DOCUMENT RESUME

ED 038 189 24 PS 003 216

AUTHOR Bemis, Katherine A.; Luft, Max
TITLE Relationships Between Teacher Behavior, Pupil Behavior, and Pupil Achievement.
INSTITUTION Southwestern Cooperative Educational Lab., Albuquerque, N. Mex.
SPONS AGENCY Office of Education (DHEW), Washington, D.C. Bureau of Research.
PUB DATE 2 Mar 70
CONTRACT OEC-4-7-062827-3078
NOTE 24p.; Paper presented at the annual convention of the American Educational Research Association, Minneapolis, Minnesota, March 2-6, 1970

EDRS PRICE EDRS Price MF-$0.25 HC-$1.30
DESCRIPTORS *Academic Achievement, Affective Behavior, Behavior Rating Scales, *Classroom Observation Techniques, Factor Analysis, Grade 1, *Student Behavior, *Student Teacher Relationship, *Teacher Behavior, Test Construction

ABSTRACT

In this study, which was designed to examine the relationships among teacher behavior, student behavior, and student achievement, the Southwestern Cooperative Educational Laboratory Interaction Observation Schedule (SCIOS) was developed. Using this instrument, pupil behaviors were isolated to assess the degree to which pupils (1) receive, (2) respond to, and (3) value a stimulus; in this case, the teacher. Teacher behaviors were categorized as either tension-reducing or tension-increasing for pupils. The subjects of observation were 15 teachers and 296 first graders in Title I schools. Pupils were pre- and posttested on the Lee-Clark Reading Readiness Test. Statistical analyses of 18 teacher behaviors and 20 pupil behaviors included computation of canonical correlations, factor analyses, and multiple regression analyses. Results indicated that there was a significant relationship between teacher and pupil behavior and there is a significant relationship between pupil classroom behavior and pupil cognitive behavior as measured by a standardized test. No attempt was made to validate the observation instrument, the SCIOS. (MH)

Relationships between Teacher Behavior, Pupil Behavior, and Pupil Achievement

Katherine A. Bemis and Max Luft
Southwestern Cooperative Educational Laboratory, Inc.
Albuquerque, New Mexico

This publication is issued pursuant to terms of Contract No. OEC-4-7-062827-3078 with the Bureau of Research, Office of Education, U.S. Department of Health, Education and Welfare.

A paper presented at the Annual Convention of the American Educational Research Association, Minneapolis, Minnesota, March 2-6, 1970.

Relationships between Teacher Behavior, Pupil Behavior, and Pupil Achievement

Katherine A. Bemis and Max Luft
Southwestern Cooperative Educational Laboratory, Inc.
Albuquerque, New Mexico

To understand the teaching--learning process, investigations must be focused on the illumination of the dynamics of the classroom. Procedures used by researchers to study this problem vary widely. At the present stage of our knowledge about classroom interaction, the majority of the studies involve assessment of teacher--learner verbal interaction. What is needed is a system which will encompass teacher and pupil discrete behaviors. Data should be generated which will indicate some of the relationships between specific teacher behaviors and the avoidance or acceptance of the teacher by pupils. Subsequently, it may be possible to state which classroom interactions contribute most to pupil cognitive growth.

The present study was designed to discover relationships between teacher behavior, pupil behavior, and pupil achievement by developing a classroom observation instrument which would: (1) be based on Sullivan's (1953) social-psychological theory of personality, (2) be related to the specified educational goals outlined by Krathwohl, Bloom, and Masia in 1964, (3) make it possible to tabulate teacher and pupil behaviors, and (4) be administered and interpreted without extensive training.

Appreciation is expressed to *Dr. James G. Cooper who provided the initial impetus for this study of teacher effectiveness and to **Dr. Paul G. Liberty for assistance in developing the observation instrument.
*Professor of Educational Foundations, University of New Mexico
**Associate Director, Measurement and Evaluation Center, University of Texas at Austin

PROCEDURE

This research was conducted during the 1968-69 school year in first grade classrooms of Albuquerque, New Mexico which were participating in the programs of the Southwestern Cooperative Educational Laboratory (SWCEL). SWCEL is a private research and development facility working at improving the early educational opportunities of the culturally divergent child of the Southwest. The development of the observation schedule was a part of SWCEL's total evaluation program.

The sample of the study comprised 15 teachers and 296 students in Title I schools. (Title I schools are defined by Albuquerque Public Schools as those where fifteen per cent of enrollment comes from families with an annual income of $3,000 per year or less.)

Statistical material which contributed to this study was gathered by two observers between September, 1968 and March, 1969. Observations were conducted with the Southwestern Cooperative Educational Laboratory Interaction Observation Schedule (SCIOS) in each of 15 first grade classrooms eight times during a five month period.

To assess cognitive gain, the pupils were pre-tested in September, 1968, and post-tested in March, 1969, with the Lee-Clark Reading Readiness Test, Kindergarten and Grade 1, 1962 Revision.

DEVELOPMENT OF THE OBSERVATION SCHEDULE

Selection of Pupil Behaviors

The SCIOS was designed to assess pupil-teacher interactions. A series of pupil behaviors was subjectively judged as belonging in one of the three lowest levels of the affective domain (Krathwohl, Bloom, and Masia, 1964).

Briefly, Krathwohl (1964) describes the three lowest levels of the affective domain as:

> Level One. RECEIVING (ATTENDING) At this level we are concerned that the learner be sensitized to the existence of certain phenomena and stimuli; that is, that he be willing to receive or to attend to them.
>
> Level Two. RESPONDING At this level we are concerned with responses which go beyond merely attending to the phenomena. The student is sufficiently motivated that he is not just willing to attend, but perhaps it is correct to say that he is actively attending.
>
> Level Three. VALUING Behavior categorized at this level is sufficiently consistent and stable to have taken on the characteristics of a belief or an attitude. The learner displays this behavior with sufficient consistency in appropriate situations that he comes to be perceived as holding a value.

Pupil behaviors were isolated to assess the degree to which pupils (1) receive, (2) respond to, and (3) value a stimulus, the teacher. Level one behaviors of pupils were defined as those occurring if pupils are not receiving the "stimulus", the teacher. An example of such a behavior would be demonstrated by the pupil who interrupts others. This was defined as an overt action in which, for example, a pupil pokes his neighbor with a ruler or disturbs his neighbor in some way.

Level two, "responding" behaviors, were chosen which seemed to indicate when a pupil was not responding to the stimulus, the teacher. An example of such a behavior is demonstrated by the pupil who does not work at his assigned task.

Level three, "valuing" pupil behaviors, were defined as those which seem

to reflect a pupil's commitment or active involvement with a stimulus, the teacher. An example of this type of behavior is evidenced by the pupil who asks the teacher questions about the academic subject being studied.

As can be noted, the first two levels of the affective domain, receiving and responding, were placed into negative behavioral terms which seemed to represent avoidance of, or not responding to, the teacher. It is probable that fewer pupils in a classroom will evidence these negative behaviors at the same time. For this reason, scoring was facilitated.

Level three, a higher level of the affective domain, was expected to be represented less frequently in terms of pupil classroom behaviors. Level three behaviors were stated in positive terms, to facilitate scoring.

Levels four and five of the Affective Domain were not translated into pupil behaviors for use in the observation schedule, because these behaviors were believed to be of a higher level than might be expected to occur frequently in a class of first grade students.

Selection of Teacher Behaviors

Sullivan's (1953) social-psychological theory of personality served as the basis for selection of two categories of teacher behavior. (1) The behavior seemed to be of a type which would result in tension-reduction and need satisfaction or success for the pupil; e.g., the teacher praises the pupil; (2) the behavior seemed to be one which would increase pupil tension or anxiety; e.g., the teacher punishes a pupil. Many of the items are the same as those recorded on the Teacher Observation Personality Schedule (TOPS) (Cooper and Bemis, 1967). Inter-rater reliability of .96 was achieved by two observers who observed in the 15 classrooms between September, 1968 and March, 1969.

RESULTS

Statistical analyses included factor analyses of eighteen teacher behaviors and twenty pupil behaviors. Canonical correlations were computed between teacher behavior factor scores and pupil behavior factor scores to determine the relationship between teacher and pupil behaviors. Multiple regression analyses were conducted to determine the value of teacher and pupil behaviors in predicting class achievement.

The means and standard deviations of teacher and pupil behaviors are included in Table 1. Some teacher behaviors occurred frequently, e.g., variable 30 which had a mean of 3.4, and some behaviors rarely occurred, e.g., variable 28 which had a mean of .03. One behavior, variable 35, "teacher uses sarcasm," did not occur during the periods of observation. Consequently, variable 35 was not included in the analyses. As with the teacher behaviors, some pupil behaviors such as variable two, "pupil leaving seat without permission" and variable five, "pupil interrupting others (talking, etc.)" were frequently observed, and some pupil behaviors, such as variable eleven, "pupil shy, fearful (head down, etc.)" were rarely observed.

Factor Analyses

A factor analysis of the eighteen teacher behaviors revealed eight factors of teacher behaviors. These factors, their loadings, eigenvalues and percentage of variance accounted for are reported in Table 2.

A second factor analysis resulted in the extraction of seven factors of pupil behaviors. These factors, their loadings, eigenvalues, and percentage of variance accounted for are reported in Table 3.

Gain Scores

Pupils in the fifteen first grade classrooms were pre-tested in September,

TABLE 1

SUMMARY OF MEANS AND STANDARD DEVIATIONS OF TEACHER AND PUPIL BEHAVIORS ON THE SOUTHWESTERN COOPERATIVE INTERACTION OBSERVATION SCHEDULE

Pupil Behaviors			Teacher Behaviors		
Variable	Mean	Standard Deviation	Variable	Mean	Standard Deviation
1	1.93	2.32	21	2.98	3.46
2	8.26	7.01	22	.18	.67
3	1.20	2.41	23	.14	.57
4	3.66	2.78	24	.49	.93
5	7.28	6.15	25	.06	.32
6	.84	1.08	26	.98	2.01
7	1.67	.68	27	.93	1.35
8	.80	2.16	28	.03	.16
9	4.08	5.36	29	.05	.25
10	3.54	4.44	30	3.40	4.04
11	.01	.09	31	.20	.75
12	.10	.35	32	.03	.18
13	1.50	2.02	33	.03	.22
14	3.28	4.43	34	.20	.90
15	.32	.67	35	.00	.00*
16	1.86	2.27	36	1.93	1.80
17	.75	1.30	37	.33	1.29
18	3.14	3.76	38	.03	.16
19	.43	.80			
20	3.88	2.94			

*This behavior was not recorded.

TABLE 1

SOUTHWESTERN COOPERATIVE INTERACTION OBSERVATION SCHEDULE
EIGHT FACTORS OF TEACHER BEHAVIORS

Factor Number		Items Comprising Factor	Factor Loading	Eigenvalue (After Rotation)	Percentage Variance Accounted For
		Permissive			
1	D7	Teacher speaks over pupil noise.	.79	2.13	12.52
	A1	Teacher allows pupil to leave seat without permission.	.75		
	A10	Teacher allows pupil to speak without permission.	.58		
		Dominance			
2	D1	Teacher warns pupil (or threatens).	.83	1.75	10.30
	D3	Teacher punishes pupil.	.82		
		Affiliation			
3	A3	Teacher calls pupil, honey, dear, etc.	.72	1.53	8.98
	D4	Teacher calls on non-volunteer.	-.53		
		Exhortation			
4	A8	Teacher uses or promises reward.	.81	1.34	7.89
	D2	Teacher frowns, glares at pupil.	.67		
		Talkative			
5	D8	Teacher ignores, interrupts, rejects pupil answer or question.	.74	1.18	6.96
	A2	Teacher praises pupil	.62		
		Helpfulness			
6	A6	Pupil asks for help and teacher helps immediately.	.81	1.10	6.48

TABLE 1 (con't)

Factor Number	Items Comprising Factor	Factor Loading	Eigenvalue (After Rotation)	Percentage Variance Accounted For
	Courtesy			
7	A9 Teacher apologizes.	-.78	1.09	6.38
	A7 Teacher uses encouraging remarks.	-.53		
	Nurturance			
8	A4 Teacher touches pupil.	-.78	1.03	6.07
	A5 Teacher asks or allows pupils to help each other.	-.52		
	D6 Teacher criticizes or corrects pupil	.52		

TABLE 3

SOUTHWESTERN COOPERATIVE INTERACTION OBSERVATION SCHEDULE
SEVEN FACTORS OF PUPILS BEHAVIORS

Factor Number	Items Comprising Factor	Factor Loading	Eigenvalue (After Rotation)	Percentage Variance Accounted For
	Disruptive			
1	rc5 Pupils interrupting others (talking, poking, etc.)	-.87	3.05	15.26
	rs3 Pupils making inappropriate, disruptive response	-.79		
	rc2 Pupils leaving seats (without permission)	-.78		
	rs2 Pupils not working on assigned task	-.77		
	Hyperactive			
2	rc3 Pupils speaking inappropriately	.75	2.35	11.73
	rc1 Pupils fidgeting in seats	.65		
	v2 Pupils asking question about subject content	.58		
	rs1 Pupils ignoring teacher request	.58		
	v3 Pupils asking teacher for help	-.52		
	Ambivalence			
3	v7 Majority of class makes solicited response	-.83	1.93	9.66
	rc7 Pupils refusing teacher request	-.67		
	Security			
4	v5 Pupils volunteering information	-.77	1.60	7.99
	v1 Pupils raising hand before speaking	-.77		
	v4 Pupils asking teacher for approval	.46		
	Boredom			
5	rs5 Pupils daydreaming (gazing out window)	-.84	1.39	6.94
	rc6 Pupils dropping objects	-.69		

TABLE 3 (con't)

Factor Number	Items Comprising Factor	Factor Loading	Eigenvalue (After Rotation)	Percentage Variance Accounted For
	Affiliation			
6	rs6 Pupils copying from others	.80	1.26	6.31
	v6 Pupils offering assistance or cooperation to fellow pupil	.68		
	Shyness			
7	rs4 Pupils shy, fearful (head down, etc.)	.71	1.12	5.58
	rc4 Pupils looking at observer at rear of room	-.63		

1968 and post-tested in March 1969 with the Lee-Clark Reading Readiness Test (1962). This test is composed of four subtests which yield three part scores and a total score. A single pupil gain score for each student was determined by first converting pre-test scores to T scores. Post-test scores were then converted to T scores. Finally, the difference between the two T scores is standardized and set with a mean of 50 and standard deviation of 10. These T scores were then considered pupil gain. Pupil gain for each teacher was calculated by averaging the gain scores of all students in her class. The "average pupil gain" score per class was used in further analyses. A summary of the Standard Score Pupil Gains appears as Table 4.

Canonical Correlations

Significant canonical correlations between the teacher behavior factors and the pupil behavior factors indicate that there is a significant relationship between teacher and pupil behavior. As evidenced by significant canonical correlations between the eight teacher behavior factor scores and the seven pupil behavior factor scores, appearing as Tables 5 through 7, teacher behaviors and pupil behaviors reflect high significant correlations.

A summary of canonical correlations between the eight teacher behavior factor scores and the seven pupil behavior factors scores appears as Table 5. Two of the eight canonical correlations revealed statistical significance between the two sets of variables. The first set of weights yielded a canonical correlation (R_c) of 1.00 which was significant at greater than the .005 level of confidence. Canonical correlation one, therefore, accounted for 100 per cent of the variance of the canonical variates. The second R_c was equal to .99, and was significant at greater than the .05 level, accounting for 98 per cent of the variance of the canonical variates.

TABLE 4

STANDARD SCORE PUPIL GAINS ON THE LEE-CLARK READING READINESS TEST AS AVERAGED PER CLASS

Teacher	Number of Pupils	Letter Symbols	Concepts	Word Symbols	Total Score
1	18	48.42	45.52	48.13	44.02
2	15	49.86	56.74	55.13	51.85
3	16	49.81	47.98	45.92	49.35
4	17	48.04	51.33	47.91	47.52
5	14	48.55	52.22	46.96	47.40
6	22	48.54	47.59	48.87	51.76
7	24	48.77	52.06	47.36	49.04
8	23	48.43	48.61	48.42	48.80
9	22	48.54	54.27	47.31	44.95
10	24	47.23	47.19	46.14	45.41
11	20	48.63	46.75	52.73	50.60
12	26	48.62	47.87	50.19	50.06
13	19	59.17	52.61	46.94	57.57
14	18	60.56	43.22	61.11	61.84
15	18	48.01	53.06	48.05	48.24

TABLE 5

SUMMARY OF CANONICAL CORRELATIONS BETWEEN SEVEN PUPIL BEHAVIOR FACTOR SCORES AND EIGHT TEACHER BEHAVIOR FACTOR SCORES

Number of Eigenvalues Removed	Largest Eigenvalue Remaining	Corresponding Canonical Correlation	Lambda	Chi-Square	Degrees of Freedom
0	1.00000	1.00000	0.00000	167.02396**	56
1	0.98050	0.99020	0.00036	55.42734*	42
2	0.88583	0.94118	0.01867	27.86700	30
3	0.63117	0.79446	0.16350	12.67666	20
4	0.40958	0.63999	0.44328	5.69480	12
5	0.19614	0.44288	0.65080	2.00630	6
6	0.06601	0.25692	0.93399	0.47800	2
7	0.00000	0.00076	1.00000	0.00000	0

*P◁.05
**P◁.005

TABLE 6

SOUTHWESTERN COOPERATIVE INTERACTION OBSERVATION SCHEDULE CANONICAL CORRELATIONS BETWEEN PUPIL BEHAVIOR FACTORS AND TEACHER BEHAVIOR FACTORS

CANONICAL CORRELATION 1 = 1.000**

Factor Number	Teacher Behavior Factor	Canonical Weight	Factor Number	Pupil Behavior Factor	Canonical Weight
2	Dominance	-.218	1	Disruptive	-.436
8	Nurturance	-.140	3	Ambivalence	.428
1	Permissiveness	.126	4	Security	-.411
6	Helpfulness	.114	5	Boredom	-.341
3	Affiliation	-.071	2	Hyperactive	-.235
5	Talkativeness	-.055	7	Shyness	.088
7	Courtesy	-.049	6	Affiliation	-.042
4	Exhortation	-.019			

**P<.005

TABLE 7

SOUTHWESTERN COOPERATIVE INTERACTION OBSERVATION SCHEDULE
CANONICAL CORRELATIONS BETWEEN PUPIL BEHAVIOR
FACTORS AND TEACHER BEHAVIOR FACTORS

CANONICAL CORRELATION 2 = 0.99020*

Teacher Behavior Factor Number	Teacher Behavior Factor	Canonical Weight	Pupil behavior Factor Number	Pupil behavior Factor	Canonical Weight
8	Nurturance	.345	5	Boredom	.645
5	Talkative	.333	3	Ambivalence	-.546
2	Dominance	.305	6	Affiliation	.433
4	Exhortation	-.184	1	Disruptive	.260
3	Affiliation	.159	7	Shyness	.228
7	Courtesy	.135	4	Security	.151
6	Helpfulness	-.091	2	Hyperactive	-.020
1	Permissiveness	-.068			

*P<.05

As can be seen from Table 7, the second significant canonical correlation was equal to .99 and was significant at greater than the .05 level of confidence. No teacher behavior factor achieved the significant factor loading of .4. Three pupil behavior factors achieved significance at greater than .4 factor loadings. These were pupil behavior factor five, Boredom, with a factor loading of .645, pupil behavior factor three, Ambivalence, with a loading of -.546, and pupil behavior factor six, Affiliation, loading .433.

Multiple Correlations

A multiple correlation coefficient of .917 between the seven pupil factor scores and the total achievement gain scores was significant beyond the .01 level of confidence indicating that there is a significant relationship between pupil classroom behavior and pupil cognitive behavior as measured by a standardized test. This information is reported in Table 8. Pupil behavior factors were ranked as to their relative contributions to the prediction. It is interesting to note that Factor two, Hyperactive, which was composed of the pupil behaviors of speaking inappropriately, fidgeting in seats, asking questions about subject content, ignoring the teacher's request, and not asking the teacher for help, made the only significant contributions to the multiple correlation coefficient.

Table 9 reveals that a multiple correlation coefficient of .799, significant beyond the .05 level of confidence, was achieved between the eight teacher factor scores and the total achievement gain scores. Factor six, Helpfulness, made the only significant contribution to the multiple correlation coefficient, and is the result of only one teacher behavior, pupil asks for help and teacher helps immediately. However, the relationship of factor six to pupil achievement is negative (-.62). By reversing

TABLE 8

SUMMARY OF MULTIPLE REGRESSION ANALYSIS BETWEEN PUPIL BEHAVIORS AND PUPIL GAIN

Multiple R = .91731**

Independent Variable	Correlation	Regression Coefficient
1. Disruptive	-0.68	-0.116
2. Hyperactive	.71	.252
3. Ambivalence	-.27	-0.093
4. Security	.37	-0.007
5. Boredom	.50	.166
6. Affiliation	-.16	-0.045
7. Shyness	0.07	0.108

Dependent Variable
Achievement

**P <.01

TABLE 9

SUMMARY OF MULTIPLE REGRESSION ANALYSIS BETWEEN TEACHER BEHAVIORS AND PUPIL GAIN

Multiple Correlation = .79903*

Independent Variable	Correlation	Regression Coefficient
1. Permissiveness	0.54	-0.011
2. Dominance	-0.06	-0.002
3. Affiliation	0.14	0.178
4. Exhortation	0.26	.212
5. Talkativeness	0.04	-0.066
6. Helpfulness	- .62	-0.317
7. Courtesy	0.05	-0.064
8. Nurturance	0.19	0.093

Dependent Variable
Achievement

*P < .05

the signs, this factor was labeled "Uncooperative" teacher (one who is not helping pupils--or one whose pupils do not request help) and is predictive of pupil achievement.

TENTATIVE IMPLICATIONS FOR EDUCATIONAL PRACTICE

This study was initiated to provide research data in the area of teacher and pupil discrete behaviors--the goal being to state their relevance to cognitive gain and to observe the effects of specific teacher behaviors on pupil behaviors and conversely, to observe the effects of specific pupil behaviors on teacher behaviors.

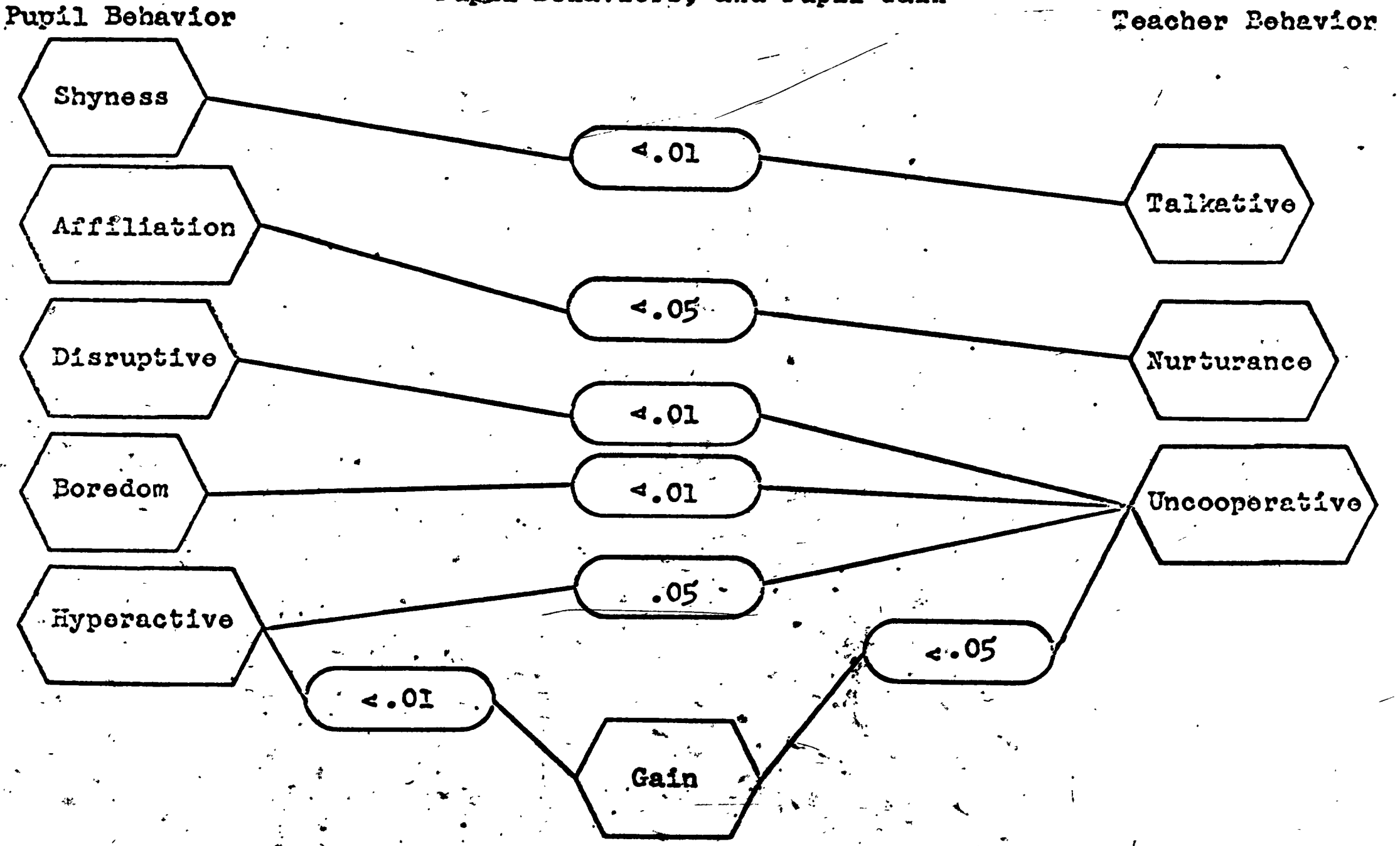
Sullivan's social-psychological theory (1953) which was used as a basis for selection of teacher behaviors, purports that childhood behavior is the result of attempts by the child to reach goals of tension-reduction and need satisfaction. A support of this theory can be seen by referring to Figure 1.

1. Shy pupils have the talkative teacher
2. Affiliative pupils have the nurturant teacher
3. Disruptive, bored, and hyperactive pupils have the uncooperative teacher.

It is possible that these first-grade pupils have learned to accommodate their behavior to that of the teacher. Hall and Lindzey (1957), in discussing Sullivan's theory state, "The first educative influence is that of anxiety which forces the young organism to discriminate between increasing and decreasing tension and to guide his activity in the direction of the latter" (p. 147). They state further that, "One may also learn by imitation and by inference; for the latter type of learning, Sullivan adopts the name proposed by Charles Spearman; eduction of relations" (Hall and Lindzey, 1957, p. 147).

Figure 1

Significant Relationships Between Teacher Behaviors, Pupil Behaviors, and Pupil Gain



In selecting pupil behaviors for the SCIOS, reliance was placed on the hierarchical levels of educational goals in the affective domain which were delineated by Krathwohl (1964). No pattern of support for this hierarchical structure was evidenced by the present study. The pupil behaviors did not load on factors which might be ascribed to the three levels of receiving, responding, and valuing. The present study, like so many previous studies, reconfirms the difficulty of assessing, through observation of overt behavior, emotions and feelings, such as those reflected by the three lowest levels of the affective domain. The pupil behavior factors which relate significantly to specific teacher behavior factors indicate however, that the pupils are accommodating their behaviors to the teacher's behaviors and are responding to her overt signals.

Results indicate that there are significant relationships between teacher behaviors, pupil behaviors, and pupil gain. The exact nature of these behaviors implies that the following teacher and pupil behaviors occur in the same classrooms:

1. Talkative teachers have shy pupils.
2. Nurturant teachers have affiliative pupils.
3. Uncooperative teachers have disruptive pupils.
4. Uncooperative teachers have bored pupils.
5. Uncooperative teachers have hyperactive pupils.

Results also indicate that significant cognitive gain will occur in classrooms where pupils are "hyperactive" and teachers are "uncooperative" (those who are not helping pupils--or those whose pupils do not request help).

Further research using the SCIOS or other instruments which tabulate teacher and pupil behaviors is needed. Unfortunately, very few such instruments are available at the present time. Rarely is the behavior of the pupil surveyed with such careful scrutiny as is the behavior or personality of the teacher.

No attempt was made during the course of this study to validate the SCIOS. The consistently most significant factor of teacher behaviors, Uncooperative, although comprised of but one teacher behavior, was not only predictive of pupil gain but also correlated most frequently with factors of pupil behavior. The admittedly small sample of classrooms (N=15) observed with the SCIOS cannot justify the validity of the SCIOS. It is recommended that other teacher behaviors which seem to bear a relationship to teacher factor Uncooperative be added to a revised SCIOS, and that a larger sample of first-grade teachers and their pupils be observed with this instrument. At the present time, the data reported in this study are being subjected to further analyses to determine patterns of behaviors which were not revealed by the design used in this investigation.

The use of the multivariate statistic, canonical correlation, was an attempt to determine which groups of teacher behaviors and which groups of pupil behaviors attained significant relationships. Unfortunately, although this technique is sophisticated in its aspirations, research on the canonical correlation technique lacks sophistication. The computer age has placed a heavy burden on the researcher who would depart from traditional analyses. He must combine empirical evidence with subjective judgments.

REFERENCES

Cooper, James G. and Bemis, K. A. "Teacher Personality, Teacher Behavior and Their Effects upon Pupil Achievement." U. S. Office of Education Contract O.E.-6-10-271, University of New Mexico, 1967. (Mimeographed)

Hall, Calvin S. and Lindzey, Gardner. Theories of Personality. New York: John Wiley & Sons, Inc., 1957.

Krathwohl, D., Bloom, B. and Masia, B. Taxonomy of Educational Objectives II. Affective Domain. New York: David McKay Co., 1964.

Lee, Murray J. and Clark, W. W. "Lee-Clark Reading Readiness Test, Kindergarten-Grade 1." 1962 revision.

Sullivan, H. S. The Interpersonal Theory of Psychiatry. New York: Norton, 1953.