8	32	31	111.11	2	5.31	3
	2nd-D	4	4	5	4	9	9	27	27	116.41	3	4.12	2
3	3rd	5	5	5	5	9	9	37	35	87.91	4	4.89	4
LP f	4th-P	4	4	4	3	7	7	$28=\frac{17}{11}$	$28=\frac{17}{11}$	127.39	2	3.37	1
	5th	5	5	5	5	8	9	$46=\frac{30}{16}$	$46=\frac{30}{16}$	110.71	4	4.26	3
	1st	3	4	3	4	3	4	21	20	134.83	2	6.51	5
	2nd-D	4	4	4	5	4	4	20	19	129.03	2	6.51	6
4	3rd	4	4	4	3	4	4	15	15	139.53	3	5.38	4
FR f	4th-P	4	4	4	5	4	4	$31=\frac{18}{13}$	$30=\frac{17}{13}$	131.91	4	7.14	7
	5th	4	4	3	4	4	4	$21=\frac{13}{8}$	$21=\frac{13}{8}$	134.78	3	6.09	6
	1st	4	4	4	3	6	8	41	42	120.00	4	7.02	6
	2nd-P	4	4	4	3	6	7	48	46	100.00	2	7.05	6
5	3rd	4	4	4	3	4	5	37	45	108.60	2	6.38	6
RS f	4th-D	4	4	4	3	5	7	$46=\frac{31}{15}$	$46=\frac{30}{16}$	117.72	3	6.33	6
	5th	4	5	5	3	7	5	$54=\frac{38}{16}$	$55=\frac{39}{16}$	124.00	2	5.51	5

Subjects	Periods	1	2	3	4	5	6	7	8	9	10	11 a	11 b
	1st	6	6	6	5	9	-*	147	157	29.92	4	6.71	5
	2nd-D	6	6	6	4	9	-	158	147	31.75	4	6.47	6
6	3rd	6	7	7	5	9	-	151	149	32.88	4	5.98	5
JT f	4th-F	5	6	6	4	9	-	202=$\frac{121}{81}$	203=$\frac{123}{80}$	37.35	3	7.25	7
	5th	6	6	6	4	9	-	241=$\frac{154}{87}$	245=$\frac{154}{91}$	32.80	3	5.92	5
	1st	2	2	2	5	3	3	2	5	150.00	4	7.42	7
	2nd-D	2	2	2	7	3	3	1	1	157.89	5	6.78	6
7	3rd	2	2	2	7	2	2	2	2	162.16	4	6.40	6
FB	4th-F	2	2	2	3	1	1	4=$\frac{2}{2}$	4=$\frac{2}{2}$	163.16	2	6.58	6
	5th	2	2	2	4	1	1	2=$\frac{0}{2}$	1=$\frac{0}{1}$	150.00	2	6.15	6
	1st	4	3	3	3	5	5	26	21	125.00	3	6.11	6
	2nd-F	4	3	4	2	4	4	24	25	121.21	3	5.01	3
8	3rd	4	3	3	3	3	4	14	14	129.03	3	5.48	5
GC	4th-D	3	3	3	3	4	5	15=$\frac{10}{5}$	15=$\frac{10}{5}$	120.13	3	5.63	4
	5th	3	3	3	2	4	6	24=$\frac{14}{10}$	22=$\frac{13}{9}$	128.28	3	4.09	2
	1st	5	5	4	2	8	8	48	46	71.64	3	6.84	6
	2nd-D	3	3	3	2	3	3	27	25	92.02	2	4.27	2
9	3rd	4	4	4	3	7	7	19	20	103.00	3	3.52	1
IC	4th-F	4	4	4	3	6	7	34=$\frac{21}{13}$	33=$\frac{21}{12}$	92.54	3	3.94	2
	5th	4	4	4	4	5	5	30=$\frac{17}{13}$	30=$\frac{17}{13}$	104.49	2	6.56	6
	1st	6	6	6	6	7	6	56	59	69.36	4	5.43	3
	2nd-F	7	7	7	6	9	9	106	104	37.50	3	5.33	4
10	3rd	7	7	7	6	9	9	101	102	36.64	4	5.37	4
HC	4th-D	6	7	6	6	7	7	111=$\frac{59}{52}$	110=$\frac{58}{52}$	59.42	2	6.25	5
	5th	6	6	6	5	4	4	82=$\frac{42}{40}$	83=$\frac{42}{41}$	74.40	3	4.79	4
	1st	4	4	4	5	4	7	30	32	129.03	4	6.64	5
	2nd-D	3	3	3	3	3	4	22	22	151.90	3	5.27	4
11	3rd	3	3	3	3	4	5	17	17	167.83	3	6.00	5
CD	4th-F	3	3	3	3	4	4	22=$\frac{12}{10}$	21=$\frac{12}{9}$	153.72	2	4.94	3
	5th	3	3	3	2	2	3	23=$\frac{12}{9}$	24=$\frac{12}{7}$	169.09	2	5.86	5

* Subject 6 refused to hear the playback of the recording, hence no scores for factor 6.

Subjects	Periods	1	2	3	4	5	6	7	8	9	10	11 a	11 b
	1st	4	3	3	3	4	7	39	34	89.55	3	5.06	2
	2nd-D	4	4	4	5	7	7	33	34	77.42	3	3.01	1
12	3rd	4	4	4	3	6	6	34	35	85.71	3	4.96	4
ED	4th-P	4	4	4	3	6	6	42= 28/14	43= 28/15	91.18	3	4.87	3
	5th	3	5	5	4	6	6	52= 30/22	51= 31/20	94.42	3	4.40	3
	1st	7	7	7	5	6	8	109	112	31.79	2	5.44	3
	2nd-P	7	7	7	7	6	7	109	107	26.14	1	6.33	5
13	3rd	7	7	7	6	7	7	92	94	43.64	2	5.26	4
RD	4th-D	7	7	7	6	8	6	148= 89/59	146= 89/57	38.11	2	5.25	4
	5th	7	7	7	6	6	4	114= 72/42	114= 72/42	50.68	4	6.37	6
	1st	6	7	7	7	5	7	162	154	22.47	3	9.40	10
	2nd-P	6	6	6	6	4	5	139	138	29.41	3	8.27	8
14	3rd	6	6	6	7	5	4	126	125	32.35	3	7.13	7
DE	4th-D	5	5	5	7	7	6	160= 95/65	166= 98/68	40.70	2	7.22	7
	5th	5	6	6	6	4	4	137= 81/56	134= 80/54	45.26	2	8.66	10
	1st	7	6	6	8	8	6	47	47	86.96	5	6.40	5
	2nd-D	6	5	5	6	5	6	28	27	128.34	2	6.16	5
15	3rd	5	5	4	7	7	6	28	28	118.81	4	6.87	7
LF	4th-P	4	4	4	7	6	5	31= 19/12	31= 19/12	130.07	4	7.41	7
	5th	4	4	4	8	6	5	13= 7/6	13= 7/6	153.00	4	5.43	4
	1st	3	4	4	2	8	8	24	25	118.23	3	6.96	6
	2nd-D	4	4	4	4	9	8	45	46	86.33	3	3.74	1
16	3rd	3	4	4	3	2	2	8	8	157.90	3	4.62	3
MG	4th-P	5	5	5	3	9	9	43= 27/16	44= 28/16	86.92	3	4.42	2
	5th	4	4	5	3	8	7	32= 22/10	32= 22/10	104.49	3	4.77	4
	1st	5	4	4	2	8	6	14	16	98.36	3	7.05	6
	2nd-P	6	5	5	5	7	7	18	19	113.21	4	5.00	3
17	3rd	4	4	4	4	7	5	11	11	115.00	4	6.72	7
RI	4th-P	4	3	4	2	5	5	11= 7/4	11= 7/4	123.18	3	6.60	5
	5th	3	3	3	2	5	5	15= 11/4	15= 11/4	148.80	3	5.52	5

Subjects	Periods	1	2	3	4	5	6	7	8	9	10	11 a	11 b
	1st	9	9	9	4	9	9	27	24	16.62	3	6.08	4
	2nd-P	9	9	9	6	9	9	43	44	10.35	3	4.29	2
18 MH	3rd	8	8	8	4	9	9	30	31	26.03	3	5.26	4
	4th-D	5	5	4	5	8	8	39= $\frac{24}{15}$	38= $\frac{23}{15}$	77.82	3	5.61	4
	5th	5	5	5	3	8	6	35= $\frac{22}{13}$	34= $\frac{22}{12}$	75.86	3	5.58	5
	1st	5	5	6	7	8	8	91	87	58.13	5	6.23	4
	2nd-P	5	5	5	6	7	7	95	99	52.40	2	5.94	5
19 KK	3rd	5	5	5	6	8	9	83	82	57.14	4	4.76	3
	4th-D	4	5	5	4	6	7	98= $\frac{58}{40}$	97= $\frac{58}{39}$	75.61	2	6.85	5
	5th	5	5	6	4	8	9	114= $\frac{70}{44}$	111= $\frac{69}{42}$	70.19	4	5.88	5
	1st	5	5	4	7	1	7	9	9	129.03	3	8.59	9
	2nd-D	2	2	2	5	4	2	4	4	155.84	3	6.74	7
	3rd	2	2	2	5	3	2	2	2	164.38	3	7.10	7
SK	4th-P	2	2	2	5	2	4	2= $\frac{1}{1}$	2= $\frac{1}{1}$	106.29	4	8.74	10
	5th	2	2	2	7	2	2	6= $\frac{4}{2}$	6= $\frac{4}{2}$	169.09	4	7.62	8
	1st	8	9	9	7	9	9	72	70	22.36	3	7.44	7
	2nd-P	8	8	8	8	5	5	73	71	30.53	1	6.16	5
21 HK	3rd	9	9	9	8	9	9	64	64	15.89	3	5.26	4
	4th-D	8	8	7	7	3	4	76= $\frac{45}{31}$	76= $\frac{44}{32}$	42.37	3	8.04	8
	5th	8	7	7	8	3	4	89= $\frac{57}{32}$	86= $\frac{55}{31}$	47.20	2	5.70	5
	1st	2	2	2	2	4	6	7	5	157.89	3	5.92	4
	2nd-D	3	3	3	2	5	5	7	6	169.01	3	7.68	7
22 BK	3rd	3	3	3	4	7	7	7	7	179.14	3	7.16	7
	4th-P	4	3	3	3	6	5	8= $\frac{2}{6}$	8= $\frac{2}{6}$	108.14	2	6.94	7
	5th	3	3	3	3	7	7	5= $\frac{3}{2}$	5= $\frac{3}{2}$	157.63	2	4.87	4
	1st	5	4	4	5	7	7	38	36	94.48	3	5.29	3
	2nd-P	4	5	5	4	6	7	36	38	107.14	3	5.38	4
23 LL	3rd	4	5	5	4	7	7	43	41	96.77	3	3.51	1
	4th-D	5	4	4	3	5	6	44= $\frac{24}{20}$	44= $\frac{24}{20}$	113.41	3	3.65	1
	5th	4	4	4	4	5	6	33= $\frac{14}{19}$	32= $\frac{13}{19}$	127.40	3	5.30	4

Subjects	Periods	1	2	3	4	5	6	7	8	9	10	11	b
	1st	4	3	4	3	5	5	27	28	113.21	3	6.58	5
	2nd-P	5	4	4	4	7	6	21	20	110.60	3	4.52	2
24	3rd	4	4	4	4	4	4	19	19	113.21	3	4.84	3
MI	4th-D	3	4	4	4	6	5	$21=\frac{11}{10}$	$21=\frac{11}{10}$	106.29	4	7.68	8
	5th	4	4	4	3	7	7	$26=\frac{13}{13}$	$26=\frac{13}{13}$	112.05	3	6.03	5
	1st	6	6	6	4	7	8	22	23	78.43	3	6.21	4
	2nd-D	3	4	4	2	4	5	20	21	133.33	2	6.23	5
25	3rd	4	4	3	2	6	5	15	15	134.83	3	4.56	3
JM	4th-P	4	4	4	2	4	5	$24=\frac{13}{11}$	$25=\frac{14}{11}$	112.05	2	5.95	5
	5th	4	4	4	3	5	5	$19=\frac{12}{7}$	$20=\frac{13}{7}$	107.87	2	6.82	7
	1st	3	3	2	3	3	3	9	9	166.67	3	6.95	6
	2nd-D	3	3	2	3	3	3	6	6	173.90	3	7.11	6
26	3rd	3	4	4	3	7	7	19	19	142.86	2	5.27	4
SN	4th-P	4	4	4	1	8	8	$35=\frac{11}{24}$	$35=\frac{11}{24}$	130.96	4	6.20	5
	5th	4	4	4	3	7	7	$37=\frac{18}{19}$	$37=\frac{18}{19}$	138.22	3	6.18	6
	1st	4	4	4	3	5	8	33	35	116.50	3	5.72	4
	2nd-P	4	4	4	5	4	6	39	44	129.03	2	5.41	4
27	3rd	4	4	4	5	5	7	36	35	141.18	3	7.33	8
LN	4th-D	5	5	5	4	8	9	$68=\frac{32}{29}$	$65=\frac{33}{27}$	104.49	3	7.48	8
	5th	5	5	5	4	5	8	$81=\frac{48}{33}$	$82=\frac{49}{33}$	113.41	3	6.93	7
	1st	2	2	1	3	4	3	6	7	181.82	3	6.15	4
	2nd-P	3	3	4	2	4	5	4	4	181.82	2	6.09	5
28	3rd	2	2	2	3	1	1	1	1	210.53	2	5.30	4
JP	4th-D	2	2	2	3	1	1	$4=\frac{2}{2}$	$4=\frac{2}{2}$	184.16	1	7.26	7
	5th	2	2	2	3	1	1	$2=\frac{1}{1}$	$2=\frac{1}{1}$	193.75	2	6.20	6
	1st	3	3	3	3	6	7	19	16	137.14	3	6.61	5
	2nd-D	3	3	3	5	5	5	12	11	139.53	3	5.70	4
29	3rd	3	3	3	4	8	8	8	8	142.01	3	6.05	5
EP	4th-P	3	3	3	4	7	5	$16=\frac{12}{4}$	$16=\frac{12}{4}$	138.81	4	6.51	6
	5th	3	2	3	4	3	3	$15=\frac{9}{6}$	$15=\frac{8}{7}$	101.69	3	5.72	5

Subjects	Periode	1	2	3	4	5	6	7	8	9	10	11 a	11 b
	1st	2	2	3	2	3	2	4	6	166.67	3	5.55	3
	2nd-D	2	2	2	3	1	1	3	3	87.50	3	3.92	2
30	3rd	3	2	2	4	2	2	3	3	96.72	3	3.96	2
AS	4th-P	3	3	3	4	3	2	13= 1/3	13= 10/3	106.90	3	3.41	1
	5th	2	2	2	5	1	2	2= 4/1	2 1/1	189.80	3	5.78	5
	1st	5	4	5	4	7	9	37	34	68.96	3	6.00	4
	2nd-P	5	5	[illegible]	4	8	8	28	27	79.47	2	6.97	6
31	3rd	5	6	5	6	9	9	35	34	80.00	2	5.97	5
JC	4th-D	5	5	5	2	5	6	35= [illegible]	33= 20/13	85.71	2	5.59	4
	5th	6	6	7	5	9	9	52= [illegible]	51= 33/18	76.94	4	5.16	4
	1st	5	6	5	4	7	9	60	61	63.16	3	6.41	5
	2nd-P	5	5	5	5	5	6	48	43	76.18	3	5.69	4
32	3rd	6	5	5	5	5	6	26	35	72.42		5.67	5
CS	4th-D	5	5	4	5	5	5	43= 32/11	43= 32/10	84.93		7.31	7
	5th	4	4	4	3	3	3	17= [illegible]	- [illegible]	115.59		4.12	2
	1st	3	2	2	2	5	6	[illegible]	[illegible]	175.25	3	6.46	5
	2nd-D	2	2	2	1	5	5	[illegible]	[illegible]	176.47	3	5.12	3
33	3rd	2	2	2	1	4	4	[illegible]	[illegible]	175.18	3	4.00	2
ES	4th-P	2	2	2	3	5	5	[illegible]	[illegible] 4/2	173.83	4	5.84	4
	5th	2	2	2	3	7	7	[illegible]	[illegible] 4/2	165.71	3	5.30	4
	1st	5	6	5	6	5	[illegible]	62	[illegible]	79.21	3	5.29	3
	2nd-D	6	5	5	6	5	[illegible]	54	[illegible]	71.86	3	3.85	2
34	3rd	5	5	5	6	3		38	[illegible]	93.75	1	4.24	2
HS	4th-P	4	4	4	7	2		45= 22/18	[illegible] 26/17	143.08	4	4.47	2
	5th	5	5	6	6	5	5	69= 43/26	70= 43/27	98.41	3	5.46	5
	1st	2	3	2	3	4	[illegible]	9	10	175.11	4	6.65	5
	2nd-P	2	3	3	3	6	5	6	6	179.10	4	5.38	4
35	3rd	2	2	2	3	3	2	5	5	188.98	3	5.58	5
AW	4th-D	2	2	2	2		5	6= 1/5	6= 1/5	172.22	2	6.59	6
	5th	3	3	3	2	[illegible]	7	12= 6/8	12= 6/8	172.22	4	5.77	5

Subjects	Periods	1	2	3	4	5	6	7	8	9	10	11 a	11 b
	1st	3	3	4	2	6	7	25	24	129.72	3	6.53	5
	2nd-P	4	4	4	4	5	6	19	20	157.89	3	4.81	3
36 DW	3rd	3	3	3	2	5	5	14	14	162.16	4	5.61	5
	4th-D	4	4	4	4	7	7	$37=\frac{22}{15}$	$37=\frac{22}{15}$	126.53	3	6.96	7
	5th	4	4	4	3	5	6	$32=\frac{19}{13}$	$32=\frac{19}{13}$	145.31	3	4.98	4
	1st	9	8	8	9	9	9	44	43	33.66	4	5.30	3
	2nd-D	8	7	7	9	3	4	12	12	67.80	2	4.46	2
37 SW	3rd	7	7	7	8	7	7	9	9	56.74	4	4.27	3
	4th-P	6	6	5	8	3	3	$11=\frac{6}{5}$	$11=\frac{6}{5}$	120.00	3	3.95	2
	5th	6	6	6	7	2	2	$8=\frac{5}{3}$	$8=\frac{5}{3}$	137.78	3	5.60	5

AFRICAN SUBJECTS

Subjects	Periods	1	2	3	4	5	6	7	8	9	10
	1st	7	8	7	6	8	9	142	145	41.96	3
	2nd-D	7	7	7	6	9	9	128	125	46.15	2
38	3rd	6	6	6	5	8	9	84	89	67.61	2
FM (f)	4th-P	6	7	7	6	9	9	$195=\frac{156}{79}$	$191=\frac{114}{77}$	46.73	3
	5th	7	7	7	7	9	9	$228=\frac{140}{68}$	$230=\frac{145}{85}$	39.91	3
	1st	7	6	7	5	7	8	74	71	58.82	3
	2nd-P	7	7	7	6	7	7	69	70	56.60	2
39	3rd	5	5	5	6	6	5	27	25	109.09	2
JB	4th-D	5	5	5	4	6	6	$28=\frac{15}{13}$	$28=\frac{15}{13}$	122.37	2
	5th	4	5	6	6	7	7	$44=\frac{29}{15}$	$42=\frac{27}{15}$	111.38	2
	1st	5	4	6	7	5	5	49	58	73.17	3
	2nd-P	6	6	5	7	9	9	70	72	62.18	4
40	3rd	4	4	4	7	2	5	25	27	87.59	2
SE	4th-D	4	4	4	5	3	4	$34=\frac{22}{11}$	$33=\frac{22}{11}$	88.57	4
	5th	3	3	3	6	2	3	$14=\frac{7}{7}$	$14=\frac{7}{7}$	100.54	3

Subjects	Periods	1	2	3	4	5	6	7	8	9	10
41 BM	1st	5	4	4	5	5	5	30	23	71.43	2
	2nd-P	4	4	4	6	3	3	20	19	83.33	2
	3rd	4	3	3	5	5	5	15	15	89.55	2
	4th-D	4		4	6	5	5	23= 14/9	21= 13/8	77.83	3
	5th	3		4	4	3	3	14= 6/8	14= 6/8	95.38	2
42 JM	1st	6	5	6	8	8	9	20	15	60.91	3
	2nd-P	5	5	5	8	6	7	10	10	75.95	2
	3rd	2	2	3	7	2	3	5	5	97.96	2
	4th-D	4	4	4	5	3	6	11= 6/5	11= 6/5	92.54	2
	5th	3	3	3	6	3	3	18= 7/11	18= 7/11	100.54	3
43 AM	1st	9	9	9	9	9	9	87	86	17.37	2
	2nd-D	9	9	9	8	7	7	99	98	14.29	2
	3rd	7	7	7	8	7	7	78	77	20.80	2
	4th-P	9	9	9	7	9	9	110= 200* only	103= 200* only	8.24	2
	5th	9	9	9	8	8	8	104= 200 only	101= 200 only	10.53	2
44 SM	1st	6	6	6	7	2	5	73	68	63.49	4
	2nd-D	4	4	4	5	2	4	26	29	98.36	3
	3rd	4	4	4	7	3	4	45	41	92.31	4
	4th-P	4	4	4	6	2	3	37= 23/14	37= 23/14	112.05	3
	5th	3	3	3	7	2	2	25= 16/9	24= 15/9	109.41	4
45 EP	1st	5	6	7	3	8	7	24	23	48.19	3
	2nd-P	4	4	6	6	5	4	12	12	68.18	2
	3rd	4	4	4	4	5	4	16	16	104.35	2
	4th-D	2	2	2	4	2	1	2= 2/0	2= 2/0	138.81	2
	5th	2	2	3	5	1	1	9= 3/6	9= 3/6	141.98	2
46 JS	1st	5	5	5	4	4	7	39	36	78.69	4
	2nd-P	4	4	4	4	4	7	13	13	94.49	2
	3rd	4	4	4	6	4	5	17	18	93.02	3
	4th-D	3	3	3	3	2	3	16= 9/7	16= 9/7	93.00	1
	5th	4	4	4	6	3	4	23= 13/10	29= 15/10	93.00	2

* Subject 43 did not read the 110-word passage in the 4th and 5th periods due to the strain imposed because of his severity and the length of time taken to read the first passage.

APPENDIX D

TABLE II

MEANS AND STANDARD DEVIATIONS FOR EIGHT FACTORS

Note: Due to the high correlations obtained between the Experimenter's three severity gatings (Tables 6 - 10), only the third rating (on 2nd playback) will be given here. For the same reason, only the frequency count taken on the playback of the recordings will be given here.

Legend:

The subjects are divided into Groups A and B according to drug administration in the second or fourth periods. "D" against the respective periods indicates drug administration.

Ps	-	Periods of Study
Ex.Sev.R.2nd PB	-	Experimenter's Severity Rating of Reading on the second playback of the tape.
Ex. Conv. R.	-	Experimenter's Severity Rating made on Spontaneous Conversation.
S.S.R. Reading	-	Subjects' Severity Rating made on Reading.
S.S.R. PB	-	Subjects' Severity Rating made on playback of the tape.
Frequency PB	-	Frequency count of Stuttered Moments taken on playback of the tape.
Reading Rate	-	Reading rate in words per minute.
S.R. Day	-	Subjects' Rating of Stuttering for the Same Day, Prior to the Interview.
IPAT Raw Sc.	-	IPAT 8-Parallel-Form Anxiety Battery raw Scores.

/ Table II ...

Appendix D.

TABLE II.

European Males - Group A - N=15

PS	Ex.Sev.R. 2nd PB		Ex. Conv. R.		S.S.R. Reading		S.S.R. PB.	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	3.87	1.76	4.20	2.37	5.20	2.37	6.13	2.08
2D	3.40	1.45	4.20	2.21	4.33	1.92	4.33	1.85
3	3.47	1.35	4.13	2.16	5.00	2.20	4.87	2.19
4	3.47	0.98	3.93	1.99	4.80	2.34	4.80	2.50
5	3.67	1.39	4.40	1.80	4.70	2.41	4.47	2.13

PS	Frequency PB		Reading Rate		S.R. Day		IPAT Raw Sc.	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	23.73	17.82	118.00	41.94	3.33	0.64	6.40	0.83
2D	18.13	15.86	126.67	54.80	2.87	0.73	5.33	1.45
3	14.33	12.24	138.87	39.27	3.00	0.76	5.25	1.15
4	13.07	9.48	123.87	26.61	3.13	0.85	5.60	1.46
5	12.87	11.21	136.13	32.34	2.80	0.68	5.77	0.82

European Males - Group B - N=15

PS	Ex.Sev.R. 2nd PB		Ex. Conv. R.		S.S.R. Reading		S.S.R. PB	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	5.13	2.27	4.33	1.16	6.47	1.63	7.13	1.74
2	5.33	1.48	5.20	1.86	6.13	1.70	6.53	1.37
3	5.13	2.04	4.87	1.63	6.20	2.46	6.20	2.65
4D	4.60	1.55	4.27	1.70	5.60	2.06	5.53	1.65
5	4.87	1.59	4.07	1.66	5.20	2.14	5.53	2.27

PS	Frequency PB		Reading Rate		S.R. Day		IPAT Raw Sc.	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	50.47	41.17	79.40	56.89	3.20	0.68	6.40	1.43
2	52.27	41.63	87.60	57.36	2.60	0.89	5.73	0.82
3	45.53	38.68	95.13	61.23	2.93	0.72	5.60	0.74
4D	25.20	29.64	95.53	44.15	2.53	0.75	6.53	1.29
5	33.60	37.42	105.53	44.07	3.07	0.69	5.80	1.05

European Females - Group A - N = 3.

PS	Ex.Sev.R. 2nd PB		Ex. Conv. R.		S.S.R. Reading		S.S.R. PB	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	4.67	2.14	4.33	0.87	6.33	4.34	6.00	2.83
2D	5.00	1.41	4.33	0.87	7.33	4.09	6.50	3.50
3	5.33	2.18	4.33	1.66	7.33	4.09	6.50	3.50
4	4.67	1.60	4.00	1.41	6.67	3.54	5.50	2.12
5	4.67	2.14	4.33	0.87	7.00	3.74	6.50	3.50

PS	Frequency PB		Reading Rate		S.R. Day		IPAT Raw Sc.	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	60.67	122.33	9.2	77.80	2.67	1.61	6.08	2.02
2D	64.33	101.41	92.33	73.[illegible]	3.00	1.41	5.67	2.55
3	66.33	102.24	87.00	75.66	3.67	0.77	5.33	1.94
4	52.33	86.56	98.67	75.59	3.00	1.41	6.00	2.65
5	62.33	114.59	93.00	75.42	3.33	0.85	5.33	2.18

European Females - Group B - N = 3.

PS	Ex.Sev.R. 2nd PB		Ex. Conv. R.		S.S.R. Reading*		S.S.R. PB	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	4.67	1.60	4.00	1.41	6.00	1.41	7.67	0.71
2	4.00	0.00	3.67	1.61	5.33	1.66	5.67	0.65
3	5.00	2.45	5.33	1.13	5.67	4.07	6.33	3.29
4D	4.00	0.00	3.00	0.00	5.00	0.00	5.67	1.59
5	4.67	0.75	3.67	0.69	5.33	2.18	5.00	0.00

* Number Subjects = 2.

PS	Frequency PB		Reading Rate		S.R. Day		IPAT Raw Sc.	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	46.00	9.80	101.30	43.53	3.33	0.25	7.00	2.65
2	30.67	18.81	115.00	20.54	2.67	0.25	6.33	3.43
3	41.67	0.85	86.70	65.45	3.00	1.41	6.00	0.00
4D	20.00	12.96	111.70	14.76	2.67	0.25	5.90	0.75
5	25.33	17.13	125.70	2.00	3.00	1.41	5.98	0.00

All Europeans - Group A - N = 16

PS	Ex.Sev.R. 2nd PB		Ex. Conv. R.		S.S.R. Reading		S.S.R. PB	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	4.06	1.71	4.22	2.16	5.39	2.43	6.12	4.21
2D	3.67	1.49	4.22	2.02	4.83	2.31	4.59	4.24
3	3.78	1.51	4.17	1.98	5.39	2.40	5.06	5.29
4	3.67	1.07	3.94	2.43	5.11	2.40	4.88	4.39
5	3.83	1.43	4.39	1.65	4.89	2.56	4.71	5.18

PS	Frequency PB		Reading Rate		S.R. Day		IPAT Raw Sc.	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	31.39	35.31	113.67	44.09	3.22	0.74	6.38	0.61
2D	25.83	33.91	124.78	44.52	2.89	0.76	5.39	1.41
3	23.00	33.69	130.22	44.86	3.11	0.76	5.26	1.16
4	19.61	24.98	119.67	32.20	3.11	0.84	5.67	1.46
5	21.67	35.04	128.94	45.29	2.89	0.67	5.69	0.98

All Europeans - Group B - N = 18.

PS	Ex.Sev.R. 2nd PB		Ex. Conv. R.		S.S.R. Reading		S.S.R. PB *	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	5.06	2.09	4.30	1.00	6.39	1.53	7.22	1.62
2	5.11	1.43	4.94	1.84	6.00	1.61	6.39	1.37
3	5.11	1.94	4.94	1.78	6.11	2.45	6.22	1.46
4D	4.50	1.42	4.06	1.62	5.50	1.89	5.56	1.53
5	4.83	1.48	4.00	1.53	5.22	2.02	5.44	2.54

* Number Subjects = 17

PS	Frequency PB		Reading Rate		S.R. Day		IPAT Raw Sc.	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	49.72	37.58	83.06	53.35	3.22	0.66	6.50	1.46
2	48.67	38.95	92.17	53.34	2.61	1.98	5.83	1.14
3	44.89	35.74	92.06	57.83	2.94	0.74	5.67	0.66
4D	32.67	27.69	98.22	40.72	2.56	0.69	6.43	1.18
5	31.89	24.19	108.89	40.76	3.06	0.71	5.82	1.01

African Males - Group A - N=2.

PS	Ex.Sev.R. 2nd PB		Ex.Conv. R.		S.S.R. Reading		S.S.R. PB.	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	7.50	2.12	8.00	1.41	5.50	4.95	7.00	2.83
2D	6.50	3.54	6.50	2.12	4.50	3.54	5.50	2.12
3	5.50	7.25	7.50	0.22	5.00	2.83	5.50	2.12
4	6.50	0.22	6.50	0.22	5.50	4.95	6.00	4.24
5	6.00	6.40	7.50	0.22	5.00	4.24	5.00	4.24

PS	Frequency PB		Reading Rate		S.R. Day		IPAT Raw Sc.	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	77.00	12.73	40.00	32.53	3.00	1.41	-	-
2D	63.50	48.89	56.00	59.40	2.50	0.22	-	-
3	59.00	23.22	56.50	50.20	3.00	1.41	-	-
4	63.00	56.57	60.00	73.54	2.50	0.22	-	-
5	58.00	60.81	60.00	69.30	4.00	0.00	-	-

African Males - Group B - N=6

PS	Ex.Sev.R. 2nd PB		Ex.Conv. R.		S.S.R. Reading		S.S.R. PB.	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	5.83	1.19	5.33	1.87	6.17	1.71	6.83	1.62
2	5.17	1.15	6.17	1.31	5.67	2.15	6.17	2.22
3	3.83	0.77	5.83	1.19	4.00	1.67	4.50	0.84
4D	3.67	1.02	4.50	1.05	3.50	1.64	4.17	1.88
5	4.33	1.38	5.50	0.84	3.17	2.03	3.50	1.97

PS	Frequency PB		Reading Rate		S.R. Day		IPAT Raw Sc.	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	37.67	22.23	65.17	11.26	3.00	0.63	-	-
2	32.67	29.85	73.33	43.68	2.33	0.83	-	-
3	17.67	17.89	97.00	26.08	2.50	0.84	-	-
4D	11.17	7.08	102.33	73.70	2.33	1.04	-	-
5	13.33	20.13	107.17	56.75	2.33	0.53	-	-

All Males - Group A - N=17

PS	Ex.Sev.R. 2nd PB		Ex.Conv. R.		S.S.R. Reading		S.S.R. PB.	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	4.29	2.12	4.65	2.57	5.24	2.53	6.24	2.06
2D	3.76	1.93	4.47	2.27	4.35	2.01	[illegible]47	1.84
3	3.71	1.52	4.53	2.71	5.00	2.18	.94	2.14
4	3.82	1.64	4.23	2.06	4.88	2.53	4.94	2.31
5	3.94	1.86	4.76	2.00	4.53	2.50	4.53	2.26

PS	Frequency PB		Reading Rate		S.R. Day		IPAT Raw Sc.*	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	30.00	24.56	108.80	48.22	3.29	0.22	6.40	0.83
2D	23.50	24.37	122.40	43.69	2.82	0.74	5.33	1.45
3	19.60	19.75	129.20	47.53	3.00	0.79	5.25	1.15
4	13.66	27.39	116.40	37.47	3.06	0.82	5.60	1.46
5	18.18	24.19	127.20	42.90	2.94	0.75	5.77	0.82

* For IPAT Number Subjects = 15.

All Males - Group B - N=21

PS	Ex.Sev.R. 2nd PB		Ex.Conv. R.		S.S.R. Reading		S.S.R. PB	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	5.33	2.02	4.62	1.41	6.38	1.63	7.05	1.64
2	5.29	1.35	5.48	1.74	6.00	1.79	6.43	1.59
3	4.76	1.85	5.14	1.57	5.57	2.44	5.71	2.40
4D	4.33	1.47	4.33	1.54	5.00	2.14	5.14	1.81
5	4.71	1.53	4.48	1.59	4.62	2.27	4.95	0.69

PS	Frequency PB		Reading Rate		S.R. Day		IPAT Raw Sc.*	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	46.81	36.39	75.33	42.92	3.14	0.67	6.40	1.43
2	46.67	38.97	183.15	48.98	2.52	2.79	5.73	0.82
3	32.57	35.57	94.24	51.43	2.81	2.37	5.60	0.74
4D	28.33	27.42	97.48	38.83	2.48	2.53	6.53	1.29
5	27.52	24.86	106.00	37.99	2.86	2.26	5.80	1.05

* For IPAT Number Subjects = 15.

All Subjects - Group A - N=20

PS	Ex.Sev.R 2nd PB		Ex. Conv. R.		S.S.R. Reading		S.S.R. PB	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	4.35	2.01	4.60	2.37	5.40	2.56	6.21	1.47
2D	3.95	1.85	4.45	2.09	4.80	2.33	4.68	1.72
3	3.95	1.61	4.50	2.15	5.35	2.37	5.11	1.87
4	3.95	1.57	4.20	1.91	5.15	2.54	5.00	1.90
5	4.05	1.79	4.70	1.84	4.90	2.61	4.74	2.09

PS	Frequency PB		Reading Rate		S.R. Day		IPAT Raw Sc.*	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	40.95	30.28	101.30	58.33	3.20	0.77	6.38	0.60
2D	29.60	27.22	117.90	49.67	2.85	0.75	5.39	1.41
3	26.45	34.35	122.85	49.47	3.10	0.79	5.26	1.16
4	23.95	31.78	113.70	39.18	3.05	0.83	5.67	1.46
5	25.30	37.67	122.05	44.84	3.00	0.73	5.69	0.98

* For IPAT Number Subjects = 18

All Subjects - Group B - N=24

PS	Ex.Sev.R. 2nd PB		Ex. Conv. R.		S.S.R. Reading		S.S.R. PB *	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	5.25	1.92	4.54	1.37	6.33	1.56	7.12	1.59
2	5.12	1.34	5.25	1.77	5.92	1.71	6.33	1.59
3	4.79	1.80	5.17	1.62	5.58	2.44	5.79	2.34
4D	4.29	1.37	4.17	1.48	5.00	2.00	5.21	1.71
5	4.71	1.44	4.37	1.54	4.71	2.17	4.96	2.17

* For S.S.R. PB Number Subjects = 23

PS	Frequency PB		Reading Rate		S.R. Day		IPAT Raw Sc.*	
	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx	$\bar{x}$	Sx
1	40.70	34.28	78.58	46.85	3.17	0.62	6.50	1.46
2	44.70	36.92	87.46	47.04	2.54	0.84	5.83	1.14
3	38.10	33.18	93.29	49.97	2.83	0.77	5.67	0.66
4D	27.29	25.56	99.25	36.67	2.50	0.78	6.43	1.18
5	27.75	23.46	108.50	35.93	2.87	0.76	5.82	1.01

* For IPAT Scores Number Subjects = 18.

APPENDIX E

TABLE I

SEVERITY RATINGS MADE BY FIVE JUDGES AND EXPERIMENTER ON NINETY-FOUR RANDOMLY SELECTED RECORDINGS

TABLE II

MEANS, AND STANDARD DEVIATIONS OF SEVERITY RATINGS MADE BY FIVE JUDGES AND EXPERIMENTER

/ Table I ...

TABLE 1.

LEGEND:

pb2 = 2nd playback
pb1 = 1st playback
ini = initial rating on reading

Code On Tape	Judges					Experimenter		
	1	2	3	4	5	pb 2	pb1	ini
FIRST RECORDING								
23 E	4	6	4	3	6	4	4	4
24 C	9	8	7	7	9	6	7	6
52 E	9	9	8	9	9	8	8	8
46 B	2	2	2	2	2	3	2	2
56 C	8	8	9	7	8	7	8	8
11 A	2	3	2	2	4	3	3	3
51 E	7	5	5	4	5	5	5	6
54 C	7	5	3	5	6	4	4	4
12 B	6	6	4	5	6	5	6	5
40 E	4	4	3	2	4	4	4	4
10 B	3	4	3	2	3	3	3	3
4 E	6	7	6	5	7	5	5	5
19 A	6	5	4	5	5	5	5	5
34 C	6	6	7	6	7	5	5	4
15 E	4	4	4	3	3	4	4	4
55 A	7	6	4	4	6	6	6	6
6 C	4	5	5	3	5	4	4	4
27 C	8	8	8	8	9	7	7	7
50 D	7	7	6	5	7	4	4	4
17 E	8	9	8	8	9	7	8	8
8 A	2	3	3	2	2	4	3	3
39 B	4	5	6	4	7	4	4	5
10 C	9	8	9	9	9	9	9	9
47 D	7	7	7	5	7	5	5	5
26 D	5	6	5	5	4	4	4	4
35 C	2	2	2	2	2	2	2	2
43 B	3	3	4	3	5	4	4	4
13 A	1	1	2	2	2	3	2	2
9 D	6	6	4	5	5	5	5	5
41 B	6	8	6	7	7	6	6	6
1 E	8	9	7	8	8	6	6	6
21 B	5	7	6	5	6	4	5	6
53 C	2	3	3	2	3	2	3	2
14 D	6	5	5	1	5	4	4	4
37 B	3	2	4	2	3	2	2	2
22 E	5	5	4	4	4	4	5	4
16 C	7	7	7	6	7	7	7	6
48 D	6	6	6	4	6	5	5	5
18 E	5	4	4	3	4	4	4	4
30 C	2	2	3	2	2	2	2	2
24 E	3	3	5	2	4	4	4	4
42 B	2	3	3	2	2	2	3	3
28 E	7	7	7	6	7	6	6	6
25 A	4	4	4	1	4	3	3	3
44 E	1	1	2	1	1	2	2	2
29 B	7	8	5	6	7	4	5	5
20 A	2	2	3	1	2	2	2	2

Code On Tape	Judges					Experimenter		
	1	2	3	4	5	pb 2	pbl	ini.
SECOND RECORDING								
8 C	6	5	4	5	5	4	5	4
6 B	5	4	6	4	5	6	4	5
50 E	1	1	1	2	1	2	2	2
25 C	5	4	4	3	4	3	3	3
16 C	7	6	7	7	7	6	6	5
29 B	7	7	5	6	7	6	6	7
19 D	6	5	4	5	4	5	4	4
15 E	4	4	4	3	4	4	4	4
18 B	5	5	5	4	5	4	4	4
37 E	2	2	2	2	2	3	3	3
13 D	4	4	3	5	4	4	4	4
44 A	2	1	2	1	2	2	2	2
40 B	4	4	3	4	5	4	3	3
55 B	8	9	9	8	9	8	8	9
45 D	3	2	2	3	3	3	3	3
35 D	2	2	2	1	2	2	2	2
31 E	7	5	5	5	6	4	4	4
52 C	6	5	4	4	6	4	4	4
17 B	5	7	8	7	7	6	5	5
48 E	5	6	6	5	5	5	5	6
26 E	4	6	5	5	4	4	4	5
11 C	2	4	4	3	4	4	4	4
54 E	4	4	4	3	3	3	3	3
4 B	7	8	8	8	7	7	6	7
46 D	1	2	2	1	2	2	2	2
27 E	8	9	8	8	8	7	7	7
24 B	8	8	6	6	6	6	6	6
21 D	9	9	9	9	9	8	8	8
36 D	9	9	9	8	8	8	8	8
30 C	7	6	6	5	7	5	5	5
14 D	4	3	3	4	6	4	5	5
34 D	8	7	7	7	8	5	5	5
10 D	9	9	9	9	9	9	9	9
53 A	2	2	3	2	3	3	3	3
22 C	3	3	4	3	4	3	3	3
23 B	6	5	4	5	6	4	5	5
12 C	1	2	2	1	2	2	2	2
20 E	1	1	2	1	2	2	2	2
42 E	4	4	4	3	5	4	4	3
28 D	8	7	7	7	7	6	6	6
49 A	6	5	5	3	6	4	5	4
9 B	7	7	5	6	6	6	5	6
41 D	4	5	5	4	5	4	4	3
1 D	9	8	8	8	8	7	7	7
47 B	7	5	6	6	7	5	4	6
33 C	7	7	7	6	7	4	5	5
43 C	6	5	5	5	6	5	5	5

TABLE II

Means and Standard Deviations of Severity Ratings made by Five Judges and the Experimenter.

Variables		Mean	SD
Judges Ratings on First Recordings	1	5.00	2.30
	2	5.06	2.24
	3	4.72	2.07
	4	4.06	2.19
	5	5.15	2.24
Experimenter's 3 Ratings on First Recordings	E1	4.43	1.68
	E2	4.51	1.82
	E3	4.49	1.79
Judges Ratings on Second Recordings	1	5.21	2.42
	2	5.06	2.34
	3	4.92	2.23
	4	4.57	2.36
	5	5.30	2.14
Experimenter's 3 Ratings on Second Recordings	E1	4.60	1.79
	E2	4.51	1.74
	E3	4.60	1.86

APPENDIX F

SIX REPRESENTATIVE SAMPLES OF VERBATIM REPORTS

NOTE

The verbatim material consists of verbal comments made by the subjects to the experimenter during the three-weekly interviews. They were written down in the presence of the subjects and were written in the third person. The summaries that were written and submitted by the subjects at the end of the experiment were given in the first person; the tense in which these were written has been retained.

VERBATIM REPORT

Subject - 1
(female)

1st Period

Speech same as usual. No change.

2nd Period - Placebo administration

Does not feel much difference in speech, but feels different within herself - feels more relaxed and less worried. Has more a "non-care" attitude. She said that stuttering is so much part of one, that she cannot say whether the speech has been affected. Is not sleeping well but it may not be due to the drug.

Later commented that she continued to feel more relaxed. Her moods were better, felt "nicer" and more confident. However, still cannot say if speech is affected as she is not aware of what she is doing, although she has fears about it. Noticed that she was "holding back" for the first time when she heard the recording three weeks ago.

3rd Period

Speech slightly worse at the beginning of this period, otherwise feels the same.

4th Period - Drug Administration

Speech is better, not holding back so much, not so many blocks and a good period. Does not know whether it is the drug or not. Feels more confident and relaxed. This week it is better than most since the beginning of the year. Mood happier, not so tired. Generally better reaction than during the first period of the drug.

Later reported that speech was improved and this was more or less consistent. Had a little more confidence. Felt more relaxed and because of this, felt that her speech had improved.

5th Period

Speech not good since off the drug. Is not very well, has a bad cold and was in bed before coming here - this probably resulted in worse speech, she said.

Summary written by subject at the end of the experiment

I feel that there certainly has been an improvement in my speech during the past two weeks - more fluent, also my breathing seems to be more controlled. During the last period when taking the drug I felt very relaxed, in a happier mood, and very much more sure of myself. Speech was improved but not to the extent it is now.

/During ...

During the first and second period of the drug, mentally I felt happier and more relaxed and a wonderful feeling of confidence. There was a slight improvement in my speed, but not to a very marked extent.

CATEGORY PLACEMENT - Drug (4th Period): Improvement
Placebo (2nd Period): No Change

VERBATIM REPORT

Subject - I6
(Male)

1st Period

Speech has remained the same as usual. Not influenced by completing the daily schedule.

2nd Period - Drug administration

Speech has not changed, but attitude has, in that he is more "lazy" about the speech and has no fear about stuttering situations. Read in front of the class - the first half was good and then it became progressively worse. This does not usually happen he said, and may be due to awareness of fluency or the effect of the drug. Has felt rather tired but has had one very late night. Falls asleep quickly, might be due to the drug as it is not a usual feeling of tiredness. He reported that the drug is not affecting his concentration on his studies.

Later reported that the main reaction of the drug was to cause tiredness. Speech worries him less, due to less anxiety - the idea was at the back of his mind that he had been taking the drug and so felt less anxious.

3rd Period

Speech, he reported, is generally on the downgrade and getting progressively worse. Feels this is because he has not been working on the speech and this has caught up with him - "reinforcement of bad habits". (His own words)

4th Period - Placebo administration

Speech has been the same as usual. No change at all.

Later reported that his speech continued to remain unchanged.

5th Period

Speech same as usual. Reported that the first period of the drug had some effect and that there was some change in his speech.

Summary written by subject at the end of the experiment

My speech as such has been good during the last two weeks. I have not had many blocks and when they have occurred they have been mild. However, I have a lot of anxiety and tension, but not enough to outwardly affect my speech. My speech now is very similar to what it was during the last period of the drug. With respect to the January-March period it is very much worse but only in attitude and amount of tension, anxiety, i.e. the actual blocks sound the same.

/During ...

During the 1st lot it was quite effective in reducing anxiety and tension but made me very tired especially towards late afternoon. I dont think it really affected what happened in the actual block, but because of the lack of anxiety, the blocks were slightly less frequent. During the 2nd lot I couldn't notice any effect. My speech was similar to periods between and after the drug.

CATEGORY PLACEMENT - Drug (2nd Period): Slight Improvement
Placebo (4th Period): No Change

VERBATIM REPORT

SUBJECT - 26
(Male)

1st Period

Speech has been the same. Says he finds it hard to judge when speech is better. Daily forms have not affected his speech.

2nd Period - Drug administration

Says speech is slightly worse taking an average. Marked difference for one day where his mood was bad and speech was good. Reported that speech has changed in that in about an 8-word sentence, he would normally stutter slightly on 5 or 6 words, now he stutters badly on one. His variation has happened to him before.

Later reported that there was still no change in his speech.

3rd Period

Since the end of the last period, his speech has been getting steadily worse. Worse than before he started the study. Could be a bad period. Says he is stuttering more frequently and is more tense.

4th Period - Placebo administration

No effect on speech at all. Says speech is better than the three previous weeks but is still worse than the speech before starting the study. Feels no different.

Later reported that speech was slightly worse.

5th Period

He reports that his speech has gone back to what it was when he first started the study. He cannot say whether the drug was effective for either period.

Summary written by subject at the end of the experiment

My speech during this last week was more or less the same as it was before I commenced the study. During the last period of the drug, my speech didn't alter as compared to when I commenced the study, i.e. since slightly after the first period of the drug, my speech has remained more or less constant.

During the first period of the drug, my speech tended to get worse. In getting worse, my speech also tended to alter in that, before taking the drug, I would stutter slightly

/over ...

over a series of words, whereas, during the drug period I tended to stutter more severely over fewer words. During the interim period between the 1st and 2nd lot of drugs, my speech returned to the way it was before taking the drug. The 2nd drug showed no change in my speech.

CATEGORY PLACEMENT - Drug (2nd Period): Worse
Placebo (4th Period): No Change

VERBATIM REPORT

SUBJECT - 30
(Male)

1st Period

Speech has been the same. Not influenced by the daily forms.

2nd Period - Drug administration

Feels more calm and relaxed and less nervous. More able to enter situations - he goes into situations and does not think about them. Speech, however, has remained the same.

Later reported that speech was better. More relaxed. Felt he could go into some situations which he feared previously. Says drug had made him less afraid.

3rd Period

Speech became worse - has gone back to the usual tense state.

4th Period - Placebo administration

At beginning of this period, speech became worse - began to block on more words. Says it is probably not due to the drug itself. Speech is the same as usual. Says he felt better during the previous drug period as speech had improved then.

Later reported that speech *remained the same*, although as soon as he stopped the drug to enter the next period, it became worse. Was not aware of improvement in speech during the drug period itself. Felt that the first drug period was better - spoke better and was less tense and said that it was effective during that period.

5th Period

Speech slightly worse - a bit more fear, and fears more blocks.

Summary written by subject at the end of the experiment

The speech during this last week was pretty much the same as usual tending to be slightly worse. Compared with the last period of the drug the speech is slightly worse in that I have more fear, i.e. I am more aware of stuttering. Compared with January-March the speech is the same.

During the first lot of drugs the effectiveness in general was good. I felt *more* relaxed and not so worried about talking in strange situations with the result that I stuttered definitely less.

/The ...

The second lot of drugs took some time to have any effect. Only after about 3 or 4 days did I begin to feel relaxed again although I still had more fear than in the first lot. I never quite lost that amount of fear as I did with the previous lot of drugs.

CATEGORY PLACEMENT - Drug (2nd Period): Improvement
Placebo (4th Period): No Change

VERBATIM REPORT

SUBJECT - 37
(Male)

1st Period

Slightly worse for a few days since filling in the forms (schedules). Possibly more aware of stuttering, he said, because of these forms.

2nd Period - Drug administration

Speech is fair. Been the same since starting the drug. Some days better and not sure if it is due to the drug. Has had good days previously. However, feels a lot better as he is speaking more - not avoiding situations very much and feels that this is due to the drug. Is a bit tired - particularly afternoons.

Later reported that speech was good and consistently so for the latter half of the drug period. More relaxed, spoke more fluently, less frequent stuttering and shorter blocks, and less tension. Family commented that speech was better. Thinks that the drug is worthwhile. Best speech for the year.

3rd Period

Began to get worse - it is better than before the beginning of the stuuy, but worse than during the drug period.

4th Period - Placebo administration

Feels speech has become worse. Thinks it will start to improve soon because the improvement in the first drug period also began later. Felt tired before, not now.

Later reported that his speech was the same as usual. Said that during the first period of the drug he felt a difference - a "tremendous effect" consistently.

5th Period

Speech worse than usual.

Summary written by subject at the end of the experiment

My speech has been average to a little better over this past week.

My speech now, is a little better than the first period of the last lot of drugs. It does not compare at all with the first period of the drug as my speech was much better between January-March.

/The ...

The drug was very effective during the first period of the study. The second period was barely effective. The drug had an excellent effect in the first period as my speech was much more fluent. It had no effect during the second period. I felt relaxed during the first period. During the second period I seemed to tense up.

CATEGORY PLACEMENT - Drug (2nd Period): Much Improvement
Placebo (4th Period): No Change

VERBATIM REPORT

SUBJECT - 46
(African Male)

1st Period

Improvement for a few days - more aware of speech because of questions on schedule.

2nd Period - Placebo administration

No difference seen at beginning but after some days there was less stuttering and less fear. Before he used to struggle on a word or find another word. Now struggles less and does manage to say those words that gave trouble previously. Feels calmer, otherwise no different. Does not feel that improved speech is due to mood or to a good period of speech, but due to the drug - even if he was in a good mood he would still normally struggle over his speech.

Later reported that it continued to be better, even better than the first part of this period. Felt calm and as a result it was easier to speak, whereas before he used to get a little tense.

3rd Period

At first did not have much difficulty with speech, although speech not as good as while taking the drug. Getting worse steadily until it is now about the same as the beginning of the study.

4th Period - Drug administration

Has helped him very much. Best speech he can ever remember having. "I get the courage, I believe from the drug to say what I want to say, even if I stutter". At times he forgets he is a stutterer and speaks fluently. He is "brave" to face all situations. Stuttering is less frequent and shorter blocks occur. While comparing the two periods, he said that he felt the real difference occurred in the third week of the previous drug period, it was good then, but not as good as now. Feels tired and drowsy but this has lessened. Is very happy, he says, about the improvement in his speech.

Later reported that it continued to help him. More calm, words are easier and allowed for easier speech. Stuttering less "tight" and less frequent. Felt that during the first period the drug only helped him in the last week, whereas in this period, the drug is helping all the time. Feels that the drug is a "good thing" but should be permanent.

5th Period

Speech slightly better than usual. Felt it might be some effect after taking the drug.

/Summary ...

Summary written by subject at the end of the experiment

During the last week my speech was much better. There were some times on which I had trouble but on the whole the speech was much better than before. When I first took the drug, there was no difference felt until the last week of my taking the drug, during the first session. The presence of the drug was real felt during my second session of my drug taking. In January my speech was much worse. From the time I filled paper (schedule) it became better. When I took the drug it became much better. The effects of the drug is that I felt braver to speak, when caught by stuttering. I became calm so as to speak with great easy. During the first lot I felt much lazy and did not see improvement clearly. In the second lot laziness disappeared and I felt much improvement in my speech.

CATEGORY PLACEMENT - Drug (4th Period): Much Improvement
Placebo (2nd Period): Improvement

APPENDIX G

ORIGINAL TABLES DEPICTING RESPONSE TO DRUG ACCORDING TO READING RATE COMPARED WITH CATEGORIES OF CHANGE BASED ON VERBATIM REPORTS

Response to Drug according to Reading Rate compared with Categories of Change based on Verbatim Reports

Note: The numbers given represent the identity numbers of the subjects.

European Females

Response to Measurements	VERBATIM REPORTS				
	Worse	No Change	Slight Improv.	Improv.	Much Improv.
Responding	-	4 N = 1	-	2 N = 1	-
Doubtful	-	5 N = 1	-	-	-
Not Responding	6 N = 1	-	- -	1, 3 N = 2	-
Totals	1	2	-	3	-

European Males

Response to Measurements	VERBATIM REPORTS				
	Worse	No Change	Slight Improv.	Improv.	Much Improv.
Responding	26 N = 1	18,22,32 N = 3	20 N = 1	10, 13, 25, 30 N = 4	19 N = 1
Doubtful	-	21,23,29 N = 3	14,16,17, 31,33 N = 5	4 N = 1	9 N = 1
Not Responding	34 N = 1	7,12,24, 27 N = 4	-	11,15,35 N = 3	28,36,37 N = 3
Totals	2	10	6	8	5

African Males

Response To Measurements	VERBATIM REPORTS				
	Worse	No change	Slight Improv.	Improv.	Much Improv.
Responding	-	-	-	43 N = 1	39,45 N = 2
Doubtful	-	-	-	40 N = 1	42 N = 1
Not Responding	-	41 N = 1	-	44 N = 1	46 N = 1
Totals	-	1	-	3	4

All Groups

Response to Measurements	VERBATIM REPORTS				
	Worse	No Change	Slight Improv.	Improv.	Much Improv.
Responding	1	4	1	6	3
Doubtful	0	4	5	2	2
Not Responding	2	5	-	6	4
Totals	3	13	6	14	9

APPENDIX H

T SCORES FOR SCALES OF THE MINNESOTA MULTIPHASIC PERSONALITY INVENTORY FOR THIRTY-ONE EUROPEAN MALE STUTTERERS

T Scores for Scales of the Minnesota Multiphasic Personality Inventory for Thirty-one European Male Stutterers

Legend:

Ss - Subjects
F - Validity score
Hs - Hypochondriasis
Hy - Hysteria
Mf - Interest
Pt - Psychasthenia
Ma - Hypomania

L - Lie score
K - Correcting Factor
D - Depression
Pd - Psychopathic Deviate
Pa - Paranoia
Sc - Schizophrenia
Si - Social I.e.

Ss	L	F	K	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Si
7	53	60	46	59	58	45	64	82	41	54	59	68	60
8	50	50	57	49	48	62	57	65	53	50	46	48	51
9	66	60	64	59	51	55	69	57	67	56	61	63	42
10	50	60	53	52	44	58	60	53	38	50	46	75	44
11	53	46	55	54	39	58	53	59	50	44	44	50	44
12	46	64	46	44	53	50	62	69	47	57	55	78	42
13	40	55	46	39	51	56	50	61	56	46	57	45	62
14	53	53	42	41	72	58	62	74	70	85	59	38	78
15	43	64	46	44	63	51	74	81	65	52	78	78	65
16	59	55	64	54	80	79	81	73	67	71	71	60	55
17	50	70	46	65	60	62	74	47	59	73	78	75	48
18	70	53	48	47	75	56	60	63	62	69	66	78	52
19	50	55	44	52	58	51	39	61	38	54	50	50	60
20	43	±95	35	54	77	60	74	74	76	87	103	88	67
21	42	58	46	67	60	60	53	71	59	69	59	70	51
22	56	50	51	57	68	51	62	67	41	60	63	58	66
23	50	60	44	39	56	51	50	67	59	42	48	83	53
24	46	60	51	41	39	53	72	71	53	40	59	83	50
25	66	53	57	49	53	53	60	65	38	44	46	68	50
26	50	46	57	75	60	56	48	57	59	50	32	35	69
27	50	70	42	49	70	53	62	51	59	77	63	73	50
28	50	58	46	41	56	49	36	73	56	62	57	63	69
29	50	70	38	59	77	67	55	63	62	69	63	58	68
30	53	66	54	57	77	62	62	73	65	66	61	43	60
31	50	55	49	47	75	53	41	67	56	54	61	35	67
32	43	50	46	41	60	47	62	71	41	56	50	65	50
33	63	55	42	49	58	58	57	76	44	56	53	88	63
34	60	44	62	49	56	47	55	51	50	60	48	60	39
35	44	58	55	47	41	64	74	61	59	60	61	75	50
36	40	46	49	41	53	57	47	73	44	50	57	55	53
37	64	44	62	52	63	52	60	57	38	54	51	63	45

APPENDIX I

PART 1

MEANS, STANDARD DEVIATIONS, F RATIOS, DEGREES OF FREEDOM AND OVERALL MEANS DERIVED FROM THE DAILY SCHEDULES FOR FORTY-SIX STUTTERERS

DAILY SCHEDULES

PART I.

Note: For convenience the categories of change based on the verbatim reports have been included.

LEGEND

S - Subject, by identity number.
Ps - Periods of experiment.
N - Number of schedules completed each period.
VR - Category of change based on verbatim reports.
NoC - No change.
SlIm - Slight improvement.
Imp - Improvement.
M. Im. - Much improvement.
Wo - Worse.
D - Drug - inserted alongside period of allocation.
P - Placebo - inserted alongside period of allocation.
(f) - Female.
F - F ratio derived from a one-way analysis of variance. In some cases F = 0. This is due to no variation in response.
df - Degrees of freedom derived from the one-way analysis of variance. Two figures will be given for df - the "between categories" and the "residual".
OM - Overall mean for the five periods.

EUROPEAN SUBJECTS

S	Ps	MEAN	SD	N	VR
1 (f)	1	3.09	.41	21	
	2-P	2.58	.34	21	NoC
	3	2.73	.34	20	
	4-D	2.36	.19	22	Imp
	5	3.55	.41	16	
		F=13.32 df= 4,95			
		OM= 2.66			

S	Ps	MEAN	SD	N	VR
2 (f)	1	2.79	.32	21	
	2-P	2.79	.37	21	NoC
	3	2.77	.31	21	
	4-D	2.59	.20	21	Imp
	5	2.71	.28	20	
		F=0 df=4,99			
		OM= 2.73			

S	Ps	MEAN	SD	N	VR
3 (f)	1	3.00	.80	21	
	2-D	2.65	.87	21	Imp
	3	3.55	1.27	21	
	4-P	2.37	1.22	21	NoC
	5	3.76	1.34	21	
		F=5.78 df=4,100			
		OM=3.07			

S	Ps	MEAN	SD	N	VR
4 (f)	1	3.25	.42	20	
	2-D	2.83	.23	20	NoC
	3	3.09	.23	20	
	4-P	2.95	.21	20	NoC
	5	2.96	.26	15	
		F=6.42 df=4,96			
		OM=3.02			

S	Ps	MEAN	SD	N	VR
5 (f)	1	1.61	.64	21	
	2-P	1.45	.54	20	SlIm
	3	1.30	.28	20	
	4-D	1.35	.39	23	NoC
	5	1.47	.35	18	
	F= 1.44 df= 4,97				
	OM= 1.43				
6 (f)	1	3.27	.64	21	
	2-D	2.91	.57	21	Wor
	3	3.36	.50	21	
	4-P	2.73	.39	21	NoC
	5	2.69	.20	6	
	F= 5.88 df= 4,85				
	OM= 3.04				
7	1	3.17	.19	21	
	2-D	2.89	.32	21	NoC
	3	3.07	.19	21	
	4-P	2.07	.23	21	Imp
	5	2.15	.21	19	
	F= 62.97 df= 4,98				
	OM= 2.68				
8	1	3.00	-0	21	
	2-P	2.99	.03	18	NoC
	3	2.96	.16	22	
	4-D	2.93	.06	25	Imp
	5	3.11	.12	14	
	F= 0 df= 4,95				
	OM= 2.99				
9	1	2.88	.52	18	
	2-D	2.51	.19	17	M.Im
	3	2.83	.32	19	
	4-P	2.97	.35	19	NoC
	5	2.94	.41	19	
	F= 4.15 df= 4,87				
	OM= 2.83				
10	1	2.95	.53	21	
	2-P	2.94	.33	21	NoC
	3	3.13	.31	21	
	4-D	2.77	.24	21	Imp
	5	3.19	.24	21	
	F= 0 df= 4,100				
	OM= 3.00				
11	1	2.75	.74	19	
	2-D	2.27	.35	18	Imp
	3	2.48	.28	21	
	4-P	2.02	.23	21	Imp
	5	2.33	.18	21	
	F= 9.14 df= 4,95				
	OM= 2.37				
12	1	2.98	.12	20	
	2-D	2.98	.05	26	NoC
	3	2.99	.03	17	
	4-P	2.99	.05	25	NoC
	5	3.00	-0	17	
	F= 0 df= 4,100				
	OM= 2.99				
13	1	2.21	.27	6	
	2-P	2.15	.48	21	Imp
	3	1.89	.69	13	
	4-D	1.75	.35	10	Imp
	5	1.71	.44	17	
	F= 2.77 df= 4,62				
	OM= 1.93				
14	1	2.65	.44	20	
	2-P	2.88	.22	21	NoC
	3	2.94	.08	21	
	4-D	2.90		21	SlIm
	5	2.88	.14	20	
	F= 0 df= 4,98				
	OM= 2.85				
15	1	3.03	.42	17	
	2-D	2.87	.24	18	Imp
	3	3.06	.32	17	
	4-P	2.90	.30	20	SlIm
	5	3.09	.27	17	
	F= 1.88 df= 4,84				
	OM= 2.99				
16	1	2.94	.42	21	
	2-D	2.99	.35	25	SlIm
	3	3.10	.30	17	
	4-P	3.14	.28	21	NoC
	5	3.04	.12	21	
	F= 1.51 df=				
	OM= 3.04				

S	Ps	MEAN	SD	N	VR
17	1	3.12	.39	21	
	2-P	3.03	.11	25	SlIm
	3	3.00	-0	15	
	4-D	3.00	-0	20	SlIm
	5	3.00	-0	22	
	F= 1.70 df= 4,98				
	OM= 3.03				
18	1	3.13	.61	21	
	2-P	2.60	.54	21	NoC
	3	2.64	.51	21	
	4-D	2.90	.51	21	NoC
	5	3.10	.51	20	
	F= 4.52 df= 4,99				
	OM= 2.87				
19	1	3.41	.59	21	
	2-P	2.70	.54	18	SlIm
	3	2.89	.54	21	
	4-D	1.66	.46	19	M.Im
	5	2.63	.92	21	
	F= 19.55 df= 4,95				
	OM= 2.68				
20	1	3.16	.57	21	
	2-D	2.83	.42	22	SlIm
	3	2.79	.41	20	
	4-P	2.78	.49	20	NoC
	5	2.79	.52	19	
	F= 2.34 df= 4,97				
	OM= 2.87				
21	1	2.62	.54	18	
	2-P	2.96	.33	15	NoC
	3	2.68	.85	20	
	4-D	2.66	.63	17	NoC
	5	2.42	.73	19	
	F= 1.42 df= 4,84				
	OM= 2.66				
22	1	3.05	.49	21	
	2-D	2.74	.29	11	NoC
	3	2.95	.44	[illegible]	
	4-P	2.77	.37	21	NoC
	5	2.51	.88	12	
	F= 2.50 df= 4,76				
	OM= 2.84				
23	1	2.49	.63	21	
	2-P	2.89	.70	16	NoC
	3	2.92	.50	26	
	4-D	2.81	.32	20	NoC
	5	2.58	.44	21	
	F= 2.85 df= 4,99				
	OM= 2.74				
24	1	2.98	.11	21	
	2-P	2.91	.24	21	NoC
	3	3.05	.08	18	
	4-D	3.01	.14	21	NoC
	5	2.92	.13	21	
	F= 0 df= 4,97				
	OM= 2.97				
25	1	2.[illegible]	.57	15	
	2-D	2.28	.41	20	Imp
	3	2.41	.35	21	
	4-P	2.20	.21	21	Imp
	5	2.28	.27	22	
	F= 2.64 df= 4,94				
	OM= 2.33				
26	1	2.62	.25	21	
	[illegible]	2.75	.39	20	Wor
	[illegible]	2.56	.23	19	
	4-P	3.32	.30	20	NoC
	5	2.73	.28	19	
	F= [illegible].82 df= 4,94				
	OM= [illegible].99				
27	1	3.01	.40	21	
	2-P	3.00	.29	21	NoC
	3	2.73	.23	20	
	4-D	2.32	.23	27	NoC
	5	2.64	.39	14	
	F= 20.60 df= 4,98				
	OM= 2.72				
28	1	2.00	.23	20	
	2-P	1.83	.[illegible]	21	Imp
	3	1.80	.[illegible]	[illegible]	
	4-D	1.25	.34	20	M.Im
	5	1.40	.36	20	
	F= 20.21 df= 4,97				
	OM= 1.66				

S	Fs	MEAN	SD	N	VR
29	1	2.42	.49	21	
	2-D	2.62	.34	24	NoC
	3	2.75	.39	22	
	4-P	2.79	.41	19	NoC
	5	2.97	.37	15	
	F= 4.83 df= 4,96				
	GM= 2.69				
30	1	3.15	.38	20	
	2-D	2.72	.34	20	Imp
	3	3.20	.37	19	
	4-P	2.99	.33	21	NoC
	5	3.01	.28	21	
	F= 6.07 df= 4,96				
	GM= 3.01				
31	1	3.23	.48	21	
	2-P	2.89	.37	21	NoC
	3	3.01	.27	21	
	4-D	2.80	.34	21	SlIm
	5	3.27	.41	21	
	F= 6.34 df= 4,100				
	GM= 3.04				
32	1	3.04	.28	21	
	2-P	2.99	.14	19	NoC
	3	2.99	.07	22	
	4-D	2.94	.22	21	NoC
	5	2.87	.19	17	
	F= 0 df= 4,95				
	GM= 2.97				
33	1	3.16	.50	20	
	2-D	3.21	.53	20	SlIm
	3	2.73	.52	20	
	4-I	3.33	.33	22	Wor
	5	3.22	.47	20	
	F= 5.08 df= 4,97				
	GM= 3.13				
34	1	2.87	.78	21	
	2-D	2.93	.52	21	Wor
	3	2.77	.41	21	
	4-P	2.98	.44	21	Wor
	5	2.54	.32	21	
	F= 2.36 df= 4,100				
	GM= 2.82				
35	1	3.06	.44	13	
	2-I	2.89	.56	13	SlIm
	3	2.45	.61	20	
	4-D	2.35	.49	20	Imp
	5	3.82	.41	11	
	F= 17.72 df= 4,72				
	GM= 2.80				
36	1	2.85	.32	21	
	2-P	3.02	.33	22	NoC
	3	3.12	.38	18	
	4-D	2.94	.46	23	M.Im
	5	3.11	.28	17	
	F= 2.03 df= 4,96				
	GM= 3.00				
37	1	2.87	.23	21	
	2-D	2.82	.22	22	M.Im
	3	2.67	.22	20	
	4-P	2.85	.15	22	NoC
	5	2.90	.23	20	
	F= 0 df= 4,100				
	GM= 2.82				

AFRICAN SUBJECTS

S	Pe	MEAN	SD	N	VR
38 (f)	1	2.85	.39	17	
	2-D	2.86	.64	20	NoC
	3	2.33	.71	21	
	4-P	2.80	.17	20	NoC
	5	2.91	.16	20	
		F= 5.04 df= 4,93			
		OM= 2.74			
39	1	3.01	.43	21	
	2-P	2.18	.33	21	Imp
	3	2.23	.26	21	
	4-D	2.01	.04	20	M.Im
	5	2.43	.21	20	
		F= 38.14 df= 4,98			
		OM= 2.38			
40	1	3.01	.52	16	
	2-P	3.10	.32	21	NoC
	3	2.78	.40	20	
	4-D	2.04	.56	20	Imp
	5	2.24	.45	20	
		F= 21.02 df= 4,92			
		OM= 2.62			
41	1	2.85	.62	25	
	2-P	3.23	.24	22	Imp
	3	3.34	.21	15	
	4-D	3.21	.24	21	NoC
	5	3.47	.09	19	
		F= 9.21 df= 4,97			
		OM= 3.19			
42	1	2.74	.31	24	
	2-P	2.70	.48	20	NoC
	3	2.98	.61	10	
	4-D	2.30	.45	23	M.Im
	5	2.10	.22	24	
		F= 14.35 df= 4,96			
		OM= 2.56			
43	1	2.94	.86	8	
	2-D	2.55	.88	22	Imp
	3	2.01	.04	19	
	4-P	2.52	.87	20	NoC
	5	3.91	.25	20	
		F= 22.46 df= 4,84			
		OM= 2.77			
44	1	2.26	.60	18	
	2-D	1.92	.60	16	Imp
	3	2.67	.52	17	
	4-P	2.32	.48	16	NoC
	5	2.09	.28	17	
		F= 5.11 df= 4,79			
		OM= 2.26			
45	1	3.38	.85	24	
	2-P	2.76	.77	23	NoC
	3	3.15	.20	12	
	4-D	2.02	.05	21	M.Im
	5	2.73	1.08	23	
		F=11.60 df= 4,98			
		OM= 2.59			
46	1	2.92	.90	21	
	2-P	2.73	.82	21	Imp
	3	2.56	.78	21	
	4-D	1.80	.62	24	M.Im
	5	2.62	.74	21	
		F= 8.39 df= 4,103			
		OM= 2.39			

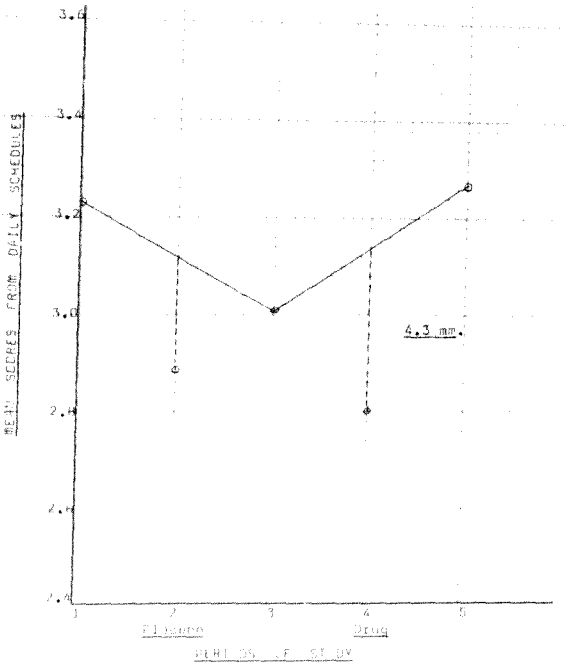
APPENDIX I

PART II

FOUR REPRESENTATIVE GRAPHS DEPICTING THE RESPONSE TO THE DRUG AFTER THE "TREND" OF STUTTERING HAD BEEN TAKEN INTO ACCOUNT

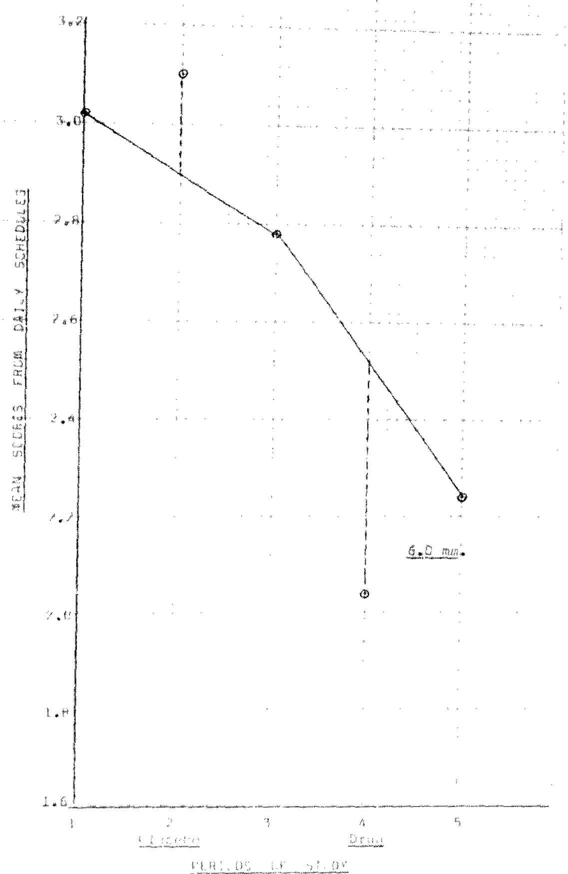
GRAPH 1

SUBJECT - 31



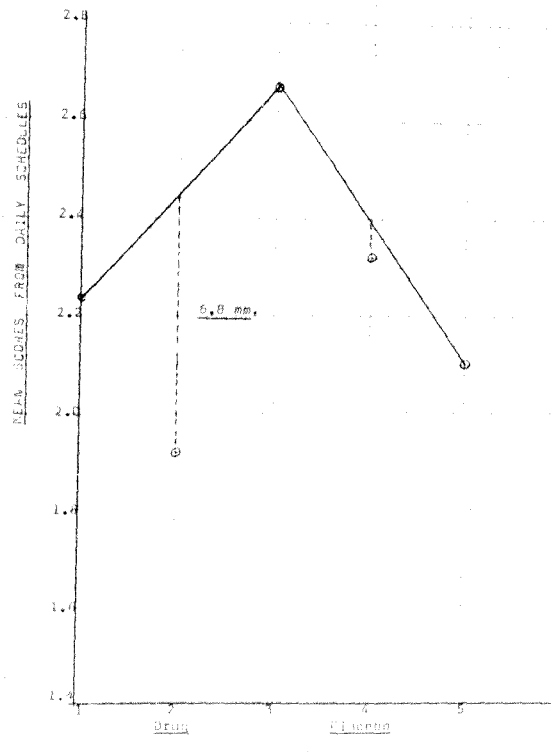
GRAPH 2

SUBJECT - AD



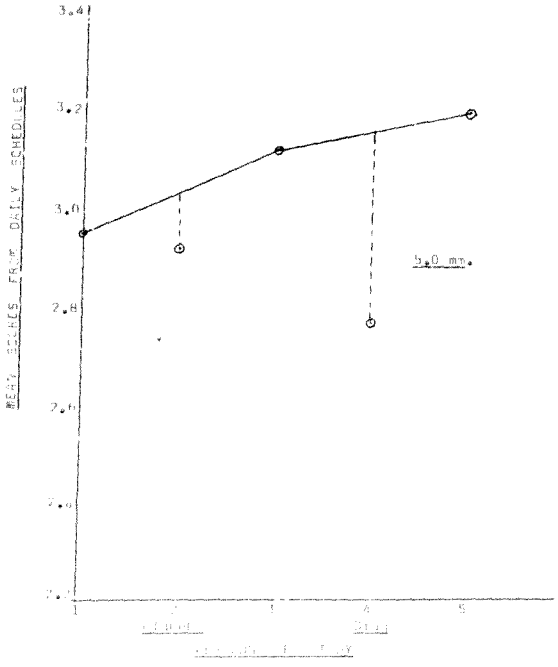
GRAPH 3

SUBJECT - 44



GRAPH 4

SUBJECT - 10



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