DOCUMENT RESUME

ED 067 168 PS 005 844

AUTHOR Rogers, Rex S.
TITLE The Effect of Having Previously Attended Junior Kindergarten on "Draw-A-Classroom" Test Scores Obtained in Senior Kindergarten.
INSTITUTION Toronto Board of Education (Ontario). Research Dept.
PUB DATE Oct 68
NOTE 32p.

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS Comparative Analysis; *Early Childhood Education; Evaluation Methods; *Kindergarten Children; *Learning Experience; *Measurement Instruments; Research; Statistical Analysis; *Test Results
IDENTIFIERS *Draw a Classroom Test

ABSTRACT

Data are presented which show the degree to which specific prior exposure to a learning situation (Junior Kindergarten) is reflected in the scores of children who had this experience compared to a group of their peers who did not. Scores obtained in Senior Kindergarten on the Draw-a-Classroom Test (DAC) are used as the measurement method. The pattern of effects emerging from the data is complex in that meaningful differences are not invariably consistent between administrations of the test. However, the influence of Junior Kindergarten on DAC test scores obtained in Senior Kindergarten gives rise to effects that are not representative of those that occur during the normal growing up of the "artist" and which tend to diminish considerably after further experience in Senior Kindergarten, indicating they are not of a permanent nature. This research may then be regarded as independent evidence of previous findings that the effects of Junior Kindergarten are short-lived. (LH)

THE EFFECT OF HAVING PREVIOUSLY ATTENDED JUNIOR KINDERGARTEN ON "DRAW-A-CLASSROOM" TEST SCORES OBTAINED IN SENIOR KINDERGARTEN

Rex S. Rogers

October, 1968

RESEARCH SERVICE

issued by the
Research Department

THE BOARD OF EDUCATION FOR THE CITY OF TORONTO

TABLE OF CONTENTS

THE EFFECT OF HAVING PREVIOUSLY ATTENDED JUNIOR KINDERGARTEN ON "DRAW-A-CLASSROOM" TEST SCORES OBTAINED IN SENIOR KINDERGARTEN

INTRODUCTION

In 1960, the Toronto Board of Education began a major longitudinal study, the "Study of Achievement" (Board of Education, 1963, 1964, 1965, 1966) which included amongst its measures, the Draw-a-Classroom test (Board of Education, 1966, 1967). In Toronto, many children begin their schooling in Senior Kindergarten without having attended Junior Kindergarten, thus making it possible for the effects of attendance or non-attendance at Junior Kindergarten on Senior Kindergarten scores to be evaluated.

Effects associated with attending Junior Kindergarten have been shown by use of more conventional academic measures used in the Study of Achievement (1966), and it was of interest to discover whether or not similar effects would be found with the more discursive D.A.C. test measure.

A report being concurrently prepared, shows clearly that the D.A.C. test scores change with the age of the child being tested. The following report presents data which show the degree to which specific prior exposure to a learning situation (Junior Kindergarten) is reflected in the scores of children who had this experience compared to a group of their peers who did not.

METHOD

A -- Design

The population breakdown available for study is given below. The total Senior Kindergarten population can be thought of as stemming from one of two geographic areas in the city, one of which lay within the catchment area for a Junior Kindergarten and one of which lay outside the catchment area. Within the area where Junior Kindergarten was available, some children did in fact attend while others did not.

Area 1 No Junior Kindergarten Available	Area 2 Junior Kindergarten Available
Sub-population "couldn't go"	Sub-population "didn't go"
	Sub-population "went"

Figure 1: Population Breakdown

To evaluate the effects of attendance, two comparisons were made:

A.....Between those who went and those who didn't go

B.....Between those who went and those who couldn't go.

} These comparisons are referred to as Matches 1 & 2 in earlier reports on the Study of Achievement.

As other work had already been conducted on these comparisons using more conventional academic measures (Board of Education, 1966), there already existed matched pairs drawn from the sub-populations given in Figure 1. It was a simple matter therefore, to use all the matches where a drawing existed for both "partners" of the match, for the first drawing test given in Senior Kindergarten. From these pairs, a slightly smaller number were

available where both "partners" had also completed a second drawing test in Senior Kindergarten. The numbers involved were as follows:

	First Drawing Test	Second Drawing Test
Match A "went" vs. "didn't go"	558	531
Match B "went" vs. "couldn't go"	556	521

There was a partial but not complete overlap between the pupils in the "A" "went" group and those in the "B" "went" group, with about 300 students common to both.

The matching criteria used were:

Sex
Age
Language
Education of father
Education of mother
Occupation of father.

As the original matching was made from large populations (1486 "went," 2425 "didn't go," 4784 "couldn't go") an exceptionally good standard of matching was obtained.

B -- Classification and Nature of the Test Materials

The DAC. test is administered by the teacher with no time restriction. Each pupil in the class is given a sheet of paper, eight coloured crayons (red, black, brown, yellow, blue, green, orange, purple) and is told to "look around and draw your classroom." When the drawing is completed the child is asked to tell his teacher (or a monitor) about the drawing. These words are recorded on the face of the drawing.

All the drawings were coded in terms of a large number of criteria which were, in the main, concerned with a comprehensive objective classification of their content, rather than with aesthetic or interpretative judgements.

The codes were grouped within five main areas of content:

Objects
Space
Classroom Constants
Persons
Drawing the Person.

Within each of these five content areas, there were some 15 - 20 sub-areas and within each of these sub-areas, 2 - 10 individual codes. For example:

Content Area	Sub-Area	Individual Codes
Space	Joined Frame Lines	No Frame Lines Present
		Only One Frame Line Present
		More Than One Frame Line Present But Not Joined
		More Than One Frame Line Present And Joined

Each drawing was classified as belonging in one but not more than one individual code, within a sub-area. Complete details of the codes and coding procedures are given in the Coding Manual (Board of Education, 1966).

C -- The Treatment of the Data

Each individual code within a sub-area had a frequency attached to it; this frequency was converted to a percentage. For example:

		Match "B" First Drawing	
Sub-Area	Individual Codes	SK	JK **
Joined Frame Lines	No Frame Lines Present	71.3%	67.6%
	Only One Frame Line Present	5.7%	5.3%
	More Than One Frame Line Present But Not Joined	3.4%	3.0%
	More Than One Frame Line Present And Joined	19.6%	24.1%

** SK = those who began school in Senior Kindergarten
JK = those who began school in Junior Kindergarten

To aid in the interpretation of large volumes of such data, the following statistic was calculated: $Z = (p_1 - p_2) / \sqrt{pq\,(1/n_1 + 1/n_2)}$, in which the percentage observed for SK, p_1, and the percentage for JK, p_2, are compared to determine whether the difference between them is large enough to be "real" rather than due to "chance." (n_1 and n_2 are the two sample sizes and in our case are equal; q is 100% - p% where p% is the average of p_1 and p_2.) In any instance where Z exceeds 1.96, we can conclude that the difference would only have occurred by chance one time in twenty or as is more usually said, the result is significant at the 5% level.

As an example, for a p of 5% (or 95%) $p_1 - p_2$ has to exceed 2.6%, while for a p of 50% the difference has to exceed 6.0%, both results at the 5% level for $n_1 = n_2 = 558$. It will be noted that the nearer p the average observed percentage approaches 50% the greater $p_1 - p_2$ has to be for the result to be statistically significant.

RESULTS

A -- A General Note on the Data

The following characteristics of the data led us to the conclusion that we should be wary of overrating such differences as did occur, both statistically and in terms of their value as reflections of the effect of Junior Kindergarten:

1. The samples were not random nor was the assignment of groups to "treatments" random, hence we have no way of knowing the true significance of a result "significant at the 5% level."

2. The actual differences that did occur were small almost never exceeding 10%.

3. The frequency with which significant results occurred was low enough to raise the possibility that some were due to random fluctuations in error variance.

4. Observation of the data suggested that within the four sets of pairings ("A" first and second applications, "B" first and second applications) there was very little consistency in which codes gave significant differences.

B -- The Findings

The information which follows is a listing of those differences between attenders and non-attenders which reached the 5% level of significance. The following coding is used for the match and different applications:

A I	Match "A"	First Senior Kindergarten Drawing
A II	Match "A"	Second Senior Kindergarten Drawing
B I	Match "B"	First Senior Kindergarten Drawing
B II	Match "B"	Second Senior Kindergarten Drawing
JK's	Those who attended Junior Kindergarten	
SK's	Those who only attended Senior Kindergarten	

The complete data from which these listed differences have been abstracted have been omitted from this report for reasons of space, there being nearly 2000 pairs of percentages (one percentage for attenders and one for non-attenders at Junior Kindergarten). The full data are available on special request as a separate appendix to this report, for those who wish to examine the data more closely.

TABLE 1

CATEGORY -- OBJECTS

Code	Nature of Effect	Stated Effec AI	AI
a) Transparency	no significant effects.....	---	---
b) Fold out	no significant effects.....	---	---
c) Behind/in front of	JK's gave more examples of behind/in front of relationships in.....	---	**
d) On/under	JK's gave more examples of on/under relationships in the.....	***	***
e) Perspective or Depth in Drawing	JK's gave fewer flat appearance drawings with objects receding by size in.....	---	***
	JK's gave fewer instances of no perspective or depth in.....	---	---
	JK's gave more examples of objects receding by arrangement in.....	---	---
f) Predominant Colour	JK's gave more red predominant colour in.....	---	***
g) Number of Colours Used	JK's used 3 colours more often in.....	---	---
	JK's used 5 or more colours less often.....	---	---
h) Use of Pencil	no significant effects.....	---	---
i) Time as Indicated by Tense of Label	JK's had fewer instances of the continuing present as the only tense in the.....	***	---

TABLE 1

CATEGORY -- OBJECTS

	Nature of Effect	Stated Effect Significant At The 5% Level In: AI	AII	BI	BII
	no significant effects.....	---	---	---	---
	no significant effects.....	---	---	---	---
	JK's gave more examples of behind/in front of relationships in.....	---	***	***	---
	JK's gave more examples of on/under relationships in the.....	***	***	---	---
in	JK's gave fewer flat appearance drawings with objects receding by size in.....	---	***	---	---
	JK's gave fewer instances of no perspective or depth in.....	---	---	***	---
	JK's gave more examples of objects receding by arrangement in.....	---	---	***	---
	JK's gave more red predominant colour in.....	---	***	---	---
ed	JK's used 3 colours more often in.....	---	---	---	***
	JK's used 5 or more colours less often.....	---	---	---	***
	no significant effects.....	---	---	---	---
Tense	JK's had fewer instances of the continuing present as the only tense in the.....	***	---	---	---

TABLE 1 (continued)

CATEGORY -- OBJECTS

Code	Nature of Effect	Stated Effe	
		AI	AI
j) Labelling to Indicate Activity of Person(s) in Relation to Object(s)	JK's had fewer labels related to objects but not scorable under these codes in.....	---	--
k) Time as Indicated by Pictorial Situation (and Labelling)	no significant effects.....	---	--
l) Classroom Atmosphere	JK's had fewer instances of non-scorable people in this code for atmosphere.....	***	--
	JK's had more passive-neutral atmospheres in...	---	--

TABLE 1 (continued)

CATEGORY -- OBJECTS

Nature of Effect	Stated Effect Significant at the 5% Level in: AI	AII	BI	BII
JK's had fewer labels related to objects but not scorable under these codes in.....	---	---	***	---
no significant effects.....	---	---	---	---
JK's had fewer instances of non-scorable people in this code for atmosphere.....	***	---	---	---
JK's had more passive-neutral atmospheres in...	---	---	***	---

TABLE 2

CATEGORY -- SPACE

Code	Nature of Effect	Stated Effec AI	AI
a) Horizontal Line at the Top of the Paper	no significant effects.....	---	---
b) Horizontal Line at the Bottom of the Paper	JK's had more in.....	---	---
c) Vertical Line at the Right-Hand Side of the Paper	no significant effects.....	---	---
d) Vertical Line at the Left-Hand Side of the Paper	no significant effects.....	---	---
e) Joined Frame Line (one or more of above lines meet or intersect)	no significant effects.....	---	---
f) Use of Circle or Ellipse as a Frame	no significant effects.....	---	---
g) Partitioning	no significant effects.....	---	---
h) Presence of Top Boundary	JK's had more implied top boundary in.....	***	---
	JK's had less absence of top boundary in.....	***	---
i) Type of Top Boundary	JK's had more ceilings in.....	***	---
j) Presence of Bottom Boundary	JK's had more bottom boundaries in.....	***	***
	JK's had more implied bottom boundary in.....	---	---

TABLE 2

CATEGORY -- SPACE

	Nature of Effect	Stated Effect Significant at the 5% Level in: AI	AII	BI	BII
the	no significant effects.....	---	---	---	---
the	JK's had more in.....	---	---	***	---
e Right-per	no significant effects.....	---	---	---	---
e Left-per	no significant effects.....	---	---	---	---
one or meet	no significant effects.....	---	---	---	---
ipse	no significant effects.....	---	---	---	---
	no significant effects.....	---	---	---	---
dary	JK's had more implied top boundary in.....	***	---	***	---
	JK's had less absence of top boundary in.....	***	---	---	---
	JK's had more ceilings in.....	***	---	***	---
oundary	JK's had more bottom boundaries in.....	***	***	***	---
	JK's had more implied bottom boundary in.....	---	---	***	---

TABLE 2 (continued)

CATEGORY -- SPACE

Code	Nature of Effect	Stated Effec	
		AI	AI
k) Type of Bottom Boundary	JK's had more floors in.....	---	**
l) Presence of Side Boundaries (walls and curtains)	JK's had more side boundaries in.....	---	--
m) Amount of Space Used	no significant effects.....	---	--
n) Scope of the Drawing	JK's less often included both outdoor areas and any part of the school in.....	---	--
o) Shading of Space or Background	JK's less often has complete shading in.....	---	--
p) Compression/Expansion of Drawing as a Whole	no significant effects.....	---	--
q) Viewpoint	no significant effects.....	---	--
r) Both Sides of Paper Used	no significant effects.....	---	--

TABLE 2 (continued)

CATEGORY -- SPACE

	Nature of Effect	Stated Effect Significant at the 5% Level in: AI	AII	BI	BII
ry	JK's had more floors in.....	---	***	***	---
daries	JK's had more side boundaries in.....	---	---	---	***
	no significant effects.....	---	---	---	---
	JK's less often included both outdoor areas and any part of the school in.....	---	---	***	---
	JK's less often has complete shading in.....	---	---	***	---
of	no significant effects.....	---	---	---	---
	no significant effects.....	---	---	---	---
sed	no significant effects.....	---	---	---	---

TABLE 3

CATEGORY -- CLASSROOM CONSTANTS (LIGHTS, DOORS, PICTURES, DESKS OR TABLES AND CH

Code	Nature of Effect	Stated Effec	
		AI	AI
a) Inclusion of Constants	JK's gave more drawings that featured at least one constant in.....	***	--
b) Lights	JK's gave more instances of more than one light all the same colour in.....	***	--
	JK's gave more instances of inclusion of lights in.....	---	--
	JK's gave more instances of inclusion of one light.....	***	--
c) Windows	no significant effects.....	---	--
d) Doors	JK's gave fewer instances of more than one door all the same colour pattern in.....	---	--
e) Pictures (blackboards, wall charts, bulletin boards, wall pictures)	JK's gave more instances of only pictures in.....	***	--
f) Children's Furniture	no significant effects.....	---	--
g) Children's Chairs	JK's had more multiple chairs each the same colour pattern in.....	***	**
h) Teacher's Desk or Table	no significant effects.....	---	--
i) Teacher's Chair	no significant effects.....	---	--

TABLE 3

ORY -- CLASSROOM CONSTANTS (LIGHTS, DOORS, PICTURES, DESKS OR TABLES AND CHAIRS)

	Nature of Effect	Stated Effect Significant at the 5% Level in: AI	AII	BI	BII
ts	JK's gave more drawings that featured at least one constant in.....	***	---	---	---
	JK's gave more instances of more than one light all the same colour in.....	***	---	***	***
	JK's gave more instances of inclusion of lights in.....	---	---	***	***
	JK's gave more instances of inclusion of one light.....	***	---	---	---
	no significant effects.....	---	---	---	---
	JK's gave fewer instances of more than one door all the same colour pattern in.....	---	---	---	***
s, wall rds,	JK's gave more instances of only pictures in.....	***	---	---	---
	no significant effects.....	---	---	---	---
	JK's had more multiple chairs each the same colour pattern in.....	***	***	---	---
le	no significant effects.....	---	---	---	---
	no significant effects.....	---	---	---	---

TABLE 3 (continued)

CATEGORY -- CLASSROOM CONSTANTS (LIGHTS, DOORS, PICTURES, DESKS OR TABLES AND C

Code	Nature of Effect	Stated Effe	
		AI	A
j) Background Shading of Blackboard, Wall Charts, Bulletin Boards	no significant effects.....	---	--
k) Appearance of Shading in Constants Other than the Above	no significant effects.....	---	--
l) Use of Colour in Constants Other than Blackboards, etc.	JK's had more instances of use of colour to distinguish parts of objects in.....	---	--
	JK's had less use of colour just in shading in.....	---	--
m) Grouping of Types of Constants (three or more of one kind make a group)	no significant effects.....	---	--

TABLE 3 (continued)

ORY -- CLASSROOM CONSTANTS (LIGHTS, DOORS, PICTURES, DESKS OR TABLES AND CHAIRS)

	Nature of Effect	Stated Effect Significant at the 5% Level in: AI	AII	BI	BII
? Black-Bulletin	no significant effects.....	---	---	---	---
g in the	no significant effects.....	---	---	---	---
stants ds, etc.	JK's had more instances of use of colour to distinguish parts of objects in.....	---	---	***	---
	JK's had less use of colour just in shading in.....	---	---	---	***
ore of b)	no significant effects.....	---	---	---	---

TABLE 4

CATEGORY -- PERSONS

Code	Nature of Effect	Stated Effec AI	AI
a) Appearance of Person(s)	no significant effects.....	---	--
b) Person(s) Labelled Boys or with Boy's Names	JK's have more instances of one labelled boy in.....	---	--
c) Person(s) Labelled Girls or with Girl's Names	JK's have more labelled girls in.....	***	--
	JK's have more instances of one labelled girl in.....	---	--
d) Unspecified Children	no significant effects.....	---	--
e) Sex of Unspecified Children Indicated by Drawing	JK's have fewer unspecified children in.....	---	--
f) Size of Teacher Relative to Children	no significant effects.....	---	--
g) Size of Teacher Relative to "Artist"	no significant effects.....	---	--
h) Size of Other Adult(s) Relative to Children including "Artist"	no significant effects.....	---	--
i) Size of Labelled Boys Relative to Labelled Girls	no significant effects.....	---	--
j) Size of Unspecified Children	no significant effects.....	---	--

TABLE 4

CATEGORY -- PERSONS

	Nature of Effect	Stated Effect Significant at the 5% Level in: AI	AII	BI	BII
s)	no significant effects.....	---	---	---	---
ys or	JK's have more instances of one labelled boy in.....	---	---	***	---
irls or	JK's have more labelled girls in.....	***	---	***	---
	JK's have more instances of one labelled girl in.....	---	---	***	---
	no significant effects.....	---	---	---	---
ildren	JK's have fewer unspecified children in.....	---	---	***	***
ive to	no significant effects.....	---	---	---	---
ive to	no significant effects.....	---	---	---	---
)	no significant effects.....	---	---	---	---
irls	no significant effects.....	---	---	---	---
ildren	no significant effects.....	---	---	---	---

TABLE 4 (continued)

CATEGORY -- PERSONS

Code	Nature of Effect	Stated Effe AI	A
k) Size of "Artist" Relative to Other Children	no significant effects.....	---	-
l) Activity of Teacher	no significant effects.....	---	-
m) Activity of Adult Person(s)	JK's have fewer non-teacher adults present who are inactive in.....	***	-
n) Activity Through Segregation of Labelled Children	no significant effects.....	---	-
o) Activity of Artist	no significant effects.....	---	-
p) Activity of Unspecified Children	no significant effects.....	---	-
q) Activity of Labelled Girl(s)	JK's have more inactive girls in.....	---	-
	JK's have more girls in.....	---	-
r) Activity of Labelled Boy(s)	JK's have more inactive labelled boys in.....	---	-
s) Differentiation of Type of Person by Labelling	JK's have fewer persons differentiated by labels in.....	***	-
	JK's have fewer labels that indicate age and sex in.....	***	-

TABLE 4 (continued)

CATEGORY -- PERSONS

	Nature of Effect	Stated Effect Significant at the 5% Level in: AI	AII	BI	BII
ative	no significant effects.....	---	---	---	---
	no significant effects.....	---	---	---	---
rson(s)	JK's have fewer non-teacher adults present who are inactive in.....	***	---	---	---
regation	no significant effects.....	---	---	---	---
	no significant effects.....	---	---	---	---
ied	no significant effects.....	---	---	---	---
Girl(s)	JK's have more inactive girls in.....	---	---	***	---
	JK's have more girls in.....	---	---	***	---
Boy(s)	JK's have more inactive labelled boys in.....	---	---	***	---
pe of	JK's have fewer persons differentiated by labels in.....	***	---	---	---
	JK's have fewer labels that indicate age and sex in.....	***	---	---	---

TABLE 5

CATEGORY -- DRAWING THE PERSON

Code	Nature of Effect	Stated Effe	
		AI	AI
a) Head	JK's had more examples of heads with hair in..	---	--
b) Facial Features	no significant effects.....	---	--
c) Stereotyping of Facial Features	no significant effects.....	---	--
d) Use of a Colour for Facial Features	JK's had more examples of different features, different colours in.....	---	--
e) Neck	no significant effects.....	---	--
f) Arm(s)	JK's had more examples of arms attached to trunk, shoulder or neck in.....	---	--
g) Fingers and Hands	no significant effects.....	---	--
h) Legs	no significant effects.....	---	--
i) Indication and Position of Feet	no significant effects.....	---	--
j) Proportion of Feet	no significant effects.....	---	--
k) Trunk	JK's had more one piece non-stick trunks in...	---	--
	JK's had fewer persons with no trunk in.....	***	--

TABLE 5

CATEGORY -- DRAWING THE PERSON

	Nature of Effect	Stated Effect Significant at the 5% Level in: AI	AII	BI	BII
	JK's had more examples of heads with hair in..	---	---	***	***
	no significant effects.....	---	---	---	---
al	no significant effects.....	---	---	---	---
acial	JK's had more examples of different features, different colours in.....	---	---	***	---
	no significant effects.....	---	---	---	---
	JK's had more examples of arms attached to trunk, shoulder or neck in.....	---	---	***	---
	no significant effects.....	---	---	---	---
	no significant effects.....	---	---	---	---
on	no significant effects.....	---	---	---	---
	no significant effects.....	---	---	---	---
	JK's had more one piece non-stick trunks in...	---	---	***	---
	JK's had fewer persons with no trunk in.....	***	---	---	---

TABLE 5 (continued)

CATEGORY -- DRAWING THE PERSON

Code	Nature of Effect	Stated Effe	
		AI	A
l) Stereotyping of Trunk Representation	no significant effects.....	---	-
m) Representation of Body	JK's had more examples of any outlined body with outlined arms and legs in.....	***	-
n) View of Person	no significant effects.....	---	-
o) Clothing	JK's had more instances of clothing in.....	***	-
p) Transparency	no signficant effects.....	---	-
q) Presence of Detail	no significant effects.....	---	-
r) Person(s) with Most Detail	no significant effects.....	---	-
s) Differentiation of Body Parts by Use of Different Colours	JK's had more differentiation by both shading and outline in.....	---	-
	JK's had more differentiation by outline colour in.....	---	-
t) Differentiation of Individuals by use of Colour	JK's had more examples of multicoloured individuals where colour was not used to group people in.....	---	-

TABLE 5 (continued)

CATEGORY -- DRAWING THE PERSON

	Nature of Effect	Stated Effect Significant at the 5% Level in: AI	AII	BI	BII
K	no significant effects.....	---	---	---	---
dy	JK's had more examples of any outlined body with outlined arms and legs in.....	***	---	***	---
	no significant effects.....	---	---	---	---
	JK's had more instances of clothing in.....	***	---	---	---
	no signficant effects.....	---	---	---	---
	no significant effects.....	---	---	---	---
Detail	no significant effects.....	---	---	---	---
dy Parts olours	JK's had more differentiation by both shading and outline in.....	---	---	***	---
	JK's had more differentiation by outline colour in.....	---	---	---	***
dividuals	JK's had more examples of multicoloured individuals where colour was not used to group people in.....	---	---	***	---

DISCUSSION

The pattern of effects that emerge from the data just presented is complex. Meaningful differences were not invariably consistent between matches A and B nor between the two administrations of the test within each match. Any consideration of the data must begin therefore from the fact that they do not follow any simple pattern.

This being said, however, we can make the general observation that significant differences were somewhat more likely to occur in match B than match A and in the first application of the test rather than the second.

It is interesting to compare these results with other available data. In one part of our research programme connected with the Study of Achievement it was observed that only some of the percentages falling within codes changed with the age of the child being tested. These age trends were not always reflected in the same codes that show change in the present study. Another piece of research studied the effect of exposure to Junior Kindergarten as revealed by more conventional measures of "achievement" such as teacher ratings or academic tests. With these measures, an effect was clearly demonstrable in match A but not in match B. The effect declined in subsequent administrations. It seems then that the D.A.C. test administered in Senior Kindergarten can indicate a different pattern of response to Junior Kindergarten than do other measures of school "achievement." Operationally, the D.A.C. test seems different from other measures.

The influence of Junior Kindergarten on D.A.C. test scores obtained in Senior Kindergarten gives rise to effects that are not representative of those that occur during the normal growing up of the "artist" and which tend to diminish considerably after further experience in Senior Kindergarten, presumably indicating they are not of a permanent nature.

It should perhaps be said that this research can be regarded as independent evidence in support of the general finding of the "Study of Achievement" that the effects of Junior Kindergarten are short-lived.

The distinction between matches A and B is that in the first the non-attenders of Junior Kindergarten were those that "didn't go" whereas in the second the non-attenders were those that "couldn't go." In accounting for the differences observed between matches A and B both with the D.A.C. test and with conventional measures, it has to be remembered that in both matches the attenders and non-attenders of Junior Kindergarten were matched on socio-metric indices. Whatever therefore "caused" the differences was clearly non-socio-metric. It has elsewhere (The Effects of Junior Kindergarten on Achievement: The First Five Years -- Board of Education, 1966) been suggested that the answer may lie in "environmental process variables" incentives to intellectualization in the home environment.

REFERENCES

RESEARCH DEPARTMENT PUBLICATIONS
THE BOARD OF EDUCATION FOR THE CITY OF TORONTO

1963 -- Study of Achievement, Toronto. Information Bulletin #1.

1964 -- Study of Achievement: An Outline of a Longitudinal Study from Junior Kindergarten Through the Elementary Grades.

1965 -- Study of Achievement: Report on Population Study of Junior and Senior Kindergarten Pupils, 1960-61 and 1961-62.

1966 -- The Effects of Junior Kindergarten on Achievement: The First Five Years.

1966 -- Draw-a-Classroom "Test": Manual and Scoring Categories.

1966 -- The Draw-a-Classroom "Test" An Overview.

1967 -- Artwork: A Brief Review.

1967 -- Children's Drawings: A Selected Review of the Literature.