U. M.

THE UNIVERSITY OF MINNESOTA

GRADUATE SCHOOL

Report

of

Committee on Thesis

The undersigned, acting as a Committee of the Graduate School, have read the accompanying thesis submitted by Ruth Margaret Van Camp for the degree of Master of Arts.
They approve it as a thesis meeting the requirements of the Graduate School of the University of Minnesota, and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts.

Herbert Woodrow
Chairman

Norman Wilde

M J Vanvoorhees

1918

THE UNIVERSITY OF MINNESOTA

GRADUATE SCHOOL

Report

of

Committee on Examination

This is to certify that we the undersigned, as a committee of the Graduate School, have given Ruth Margaret Van Camp final oral examination for the degree of Master of Arts . We recommend that the degree of Master of Arts be conferred upon the candidate.

Minneapolis, Minnesota

May 27 1919

Herbert Woodrow
Chairman

Norman Wilde

H L Dealey

An Analysis of the Differences between Oral and Written Responses to a Free Association Test

A Thesis submitted to the
Faculty of the Graduate School of the
University of Minnesota

by

Ruth Margaret Van Camp

In partial fulfillment of the requirements
for the degree of
Master of Arts

June
1919

1. The Problem Stated

The object of this investigation is to discover and analyze some of the differences which are to be found between children's oral and written responses to a list of stimulus words. It is an attempt to contribute in a slight degree, to the solution of the larger problems of the differences which exist between the oral and written prose of the same individual, whether child or adult. That these differences do exist is a recognized fact. Whether they are differences in the kind of a vocabulary which the person uses, in the number of words employed, or whether the difference between written composition and speech is mainly a matter of rhetoric, seems a problem worthy of study. Undoubtedly these differences indicate most clearly a significant change in the mental attitude of the individual when he turns from oral to written work.

Regarding this point, a writer on"Fundamentals in Method" says: "Some people who speak very fluently cannot be driven to write anything. They have formed the talking, and not the writing habit. They have become accustomed to letting their thoughts flow out over the nervous pathway leading to the vocal organs, while no way for the expression of thought by the hand has ever been opened up. On the contrary, there are others who have formed the habit of writing, and who are unable, under any circumstances, of expressing themselves orally, on their feet, before a public

audience. Many preachers and public orators fall into the habit of oral speech and never put anything down in black and white. On the other hand, Thomas Jefferson, one of the greatest writers of his day, could, under no circumstances, give an oral address." [1]

In the case of school children this can be plainly seen. Some pupils are self-conscious, shy and inarticulate. Their powers of expression must be carefully trained and cultivated. Encouragement is a necessary part of teaching these children to talk easily and well. The trouble, perhaps, does not lie in the unwillingness of the child to speak, or recite, but in his inability to do so because of his stage in life, his nervous system, and his old habits. Another type of child expresses himself orally with a considerable amount of freedom and fluency but cannot find any pleasure in writing the story which he tells with ease.

It seems apparent that the child's mental attitude when he is writing, and when he is speaking, is totally different. It is difficult to say how much the actual manual labor of writing affects the attitude of a school child; however, it can scarcely account, in any great degree, for the striking difference which exists between his oral and written work, since some children write more easily than they talk. The child's whole mental set seems to change with the change from written to oral work or vice versa.

The large problem, then, is that of the marked and significant difference found between oral and written speech of both adults and children. The smaller phase of it, which has been undertaken by the present writer, is that of discovering some of the

[1]Kennedy, Joseph: Fundamentals in Method, 1915, pp.135-137.

differences between children's spoken and written responses by a free association test.

Data has been gathered from a group of 200 school-children, getting their responses to the same stimulus words, first orally, and later in writing. By the compilation of frequency tables and a comparative study of the results obtained by each method, certain conclusions may be reached. The question is whether or not the types of associations formed differ with the method used, and whether, therefore, a change in method will bring a change in some, at least, of the associations given. An analysis of these differences, with suggestions as to their possible causes, will be attempted, with a view to ascertaining how the mental attitude of the child varies, when speaking and writing, and what are the contributing factors.

2. Historical Setting

While a great deal of work has been done on the general subject of children's associations. The only comparison hitherto made of oral and written responses to the same stimulus words is contained in the monograph "Children's Association Frequency Tables."[2] In this research the oral responses of a thousand children to 9 stimulus words were compared to the written responses of another thousand children to the same stimulus words.

Commenting upon the result obtained, the writers say: "The agreement between the children's oral data and their written data is so close that there can be little question but that all our conclusions would hold as well for one as for the other. It is interesting to note, however, that orally the children give nearly twice as many associations by contrast and also more coordinates and participles than they do in writing. They seem, further, to give fewer subordinates and fewer associations of the class verb-object. These differences may not be reliable but they are sufficiently marked to suggest that somehow they are correlated with the difference in method. Just why children should give opposites orally more frequently than in writing is hard to say. It can hardly be due to any difficulty in writing, since many words which are written infrequently as opposites are written very frequently when they form associations of some type more characteristic of children. The whole matter of the difference between the mental attitudes in writing and speaking should be made the subject of a

[2]Woodrow, H., and Lowell, F., Children's Association Frequency Tables, Psychol. Monog., Vol.XXII,1916. No. 5.

special investigation. The results here obtained suggest one method." [3]

Two differences between the conditions of that investigation and the present one must be noted. Woodrow and Lowell used different groups of children for the two tests, and only nine stimulus words, while in the present work the same group was tested by both methods and fifty stimulus words were used, thus affording a broader basis upon which to judge any differences in results. While this investigation supports their conclusions, in part, some striking additions must be made to the list of preferred association types obtained by each method; moreover their statement that the same conclusions will hold for both oral and written data must be questioned.

It is true that the conclusions to which they referred had to do primarily with certain striking differences between the associations of children and adults, and that these conclusions would hold, in so far as the present findings are concerned, no matter whether a written or an oral method was used. The exact amount of differences between children and adults, emphasized by these writers, would, however, be affected by the method used, (as would also various other conclusions) since actual, and easily discernable differences have been found, which are in all probability, due to the change in method.

[3]Woodrow, H., and Lowell, F., Children's Association Frequency Tables, Psychol. Monog., Vol. XXII, 1916. No. 5,. p. 106.

3. Procedure

The children from whom this data was collected numbered two hundred, and their ages ranged from 8.5 to 10.5 years, inclusive. They came from seven different rooms in two St. Paul schools and they were all in either the B 3rd, A 3rd or B 4th grades. According to the school census cards they represented families of several classes, varying nationalities and many different occupations. Two of the children were negroes; the rest whites.

Nine and ten-year-old children were chosen as being old enough to write without great difficulty and at the same time, being young enough so that their associations would still show all the features characteristic of children's associations.

The stimulus words given were selected from the list of one hundred used by Woodrow and Lowell.[4] The fifty stimulus words having the highest frequencies in their frequency tables were chosen, so that any differences which might be found would be as reliable as possible, since less room would be left for erroneous, chance or individual associations. For example, supposing a stimulus word had a great many responses, each with a low frequency, in their written data, it might reasonably be expected that it would have many scattered responses, with low frequencies, when given orally, and no trustworthy conclusions could be drawn. However, in the case of a stimulus word which had a high frequency, by the written method, if the responses to it orally differed widely from

[4] Op. cit. p. 33

the written ones, that fact must necessarily be taken as an indication that a change in method brings some change in the associations formed.

The test of stimulus words, in the order given, follows: scissors, lamp, blossom, anger, butter, tobacco, bed, needle, doctor, loud, chair, cottage, dark, window, ocean, sleep, swift, thirsty, eagle, stem, bread, sheep, hungry, thief, soldier, blue, square, quiet, working, red, bath, afraid, beautiful, whiskey, stove, dream, priest, joy, spider, cheese, light, carpet, girl, bible, earth, head, hammer, lion, foot, and heavy.

The question arises here whether the order of giving the words influence the response or not. For instance, putting "bread", "sheep" and "hungry" all in sequence, might very well affect the responses, particularly to the word hungry. This may be admitted, but it would affect the present data merely in comparison ~~with~~ with that of Woodrow and Lowell. It would not affect the comparison between oral responses and written ones, about which the present investigation centers.

The instructions given were those standardized by the earlier investigators.[5] They were essentially the same, whether the oral or written method was used, and were given to the class as a whole. Since they were memorized exactly, they did not vary in accuracy from time to time. Picking up an eraser from the blackboard, by way of illustration, the investigator held it up before the children and said: -

"If I were to ask you for the very first word that comes into your mind when I hold up this eraser, some of you would probably

[5] Op. cit. pp. 26 - 27.

say, 'chalk', - 'blackboard', - 'write', - or 'school', - while others might think of the color, 'red', or 'blue'; or of the material of which it is made, as 'felt', or 'wood'. Still others of you might remember that just before recess or noon, you worked arithmetic on the blackboard, and that your work had to be erased before you could be dismissed, and so to you, the sight of an eraser might suggest the word 'play', - 'home', - 'dinner', or 'recess'.

"Now let us take another word, and I'll give you a quarter of a minute to think before raising your hands. What would you think of first if I said 'clock'? (Fifteen seconds allowed.) Ready."

Responses were then given which showed that the children understood the directions, that they did not merely repeat the stimulus word, and that they used a single word instead of a phrase or clause.

If the responses were to be oral, the children then came, one at a time, into the closed cloak-hall, where each word was given to them individually and their responses recorded. They were not urged, nor prompted, and the stimulus word was not repeated, unless they failed to understand it the first time because of a sudden noise or other disturbance. No suggestions as to a possible association were made to the children at any time, and no outsider or onlooker was permitted to be present when they were taking the test.

When the responses were to be written, ruled paper was passed out, and the instructions were continued: "What you are to do now, is this. I will give you a large number of words, but instead of telling me what they make you think of, I want you to write, on some blanks I have here, the very first word that comes into your

mind when I give you a certain word, - such as 'clock', that we just talked about." They were then told to write just one word on a blank, and that the first word thought of, not to write the stimulus word, to leave a blank space when they could think of no response, and to spell all words by sound, if they were uncertain of the correct method of spelling them. Just before beginning the experiment, the following questions were asked, and answered in chorus:

(1) Are you going to write the word I pronounce? (No.)

(2) How many words are you going to write on each blank? (One.)

(3) If you should think of two or three different words, which one would you write? (The first.)

The tests were given four weeks apart, first orally and then by the written method. It might be urged that the written responses thus obtained were second associations. However, this objection seems adequately answered by the agreement of the written data with that of former investigators.[6] When the relatively small number of cases is taken into consideration, the agreement will be seen to be exceedingly good, and no alarming discrepencies are to be found.

[6] Op. cit. pp. 33-71

4. Frequency Tables.

The following tables show the frequency with which each of the responses to each of the 50 stimulus words appeared. The oral and written frequencies are shown side by side and the total number of responses to each word is 400 - i.e. 200 oral and 200 written responses.

Frequency Tables

1. SCISSORS

	Oral	Written		Oral	Written
blade	0	3	iron	0	1
blades	8	0	knife	24	0
cloth	3	5	paper	2	3
cut	145	148	school	1	0
cutting	0	3	screw	0	1
dinner	1	0	sharp	2	4
goods	3	0	sharpener	1	0
handles	10	0	steel	0	32

2. Lamp

	O.	W.		O.	W.
animal	0	1	magic	1	0
baa	0	1	match	8	0
blaze	1	0	oil	6	0
bright	0	3	read	2	0
burn	31	13	see	4	2
burning	0	5	sheared	0	1
burns	0	2	sheep	0	2
fine	0	1	stand	1	0
fire	5	12	stove	5	0
flower	0	1	white	1	0
glass	6	3	wick	5	3
iron	0	2	wool	0	1
light	124	147			

3.. BLOSSOM

	O.	W.		O.	W.
bloom	37	10	petals	5	0
bud	7	7	pick	3	0
color	0	1	pink	0	2
dew	0	1	plant	4	2
fade	2	0	pretty	6	20
flower	105	102	red	2	0
flowers	0	10	ripe	4	0
fruit	2	1	rose	2	5
garden	0	2	smell	0	4
green	0	2	spring	2	4
grew	0	2	stem	3	1
grow	6	2	summer	0	2
ground	0	1	sweet	1	4
leaf	0	1	tree	5	0
lily	1	0	water	1	0
open	0	1	white	2	11
petal	0	2			

4. ANGER

	O.	W.		O.	W.
afraid	0	1	mad	120	132
am	0	1	mean	11	19
angry	6	6	mouth	1	0
animal	1	0	names	1	0
bad	3	5	nice	5	2
bite	2	0	not	0	1
boot	0	1	pinch	3	0
chew	0	1	quarrel	0	3
cool	1	0	rage	1	0
cross	11	16	rough	0	3
face	0	1	show	1	0
fight	4	1	slap	2	0
fist	1	0	smoking	0	1
happy	2	0	sorry	1	0
hateful	1	0	swear	1	0
hit	19	4	temper	1	0
like	1	0	throw	0	2

5. BUTTER

	O.	W.		O.	W.
bread	97	70	like	0	2
brown	1	0	made	1	0
cheese	4	5	make	1	0
churn	2	3	meat	1	0
cow	0	3	milk	7	10
cream	11	20	news	1	0
cut	1	1	pound	1	0
dinner	0	0	salty	1	0
eat	38	45	spread	7	15
food	2	6	sweet	1	3
golden	1	0	syrup	1	0
good	6	3	use	1	0
jelly	2	0	yellow	11	13
knife	1	0			

6. TOBACCO

	O.	W.		O.	W.
brown	4	11	man	0	15
can	2	1	men	0	6
chew	25	16	pipe	14	17
cigarette	4	0	plant	1	0
cigars	13	0	smell	0	2
dirty	2	0	smoke	129	131
father	0	1	smoke	0	1
grows	1	0	South	0	1
harmful	2	0	unhealthy	0	1
horrid	0	3	wrong	1	0
leaves	2	4			

7. BED

	O.	W.		O.	W.
asleep	5	0	mean	1	0
boy	3	0	naughty	2	0
clothes	4	3	night	2	3
cot	1	0	pillow	6	6
couch	1	1	post	0	1
covers	6	7	quilt	5	2
dark	0	1	sleep	129	146
floor	1	0	sleeping	0	2
go	1	0	sleepy	3	6
good	2	0	soft	0	4
iron	0	2	springs	1	2
lay	15	3	steel	0	1
laying	0	3	up	0	1
legs	2	0	wake	3	0
lie	3	3	white	0	1
mattress	4	2			

8. NEEDLE

	O.	W.		O.	W.
darn	2	0	sewing	2	5
eye	0	3	sharp	2	16
hole	6	3	sleep	1	0
iron	2	0	steel	1	4
machine	2	0	stick	3	2
pin	11	4	thin	0	1
pinch	0	1	tin	0	2
point	7	4	thread	16	18
sew	143	136	white	0	1
			wire	2	0

9. DOCTOR

	O.	W.
better	2	4
bread	0	1
call	17	0
case	2	0
clothes	0	1
come	5	0
comes	1	0
cotton	0	1
cure	4	2
daytime	1	0
dentist	2	0
die	1	0
disease	2	0
fix	1	0
examine	0	1
flu	0	2
good	2	0
grippe	1	0
heal	0	4
help	2	0
hurt	3	1
lung	0	1
man	2	5
medicine	17	15
name	1	0
nurse	6	7
office	0	1
patient	2	0
sew	1	0
sick	106	145
sickness	2	3
suitcase	1	0
well	15	6

10. LOUD

	O.	W.		O.	W.
bird	1	0	quiet	33	2
call	9	5	rain	1	0
called	0	1	rough	0	1
calling	0	2	run	0	1
cross	1	0	say	0	1
cry	1	5	scream	0	3
echo	2	1	shout	6	9
flow	0	1	singing	0	1
frightened	1	0	soft	20	15
gun	0	1	sound	0	3
harsh	0	1	still	20	2
hear	1	2	take	0	1
heard	0	2	talk	14	8
heavy	1	0	talking	0	2
holler	23	25	train	2	0
hollering	3	0	voice	5	9
hurt	1	0	weak	1	0
kiss	0	1	whisper	0	1
low	6	6	whistle	2	0
noise	37	66	yell	3	10
noisy	6	12			

11. CHAIR

	O.	W.		O.	W.
bench	6	1	seat	6	22
benches	0	1	set	0	5
boy	1	0	sit	137	136
floor	3	0	sitting	4	6
legs	9	0	table	18	6
rest	4	7	use	1	0
sat	0	3	wood	11	13

12. COTTAGE

	O.	W.		O.	W.
Basement	1	0	learn	1	0
bed	0	2	little	5	2
bungalow	1	0	live	62	35
camp	0	3	nice	0	3
casing	0	1	peaple	1	0
chair	0	2	piazza	0	1
country	0	3	rooms	6	5
door	1	0	rug	1	0
downstairs	1	0	shack	1	0
frame	0	1	school	0	1
home	16	22	stay	5	2
house	90	89	stucco	1	0
hut	0	1	summer	0	6
lake	0	17	vines	2	0
lakes	0	4	window	5	0

13. DARK

	O.	W.		O.	W.
afraid	5	8	light	98	56
bark	1	1	moon	2	1
bed	2	1	night	65	81
black	17	20	outside	0	1
coal	0	1	paint	0	1
cold	0	2	room	1	3
cloud	1	0	scared	0	4
darkie	0	1	see	5	6
dismal	0	1	sky	2	3
dungeon	1	0	sleep	0	6
go	0	1	storm	0	1
house	0	1			

14. WINDOW

	O.	W.		O.	W.
air	0	4	look	56	40
broken	2	0	looking	1	1
close	3	0	open	21	5
curtain	11	7	out	1	1
dark	2	0	pane	5	7
door	2	0	scenery	0	1
frame	0	1	screen	3	0
glass	39	79	see	12	14
high	0	1	shed	0	1
home	0	1	shut	3	6
house	5	3	sill	0	7
latch	1	0	white	1	1
light	31	20	wood	1	0

15. OCEAN

	O.	W.		O.	W.
big	0	1	round	1	0
blue	4	6	sail	4	5
boat	11	13	sea	76	37
broad	2	0	shells	0	1
cross	1	0	ship	15	15
fast	2	0	ships	0	2
fish	0	4	swim	18	5
lake	2	6	water	46	86
near	0	1	waves	11	15
ride	1	0	wet	3	0
river	1	2	wide	2	0
rough	0	1			

16. SLEEP

	O.	W.			
awake	16	23	night	37	34
bed	83	95	people	0	1
bedtime	0	1	prayer	1	0
dark	0	2	rest	2	7
dead	0	1	sheep	0	1
did	0	2	snore	2	2
dream	19	9	snow	0	1
eyes	4	5	sound	3	1
go	2	0	tired	7	8
hard	2	0	up	2	0
lay	10	2	wake	10	2
lie	0	2	walk	0	1

17. SWIFT

	O.	W.		O.	W.
animal	0	2	pen	1	0
auto	6	0	rest	1	0
ball	1	0	ride	5	0
blow	0	2	run	28	55
boat	0	3	running	3	17
car	1	2	sled	1	0
clear	0	1	slide	0	1
current	0	1	slow	102	31
fast	41	62	speed	1	0
fly	3	0	step	1	0
frisking	0	1	throw	1	0
go	2	2	train	0	7
going	0	3	water	0	3
hand	0	1	wind	2	0
heavy	0	1	wolf	0	2
hot	0	3			

18. THIRSTY

	O.	W.		O.	W.
cup	1	5	slow	1	0
day	0	1	spring	0	2
drank	0	1	sunshine	0	1
drink	99	86	swallow	3	0
dry	27	42	tired	2	1
hungry	23	5	water	44	47
mouth	0	3	wet	0	6

19. EAGLE

	O.	W.		O.	W.
afraid	0	2	high	2	2
America	10	4	kills	2	0
big	3	4	king	0	3
bird	87	84	lion	1	0
carry	4	0	mouth	0	1
catch	1	0	mountain	2	0
claws	3	2	outside	0	1
death	0	1	owl	2	0
dove	3	0	pounce	6	0
eaglet	1	0	scoop	1	0
eat	1	3	see	1	0
eggs	0	2	sheep	0	1
eyes	2	3	swoop	0	3
flies	2	5	throw	1	0
fly	51	53	tree	0	1
flying	0	4	United States	0	1
feathers	0	8	Wings	12	10
great	2	2			

20. STEM

	O.	W.		O.	W.
apple	3	0	leaves	1	4
blossom	0	7	letter	0	1
branch	3	1	limb	5	0
brown	0	1	long	2	1
bud	5	9	pick	2	2
bush	0	1	plant	2	4
dandelion	1	0	root	2	3
feet	0	1	roses	4	1
fruit	0	2	set	0	1
flower	97	97	stalk	1	1
flowers	0	2	stand	2	0
garden	0	3	stick	2	3
goldenrod	0	1	still	0	2
green	23	42	strained	0	1
grew	0	1	tree	3	1
ground	0	6	vase	0	1
grow	39	16	white	0	4
leaf	3	0			

21. BREAD

	O.	W.		O.	W.
bake	17	6	jam	0	1
beat	0	1	jelly	1	1
bit	0	1	knife	0	3
boy	1	0	loaf	4	2
butter	21	84	made	1	0
cake	1	1	piece	2	1
crumbs	2	0	soft	2	0
cut	3	0	spread	0	3
dough	1	2	supper	1	0
eat	109	53	table	0	1
food	3	4	today	1	0
flour	11	16	water	2	2
good	0	7	wheat	6	3
hungry	3	6	white	8	2

22. SHEEP

	O.	W.		O.	W.
animal	16	34	kill	2	0
bear	1	0	lamb	0	6
bread	0	1	lambs	23	4
brier	0	1	lay	1	0
care	1	1	live	1	0
cattle	0	9	man	0	1
chase	1	0	meadow	3	2
cloth	0	2	meat	2	1
cover	0	1	money	0	2
cows	3	2	mutton	2	0
cut	1	0	pasture	8	5
eat	7	0	ram	0	1
farm	0	4	run	1	6
feed	3	0	running	0	2
field	0	1	salt	1	0
flock	3	0	shepherd	6	2
flower	0	1	skin	2	1
food	3	0	sleep	1	1
fun	0	1	small	0	1
goats	1	0	stable	0	3
grass	2	2	things	0	1
grazing	0	2	warm	0	1
hair	1	0	white	5	1
head	2	0	wolf	2	3
herd	5	2	wool	90	92

23. HUNGRY

	O.	W.		O.	W.
animal	0	1	meat	2	2
appetite	0	2	milk	3	0
apple	1	0	more	0	1
banana	0	1	not	1	1
bird	2	0	pig	0	1
boy	2	0	plum	0	1
bread	21	28	some	0	1
breakfast	0	2	something	0	1
chuck	0	1	starve	4	13
cookies	0	1	starved	0	3
dinner	2	2	starving	2	3
eat	127	68	stomach	0	2
eating	0	4	supper	2	0
food	11	48	table	0	4
full	0	4	thirsty	18	4
ice cream	0	1	today	2	0

24. THIEF

	O.	W.		O.	W.
bad	2	0	rob	53	20
bandit	1	0	robber	13	41
burglar	2	4	robbers	0	5
bear	0	1	robbing	0	2
feet	0	1	round	2	0
fight	0	3	safe	0	1
flour	0	1	shoe	1	0
God	0	1	sneak	1	0
gold	2	6	steal	96	98
good	0	1	stealing	0	1
glad	0	1	stolen	0	2
man	5	7	take	3	3
meat	1	0	talk	1	0
money	6	0	things	2	0
night	0	1	walk	2	0
revolver	7	0			

25. SOLDIER

	O.	W.		O.	W.
America	0	2	marching	0	2
army	4	15	men	0	2
back	0	2	ocean	1	0
battle	0	3	overseas	1	0
boy	13	31	sail	0	1
boys	0	13	sailor	30	12
brave	7	7	salute	2	0
brown	0	2	shell	0	2
fight	25	10	shoot	6	0
fighter	3	0	stout	1	0
fighting	0	4	straight	2	0
France	1	6	suits	1	2
great	0	1	sweet	0	1
gun	20	12	sword	0	2
home	6	0	track	0	1
khaki	6	3	trench	0	2
knapsack	0	1	uniform	9	5
man	11	14	war	27	33
march	14	19			

26. BLUE

	O.	W.		O.	W.
black	2	0	pink	2	3
bloom	5	0	pretty	7	3
bluebird	0	2	purple	1	0
boy	1	0	red	12	1
bright	7	0	sailor	8	5
broken	1	0	see	0	1
cloth	2	1	sew	1	0
cloud	3	0	ship	9	0
color	63	81	shirt	0	1
crayon	0	1	square	0	2
dress	9	11	star	0	2
flag	11	10	stick	1	0
hair-ribbon	0	5	sticky	1	0
hat	0	2	sky	43	49
horn	1	1	three	1	0
light	1	0	waist	0	2
paint	0	2	water	2	0
paper	0	7	white	0	5
pants	3	1	wind	1	0
paste	1	1	yellow	0	1
pasting	1	0			

27. SQUARE

	O.	W.		O.	W.
bad	0	1	lines	4	0
bible	0	1	lose	0	1
black	0	1	mean	0	1
blank	0	1	oblong	24	5
block	43	49	paper	3	4
book	5	0	part	2	0
box	7	33	picture	0	4
chair	2	0	point	0	1
circle	1	0	red	0	1
corner	22	23	right	0	1
crack	1	•0	room	4	12
crooked	0	2	round	43	11
cross	2	0	ruler	1	4
cube	4	1	shape	3	2
darn	0	1	sidewalk	2	11
desk	0	6	sin	0	1
dress	0	1	slant	0	1
flat	1	1	space	1	0
four	2	0	straight	5	0
hose	0	1	table	10	0
house	4	11	there	0	1
ice cream	0	1	window	4	0
inch	0	2	wood	0	3

28. QUIET

	O.	W.		O.	W.
awful	2	0	rest	8	0
baby	0	1	room	0	2
bee	0	1	school	3	6
busy	3	0	silent	1	1
children	0	27	sit	1	4
clear	0	1	sleep	1	0
feet	0	1	sleeping	5	0
girl	1	0	sleepy	3	3
keep	1	1	slow	0	4
lid	1	0	soft	7	7
light	1	0	sound	2	0
lonesome	1	0	still	23	65
loud	39	10	talk	3	1
mice	9	0	talkative	0	1
night	1	3	tired	0	2
noise	20	19	very	0	1
noisy	57	37	whisper	7	0
quietly	0	2			

29. WORKING

	O.	W.
bleed	0	1
build	0	8
building	0	3
business	0	8
busy	40	33
clean	0	1
children	2	0
doing	3	0
dress	1	0
engineering	2	0
fast	1	0
father	1	3
fix	0	1
go	2	0
grading	0	1
hard	54	52
home	2	2
housecleaning	2	0
idle	0	3
job	10	12
labor	4	6
lazy	6	5
make	0	1
man	12	0
men	11	16
money	2	0
mother	0	2
motor	0	1
papa	1	0
people	0	4
play	3	14
playing	22	0
pounding	2	0
reading	2	0
resting	1	2
sell	0	3
school	3	0
shop	1	1
shovel	0	4
slack	0	2
something	0	1
steady	2	0
store	1	1
sweep	1	0
sweeping	0	1
time	0	1
tired	2	4
tools	3	2
town	1	0
work	0	3

30. RED

	O.	W.		O	W.
apple	1	2	goods	0	6
beet	0	1	gun	0	1
berries	1	0	hair	5	8
black	1	0	hot	9	0
blood	1	0	house	0	1
blue	25	10	Indian	1	0
book	7	4	paint	0	1
box	0	1	pants	0	1
bright	0	2	paper	0	4
bud	0	5	pink	0	2
butter	0	1	pretty	6	7
cap	0	2	read	0	1
cape	0	1	ribbon	1	0
cherry	2	0	roses	0	4
cloth	0	6	see	1	0
coat	5	5	sky	2	0
color	67	61	steel	1	0
cross	0	2	stockings	3	0
danger	3	2	strawberries	1	0
dark	0	1	sun	0	2
dress	15	14	sunset	0	2
fine	0	1	sweater	0	1
fire	0	2	tie	1	4
flag	31	11	waist	0	4
flake	0	1	white	5	12
flower	5	4			

31. BATH

	O.	W.		O.	W.
boy	1	0	robe	2	0
bathe	0	2	rough	0	1
bath tub	0	2	scare	0	2
clean	5	16	shower	1	0
dirt	0	8	soap	0	8
dirty	12	11	swim	2	0
dry	0	9	take	11	4
frightened	0	2	towel	8	12
fun	0	3	tub	37	28
girl	2	0	undressing	2	0
good	2	4	water	62	59
hot	3	0	wash	47	21
make	1	0	week	1	0
mean	0	2	wet	0	6
play	1	0			

32. AFRAID

	O.	W.		O.	W.
alone	3	0	house	0	2
animal	2	0	killed	1	0
animals	2	0	lions	3	4
away	0	1	nervous	1	0
baby	1	2	night	3	2
bashful	0	4	not	5	3
bear	1	2	nothing	1	0
bold	2	0	picture	1	0
brave	40	9	quick	0	2
bugs	3	0	quiet	1	0
coward	0	9	robber	0	3
dark	17	17	robbers	0	5
dog	0	4	run	13	4
dogs	4	0	running	1	0
donkey	0	1	scared	50	72
eagle	0	1	skinned	0	1
faint	0	1	something	2	0
fast	1	0	thief	0	1
fear	0	3	timid	0	6
fearless	0	2	wild	3	0
fright	36	23	wolf	2	1
girls	0	3	woods	0	1
go	1	1	worried	0	1
hit	0	2	you	0	1

33. BEAUTIFUL

	O.	W,		O.	W,
bed	0	1	home	1	1
bead	0	1	homely	41	9
blue	0	2	horrid	0	5
brass	1	0	knife	1	0
bright	1	0	lady	11	12
box	1	0	lambs	1	0
clean	3	0	lovely	5	0
clothes	2	0	mad	0	1
coat	0	2	more	1	0
country	0	1	nice	14	6
dress	5	0	pansies	1	0
face	0	2	pictures	2	0
flag	0	5	pretty	77	99
flower	10	0	ragged	0	6
flowers	5	0	rainbow	0	2
girl	3	4	rose	0	3
good	0	10	sky	0	2
great	0	2	sun	0	1
grand	5	5	summit	0	1
hair	1	0	sweet	1	0
handsome	0	7	ugly	0	2
heaven	0	2	wonderful	7	6

34. WHISKEY

	O.	W.		O.	W.
abuse	0	2	July	2	4
alcohol	5	0	liquid	0	1
awful	0	7	liquor	2	12
bad	0	11	man	0	3
beer	44	26	nasty	3	0
booze	5	0	naughty	5	0
bottle	0	2	prohibition	2	0
dizzy	0	1	saloon	5	14
drank	0	5	slow	0	1
drunk	94	69	stop	0	1
drunk	16	17	strong	2	4
drunken	0	2	water	5	0
drunkard	0	2	wine	10	15
fast	0	1			

35. STOVE

	O.	W.		O.	W.
bake	5	11	heat	11	4
big	0	1	hot	22	38
black	1	11	iron	0	3
burn	53	40	kettle	2	0
coal	2	0	kitchen	0	2
cook	49	17	light	3	0
cooking	0	7	range	3	0
dinner	0	2	rock	1	0
fire	23	15	smoke	5	12
food	0	8	warm	10	9
furnace	3	1	warmth	2	0
gas	3	19	wood	2	0

36. DREAM

	O.	W.		O.	W.
animals	2	0	rest	0	4
asleep	0	5	scared	1	0
awake	1	0	see	0	1
bad	12	19	she	0	1
bed	15	6	sing	0	1
color	2	0	sister	1	0
coming	0	1	sleep	59	71
done	1	0	sleeping	0	3
dreaming	0	1	snore	2	0
fairy	2	0	snoring	0	1
fairies	0	2	something	5	0
flowers	0	5	story	0	2
funny	0	1	stories	3	0
good	1	2	sweet	2	4
horrible	2	0	telling	0	1
Kaiser	0	1	terrible	6	0
lovely	0	4	things	3	5
make-believe	0	1	think	25	0
nice	6	5	tiger	1	0
night	44	12	tigers	2	0
nightmare	0	2	true	0	3
pleasant	0	24	water	0	2
plums	0	1	wonderful	0	1
pretty	2	6	you	0	1
prick	o	1			

37. PRIEST

	O.	W.		O.	W.
abbey	0	1	pray	14	6
bible	0	3	prayer	11	0
black	0	1	preach	7	7
Catholic	4	8	preacher	13	26
church	67	88	preaches	16	7
coat	1	0	priestly	0	1
cold	0	1	robe	2	0
collar	4	0	seminary	0	1
father	5	0	service	0	2
God	3	0	sick	1	0
good	8	0	sing	1	0
holy	6	0	sings	1	0
man	3	6	speech	7	7
marry	3	0	Sunday	0	9
marriage	0	5	swear	0	1
minister	18	11	talks	4	0
pastor	0	1	teach	0	7
pleads	0	1	teaches	1	0

38. JOY

	O.	W.		O.	W.
angry	1	0	like	1	0
bird	0	2	mad	0	4
boy	3	0	money	0	3
cheerful	0	5	nice	1	0
enjoy	5	0	party	1	0
fine	0	1	pleasure	13	0
full	0	1	play	15	15
fun	31	46	ride	0	1
give	0	1	run	1	0
glad	38	37	sad	0	2
gloom	10	3	sleep	1	0
go	0	5	sorry	20	2
good	3	12	spring	0	2
happiness	2	5	summer	0	1
happy	36	48	today	0	1
kitten	2	0	unhappy	14	0
laugh	0	3	Xmas	1	0
life	1	0			

39. SPIDER

	O.	W.		O.	W.
afraid	1	0	insect	4	16
amber	0	1	legs	15	21
animal	6	4	long	0	1
ant	3	0	moss	0	1
awful	0	2	Muffet	0	1
bird	2	3	nasty	0	1
bite	6	0	pan	2	0
bites	1	0	pinch	0	1
bug	10	21	poison	3	6
climb	2	0	sat	0	2
cobweb	8	4	scared	2	0
crawl	20	5	silk	0	3
crawls	5	0	spiderweb	0	2
creature	0	3	spin	7	7
creep	6	0	spinner	0	2
fierce	2	0	stings	0	1
flames	0	1	string	3	0
fly	23	7	walk	1	11
frightened	0	1	walks	2	0
frightful	1	0	wall	1	0
fry	1	0	web	59	63
gnaw	1	0	wiggling	2	0
house	1	4	worm	0	5

40. CHEESE

	O.	W.		O.	W.
bread	14	8	meat	2	2
butter	12	0	meals	0	1
buy	0	2	mice	8	21
churn	0	3	milk	6	9
cloth	0	1	mouse	3	6
cow	0	12	noise	0	1
crackers	20	0	orange	0	1
cream	6	5	pie	0	1
creamery	0	1	rat	0	14
cut	0	2	rats	0	3
eat	97	72	salt	4	0
eating	0	3	summer-sausage	0	1
food	3	2	table	0	6
good	3	10	taste	3	0
heat	0	1	trap	0	4
lunch	3	0	yellow	16	2

41. LIGHT

	O.	W.		O.	W.
bread	0	1	give	1	0
bright	8	6	good	0	1
burn	18	0	heavy	32	18
burns	1	0	kite	0	2
candle	4	3	lamb	0	1
carry	1	0	lamp	4	41
collar	0	1	letter	1	0
dark	66	41	morning	0	9
darkness	1	0	need	0	1
day	10	4	night	9	0
day-time	2	2	outside	0	3
drunk	0	1	play	0	1
easy	0	1	pretty	1	0
electric	2	0	see	5	24
fine	0	1	sun	4	6
fire	10	0	yellow	0	14
float	0	1	wall	1	0
flower	0	1	white	1	2
gas	15	14	window	3	0

42. CARPET

	O.	W.		O.	W.
beat	7	3	linoleum	0	2
carpenter	0	3	pound	14	0
checked	0	3	pretty	1	0
clean	0	1	room	0	6
cloth	3	1	rug	92	40
color	2	0	shake	0	1
curtain	0	14	soft	0	3
dirty	0	6	stand	0	2
dusty	0	1	sweep	0	31
feet	4	0	tacks	1	0
floor	28	42	threads	0	3
goods	0	1	walk	38	32
hard	0	2	weave	5	0
house	3	1	west	1	0
house-cleaning	1	0	wool	0	2

43. GIRL

	O.	W.		O.	W.
baby	0	3	jumping-jack	0	1
bad	1	4	lady	2	14
big	1	0	lover	0	1
boy	88	46	nice	7	3
child	3	3	people	4	3
clothes	5	0	person	3	4
curl	0	4	play	8	0
curls	10	0	plays	4	0
did	1	0	pretty	5	11
dig	0	1	prison	0	1
dishes	2	0	ribbon	7	23
doll	1	2	rotten	0	1
dolls	0	3	run	0	2
dress	17	33	runs	2	0
dresses	6	6	Ruth	1	0
fun	1	0	school	1	6
funny	0	1	sew	1	0
get	1	0	sing	1	0
girls	0	2	skirt	1	0
Gladys	0	1	talking	0	1
good	2	4	waist	2	0
hair	2	6	walk	2	0
hair-ribbon	0	7	wears	1	0
hard	2	0	woman	2	0
I	1	0	work	2	0
			young	0	3

44. BIBLE

	O.	W.		O.	W.
book	42	74	pictures	0	3
Catholic-school	0	1	pray	3	2
church	17	0	prayer	2	15
Christ	0	4	preaching	5	0
commandments	0	1	priest	1	3
cross	0	1	read	68	52
dictionary	2	0	rules	0	1
dust	2	0	school	1	1
God	18	7	St. John	0	1
good	2	0	story	2	2
history	7	4	stories	0	3
holy	16	8	study	0	3
Jesus	3	4	Sunday	3	4
learn	1	0	Sunday School	2	0
looks	1	0	tell	0	2
old	0	1	war	0	1
pages	2	0	words	0	1
Paper	0	1			

45. EARTH

air	2	0	house	2	2
ball	0	4	land	35	10
big	3	5	look	1	0
black	0	1	live	12	0
body	0	1	mountain	0	1
brook	0	1	mud	6	0
dig	1	0	quake	8	0
dirt	6	10	rain	1	0
dirty	0	3	round	13	37
dust	0	2	sand	5	0
ear	0	1	sky	10	0
fat	0	1	sod	0	1
feet	0	1	soil	0	6
garden	0	1	spring	1	0
geography	0	1	sun	2	0
grass	1	3	tree	0	3
green	5	0	trees	0	2
ground	11	67	vegetables	0	1
hard	1	0	walk	10	0
hear	1	0	world	46	24
heaven	17	11			

46. HEAD

	O.	W.		O.	W.
ache	3	2	kneeling	0	1
army	0	1	know	0	1
bed	1	0	lettuce	0	1
body	6	11	neck	3	12
brain	63	84	nose	0	1
brains	0	4	nut	0	1
ear	0	5	off	0	1
ears	4	0	people	0	2
eyes	16	16	person	1	0
face	2	2	pound	0	1
feet	7	0	ribbon	1	0
foot	16	13	round	1	1
flower	1	0	see	3	6
forehead	1	2	talk	1	0
get	1	0	think	3	0
hair	47	11	use	1	3
hat	15	6	useful	2	0
have	0	2	white	0	1
hear	1	9			

47. HAMMER

	O.	W.		O.	W.
break	0	1	pound	76	79
carpenter	0	1	shoeman	0	1
finger	1	0	steel	0	4
handle	10	4	strong	0	5
hard	5	0	tools	0	6
hatchet	2	2	use	0	3
hit	18	8	wood	3	1
lay	1	0	work	0	2
meat	0	1			
nail	17	52			
nails	67	28			
noise	0	2			

48. LION

	O.	W.		O.	W.
afraid	7	3	frightened	3	0
amble	0	1	fur	0	13
Androcles	0	1	furious	0	1
angry	2	3	growl	7	4
animal	43	34	head	0	1
bad	2	2	horse	0	1
bear	20	5	king	2	6
beast	19	29	large	0	5
big	3	3	man	0	1
bite	6	0	roar	20	7
bright	0	1	rough	2	1
brown	0	1	run	0	4
cage	2	4	safe	2	0
cave	0	2	scared	6	0
cheater	0	1	shoot	0	2
circus	9	3	sleep	3	0
claws	0	4	tiger	25	16
dangerous	2	0	trap	0	1
den	3	0	ward	0	1
eat	7	6	whiskers	2	3
eats	0	2	wild	2	2
fierce	8	26	woods	1	0
fight	1	0			

49. FOOT

	O.	W.
ache	0	2
big	2	1
bone	0	2
claws	1	0
doctor	0	1
eyes	0	1
feet	6	10
flower	0	1
gloss	0	1
ground	0	2
hand	7	0
head	27	12
heavy	1	0
hurt	1	0
inch	2	0
instep	0	1
knee	3	0
lay	0	1
leg	6	5
long	0	2
palm	1	0
print	2	8
prints	7	0
run	0	8
shoe	21	49
shoes	3	0
show	0	1
skin	0	1
sore	1	2
stand	5	1
step	3	0
stocking	10	11
take	0	1
toes	15	22
toenails	3	3
use	1	0
walk	71	43
walking	0	8
wash	1	0

50. HEAVY

	O.	W.		O.	W.
awful	1	0	lick	0	2
bag	0	1	lift	1	11
barrel	0	1	light	98	27
basket	0	1	lighter	0	3
big	2	2	load	1	14
bound	0	1	log	0	10
boxes	0	4	noise	5	0
brave	0	1	radiator	2	0
breaks	1	0	rock	1	0
bricks	1	0	screwdriver	1	0
carry	0	6	smooth	0	2
desk	0	2	soft	1	0
drop	1	0	stamp	1	2
fat	0	3	steel	0	3
gun	2	0	stone	1	0
hammer	3	3	stove	0	8
hand	0	1	strong	6	0
hard	45	27	tired	0	3
house	3	0	ton	0	2
iron	20	25	trunk	0	2
large	0	3	weight	2	14
lead	1	16			

5. Classification and Analysis of Categorical Differences

In order to interpret the foregoing frequency tables, it was found necessary to classify the associations according to form or type. The classificatory categories selected by Woodrow and Lowell were used, since some comparisons between their results and the present ones seemed desirable. Regarding their system of headings they say: "We have endeavored merely to get headings which would serve to describe the chief similarities and dissimilarities between the associations of children and adults."[7] The following types were distinguished:

I	Superordination	XII	Verbs
II	Subordination	XIII	Participles
III	Contrast	XIV	Adjective-Noun
IV	Coordination	XV	Noun Adjective
V	Similarity	XVI	Noun-Abstract-Attribute
VI	Part-Whole	XVII	Verb-Object
VII	Whole-Part	XVIII	Pronouns
VIII	Cause-Effect	XIX	Sound-Similarity
IX	Effect-Cause	XX	Word-Compounding
X	Material	XXI	Non-Specific
XI	Contiguity	XXII	Miscellaneous

The miscellaneous group, which perhaps demands explanation includes three classes: first, associations which seem to belong fairly well in more than one of the groups; second, associations of a sort so rare that it was not considered worth while to make a separate classification of them; and third, associations which were extremely difficult to classify at all, or, at any rate, under any very general heading.

The following table shows the total number of associations

[7] Op.cit. p. 79

of each type obtained by the two methods. It also indicates the types of responses preferred, when the method used is the oral one, and when it is the written.

Total Frequencies of Various Association Types

	class	Written	Oral
Preferred with Written Method	Similarity	1145	620
	Contiguity	1129	805
	Noun-Adjective	748	429
	Participle	133	66
	Miscellaneous	865	218
Preferred with Oral Method	Coordination	701	1120
	Contrast	454	1010
	Verb	2250	2795
About Equally Frequent with Both Methods.	Sound-Similarity	83	78
	Superordination	237	281
	Subordination	5	5
	Part-Whole	148	161
	Whole-Part	388	406
	Cause-Effect	375	387
	Effect-Cause	278	192
	Material	219	177
	Adjective-Noun	667	631
	Verb-Object	96	114
	Word-Compounding	69	105
	Pronouns	0	2

In the interpretation and explanation of the foregoing table, it must be noted that when the total of the responses of any particular type is very small, less weight must necessarily be attached to any differences found. Before a difference can be considered reliable, and significant, a large number of cases, must be studied, so that errors in sampling, and individual differences, can be eliminated as far as possible. For example, in the case of the class verb-object, where there are 96 written and 114 oral responses, the total number of cases is so small that the slight preference, with the written method, for that association type can scarcely be taken into account, since a larger number of cases might alter the totals considerably.

A second fact which must be noted before the categories are further interpreted is that the large number of responses of the class miscellaneous, with the written method, is made up, almost entirely, in two ways - one, by the responses "color", "water" and "mad" to the stimulus words "red","blue" "ocean" and "angry"; and in the second place by a very large number of frequencies of one or two. These latter responses fell mostly into the class afore mentioned as being one of those included under the general heading of miscellaneous, that is, responses which were extremely difficult to classify at all. Nowhere in the frequency table can there be found a really significant difference between oral and written responses which hinges upon the use of this especial association type. It seems, therefore, unnecessary to consider it further, in the interpretation of the present data.

A study of the table of total categorical frequencies

brings out several facts. In the first place, certain differences are clearly marked. Over 100 per cent more similarities and participles, about 75 per cent more noun-adjectives and 50 per cent more contiguities appear in the written column that in the oral. On the other hand, 50 per cent more coordinations, 120 per cent more contrasts and 20 per cent more verbs are found to be preferred by the oral method over the written. In summarizing these differences the sizes of the groups must be taken into account. Associations by similarity make up 18 per cent of the whole number of responses; by contiguity, 19 per cent; of the class noun-adjective, 12 per cent and of the participial class, only 2 per cent, a relatively small total. Associations by coordination make up 18 per cent of the total reactions; by contrast, 15 per cent, and of the verbal class, 50 per cent. When both the amount of differences, and the size of the groups are considered, the following conclusions may safely be drawn: -

1. With the written method, associations of the types similarity, contiguity and noun adjectives are preferred. The small total of participles makes any judgment regarding that class unreliable without further data.

2. By the oral method, the association types favored are association by coordination and contrast; and verbal, to a much slighter degree.

While these results, with one exception, agree in general tendency with those of Woodrow and Lowell,[8] they are much more marked, due possibly to the use of a larger number of stimulus words. In regard to the exception, which is the occurrence of

[8] Op.cit. p. 106.

twice as many participles in the written data, as in the oral, while they found 45 per cent more in the oral, than in the written data, it must be admitted that the relatively small total of participles in both kinds of data may render invalid any conclusions based upon the present evidence alone. The same thing may be said of the effect-cause group. While 40 per cent more responses of the effect-cause type were found in the written data than in the oral, the total of both groups was so small as to afford no reliable basis upon which to form any judgments.

In the second place, by a comparison of the preferred oral and written association types with those preferred by adults and children (in the table given by Woodrow and Lowell)[9] there seems to be a strong tendency for the children's written respnnses to follow the preferred children's types while their oral responses follow, in kind, the preferred adults. This is true in the case of associations by coordination and contrast, both of which are found to be favored in the oral type of response types and, at the same time, favorite <u>adult</u> association types, and the same thing is true of contiguities and noun-adjectives, both of which are favored by the written method, and also, preferred by <u>children</u>. Similarities, according to Woodrow and Lowell, are equally frequent in both adults' and children's groups. In the data presented here they are found most frequently when the written methods was used. A few more verbs, which belong to the preferred children's types, are found in the oral than in the written data, but this evidence can scarcely

[9] <u>Op. cit.</u> p. 106.

be taken as contradictory, since the percentage of increase is not large compared to the increase in the other groups.

There seems, then, a marked tendency for the children's oral responses to favor the preferred adult types of association - i. e., associations by contrast and coordination, while at the same time the types preferred by children with the written method,- i.e. contiguities, noun-adjectives and similarities, are favorite children's types of response.

Just why children should tend toward adult forms of response when speaking is possibly explainable by the circumstances under which the oral responses were given. Each child, in taking the test orally, spoke individually to the investigator. To use a colloquial phrase, perhaps they "talked up" to her, just as grown-ups often "talk down" to younger persons. It seems possible that the whole mental attitude of the child would be that of a more mature person, when he was talking to the investigator, alone, without the hampering presence of his teacher or classmates, or the restraining influences of the class-room itself, than when he was writing with thirty of his fellows under school discipline. In practically every case the child was willing, even anxious, to do his part and more than that, eager to do his best. Perhaps to him his "best" included being as grown-up, as mature, as much on the level with the investigator as possible.

That adults adapt their speech to the audience whom they are addressing seems undeniable, and upon this fact much of the greater effectiveness of oral speech over written dissertation hinges. The orator, who sees his crowd before him, and can measure by their

faces, the impressiveness of his address, has a great advantage over the author whose work may fall into any hands, and with no personal note to reinforce its message. Moreover, the man who speaks can adjust his talk to the kind of persons who hear him, and to their age and position as well, while the writer must be prepared to be read by individuals of all sorts, no matter what their taste, how appropriate their age or station, or where their interests may be.

If this is true of the adult, it must be equally true of the child, whose imitative instinct is strong; whose desire to grow-up and claim the rights of older children, or grown-up persons, is still greater, and those instincts and desires are plainly evidenced by the types of responses given orally to stimulus words. Failures of response, orally, were so few as to be practically negligible.

On the other hand, most of the influencing factors in the written test were on the side of making the individual as young (or childish) as possible. The routine of school was still about him. He was compelled to write his reactions, and with children of nine and ten, writing is virtually an art unknown outside of the classroom. Moreover, he was surrounded by his school-mates and the person giving the test was no longer the sole object at the focus of his attention. His whole previous experience of school life would tend toward making him younger rather than older and his mental attitude would undoubtedly by that common to the class-room and class-exercise. The test, instead of being in the nature of a conversation between the child and a single, older per-

son was verging on the abhorred "examination". Failures of response to the stimulus words, when the responses had to be written were many times more numerous than when the data was collected by the oral method.

A well-defined tendency, then, toward the favorite adult forms of response when speaking and toward the preferred children's type when writing, seems to be one possible, and plausible, explanation of the differences found when using the two methods. However, some study must be made of some of the individual response words given, before any great certainty can attach to these generalizations.

6. An Analysis of Actual Response Words

In order to study and analyze some of the differences found between the individual responses given by each method, the two reactions to each stimulus word which showed the widest degree of variation between the oral and written responses were selected, and the following table made up from them. In the first column is the stimulus word; in the second, the class, or association type of the response; next, the frequency of the response orally; then, its written frequency, and in the fifth column, in parenthesis, the response word or words, themselves. The predominence of coordinations, contrasts and verbs on the oral side and similarities, noun-adjectives and contiguities in the written data, can easily be seen, and at the same time the actual differences in words can be studied.

Responses Showing Greatest Differences

Stimulus word	Actual Response	Oral	Written	Class of Response
1.Scissors	knife	24	0	Coordination
	steel	0	32	Noun-Adjective
2.Lamp	burn	31	13	Verb
	light	124	127	Cause-Effect
3.Blossom	bloom	37	10	Verb
	pretty	6	20	Noun-Adjective
4.Anger	hit	19	4	Verb
	mad	120	132	Miscellaneous
5.Butter	bread	97	70	Contiguity
	eat, spread	45	60	Verb
6.Tobacco	cigars	13	0	Material
	man	0	15	Contiguity
7.Bed	lay	15	3	Verb
	sleep	129	146	Contiguity
8.Needle	pin	11	4	Coordination
	sharp	2	6	Noun-Adjective
9.Doctor	call	17	0	Verb
	sick	106	145	Contiguity
10.Loud	noise	37	66	Adjective-Noun
	quiet,still	53	4	Contrast
11.Chair	seat	6	22	Similarity
	table	18	6	Coordination
12.Cottage	home	16	22	Similarity
	live	62	35	Verb
13.Dark	light	98	56	Contrast
	night	65	81	Adjective-Noun
14.Window	glass	39	79	Material
	look,open	77	45	Verb
15.Ocean	sea	76	36	Coordination
	water	46	86	Miscellaneous

16.Sleep	dream,lay	29	11	Verb
	bed	83	95	Contiguity
17.Swift	fast	41	62	Similarity
	slow	102	31	Contrast
18.Thirsty	dry	27	45	Similarity
	hungry	23	2	Coordination
19.Eagle	pounce	6	0	Verb
	feathers	0	8	Whole-Part
20.Stem	green	23	42	Noun-Adjective
	grow	39	16	Verb
21.Bread	butter	21	84	Contiguity
	eat	109	53	Verb
22.Sheep	animal	16	34	Superordination
	lambs	23	4	Coordination
23.Hungry	food	127	68	Verb
	eat	18	4	Coordination
24.Thief	rob	53	20	Verb
	robber	13	41	Similarity
25.Soldier	boy,boys	13	43	Similarity
	sailor	30	12	Coordination
26.Blue	color	63	81	Miscellaneous
	red	12	1	Coordination
27.Square	box	7	33	Adjective-Noun
	oblong,round	67	16	Coordination
28.Quiet	loud,noisy	96	47	Contrast
	still	23	65	Similarity
29.Working	man	12	0	Adjective-Noun
	playing	22	0	Participle
30.Red	blue	25	10	Coordination
	flag	31	11	Adjective-Noun
31.Bath	clean	5	16	Cause-Effect
	wash	47	21	Verb
32.Afraid	brave	40	9	Contrast
	scared	50	72	Similarity
33.Beautiful	homely	41	9	Contrast
	pretty	77	99	Similarity

34.Whiskey	drink	94	69	Verb
	beer	44	26	Coordination
35.Stove	burn, cook	102	57	Verb
	hot	22	38	Noun-Adjective
36.Dream	night	44	12	Contiguity
	think	25	0	Verb
37.Priest	church	67	88	Contiguity
	preacher	13	26	Similarity
38.Joy	happy	36	48	Similarity
	sorry, unhappy	34	2	Contrast
39.Spider	fly	23	7	Coordination
	crawl	20	5	Verb
40.Cheese	butter,crackers	32	0	Coordination
	eat	97	72	Verb
41.Light	dark, heavy	98	59	Contrast
	lamp	4	41	Effect-Cause
42.Carpet	rug	92	40	Similarity
	floor	28	42	Contiguity
43.Girl	boy	88	46	Coordination
	dress,ribbon	24	56	Contiguity
44.Bible	book	42	74	Similarity
	read	68	52	Verb
45.Earth	ground,land	46	77	Similarity
	round	13	37	Noun-Adjective
46.Head	brain, hair	110	95	Whole-Part
	hat	15	6	Contiguity
47.Hammer	handle	10	4	Whole-Part
	hit	18	8	Verb
48.Lion	bear,tiger	45	22	Coordination
	fierce	8	46	Noun-Adjective
49.Foot	shoe	21	49	Contiguity
	walk	71	43	Verb
50.Heavy	hard	45	27	Coordination
	light	98	47	Contrast

Probably one apparently obvious reason for a striking difference between children's oral and written responses is that they choose words which are easier to spell and write, for the written test, particularly words that are easier to spell. However, an examination of the words which were more frequently spoken that written, and vice versa, fails to corroborate this conclusion. A list of twenty-five words picked from each of these kinds of preferred responses shows that the choice between them, as far as spelling is concerned, is a difficult one to make. On the oral side of the ledger, among the preferred responses are found the following:

knife	live	sailor
burn	look	oblong
bloom	sea	round
bread	dream	homely
cigars	slow	happy
pin	hungry	light
call	grow	heavy
still	eat	quiet
table		

Among the preferred written responses, these words occur:

night	unhappy	sharp
fierce	ribbon	sick
scared	ground	noise
clean	round	seat
color	steel	glass
animal	light	green
feathers	pretty	butter
church	spread	
preacher	sleep	

The repetition of several words in both columns seems further to indicate that difficulty in spelling has nothing to do with the results obtained. "Light" occurs as a favorite response to "lamp", by the written method; it is the preferred oral response to both "heavy" and "dark". To the stimulus word "thief","rob" is the favorite oral, and "robber" the favorite written response, despite

the fact that a one-syllable word is obviously easier to spell than a dissyllabic one. "Round" is given 67 times orally, in response to "square" but it is also written 34 times in answer to "earth". The stimulus word "sheep" has as its preferred written response "animal" and as its preferred oral reaction "lambs". It seems, very decidedly, that the matter of spelling has little or no influence. Most of the childfen tested were very poor speller, but since they were told to spell by sound, they did so, with a high degree of success, if not of accuracy.

A second conclusion which this table of different responses seems fairly well to establish is that in writing the children use similarities and noun-adjectives in the same places where they use coordinations and contrasts orally. For example, a few illustrations of that point may be chosen from the foregoing table.

Stim. Word	Response	Oral	Written	Class
Loud	noise,	37	66	Adj.-Noun
	quiet, still	53	4	Contrast
Dark	light	98	56	Contrast
	night	65	81	Adj.-Noun
Swift	fast	41	62	Similarity
	slow	102	31	Contrast
Thirsty	dry	27	42	Similarity
	hungry	23	5	Coordination
Quiet	loud, noisy	96	47	Contrast
	still	23	65	Similarity
Afraid	brave	40	9	Contrast
	scared	50	72	Similarity
Heavy	hard	45	27	Coordination
	light	98	47	Contrast

One notable feature about the foregoing list is that the stimulus words selected are all abstractions and it would appear

to point to the fact that the child, when given an abstract term, tends to reply with an association of the noun-adjective, or similarity type, if he is writing his response, whereas, if the response is oral he gives an opposite or a coordination. The question of why he does this must again be referred to the possible explanation of his oral tendency toward preferred adult responses, and his preference when writing for the favorite children's types of associations. Since it was impossible to obtain introspection from the children tested, and since, moreover, such introspections would scarcely be reliable data, all attempts at analysing the differences found must necessarily be more or less a matter of theory, rather than of actual fact.

However, it is obviously impossible to say that because all of the discoverable differences cannot be explained by a cut-and-dried rule or difinition, that they are accidental or occur because of errors in sampling. The tendency for the child to reply with a similarity, a contiguity or a noun-adjective in writing and with a coordination or an opposite orally, is too well-marked to be insignificant.

By way of further illustration of this point, a table of ten cases, where these differences are strikingly apparent, is presented below. The stimulus word, the responses, both oral and written, and the association type to which the response belongs are given in the order named.

Stimulus Word	Response	Oral	Written	Class
Scissors	steel	0	32	Noun-Adjective
Earth	round	13	37	" "
Butter	bread	70	97	Contiguity
Foot	shoe	21	49	"
Ocean	sea	76	36	Coordination
Girl	boy	88	46	"
Swift	slow	102	31	Contrast
Beautiful	homely	41	9	"
Thief	robber	13	41	Similarity
Bible	book	42	74	" ?

The foregoing table illustrates clearly the differences found between tendencies in both oral and written work toward certain types of response. Moreover the frequency tables here presented show distinctly that many words which are infrequently written as opposites may often be written as similarities or noun-adjectives, showing that an actual difficulty in the spelling of the word can scarcely be the cause of the differences noted.

7. Conclusions

From the data gathered from 200 school children, and presented in the forms of frequency tables, classified categories and tables of preferred responses, it is evident that a difference does exist between the same children's oral and written responses to the same 50 stimulus words.

Orally, the preferred types of response are associations by contrast, coordination, and to a lesser extent, verbal; in written work, the favorite association types are contiguity, noun-adjective, similarity, and possibly participles, although the data in that particular case may be disputed.

An analysis of the causes of these striking differences is necessarily theoretical, rather than factual, but it seems most probable that orally children lean toward the adult form of response, while in writing they choose the preferred children's types of associations.

These differences, moreover, cannot be laid at the door of difficulty in spelling or writing, and the obvious conclusion is that they are closely correlated with the change in method, - that is, that the child will vary his responses as the method varies, from the oral to the written one.

It is suggested that with children, as with adults, the individual's language is adapted to the person spoken to, and that this fact may in itself be the most fundamental reason for the change in mental attitude which seems to accompany the change

from oral to written work as evidenced by the children's different oral and written responses to the stimulus words.