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ABSTRACT

A comparison was made of normal and retarded subjects' (1) ability to utilize context to supply appropriate words in material which has been altered in its contextual properties, (2) comprehension of material read as a function of overtly using context versus covertly using context, and (3) reading comprehension as a function of material properties--cloze procedure versus modified cloze procedure (nonsense syllable substituted for every deleted word) versus complete unaltered passage. Subjects were 60 mentally retarded (IQ's 55 to 70) and 60 normal (IQ's 100 to 115) children aged 10 to 12 years. Fifteen subjects from each diagnostic category were randomly assigned to one of four treatment groups receiving each type of material. Findings indicated that (1) normal and retarded subjects differed significantly in ability to use context, (2) overt and covert use of context did not have significantly different effects on reading comprehension, (3) there were no significant differences between reading comprehension scores on the cloze procedure passages and the unaltered passages, and (4) comprehension scores on the modified cloze passages differed significantly from those on the cloze passages and on the unaltered passages. Tables, references, and an appendix are included. (Author/AW)

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CONTEXTUAL USE IN READING PERFORMANCE AS A FUNCTION OF TYPE OF MATERIAL AND LEVEL OF INTELLIGENCE

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August, 1970

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

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SUMMARY

The purpose of this research was to compare the normal and the mentally retarded subject's ability to use context in reading. Taylor's (1953) cloze procedure was the technique employed. The specific objectives of this research were to compare normal and retarded subjects:

(1) ability to utilize context to supply appropriate words in material which has been altered in its contextual properties (cloze procedure, every fifth word deleted),
(2) comprehension of material read as a function of overtly using context vs. covertly using context (cloze procedure, every fifth word deleted),
(3) reading comprehension as a function of material properties: cloze procedure (every fifth word deleted) vs. modified cloze procedure (nonsense syllable substituted for every fifth word) vs. complete unaltered passage.

Sixty mentally retarded objects (IQs 55 to 70; CAs 10-0 to 12-0) and sixty subjects with IQs 100 to 115 (CAs 10-0 to 12-0) were selected for the research. Fifteen subjects from each diagnostic category were randomly assigned to treatment groups receiving each type of material.

The findings indicated the following: There were significant differences between the normal and the retarded subjects in their ability to use context to supply appropriate words. There were no significant differences found between the effects of overt and covert use of context on reading comprehension. Also there were no significant differences between reading comprehension scores of the cloze procedure passages and the unaltered passages. However, there were significant differences found between comprehension scores on the modified cloze passages and cloze passages, and also between the modified cloze passages and the unaltered passages.

INTRODUCTION

The purpose of this research was to compare the retarded child and the normal child on their ability to use context in reading.

Reading authorities generally agree that the use of context surrounding strange printed words is a fundamental skill or tool to use in identifying those words. McKee (1966), in particular has given prominance to the skill of using context in his word identification program.

The use of context requires certain language skills. A functional knowledge of the grammatical forms of the context is required in order to limit the form class possibilities for the unknown words. A working knowledge of the vocabulary in the available context is needed inorder to further limit the lexical possibilities of the unknown words.

The problem stimulating this research was that the retarded child whose language functioning is deficient (Dever 1969) or possibly qualitatively different, may not be able to utilize context as effectively or in a manner similar to the normal child for whom most reading instructional programs are designed.

The tool selected to study contextual use was the "cloze" procedure which was developed by Taylor (1953) as method for determining the readability or difficulty level of reading selections. Since this procedure deletes every n^{th} word, the subject must use the context surrounding the missing word to supply that word just as the subject must use that context to help him supply the appropriate familiar spoken counterpart of a strange printed word. The "cloze" procedure effectively isolates the use of context in that it alone must be used to supply the unknown word. There are no additional phonic or structural clues which a child may use in identifying or supplying the strange printed word. Spache (1968) notes that the cloze procedure is a useful technique for studying the ability to use context.

The purposes of the study as outlined so far have pertained to the comparison of the retarded and normal child's ability to use context in word provision. Additionally, the effects of overt versus covert word provision on comprehension were studied. And since, the cloze procedure deletes every n^{th} word with a standard-sized blank, it was felt that this type of material might sufficiently change the setting so as to alter the subjects' performance. Consequently, three types of material were used. One type of material was an unaltered passage at the individual subject's instructional reading level. A second was the same passages treated with the cloze procedure. A third type of material replaces every 5th word with a standard size nonsense syllable to more closely approximate an unknown word. Comprehension measure were used with each of the three types of material. So in addition to the practical and theoretical issues related to the use of context, the study methodologically considered the relevance of the cloze procedure for studying the reading process.

METHODS

Subjects: Sixty mentally retarded Ss (IQ 55 to 70; 10-0 to 12-0) were randomly sampled from a subject pool of 114 who were identified in a public school system and who met the IQ and CA requirements. Sixty subjects with IQs of 100 to 115 (CAs 10-0 to 12-0) were randomly sampled from the same schools from which the retarded subjects were selected. (See Appendix A for Subject Data.)

The IQ data used in the identification of the retarded subjects was the Latest Stanford-Binet Form L-M administration on each child. The "normal" subjects were selected on the basis of their score on the California Test of Mental Maturity form Q which was administered in the Fall of 1969.

Fifteen subjects from each diagnostic category were randomly assigned to one of four experimental groups. One group received material treated with the cloze procedure and was measured on both word provision and reading comprehension (CP_1). The second group (CP_2) received material identical to that received by CP_1 but did not write in the missing words, and had comprehension measured only. The third group MCP received material treated by a modified cloze technique and had comprehension measured only. The fourth group (UAP) received unaltered material and had only comprehension measured.

All subjects evidencing marked visual, hearing, CNS or emotional impairments were eliminated from the study prior to sampling and assigning procedures. Information concerning these impairments were obtained from pupil records and teacher conferences.

Materials: Materials for this study consisted of the Kent State University Informal Reading Survey which is based on the recommendations of Harris (1961) and Betts (1946). This instrument was used as an informal reading inventory to establish each subject's instructional reading level. Passages of approximately 200 words each were prepared to match as nearly as possible the readability levels of each selection in the reading survey (see Appendix B). These passages were selected and prepared by applying the Spache Readability Formula to the primary materials (Primer through 3rd grade level) and the Dale-Chall Formula to the intermediate materials (4th through 9th grade level). This was done so that each subject could receive material which was as nearly as possible equivalent to his identified instructional reading level. Twenty comprehension questions were prepared for each of the passages. These comprehension questions were prepared so they would have the same composition in terms of the type of questions asked for each passage from primer through the 9th grade level. In the preparation of the questions, agreement by two other reading specialists was obtained as to the consistency in composition of the questions from passage to passage.

Passages for groups CP_1 and CP_2 were altered using the cloze

procedure with every fifth word deleted. Forty words were deleted from each of the passages. Each deleted word was replaced by a standard sized blank. Passages for MCP were prepared using a modification of the cloze procedure. In place of every blank a standard nonsense syllable was inserted. (see Appendix C) The nonsense syllables were adjusted to sufficiently resemble words in general and to be phonically regular enough to be pronounced but still be sufficiently different in their pronouncable form so as not to be confused with any real word.

The test of overt use of context consisted of the CP_1 subjects writing the missing words in the blanks. The test of comprehension for all groups consisted of the 20 standard questions for the subjects to respond to.

Procedures: The subjects were individually tested in minimal distraction rooms within the schools they attended. The subjects' individual instructional reading levels were determined using the Kent State University Informal Reading Survey. The identification of individual instructional reading levels was performed in order to provide all subjects with material which was of approximately the same level of difficulty, or easiness. Each subject was then assigned a passage to read silently which was at his instructional reading level. Depending on what treatment group the subject was in, he received material treated with the cloze procedure (groups CP_1 and CP_2), modified cloze procedure (MCP) or an unaltered passage (UAP).

From pilot testing it was determined that 25 minutes was the longest time taken by a retarded child to complete the CP_1 test. This test was shown to be the most time consuming. 12 minutes was the longest time noted for a normal subject to complete the CP_1 test. A thirty minute time limit was arbitrarily established for all test groups. This time limit was not surpassed in the actual testing. Time consumed with spelling, writing or printing accounted for much of the added time for the CP_1 test. A further review of cloze research indicates that cloze tests are generally administered without time limits (Bormuth, 1965, 1967, 1968; Blumenfeld, 1966).

The directions given to each child were the following:

CP_1 - In this story, some words are gone. Write in the blank the word that you think goes there. When you finish the story I will ask you some questions about it. (a copy of comparable cloze treated material was used to show children how to perform the task if they did not understand the directions.)

CP_2 - In this story some words are gone. When you come to a blank, try to think of what word goes there and then go on reading. When you finish the story, I will ask you some questions about it.

MCP - In this story, there are some words that you probably do not

know. When you come to one of these words, try to think of what it means and then go on reading. When you finish the story, I will ask you some questions about it.

UAP - Read the story to yourself and when you finish I will ask you some questions about it.

Group CP_1 was required to fill in the deleted words as the passages were read. Immediately subsequent to the completion of the passages, the passages were removed and all subjects were tested for reading comprehension on what they had read. The comprehension questions were read to the subjects by the examiner and their responses were recorded on the question sheet.

Additionally two procedures were used in scoring the words supplied in the CP_1 passages. (Blumenfeld, 1966; Bormuth, 1965). One procedure was to count correct only those responses which exactly matched the deleted word. The other procedure was to score in addition, those words which were not the exact word but which were synonymous with the story context and grammatically correct. In either case spelling errors were not considered, as long as the spelling was sufficiently unambiguous to be recognizable.

Data Analysis: Normal and retarded subjects were compared in their ability to use context. The criterion measures for this comparison were the number of exact words which were grammatically correct (EGC) and also the EGC's plus synonymous words which were grammatically correct (SGC). This data was gathered on group CP_1 and was analyzed using independent measures t-tests.

The criterion measure for reading comprehension comparisons was the number of correct responses to the standard series of questions on the material read. The effect of overt versus covert word provision an comprehension were measured by comparing the comprehension performance of groups CP_1 and CP_2. The data was analyzed by using a 2 x 2 (subject classifications and treatments) analysis of variance.

The effects of material contextual properties on reading comprehension were studied by comparing groups CP_2, MCP, and UAP. These data were analyzed by using a 3 x 2 (treatments and subject classifications) analysis of variance. Post hoc comparisons were made using Duncan's New Multiple Range test. An assessment of the contribution of Mental Age and Reading Age were attempted through analysis of covariance.

FINDINGS AND ANALYSIS

The first analyses were independent measures t-test comparing the normal and retarded subjects in their relative abilities in using context to supply deleted words. The comparisons were made on the basis of two scoring procedures:

1. Exact word, Grammatically correct (EGC)

2. EGC plus Synonyms, Grammatically correct (SGC)

The results of this analysis are shown in Tables 1 and 2.

Table I
Comparison of Normal and Retarded Subjects on the basis of EGC Responses

	N	Mean	SD	T
Normal	15	16.933	4.773	1.309
Retarded	15	14.067	7.015	

Table II
Comparison of Normal and Retarded Subjects on the basis of EGC + SGC Responses

	N	Mean	SD	T
Normal	15	30.000	5.438	4.579*
Retarded	15	18.400	8.166	

* $P < .001$

These findings were interpreted to mean that there was no significant difference between the abilities of normal and retarded subjects in their use of context to supply words of the EGC class. However, there was a significant difference ($P < .001$) indicating a deficiency on the part of the retarded child in the use of context to supply words in the SGC class. Further, these findings appear to indicate that SGC class responses tend to be a function of intelligence.

The second analysis concerned the effects of overt versus covert word provision on comprehension. Table 3 reports the results of that analysis of variance.

Table 3
CP_1 and CP_2 Comparisons

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Square	F	P
Groups CP_1, CP_2 (A)	25.350	1.	25.350	1.924	0.1675
Normal, Retarded (B)	3.750	1.	3.750	0.285	0.6022
AXB	18.150	1.	18.150	1.378	0.2439
Error	737.733	56.	13.174		
Total	784.983	59.			

There were no significant main effects or any significant interactions. These results were interpreted to mean that there were no significant effects on comprehension from overt versus covert word provision.

The third analysis concerned the effects of material contextual properties on reading comprehension. Groups CP2, MCP, and UAP were compared. The results of this analysis appear in Table 4.

Table 4
CP_2, MCP, and USP Comparisons

Source of Variance	Sums of Squares	Degrees of Freedom	Mean Square	F	P
Groups CP_2, MCP, UAP (A)	79.600	2.	84.933	6.582**	0.0026
Retarded, Normal (B)	1.600	1.	1.600	0.124	0.7259
AXB	24.267	2.	12.133	.940	0.6032
Error	1083.867	84.	12.903		
Total	1279.600	89.			

** P < .01

Table 5 illustrates where the significance exist among the CP_2, MCP, and UAP groups.

Table 5
Tests of Groups CP2, MCP, and UAP Means S.E. = 0.656

	UAP	CP_2	MCP
	13.800	12.867	10.533
	Mean Differences		
	UAP	CP_2	
MCP	3.267**	2.333*	
CP_2	0.933		

* P < .05 with no intervening X:SSR.05=2.829(0.656)=1.856
** P < .01 with one intervening X:SSR.01=3.922(0.656)=2.573

These findings were interpreted to mean that comprehension scores on both the unaltered passage differed significantly from comprehension scores on the passages treated with the modified cloze procedure. They did not, however, differ significantly from one another. This would indicate that the process of deleting every 5th word does not create a sufficiently artificial setting as to alter the subject's comprehension performance substantially.

The next analysis concerned the assessment of the contribution of mental age to the effects of material contextual properties on reading comprehension. Table 6 shows the results of the analysis of covariance.

Table 6
CP_2, MCP, and UAP with Mental Age Covaried

Source of Variance	Sums of Squares	Degrees of Freedom	Mean Square	F
Groups CP_2, MCP, UAP (A)	172.581	2.	86.291	6.642**
Normal & Retarded (B)	6.895	1.	6.895	0.531
AXB	26.966	2.	13.453	1.036
Error	1078.238	83.	12.991	

** P < .01

	CP_2	MCP	UAP
Unadjusted Criterion means, S.E. = 0.656	12.867	10.533	13.800
Adjusted Criterion means, S.E. = 0.659	12.845	10.524	13.832

These findings were interpreted to mean that the differences that existed among comprehension scores on groups CP_2, MCP, and UAP were not a function of Mental Age.

The final analysis attempted was the analysis of covariance to determine the contribution of reading age to the effects of material contextual properties on reading comprehension. However, homogeneity of within-class regression is one of the fundamental assumptions underlying the analysis of covariance (Winer, 1962). When the analysis of covariance program was performed using reading age as the covariance, the test of homogeneity of within class regression yielded an F ratio of 3.158 significant beyond the .05 level. This indicated the analysis of covariance could not be legitimately conducted since it did not conform to its undulying assumptions.

CONCLUSIONS

It was concluded from the findings related to the use of context that the retarded subjects in this sample have a significant deficiency in their ability to use context in reading. Consider the mean number of SGC responses for the retarded child and for the normal. They were 4.333 and 13.066 respectively. The median SGC score for the retarded was only 3.00 while it was 13.000 for the normal child.

Bormuth (1965, 68) in reporting and reviewing research on using the cloze technique as a readability procedure, indicates that including SGC responses in scoring, increases the variances among scores but not among the means of the tests. The findings from this research would indicate that variation in SGC responses may well be related to the intellectual level of the subjects who are taking the cloze tests.

If the child can couple the use of context with some, even if minimal, phonic skill, the two working together considerably enhance the possibility of a correct response in reading.

Consider the following example:

Joe _____ a game yesterday.

The context is not sufficiently strong to restrict the number of responses to more than two broad classes of verbs such as watched, saw,

observed, etc. and played, supervised, started etc. However, if the context is coupled with a phonic knowledge of just the initial consonant sound of the word that appears in that blank, then the likelyhood of arriving at the exact word is increased. Consider this example:

Joe w____ a game yesterday.

The effect of overt versus covert word provision on comprehension showed a slight though non significant comprehension advantage for the normal subjects actively supplying the words. No noticable difference was observed in the retarded subjects. This might be attributed to the test condition and that those subjects who did not actually write in the words were about as active, if not overtly, in attempting to supply them.

The effects of material contextual properties on reading comprehension indicated that the cloze procedure did not create a setting sufficiently artificial to alter the subjects' performance substantially. It is hypothezied that the significant difference between comprehension scores from groups CP2 and MCP may be caused by the fact that when the material's context was strong enough to provide an exact word and then a nonsense syllable appeared, the appearance of the nonsense word was probably somewhat confounding. In planning the research it was decided necessary to identify the instructional level of each chold inorder to provide him with the treatment material which was also at this same level of difficulty, at least prior to the two cloze treatments. Apparently this procedure sufficiently controlled the effects of Mental age on the comprehension scores as well as serving the other function of providing material of an appropriate language and readability level to act as the vehicle for the cloze procedures.

RECOMMENDATIONS

In view of the importance of the ability to use context as a word identification skill, it is felt that the retarded student may well benefit from additional or supplementary work related to developing more competence in its use. Cloze type exercises may well provide a means for developing ability to use context more effectively.

It may be of benefit to control the nature of the contextual properties of the reading instructional materials that the retarded child uses so that when unfamiliar printed words are introduced they would be placed, in appropriate grammatical positions or lexical settings that supply sufficient contextual strength to aid in their indentification.

It is further recommended that research be conducted to determine the contextual strength of a broad range of grammatical constructions and grammatically complex sentences. This might be conducted by using the cloze procedure, but selecting a specific site for the deletions within the structure to be studied rather than by the every n^{th} word deletion procedure.

REFERENCES

Betts, Emmett A., Foundations of Reading Instruction. (New York: American Book Company, 1946, pp. 443-454.

Bormuth, John R., Validities of Grammatical and Semantic Classifications of Cloze Test Scores. Reading and Inquiry, Proceedings of the International Reading Asscciation, 1965, pp. 283-286.

Bormuth, John R., Comparable Cloze and Multiple-Choice Comprehension Test Scores. Journal of Reading, 1967, 10, pp. 291-299.

Bormuth, John R., The Cloze Readability Procedure. Elementary English, 1968, 45, pp. 429-436.

Blumenfeld, J. P., and Miller, G. R., Improving Reading Through Teaching Grammatical Constraints. Elementary English, 1966, 43, pp. 752-755.

Dever, Richard B., A proposal to teach English as a foreign language to educable mentally retarded children. Exceptional Children, 1969, 5, pp. 367-371.

Harris, Albert J., How to Increase Reading Ability, (New York: David McKay Company, Inc., 1961, pp. 153-161.

McKee, Paul, Reading: A program of instruction for the elementary school. (Boston: Houghton Mifflin Company, 1966.

Spache, George, D., Contributions of allied fields to the teaching of reading. Innovations and Change in Reading Instruction. The Sixty-seventh yearbook of the National Society for the Study of Education, Part II, 1968, pp. 237-290.

Taylor, W. L., Cloze procedure: A new tool for measuring reability. Journalism Quarterly, 1953, 30, pp. 414-438.

Winer, B. J., Statistical Principles in Experimental Design, (New York: McGraw-Hill, 1962.

APPENDIX A continued

CP_2 NORMAL

Subject	Age in Months	IQ	M.A. in Months	Instructional Reading Level	R.A. in Months	Cloze Scores EGC	Cloze Scores EGC + SGC	Comprehension Scores
1	132	101	133	5	130			12
2	140	114	160	5	130			14
3	120	109	131	4	118			13
4	136	107	146	7	154			15
5	141	110	155	5	130			13
6	133	115	153	5	130			15
7	137	109	149	5	130			17
8	133	101	134	6	142			12
9	143	107	153	6	142			9
10	138	110	152	5	130			17
11	123	107	132	5	130			7
12	136	101	137	4	118			11
13	127	101	128	3	106			10
14	135	106	135	4	118			10
15	123	109	134	3	106			6
$\bar{X}$	133.13	106.73	142.13		127.60			12.06

APPENDIX A

CP_1 NORMAL SUBJECTS

Subject	Age in Months	IQ	M.A. in Months	Instructional Reading Level	R.A. in Months	Cloze Scores EGC	Cloze Scores EGC + SGC	Comprehension Scores
1	132	110	145	5	130	15	27	17
2	138	103	142	4	118	16	32	16
3	123	102	125	3	106	18	30	15
4	131	102	134	4	118	12	25	8
5	126	100	126	2	94	22	36	18
6	141	100	141	5	130	11	24	13
7	125	104	130	5	130	20	35	15
8	127	100	127	4	118	12	26	12
9	136	108	147	5	130	21	30	14
10	124	103	128	5	130	22	36	17
11	140	108	157	5	130	20	36	19
12	137	108	148	7	154	20	33	12
13	153	111	159	6	142	10	17	11
14	131	111	135	5	130	24	36	17
15	143	103	147	6	142	11	25	13
$\bar{X}$	133.13	104.86	139.00		126.80	16.93	30.00	14.46

APPENDIX A continued

MCP NORMAL

Subject	Age in Months	IQ	M.A. in Months	Instructional Reading Level	R.A. in Months	Cloze Scores EGC	Cloze Scores EGC + SGC	Comprehension Scores
1	122	102	124	4	118			9
2	132	100	132	4	118			7
3	139	106	147	5	130			12
4	142	105	149	4	118			15
5	142	104	148	5	130			15
6	128	106	136	5	130			16
7	133	102	136	4	118			7
8	135	114	140	5	130			10
9	138	105	145	6	142			5
10	120	109	131	4	118			13
11	125	102	128	4	118			6
12	131	106	139	4	118			12
13	133	108	144	3	106			10
14	137	108	148	4	118			12
15	134	107	143	2	94			14
$\bar{X}$	132.73	105.60	139.33		120.40			11.00

APPENDIX A continued

UAP NORMAL

Subject	Age in Months	IQ	M.A. in Months	Instructional Reading Level	R.A. in Months	Cloze Scores EGC	Cloze Scores EGC + SGC	Comprehension Scores
1	138	104	144	5	130			18
2	131	101	132	4	118			16
3	134	106	142	4	118			12
4	130	113	147	6	142			10
5	124	104	129	4	118			13
6	142	102	145	5	130			19
7	143	109	156	4	118			12
8	144	101	145	5	130			13
9	136	110	150	6	142			9
10	133	101	134	5	130			16
11	135	100	135	6	142			11
12	123	106	134	4	118			12
13	131	102	134	2	94			17
14	125	112	140	4	118			11
15	137	100	137	5	130			17
$\bar{X}$	133.73	104.73	140.26		126.20			13.86

APPENDIX A continued

CP_1 RETARDED

Subject	Age in Months	IQ	M.A. in Months	Instructional Reading Level	R.A. in Months	Cloze Scores EGC	Cloze Scores EGC + SGC	Comprehension Scores
1	141	65	92	2	94	31	34	20
2	143	65	93	1	85	22	23	18
3	143	65	93	2	94	12	27	12
4	134	70	94	2	94	14	27	9
5	124	67	83	1	85	18	22	17
6	126	68	86	1	85	17	21	17
7	141	70	99	3	106	08	11	3
8	139	69	96	P	82	10	11	15
9	141	68	96	P	82	19	21	17
10	143	67	96	2	94	11	17	10
11	141	67	94	1	85	06	09	13
12	128	62	79	P	82	04	05	14
13	120	62	74	P	82	07	08	9
14	122	70	85	P	82	16	21	18
15	143	60	86	1	85	16	19	16
$\bar{X}$	135.26	66.33	87.73		87.80	14.06	18.40	13.86

APPENDIX A continued

MCP RETARDED

Subject	Age in Months	IQ	M.A. in Months	Instructional Reading Level	R.A. in Months	Cloze Scores EGC	Cloze Scores EGC + SGC	Comprehension Scores
1	136	68	92	2	94			6
2	144	66	95	1	85			11
3	137	65	90	3	106			4
4	143	69	99	2	94			3
5	136	63	86	3	106			7
6	135	67	90	P	82			18
7	143	67	96	2	94			8
8	133	63	84	P	82			8
9	141	67	94	P	82			11
10	138	66	91	P	82			13
11	124	55	79	P	82			14
12	127	70	89	P	82			7
13	127	61	77	P	82			13
14	135	60	81	P	82			13
15	137	68	93	P	82			15
$\bar{X}$	135.86	65.00	89.00		89.80			10.06

APPENDIX A continued

CP2 RETARDED

Subject	Age in Months	IQ	M.A. in Months	Instructional Reading Level	R.A. in Months	Cloze Scores EGC	Cloze Scores EGC + SGC	Comprehension Scores
1	141	62	87	2	94			13
2	133	70	93	P	82			15
3	123	70	86	1	85			17
4	122	67	82	2	94			11
5	142	70	99	2	94			12
6	130	60	78	P	82			13
7	120	61	73	P	82			15
8	130	68	88	3	106			8
9	136	57	78	P	82			20
10	139	63	88	P	82			10
11	129	68	88	P	82			13
12	123	68	84	1	85			13
13	143	68	97	P	82			10
14	141	63	89	2	94			20
15	144	66	95	P	82			15
$\bar{X}$	133.06	65.40	87.00		87.20			13.66

APPENDIX A continued

UAP RETARDED

Subject	Age in Months	IQ	M.A. in Months	Instructional Reading Level	R.A. in Months	Cloze Scores EGC	Cloze Scores EGC + SGC	Comprehension Scores
1	120	70	84	1	85			17
2	129	70	90	2	94			16
3	130	66	86	2	94			10
4	121	65	79	P	82			14
5	130	68	88	2	94			8
6	140	56	78	P	82			14
7	120	70	84	P	82			13
8	143	68	97	1	85			18
9	134	68	91	4	118			8
10	144	55	79	P	82			11
11	128	66	84	1	85			12
12	129	64	83	P	82			20
13	126	67	84	1	85			13
14	131	64	84	P	82			14
15	138	68	94	2	94			20
$\bar{X}$	130.86	65.66	85.66		88.40			13.86

APPENDIX B

Readability Data

Reading Ages*	Grade Placement	Informal Inventory	Treatment Passages
		Levels Indicated by Spacke Formula	
82	P	1.5	1.5
85	1	1.7	1.7
94	2	2.(	2.1
106	3	3.3	3.3
		Dale Chall Formula Raw Score	
118	4	4.76	4.77
130	5	5.24	5.27
142	6	5.95	5.75
154	7	6.28	6.23
166	8	6.43	6.73

* based on 6-0 CA requirement, before 1 October, in this school system, admission to first grade.

APPENDIX C

Nonsense Syllables

Milf	crin
brun	dulk
chud	korb
bruf	bork
muns	korf
flon	shup
bolb	pird
dolb	glof
blor	puld
cluf	cene
brok	cyke
gled	chuf
eald	shug
hirk	thub
clup	guth
cris	farp
frud	gine
plun	shen
suln	
horp	
porn	
rild	