The Adjustment of Fourth Grade Children: a Primary Prevention Approach In Behavioral Education.

John Robert Kagey
Louisiana State University and Agricultural & Mechanical College

Follow this and additional works at: https://digitalcommons.lsu.edu/gradschool_disstheses

Recommended Citation
https://digitalcommons.lsu.edu/gradschool_disstheses/2135
KAGELY, John Robert, 1944—
THE ADJUSTMENT OF FOURTH GRADE CHILDREN: A PRIMARY PREVENTION APPROACH IN BEHAVIORAL EDUCATION.

The Louisiana State University and Agricultural and Mechanical College, Ph.D., 1971
Psychology, clinical

University Microfilms, A XEROX Company, Ann Arbor, Michigan

THIS DISSERTATION HAS BEEN MICROFILMED EXACTLY AS RECEIVED.
THE ADJUSTMENT OF FOURTH GRADE CHILDREN:  
A PRIMARY PREVENTION APPROACH IN  
BEHAVIORAL EDUCATION

A Dissertation

Submitted to the Graduate Faculty of the 
Louisiana State University and 
Agricultural and Mechanical College 
in partial fulfillment of the 
requirements for the degree of 
Doctor of Philosophy 
in 
The Department of Psychology

by 
John Robert Kagey
B.S., Randolph-Macon College, 1966
M.A., Louisiana State University, 1970
December, 1971

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
PLEASE NOTE:

Some pages may have
indistinct print.
Filmed as received.

University Microfilms, A Xerox Education Company
ACKNOWLEDGMENTS

The author wishes to express his gratitude to his major professor Dr. Edwin O. Timmons and other members of the advisory committee, Drs. Kenneth Koonce, Laurence Siegel, Ralph M. Dreger, and Robert Coon. Dr. Timmons' guidance through the author's five year program, including the present study, has been invaluable. Thanks are extended to Dr. Koonce for his instruction in statistical procedures which were so very helpful in designing this study. Also Drs. John J. Wright and Doug Slavin contributed greatly to the initial development of the hypotheses evaluated in the present research.

Very special and sincere thanks are extended to those people in the Atlanta Public School System, Atlanta, Georgia who made the present study possible. The principal, Miss Louise Stakely, and fourth grade teachers, Mrs. Mae Freeman and Mrs. Pearl Mullins, of Rock Springs Elementary School are special people who are dedicated to the children they teach. The author is indebted to these three ladies for their cooperation and support. Also the author would like to express his gratitude to the fourth grade children who were patient with his ineptness as a teacher.

Of all the people who contributed to the present study, the author wishes to recognize his wife as the most valuable contributor. Her understanding, support, and professional advice as a teacher were greatly appreciated. Also the author's warmest regards are extended
to Mrs. Mary Mevers for her excellent typing of the completed dissertation, and her support throughout the author's graduate career.
**LIST OF TABLES**

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Analysis of Covariance: Comparison of Operant, Causal, Current Events and No Treatment Groups on the Fourth Factor of the Behavioral Classification Project</td>
<td>48</td>
</tr>
<tr>
<td>2. Orthogonal Comparisons Among Operant, Causal, Current Events, and No Treatment Groups on the Fourth Factor of the Behavioral Classification Project</td>
<td>49</td>
</tr>
<tr>
<td>3. Intercorrelations of Post-test Scores of the Dependent Variables.</td>
<td>53</td>
</tr>
<tr>
<td>4. Index of the Dependent Variables.</td>
<td>55</td>
</tr>
<tr>
<td>5. Rankings of Groups as to Positive Change on Each Variable.</td>
<td>64</td>
</tr>
</tbody>
</table>
ABSTRACT

The present study was designed to promote adjustment in fourth grade children by helping the students to develop a better understanding of human behavior. Forty-nine children were randomly assigned to four groups: an Operant group, a Causal group, a Current Events group, and a No Treatment group. In the Operant and Causal groups a behavioral science curriculum was taught to the children and emphasized operant principles of behavior and causal principles of behavior, respectively. The Current Events group and No Treatment group were control groups. The children in the Operant, Causal, and Current Events groups met for 21 half hour classes over a 12 week period. Analysis of covariance were used to compare the groups on 17 dependent variables which varied from stable personality traits to specific classroom behaviors. The curricula were not successful in improving adjustment as measured by the instruments used in this study. Even though the differences between the experimental groups and control groups were not great enough to be significant, a trend appeared to occur which favored the experimental groups in regard to positive changes in adjustment. Perhaps by increasing the experimental period and measuring more specific adjustment traits, a significant change in the children's behavior could be recorded.
The Demand for Services in the Field of Mental Health

Within the last decade the mental health field has received much criticism because of its failure to make dramatic progress towards the eradication of emotional disturbances. In fact, the mental health profession appears to be less and less able to meet the tremendous demands for its services. In a Federal report, *Patients in State and County Mental Hospitals* (1969), statistics are quoted which indicate an increase in the number of patients under age 25. This increase appears to be a function of inefficient services as well as an increase in the number of children in this age group. Regardless of why there are a greater number of patients in this group, the important factor is that the statistics do imply an increased demand for services for emotionally disturbed children. In a report to the Joint Commission of Mental Illness and Health, Albee (1959) concludes that sufficient professional personnel to eliminate glaring deficiencies in the care of mentally disturbed patients will never become available if the present population trend continues without a large increase in mental health manpower. In comparing population growth and professional training potential it is highly unlikely that the deficiencies in mental health services will be overcome in the near or distant future. In fact Albee (1963) suggests that the manpower crisis may become worse because of demands for services outside of the mental health field. The
The manpower crisis becomes even more critical when a distinction is made between the "demand" for services and the "need" for services. Statistics are based upon the "demand" concept which is a more conservative term than the "need" concept. Cowen and Zax (1967, p. 14) report, "Findings suggest that insofar as mental health helping services are concerned, need may well exceed demand by a factor of anywhere from 6 to 20."

Mental Health services have not only been criticized as being insufficient, but also one of the major services—psychotherapy—has been criticized as being inadequate. Eysenck's (1952 and 1961) studies suggest that psychotherapy does not positively affect recovery from neurotic disorders. Schofield (1964, p. 99) questions the efficacy of psychotherapy in his statement, "We still do not have acceptable evidence that psychotherapy accomplishes significant reduction of neurotic symptomatology, let alone evidence that the several different forms of psychotherapy have different levels of efficacy."

Nichol's (1963, p. 15) statement summarizes the preceding discussion on the crisis in mental health services, "The consequence is inescapable; at present many people get no help and many more get less than they need or get the wrong kind." The failing of mental health services forces upon us a sense of urgency to explore and develop new approaches which may help to reduce the existing imbalances between "needs" or "demands" and available resources.
Preventive Services in the Field of Mental Health

The primary goal of the mental health professions may no longer be stated as the diagnosis and treatment of patients, but must be broadened to include the reduction in frequency of mental disorders by prevention as well as treatment. The Joint Commission on Mental Illness and Health (1961) awakened the general public to the need for new approaches to reduce the frequency of mental disorders. The Commission's report and President Kennedy's address to Congress (1963) stressed the importance of prevention of mental disorders as well as the use of more intensive means of rehabilitation. Though the term prevention has long been accepted in the public health services, only since the Commission's report has it attained widespread significance in the thinking of mental health professionals.

Given the acknowledged lack of mental health services and the lack of evidence supporting one of the major services, psychotherapy, there exists a need for new approaches to the reduction of mental disorders. An approach which deserves extensive investigation is preventive services. Perhaps preventive services which have been very effective in the public health field could also have a significant affect on the reduction of mental disorders. Prevention is frequently classified into three levels: primary, secondary, and tertiary. Tertiary prevention is defined as the reduction of an impairment which has resulted from a mental disorder (Caplan, 1964). Since the goal of tertiary prevention is directed towards minimizing the impairment, the
emphasis appears to be on treatment rather than prevention. Secondary prevention is defined as the early recognition of symptoms so that isolated cases may benefit from the most favorable prognosis that early treatment can provide (Muuss, 1960c). The important aspect of secondary prevention is the emphasis on early detection which permits early treatment before the symptoms become inherent and resistant to change. Primary prevention is defined as a mass attack upon and elimination of the possibility of a mental disorder before a symptom ever occurs (Muuss, 1960c). Primary prevention programs are designed to promote mental health in the general public and hence are likely to involve people and disciplines who, in the past, have had only minimal opportunities to become involved in mental health programs.

Prevention programs are not designed to replace existing mental health services but are designed to supplement the ongoing services. The importance of prevention comes to the foreground when the need for long-range planning is emphasized. The majority of mental health services are concerned with meeting immediate demands; whereas, preventive services are directed towards decreasing the genesis or flow of disorders. If the long-range prevention program is successful, the implicit assumption is that the program would reduce to more manageable proportions the demand for treatment services. Logically, a prevention program in conjunction with the more traditional mental health approaches should be much more successful in reducing the frequency of emotional disturbances than the traditional approaches alone.
Certainly the ultimate savings in human misery is more than enough to justify an emphasis on prevention programs. These programs are directed towards protecting the individual from experiencing discomfort while developing his assets and resources.

Whatever the promise of prevention, there do exist limitations to the approach. One limitation is that a prevention approach is basically future oriented and does not respond to the immediate need for mental health services. Also there may exist a reluctance to support prevention programs when there is no immediate payoff. Since these programs are relatively new in the field of mental health they are of unproven quality and must be thoroughly researched. Certainly there will be problems in the establishment of prevention programs; however, the positive aspects of prevention programs justify such an emphasis in the mental health field.

**Approach to Mental Health in the Schools**

As the field of clinical psychology was being developed in the late 1800's, the schools seemed destined to be the hub of mental health programs. In 1896, Lightner Witmer (1907a, 1907b), the "father of clinical psychology," organized the Psychological Clinic and outlined a plan of practical work in psychology. A major aspect of his plan was the intensive involvement of mental health programs in the schools. He encouraged the treatment of all children whose school progress was being disrupted because of mental or physical defects. However, Witmer's influence on subsequent developments in clinical psychology has been surprisingly small.
In contrast to Witmer's minimal influence on the field of clinical psychology, the child guidance movement in the early 1900's had a much more dramatic impact. William Healy was instrumental in the development of this movement (Healy and Bronner, 1948). Healy, a psychiatrist, outlined a plan which emphasized treatment in a clinic or hospital setting and minimized the role of schools in the field of mental health. Healy's approach was directed towards resolving immediate problems and therefore satisfied the demands for services; whereas, Witmer's approach was oriented more towards the future. Hence, in the early 1900's a trend was established in the mental health field which emphasized a treatment approach in a clinical setting. Perhaps if the trend would have followed Witmer's model and emphasized treatment and prevention in a school setting, there would not have existed such a long delay in the establishment of mental health programs in the schools.

As in the entire mental health field, in the schools there is an overwhelming demand for services to meet the adjustment needs of children. Programs oriented towards early identification of emotional disorders in the primary grades report that over one-third of the children were diagnosed as having emotional problems (Cowen, Izzo, Miles, Telschow, Trost and Zax, 1963 and Cowen, Zax, Izzo, and Trost, 1966). Pate (1963) reported that at least 1.5 percent of 10-16 year olds in urban school districts are so socially maladjusted as to need special education. The number of patients under age 15 in state and county mental hospitals increases at the rate of 9.5 percent each year,
and for patients between the ages of 15-24 years, a 5.3 percent increase each year (Patients in State and County Mental Hospitals, 1969).

In the last decade the mental health field and the educational field appear to be joining forces (Babbitt, 1961 and Ulrich, Wolfe, and Bluhm, 1968). Educators have attempted to move beyond their primary concern with subject matter and content and have placed greater emphasis on the need for social and emotional growth. Likewise mental health specialists have moved beyond a preoccupation with mental illness and personality disturbances to an equal concern with mental health. Hence the time appears to be suitable for a focus on prevention approaches in the schools for mental disturbances.

Most of the past and present prevention programs in the schools appear to emphasize a secondary as opposed to a primary prevention program. Secondary prevention programs focus on early identification of emotional problems and prompt referrals for appropriate treatment. However, as was discussed in the preceding section, treatment services appear to be insufficient and sometimes inadequate to handle the referrals. Iscoe and associates (1967, p. 308) comment on the availability and adequacy of mental health services in secondary prevention programs, "Already child guidance centers, the supposed bastions of secondary prevention, are handicapped by long waiting lists which, although testifying to the existing needs, also point to a technological lag in the rendering of effective services. In fact, the general record of success of our traditional approaches in child
guidance clinics is only fair." Clearly then, new strategies are needed if progress is to be made in the prevention of emotional disturbances.

The classroom seldom functions as the province of a primary prevention program, even though, the classroom environment is where children undergo numerous learning experiences which affect their present and future adjustment. The school does not have an active choice to make in regard to whether it has a psychological impact on children. The school does, however, have a choice as to the degree and kind of impact it may have upon the children. Often the psychological impact occurs as a by-product of a purely academic-intellectual program. Sometimes this by-product is detrimental to the children's adjustment as is dramatically documented in the writings of Kozol (1967), Herndon (1968), Kohl (1968), and Holt (1970). If a primary prevention approach to emotional disturbances is implemented in the schools, then the task of the teacher and school is to help children grow in a healthy direction, socially and behaviorally as well as intellectually.

The school environment is an ideal situation for the development of prevention programs for several reasons. It is axiomatic that a prevention program should begin as early as possible in the life of the individual; therefore, it could be initiated in the primary grades. Also, the schools are one of the most influential agencies in the community, perhaps the most influential, since the schools involve all strata of society. The teachers' potential for developing positive growth in mental health is great when compared with other mental health
professionals. The teacher's impact on the child is on an hour-to-hour basis, 6 to 7 hours per day, and 180 days per year; whereas, the mental health professional is with the child for several hours each week over a period of months. It seems evident that schools and teachers can be a tremendous asset to the total mental health effort by playing an active role in a primary prevention program in the schools.

**Primary Prevention of Emotional Disturbances Through Programs in the Schools**

Children in elementary schools have been able to understand mental health concepts as the concepts were taught to them, and appear to have profited from an understanding of these concepts (Ojemann, 1956, 1959, 1964, and 1967; and Roen, 1967a, 1967b, and 1967c). There have been several different approaches to the primary prevention of emotional disturbances by establishing programs in the schools. Biber (1961) advocated an approach which focused on the total school atmosphere. She encouraged the integration of the goals of education and mental health by infusing mental health principles in every school process. Other approaches encouraged the development of a behavioral science curriculum (Roen, 1967c and Spano, 1965). Roen (1965, 1967b) has successfully established an experimental behavioral science curriculum in elementary school programs. The curriculum imparted factual academic subject matter to the students in an effort to enhance social relation skills. Spano (1965) also used a didactic approach to impart behavioral science information to the children. He placed greater
emphasis on the development of certain personality traits, recognized as deterrents to maladjustment, and less emphasis on retaining of formal academic subject matter. Following 20 weekly classes of 50 minutes duration, he found that fourth grade subjects changed in a positive direction in causal thinking, an appreciation of the dynamic, interacting forces operating in human behavior; in democratic behaviors, such as cooperation, friendliness, integrity, leadership, and responsibility; and in critical thinking, the ability to weigh evidence and to deliberate carefully. Further analyses indicated positive relationships between causal thinking and the following variables: democratic behavior, critical thinking, and mental health assets (close personal relationships, interpersonal skills, social participation, satisfying work and recreation, and adequate outlooks and goals). Hence Spano suggested that programs directed at developing causal thinking may positively affect a larger segment of personality.

Ojemann and his associates (1955, 1956, and 1967) at the University of Iowa were responsible for another approach aimed at the prevention of emotional disturbances. Ojemann's work began in the early 1940's and continued with special emphasis on the axiom that behavior is caused. His preventive approach was directed toward the development of a causal orientation in elementary school children. He defined the term causal as follows: "'Causal' is roughly synonymous with 'dynamic,' 'motivational' or 'analytical.' To behave causally is to deal with interpersonal phenomena in a way which takes account of the factors
underlying or causing behavior" (Levitt and Ojemann, 1953, pp. 393-394). The antonym for "causal" could be defined as "surface," an approach to human interaction which ignores behavior dynamics. A causally oriented person is aware of the existence of complex and interacting causes of behavior and is able to suspend judgment of others' behavior until sufficient information is available. A causal orientation enables a person to see things from the viewpoint of others and to be conscious of the fact that one's behavior has an effect on others' behavior. Hence, a person who developed a causal understanding of human behavior should be able to function more successfully in social situations.

Ojemann and his associates restructured the existing curricula of social science, English, mathematics, and other subjects as opposed to the single presentation of a behavioral science course, exemplified by Roen's and Spano's programs. Ojemann's approach necessitated extensive change in existing curricula as well as comprehensive teacher training programs. His success in developing a causal orientation in children appears to have had only limited effect on the present educational processes. Perhaps the program's failure to have had a more widespread effect and greater acceptance resulted from a too elaborate program which demanded extensive changes in the development and presentation of curricular materials.

As early as 1939, Ojemann was investigating the effect of teachers and schools on pupils' adjustment behavior (Ojemann and Wilkenson, 1939). He found that by helping the teachers to better
understand the causes of pupils' behavior, the pupils made significantly greater gains in terms of achievement and attitude towards school and had fewer personal conflicts. More recent studies in which pupils participated in a causal learning program resulted in increased understanding of human behavior. For example, after completion of a causal learning program, fourth, fifth and sixth grade children demonstrated greater understanding of behavior problems which were discussed in a "room council" situation (Stiles, 1950). Children participating in the "room council" appeared to be less punitive and demonstrated an increased concern over understanding the problem behavior being reviewed by the "council." Ojemann and others (1955) also found a reduction in the tendency of fourth, fifth and sixth graders to resort to arbitrary punitive procedures after they were exposed to causal material by a causally oriented teacher. Levitt (1955b) reported that a significant relationship existed between causal orientation and punitiveness. The greater the causal understanding of behavior the less punitive fifth and sixth grade students appeared to be. Muuss (1960a, 1960b and 1961) also found significant changes in pupils as a result of a causal learning program. He matched 25 sixth grade students who participated in a two year causal learning program with 25 control students. The experimental subjects were less punitive, more democratic, and better able to tolerate ambiguity. Muuss (1960b) reported that understanding of the dynamics of behavior increased in proportion to the time spent in the experimental learning program. Bruce (1958)
reported significant changes in sixth grade students' behavior after a two year causal learning program. When compared with control subjects, the students evidenced less anxiety as measured by the Children's Manifest Anxiety Scale and less observed insecurity as measured by the Kooker Security-Insecurity Rating Scale.

Other studies (Snider, 1957 and Muuss, 1960d) investigated the relationship between a causal orientation and insecurity. Snider (1957) found that fourth, fifth, and sixth grade children, who were rated as being insecure, gained as much in causal orientation as those who were rated as being secure. Muuss (1960d) found that high causally oriented subjects were more secure than low causally oriented subjects. Hence, it appears that insecure students can increase their causal orientation, and the greater the causal orientation, the more secure a student becomes. Muuss (1960b) also found that high causally oriented children exhibited less anxiety.

Levitt (1955a) reported significant changes in pupils' behavior as a result of a causally oriented classroom environment. The teachers' fourth, fifth and sixth grade students showed significantly lower authoritarian scores and more willingness to assume responsibility than children in corresponding control classes. Fourth and fifth grade students involved in a causal learning program (Ojemann and Snider, 1963) appeared to recognize many causal factors underlying teacher's behavior. These students demonstrated greater understanding of how the teacher's behavior applied to them and other school personnel. In more
recent studies, Ojemann, Maxey, and Snider (1965a and 1965b) demonstrated that learning experiences in the classroom can help elementary children to develop the ability to think in probability terms. This ability enabled the children to deal more effectively with ambiguous situations and "trial and error" situations. The ability to think in probability terms is considered to be an important attribute of a causal orientation.

The data from the preceding studies suggested that a preventive approach in the schools, which is directed at developing an understanding of behavior, resulted in positive adjustment of the children. Children participating in primary prevention programs were less ready to be arbitrarily punitive, were less authoritarian, showed less manifest anxiety and evidence of insecurity, showed greater tolerance of ambiguity and ability to assume responsibility, and exhibited more democratic behaviors. Overall, these children increased in causal orientation, showing a better understanding of their behavior and the behavior of teachers, peers, and other school personnel.

The preceding reports of positive changes in students' behavior suggested the present study, a primary preventive approach to emotional disturbances and behavior problems. This prevention program is a behavioral science curriculum which is designed to promote adjustment by developing a better understanding of human behavior. In contrast with the majority of studies that were reviewed, the present study does not demand a complete restructuring of the total school
atmosphere. The present study's program, a curriculum in human behavior, is designed to fit easily into the ongoing fourth grade curriculum. Also, the major emphasis of this study's program is directed specifically at the understanding of behavior as opposed to those programs which emphasized the understanding of a general behavioral science curriculum. Put another way, the present study is an attempt to deal directly with those behaviors which appear to be important to the children as opposed to such behavioral science concepts as developmental stages, maturation, and heredity. Also, an effort is made to develop a curriculum which can be easily duplicated in other educational settings with a minimal amount of disruption to the ongoing curriculum and without requiring the teacher to have a degree in the behavioral sciences.

Beyond investigating the effects of teaching children about human behavior, the present study compares two different approaches of teaching children about behavior— an operant approach and a causal approach. These two approaches are based on two very different theoretical orientations. The causal approach is based on the theoretical foundation of psychoanalysis as developed by Freud. Freud based much of his analytic theory on the concept of the unconscious, a reservoir of impulses and repressed wishes which causes people to behave in different ways.

Psychoanalytic theory has had a tremendous influence on present day therapy. Also, its influence on behavioral science content in contemporary education has been important. Analytic therapists have
argued that schools must accept some responsibility for the emotional adjustment of their students (Adler, 1930 and Rank, 1932). Anna Freud's (1931) book, *Psychoanalysis for Teachers and Parents* concerned what should be taught to children about their development. Since 1939 Ojemann and his associates have researched the application of analytic or causal principles in the schools. Ojemann's causal approach is based on the axiom that all behavior is caused. As typified by psychoanalysis, the causal approach looks beyond the overt behavior and considers the motives or causes behind the manifested behavior.

The operant approach is based on operant conditioning principles which developed from the experimental analysis of behavior. J. B. Watson's (1920) work in the 1920's was responsible for the development of behaviorism as a science. He encouraged the study of behavior through observation and measurement rather than through hypothetical constructs of inner processes as occurs in the psychoanalytic study of behavior. Specific principles of behavior were developed through the research of Pavlov (1927) and Thorndike (1911). Thorndike's research contributed greatly to B. F. Skinner's (1953) development of the science of operant conditioning. Operant conditioning is based on the axiom that behavior is a function of its consequences, or more explicitly, the frequency of occurrence of a behavior is modified by its consequences.

Operant conditioning principles have been used extensively in school settings to improve the classroom environment. Manuals have been developed for the application of these principles to the control of
disruptive classroom behaviors (Patterson and Gullion, 1968; Becker, Thomas, and Carnine, 1969; and Buckley and Walker, 1970). Operant principles have been directed towards improving the effectiveness of the teacher (Meacham and Wiesen, 1969). Benson (1969) has provided the teacher with operant methods for modifying deviant social behaviors. Operant studies in the classroom have most often been directed at changing maladaptive behaviors rather than prevention. However, as with the causal principles, the operant principles are directly applicable to prevention programs.

In the present study both the operant and causal approaches are designed to prevent maladaptive behavior from occurring. The basic principles of the two approaches are derived from two historically divergent theoretical orientations: the causal approach emphasizes the importance of understanding the underlying reasons for behavior and minimizes the importance of the overt behavior, while the operant approach directs attention to the consequences of behavior as a necessary condition for understanding the behavior. Hence the operant approach emphasizes the importance of observing the overt behavior and minimizes the need to understand the "inner states" of the organism.

The present study is designed to evaluate specific behavioral changes in classroom adjustment as a result of participation in a behavioral education program. Hence a change is expected in classroom behaviors as is indicated by the following hypotheses:

1. Exposure to and participation in classes designed to increase the understanding of human behavior will effect
positive change in the following behaviors as measured by the Behavior Classification Project:

a. appreciative, concerned, obedient social orientation vs. unappreciative, aggressive disobedience
b. intellectual and scholastic retardation vs. alert socialized scholastic achievement
c. disobedient, sullen, hyperactive aggressiveness
d. fearful, desurgent seclusiveness vs. sociableness

2. Exposure to and participation in classes designed to increase the understanding of human behavior will significantly decrease absenteeism, tardiness, and disruptive school habits and attitudes as judged by the teacher (failing to use self-control, failing to respect school regulations, etc.).

A preventive approach to emotional disturbances should help children to be more successful in learning academic material by improving behavioral adjustment in the classroom and by helping a child to accept greater responsibility for his own behavior. Hence the following hypothesis is stated:

3. Exposure to and participation in classes designed to increase understanding of human behavior will foster significant growth in academic behaviors as measured by the student's grades.

Children who gain an understanding of human behavior should develop...
greater insight into the forces operating in their social environment--the classroom--and this insight should facilitate interaction with their environment. Hence the following hypothesis relating to social and personal adjustment are stated:

4. Exposure to and participation in classes designed to increase understanding of human behavior will foster significant growth in the social impact of the child in the class and changes in self- and peer-perception as measured by A Class Play.

5. Exposure to and participation in classes designed to increase understanding of human behavior will foster significant growth in security as measured by the Institute of Child Study Security Test.

6. Exposure to and participation in classes designed to increase understanding of human behavior will foster significant growth in Personal Adjustment, Social Adjustment, and Total Adjustment as measured by the California Test of Personality.

The effectiveness of the operant and causal approaches should be compared. Hence the final hypothesis is stated as follows:

7. The operant and the causal approach will differentially affect growth in personal and social adjustment, social impact in the classroom, self- and peer-perception, and security, academic achievement, and adaptive school and classroom behaviors.
METHODOLOGY

Subjects

Forty-nine (49) students from two fourth grade classes were randomly assigned to four (4) groups. The boys from each class were randomly assigned to the four groups and then the girls from each class were randomly assigned to the same groups. This procedure of assigning students to groups enabled each group to have an equal number of boys and girls (except the fourth group which had one extra student, a boy) and similar representation of students from each of the two fourth grade classes. The four groups and the number of students assigned to each group were as follows:

1. Experimental Group A (Exp A)--An Operant Group in which children were taught to understand behavior in terms of the consequences of behavior. Twelve (12) students were assigned to this group.

2. Experimental Group B (Exp B)--A Causal Group in which children were taught to understand behavior in terms of the causes that precede the behavior. Twelve (12) students were assigned to this group.

3. Control Group A (Con A)--A Current Events Group in which children discussed recent news releases which had nothing to do with understanding behavior. Twelve (12) students were assigned to this group.
4. Control Group B (Con B)--A No Treatment Group in which there were no changes made in the children's daily program. Thirteen (13) students were assigned to this group.

All of the children assigned to the four groups were attending Rock Springs Elementary School in the Atlanta, Georgia Public School System. The school was judged to be in a "middle to upper" socio-economic level based on a 1968 survey in the Atlanta school system. The survey ranked the Atlanta schools on the following characteristics which were judged to be indicative of socio-economic level:

1. Percent of families with less than $3,000 income
2. Percent of attendance
3. Percent of failures
4. Median fourth grade reading level
5. Mobility rate

Rock Springs Elementary School was ranked 93 out of a total of 121 schools (the higher the ranking implies the higher the socio-economic level).

The principal of the school described the fourth grade children as the most disruptive group in the school, and she and the teachers welcomed the present study's behavioral education approach.

In the past three years, these children had left behind a trail of teachers suffering from battle fatigue. One of their second grade teachers and two of their third grade teachers requested a transfer before the end of the school year. After the second grade teacher
quit in the last month of the school year, five supply teachers were called upon before the school year was completed. Hence a preventive approach to emotional disturbances and behavioral problems in which the children understand their own behavior and the behavior of peers, teachers, and other school personnel appeared to be directly applicable to the present situation in the fourth grades at Rock Springs Elementary School.

Procedure

Because of the complex nature of the experimental procedure the following discussion is divided into five specific areas: dependent variables, experimental and control groups, behavioral science curricula, data collection, and statistical analysis.

Dependent Variables. The children in the experimental and control groups were administered a series of tests during the week prior to the initiation of the experimental program. The tests were administered to each of the two fourth grade classes by an unbiased person who had no knowledge of the individual assignments to the experimental and control groups. The person administering the tests had formal training in testing procedures and was instructed in the method of administering the instruments. After reading each test item, the tester allowed sufficient time for the students to mark the answer. The following instruments were selected to measure changes in the students' behavior:

   **A Class Play** was used to measure changes in children's social impact in the class and changes in self- and peer-perception. Each child selected classmates whom they judged most suitable to play specified roles in a hypothetical class play. Also in another section of the test, each pupil selected roles he would prefer, or roles he thought other people would select for him. The social impact and perceptions of each child were determined according to how frequently he was selected and the type role for which he was selected. The instrument was developed in an experimental program to screen out elementary school children who were the most likely to experience future emotional disturbances because of adjustment problems. In the first edition of the test, 14 of the 15 test items were found to discriminate between emotionally handicapped and non-emotionally handicapped boys. For girls, 10 of the 15 items were found to discriminate. Recently Bower and Lambert further refined **A Class Play** by adding new items, increasing the length of the test to 20 items. The total number of selections for "negative" roles discriminated significantly between an emotionally handicapped group and a "normal" group. Test-retest reliability coefficients for 180 students in the fourth, fifth, and
sixth grades were .88 for the total role selections and .90 for the "negative" role selections. There was a three-week period between administrations of the tests.

2. Institute of Child Study Security Test by Michael F. Grapko (Grapko, 1957).

The Child Study Security Test was administered to determine a child's degree of security and the consistency of his security behavior. The Test defines security as "Willingness to accept consequences for one's decisions or behavior." The child read a story which was interrupted 15 times for him to make a decision by ranking five statements from most likely to least likely to occur. The statements were designed to illustrate different degrees of security--willingness to accept consequences for his decisions or behavior.

Test-retest reliability coefficients over a two month interval was .91 for security scores and .85 for consistency scores. With regard to validity, judges showed good agreement (83% to 87%) with the selection of the items as illustrative of the type of behavior specified. Also, with 98 fourth grade pupils, the security and consistency scores correlated reasonably well with teachers' ratings of pupils' adjustment, .50 and .52 respectively.

The *California Test of Personality* is a questionnaire which measures a number of components of personal and social adjustment. The two principal components, Personal Adjustment and Social Adjustment, are subdivided into the following areas: self-reliance, sense of personal worth, sense of personal freedom, feeling of belonging, withdrawing tendencies, nervous systems, social standards, social skills, anti-social tendencies, family relations, school relations and community relations.

The reliability for the Total Adjustment Score, the Social Adjustment Score, and the Personal Adjustment Score ranged from .92 to .94. With regard to the test's validity, the authors described some 90 studies which indicated the effectiveness of the test in evaluating adjustment.

4. **Behavioral Classification Project** by Ralph M. Dreger (Dreger, 1970).

The teachers completed the *Behavioral Classification Project*, a behavior checklist, by identifying specific behaviors of each child on the following factors:

a. appreciative, concerned, obedient social orientation vs. unappreciative, aggressive disobedience

b. intellectual and scholastic retardation vs. alert
socialized scholastic achievement
c. disobedient, sullen, hyperactive aggressiveness
d. fearful, desurgent seclusiveness vs. sociableness.
These factors yield reliability coefficients of .82, .84, .89, and .76 respectively. The coefficients are based on the average intercorrelations among items for each factor. The preceding factors were selected from a list of 25 factors which were derived (factor analyses of the correlation matrix of the items) from approximately 270 items administered to parents of 341 clinic and non-clinic children. The Behavioral Classification Project differs from other behavior checklists because each item is a specific behavior description as opposed to second-order abstractions about behavior. The instrument originated as an attempt to develop an objective system for evaluating changes in children's behavior as a result of therapy. More recently the direction of the Behavioral Classification Project has been towards the development of a classification system for children's emotional disorders.

5. School and Classroom Behaviors

Data on the students' grades (academic and conduct), absenteeism, tardiness, and disruptive school habits and attitudes were recorded for a three-month period prior to the experimental classes. Follow-up data on the preceding
behaviors were collected for three months beginning at the mid-point of the experimental period and continuing until the end of the academic year.

**Experimental and Control Groups.** The Operant group (Exp A), the Causal group (Exp B), and the Current Events group (Con A) met separately for thirty minute classes on Tuesday and Friday afternoons. The No Treatment group (Con B) did not meet for special classes. Exp A, Exp B, and Con A met for 21 half-hour classes over a 12 week period for a total of 10 1/2 class hours. The beginning times for the three groups were counterbalanced to control for the effect the class meeting time might have on the students' performance. The counterbalancing consisted of rotating the beginning time of each group after a sequence of seven classes.

The regular teachers did not participate in the half hour sessions and did not have access to the material that was presented to the students. The identity and processes of the three groups, Causal, Operant, and Current Events, were not described to the teachers. The teachers were aware of different processes operating in the three groups; however, they seemed to assume that the purpose of the three groups, including the Current Events group, was to help the children understand their behavior. The preceding conditions served as a minimal control for teachers' biases in post-experimental ratings of the children's behavior.

An effort was made to equate the three groups, Exp A, Exp B,
and Con A, as closely as possible on all extraneous variables. Hence, the experimenter taught all three groups and the teaching methodology was as consistent as possible over the groups. The teacher and children in each group sat on the floor in a circle. Group discussion was encouraged by directing questions to the children. Questions were phrased in a very positive, commanding manner; for example, "Give me one cause for Joey's behavior" as opposed to "Would you give me one cause for Joey's behavior?" The questions were repeated if the child failed to respond within a few seconds, and as a last resort he could receive help from another student. Even when the child received help he was still encouraged to respond in some manner to the question. Any exercises such as role playing or homework assignments were repeated in all three groups.

Since the teacher attempted to encourage group discussion, he conditionally accepted all non-disruptive responses and never responded in a manner such as, "No, that is incorrect." Even if the response was incorrect or if it was correct in the orientation of the other group (i.e., a "causal" response in the "operant" group), the student's response was accepted but was followed by more appropriate response. For example, the teacher would respond to the student's incorrect response by saying, "Yes, but what about . . . ."

One basic rule was "spelled out" to enable the three groups to function as smoothly as possible. The rule was that to talk or leave your seat you must be recognized by the teacher. Disruptive behavior
was ignored the first time it occurred. The second time the behavior occurred the student was reprimanded, and only when the behavior became too disruptive for the group to function was the student sent back to his classroom. Also, in the experimental groups the disruptive behavior was discussed according to the orientation of each group. Hence behaviors occurring in a group became material for discussion in both the experimental groups.

As was described in the preceding paragraphs, the general mechanics of the classes remained consistent over the three groups, Exp A, Exp B, and Con A. However, the materials and discussion differed greatly between the experimental groups (Exp A and Exp B) and the control group (Con A). The materials and discussion for Con A centered around current events whereas, the materials and discussion for Exp A and Exp B were about behaviors of fourth grade children.

In regard to the experimental classes (Exp A and Exp B), the materials and the general class mechanics were similar in both groups. However, these two groups differed greatly in how the materials were discussed. The children in each group discussed materials about behavior in a manner compatible with the orientation of their group. Children in the Operant group, Exp A, discussed behavior in terms of its consequences, and children in the Causal group, Exp B, discussed the same or similar behavior in terms of what preceded and caused the behavior. An effort was made to involve each child in both groups with personal behavioral experiences through role playing and class
discussions. Also films about behavior typical of fourth grade children were used to encourage class discussion. An emphasis was placed on "learning through doing." Hence, the curriculum was designed to encourage much involvement in group discussion, role playing and overall participation.

In the two experimental groups the initial classes were concerned with conveying the objectives of the course and the basic principles underlying the group's orientation, Operant or Causal. Both groups were asked to develop a list of behaviors. Children in the Operant group were encouraged to identify specific, observable behaviors, whereas children in the Causal group were encouraged to identify more general behaviors which included the child's feelings. For example, behaviors listed in the Operant group were talking, laughing, and hitting, and behaviors listed in the Causal group were acting bad, feeling happy and being "upset." The children in the Causal group were asked, "Why do people behave in different ways" and the children in the Operant group were asked "What happens when children behave in different ways." In the initial classes of the Current Events group the children were asked to define the term current event and identify specific current events. Also they were asked, "Where do you find information about current events." Following the initial classes, the children in the Current Events group studied numerous news releases. The children gave reports and role played different current events. The children were asked to state what they believed was the most important news item and to give their opinions on the news item.
During the remaining classes the experimental groups discussed behaviors they had observed in the group and in the classroom. In the Causal group the children would identify a behavior and list possible reasons for the behavior occurring. When one of the boys disrupted the group by making a silly comment, the group attempted to discover why he was acting in this manner. Some of the reasons offered by the children were that the boy was anxious, was trying to be a part of the group, or was angry. With the boy's help the group tried to determine the most probable cause. When a similar situation occurred in the Operant group, the children listed the consequences of the boy's behavior. They observed consequences such as the children's laughter, the teacher's angry comment, and the group's discussion of his behavior. Then the members of the Operant group identified what appeared to be the most influential consequence and its effect upon the behavior.

Members of the two groups participated in role playing situations in which the children experimented with different causes or consequences of behavior, depending on whether the children were in the Operant or the Causal group. For example, a child was taken out of the Causal group and told, "You feel hurt because no one would play with you." The child came back into the Causal group and role played his "hurt behavior." The children tried to discover the reason for his behavior and to decide how he could be helped. In the Operant group a child was asked to leave the room and told, "When you come back to the group be ready to tell the group about the past weekend." The
children who remained in the Operant group were told to ignore the child when he came back. Then the group members discussed how the consequence of ignoring changed the child's behavior.

Depending on the orientation of the group, the teacher related the discussions about causes or consequences to behaviors that occurred in the groups or in the classroom. In the Causal group the teacher asked, "Why does Mike tease other children?" Whereas, in the Operant group the teacher asked, "What happens when Mike teases other children?" The children were encouraged to understand the importance of either causes or consequences of behavior, and how they might effectively change behaviors occurring in the group or classroom.

Behavioral Science Curricula--the Independent Variables. On the following pages detailed outlines of the Causal and Operant curricula are given. The planned curriculum for the Causal group was oriented toward helping children understand behavior in terms of what preceded and caused the behavior. The curriculum for the Causal group was as follows:

I. Introduction (Classes 1, 2, and 3)
   A. Provide information on the mechanics of the class
      1. The class schedule
      2. The class structure and rules

1Specific information concerning the Causal curriculum can be obtained from the author, Department of Psychology, Louisiana State University, Baton Rouge, Louisiana 70803.
B. Define behavior science and scientists
   1. Listing behaviors in the groups
   2. Behaving in different ways—role play a stomach ache

C. Discuss course's objective--understanding behavior
   1. Why do people behave in different ways
   2. How will understanding behavior help each of the class members
   3. Discuss the causes of angry and happy behavior—role play

II. Define Causality
   A. Understand behavior as a function of causes (Classes 4, 5, 6, 7, and 8)
      1. Causes precede the behavior
         a. Pinch someone to cause a startle reaction
         b. List causes of different behavior being exhibited in the group
      2. Varying the causes
         a. List possible different causes for particular behaviors (child crying, teacher yelling, etc.)
         b. Role play different ways a certain behavior might be caused (child crying, teacher yelling, etc.)
      3. Determine the most probable cause of a behavior
a. Review causes suggested for behaviors discussed in preceding classes
b. Rank order causes from most to least probable

4. Complex nature of causes
   a. Role play—same cause and different effects
   b. Role play—different causes and same effect

5. Discuss causes of classroom behaviors (out of seat, talking too loud, etc.)
   a. List causes
   b. Suggest probable cause for each behavior

B. A Causal orientation in the classroom (Classes 9, 10, & 11)

1. Behavior in the classroom
   a. Each person report on a behavior which occurred in the classroom
   b. List causes of the behavior
   c. Determine the most probable cause
   d. Effect of the cause on future behavior

2. Obtaining information about causes
   a. Verbal inquiry
      1. Each person identify a behavior in the group
      2. Each person inquire as to why the behavior occurred
   b. Observation
      1. Assign someone to role play a behavior
2. Each person observe the behavior and hypothesize a cause

C. Basic needs of the individual (Classes 12 & 13)

1. List the needs of human beings (food, rest, activity, security, etc.)
2. Discuss how these needs affect behavior
3. Short and long range ways of meeting these needs
4. Pictures about behavior
   a. The need expressed in the pictures
   b. How the need affects behavior

D. Behaviors occurring within the Causal group (Classes 14 & 15)

1. Select two people to observe specific behaviors in the group (talking out, moving out of seat, etc.)
2. Record their behavior and causes for the behavior
3. Can their behavior be changed

E. Behaviors occurring in the classroom (Classes 16, 17 & 18)

1. Film loop--"Flying into a rage"
   a. Discuss why the character in the film loses his temper at school
   b. Discuss ways of changing behavior
      1. Observe the behavior carefully
      2. List possible causes of the behavior
      3. Decide upon the most probable cause
4. Sharing your understanding of the person's behavior and feelings with him

2. Film loop--"Annoying people"
   a. Discuss why the character in the film annoys people
   b. Discuss ways of changing his behavior

3. Assignment--list three behaviors that occur at school
   a. Discuss in the Causal group the possible causes and feelings involved (fight on the playground, hanging onto the teacher, etc.)
   b. Discuss in the Causal group how these causes might affect future behaviors

4. Role play classroom behaviors most frequently referred to in the preceding assignment.
   a. "The Class Pest"--annoying classmates
      1. Discuss the causes of the behavior
      2. Discuss the needs and feelings of people involved (the pest, other children and the teacher)
   b. "The Spelling Bee"--making errors, mistakes and failing
      1. Discuss the causes of the behavior
      2. Discuss the needs and feelings of people involved
F. Solving Behavioral Problems--The Room Council (Classes 19, 20, & 21)

1. Review problem behaviors in the school
   a. Teasing--"Chewing gum in a girl's hair"
   b. Destroying property--Destroying the class's art project
   c. Hanging onto the teacher
   d. Fighting--Two boys fighting a smaller boy
   e. Shyness--Teacher calls on a shy child
   f. Teacher's pet--Always being chosen to help teacher

2. The Room Council--a committee which must make decisions about behavior problems
   a. A student appears before the committee with one of the above problems
   b. The committee discusses the problem and reasons for the behavior
   c. The committee arrives at a solution based on a causal understanding of the behavior

The planned curriculum for the Operant group was oriented toward helping children understand behavior in terms of the consequences of the behavior. The curriculum for the Operant group was as follows:²

²Specific information concerning the Operant curriculum can be obtained from the author, Department of Psychology, Louisiana State University, Baton Rouge, Louisiana 70803.
I. Introduction (Classes 1, 2, and 3)
   A. Provide information on the mechanics of the class
      1. The class schedule
      2. The class structure and rules
   B. Define behavior science and scientists
      1. Listing behaviors in the group
      2. Behaving in different ways--role play a stomach ache
   C. Discuss course's objectives--understanding behavior
      1. What happens when people behave in different ways
      2. How will understanding behavior help each of the class members
      3. Discuss the consequences of angry and happy behavior--role play

II. Define consequences
   A. Understand behavior as a function of its consequences
      (Classes 4, 5, 6, 7, and 8)
      1. Consequences follow the behavior
         a. Pinch someone and observe and discuss the consequences
         b. List consequences of different behaviors being exhibited in the group
      2. Varying the consequences
         a. List possible different consequences for particular behaviors (child crying, teacher yelling, etc.)
b. Role play different consequences for a certain behavior (child crying, teacher yelling, etc.)

3. Determining the consequence of a behavior
   a. Review the consequences of behaviors discussed in the preceding classes
   b. List what appears to be the most important consequence

4. Effect of consequences on behavior
   a. Role play the effects of positive consequences on behavior
   b. Role play the effects of negative consequences on behavior—punishing and ignoring

5. Discuss the consequences of classroom behaviors (out of seat, talking out loud, etc.)
   a. List the consequences
   b. Determine the effects of the consequences
      1. Positive consequences—increase behavior
      2. Negative consequences—decrease behavior

B. An Operant orientation in the classroom (Classes 9, 10 & 11)
   1. Behavior in the classroom
      a. Each person describe a behavior which occurred in the classroom
      b. List consequences of the behavior
      c. Consequences positive or negative
d. Effect of the consequences on future behavior

2. Obtaining information about consequences
   a. Pinpointing behavior
   b. Changing the consequences
   c. Counting the behavior

C. Basic positive and negative consequences of behavior
   (Classes 12 and 13)
   1. List basic positive consequences (food, praise, etc.) and negative consequences (criticism, spanking, etc.)
   2. Discuss how these consequences affect behavior (increase vs. decrease behavior)
   3. Long range vs. short range effect (reinforcement vs. punishment)
   4. Pictures about behavior
      a. The type of consequence occurring in the picture
      b. How the consequence affects behavior

D. Behaviors occurring within the Operant group (Classes 14 & 15)
   1. Select two people to record the frequency of specific behaviors in the group (talking out, moving out of seat, etc.)
   2. Change the consequences of the recorded behavior
   3. Can their behavior be changed
E. Behaviors occurring in the classroom (Classes 15, 17 & 18)

1. Film loop--"Flying into a rage"
   a. Discuss the consequences of the character's behavior in the film
   b. Discuss ways of changing behavior
      1. Observe the behavior carefully
      2. Change the consequences of the behavior
      3. Determine the effect of the new consequences on the behavior

2. Film loop--"Annoying people"
   a. Discuss the consequences of the character's behavior in the film
   b. Discuss ways of changing his behavior

3. Assignment--list three specific behaviors that occur at school
   a. Discuss in the Operant group the consequences of the behavior (fight on playground, hanging onto the teacher, etc.)
   b. Discuss in the Operant group the effect of the consequences

4. Role play classroom behaviors most frequently referred to in the preceding assignment
   a. "The Class Pest"--annoying classmates
1. Discuss the consequences of the behavior
2. Discuss the effect of the consequences on future behavior

b. "The Spelling Bee"—making errors, mistakes, and failing

1. Discuss the consequences of the behavior
2. Discuss the effects of the consequences on future behavior

F. Solving behavioral problems--The Room Council
(Classes 19, 20, and 21)

1. Review problem behaviors in the school
   a. Teasing--"Chewing gum in a girl's hair"
   b. Destroying property--Destroying the class's art project
   c. Hanging onto the teacher
   d. Fighting--Two boys fighting a smaller boy
   e. Shyness--Teacher calls on a shy child
   f. Teacher's pet--Always being chosen to help the teacher

2. The Room Council--a committee which must make decisions about behavior problems
   a. A student appears before the committee with one of the above problems
   b. The committee discusses the problem and the consequences of the behavior

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
c. The committee arrives at a solution based on an Operant understanding of the behavior.

_data collection_. The following tests were administered prior to the experimental program and readministered during the week immediately following the experimental period: _A Class Play_, the _Institute of Child Study Security Test_, and the _California Test of Personality_. The person who administered the pre-tests also administered the post-tests. The teachers completed the _Behavioral Classification Project_ checklist on each child during the week prior to the experimental period and again during the week following the experimental period. Data on the students' School and Classroom Behaviors were collected during two three month periods. The first period was prior to the experimental classes. The second period began at the mid-point of the experimental period and ended approximately six weeks after the completion of the experimental period. Post-test data were collected only on those students who attended at least sixteen of the twenty-one classes. Two students failed to attend the required number of classes. Both students were boys and one was in the Causal group and the other was in the Current Events group.

 Statistical Analysis. Analyses of covariance were used to compare the Operant, Causal, Current Events, and No Treatment groups on the seventeen dependent variables. The covariants were the pre-test scores on the dependent variables, and were used to make adjustments in
post-test scores. By adjusting the post-test scores, a lower experimental error and a more precise comparison occurred among the four groups. Also the experimental error was further reduced by removing variance in post-tests' scores accounted for by two specific factors: sex and classroom environment. The children were selected from two ongoing fourth grade classes, that is to say, two different classroom environments. The four groups were compared on the following variables:

1. Scores on the following four factors of the Behavioral Classification Project behavior checklist:
   a. appreciative, concerned, obedient social orientation vs. unappreciative, aggressive disobedience
   b. intellectual and scholastic retardation vs. alert socialized scholastic achievement
   c. disobedient, sullen, hyperactive aggressiveness
   d. fearful, desurgent seclusiveness vs. sociableness

2. Total number of roles a child was chosen for, percent of negative roles a child was chosen for, and percent of negative roles the child chose for himself in A Class Play.


4. Total adjustment scores on the California Test of Personality and the two principal components of the test, Personal Adjustment and Social Adjustment.
5. Absenteeism--number of days a student was absent over a three month period
6. Tardiness--number of days a student was tardy over a three month period
7. Academic achievement (student grades--A=4, B=3, C=2, D=1, and F=0)--a total score for each student based on letter grades in reading, language, spelling, handwriting, arithmetic, social studies, and science. The grades were based on the student's academic work during a three month period.
8. A conduct grade (A=4, B=3, C=2, D=1, and F=0)--based on the teacher's subjective judgement of a student's behavior over a three month period.
9. School habits and attitudes--a total score for each student based on whether the child was judged by the teacher to need improvement in one or more of the following areas during a three month period: meeting new situations, using self-control, showing consideration for others, accepting responsibilities, showing good sportsmanship, respecting school regulations, respecting property of others, and cooperating in group activities.

Orthogonal comparisons were made among the Operant, Causal, Current Events, and No Treatment groups to determine the following:

1. Were the three groups which met for 21 classes significantly different from the group which did not meet for classes on the preceding dependent variables?
2. Were the experimental groups significantly different from the Current Events group on the dependent variables as defined in the preceding statements?

3. Was the Operant group significantly different from the Causal group on the dependent variables as defined in the preceding statements?

A matrix of the correlations among the dependent variables was derived. The purpose of this matrix was to clarify the relationships among the measures of students' behavior.
RESULTS

The four groups (Operant, Causal, Current Events, and No Treatment) were compared on the seventeen dependent variables. There was a significant difference among the four groups on only one of the seventeen variables, fourth factor (Fearful, Desurgent, Seclusiveness vs. Sociableness) on the Behavioral Classification Project \( p < .05 \), Table 1). Also, the analysis of covariance was effective in removing a significant source of experimental error based on the covariant, pre-test scores.

Since a significant difference was found among the four groups on the fourth factor of the Behavioral Classification Project, further analysis was needed to determine where the difference existed among the groups. The first orthogonal comparison was made between the groups which met for classes (Operant, Causal, and Current Events groups) and the group which did not meet for classes (No Treatment group), and a significant difference was found (Table 2). The children in the groups which met for classes had better scores on the fourth factor (Fearful, Desurgent, Seclusiveness vs. Sociableness) than the children which did not meet for classes (Appendix, Table A). A second orthogonal comparison was made to compare the experimental groups (Operant and Causal groups) with the control group that met for classes (Current Events group) (Table 2). Even though the adjusted mean scores for children in the experimental groups indicated greater Sociableness than the
TABLE 1
ANALYSIS OF COVARIANCE: COMPARISON OF OPERANT, CAUSAL, CURRENT EVENTS AND NO TREATMENT GROUPS ON THE FOURTH FACTOR OF THE BEHAVIORAL CLASSIFICATION PROJECT

<table>
<thead>
<tr>
<th>Source</th>
<th>DF</th>
<th>Mean Squares</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>3</td>
<td>42.36</td>
<td>2.98*</td>
</tr>
<tr>
<td>Sex</td>
<td>1</td>
<td>9.81</td>
<td>.69</td>
</tr>
<tr>
<td>Class Environment</td>
<td>1</td>
<td>11.44</td>
<td>.80</td>
</tr>
<tr>
<td>Sex * Class</td>
<td>1</td>
<td>29.36</td>
<td>2.06</td>
</tr>
<tr>
<td>Covariant</td>
<td>1</td>
<td>490.81</td>
<td>34.52**</td>
</tr>
<tr>
<td>Residual</td>
<td>37</td>
<td>14.21</td>
<td></td>
</tr>
</tbody>
</table>

*p < .05
**p < .01
TABLE 2
ORTHOGONAL COMPARISONS AMONG OPERANT, CAUSAL, CURRENT EVENTS, AND NO TREATMENT GROUPS ON THE FOURTH FACTOR OF THE BEHAVIORAL CLASSIFICATION PROJECT

<table>
<thead>
<tr>
<th>Comparisons</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operant, Causal &amp; Current Events vs. No Treatment</td>
<td>6.65*</td>
</tr>
<tr>
<td>Operant and Causal vs. Current Events</td>
<td>2.59</td>
</tr>
<tr>
<td>Operant vs. Causal</td>
<td>0.14</td>
</tr>
</tbody>
</table>

*p < .05
adjusted mean scores of the children in the Current Events group (Appendix, Table A), the difference is not great enough to be statistically significant. A third orthogonal comparison was made between the Operant group and the Causal group (Table 2). The difference between the adjusted mean scores of the Operant and Causal groups was not significant.

Analyses of covariance were used to compare the Operant, Causal, Current Events, and No Treatment groups on the remaining factors of the Behavioral Classification Project. No significant differences were found among the groups on the three factors:

1. Appreciative, Concerned, Obedient Social Orientation vs. Unappreciative, Aggressive Disobedience
2. Intellectual and Scholastic Retardation vs. Alert, Socialized, Scholastic Achievement
3. Disobedient, Sullen, Hyperactive Aggressiveness

For each of the preceding factors a significant adjustment was made in post-test scores because of biases in pre-test scores, the covariant. The post-tests' adjusted mean scores for the four groups on the preceding factors are presented in the Appendix (Tables B, C, and D).

The California Test of Personality (CTP) measured changes in Personal Adjustment, Social Adjustment, and Total Adjustment. There was no significant difference among the four groups (Operant, Causal, Current Events and No Treatment) on the three adjustment scores of the CTP. The analyses of covariance were effective in reducing variability.
of the data by correcting for pre-test differences among the four groups. The post-tests' adjusted mean scores for the CTP are presented in the Appendix (Tables E, F, and G).

The four groups (Operant, Causal, Current Events, and No Treatment) were also compared on the Security and Consistence scores from the Institute of Child Study Security Test. Again no significant difference was obtained among the four groups, and the analyses of covariance successfully reduced experimental error accounted for by pre-test scores. The post-tests' adjusted mean scores for the Consistency and Security scores are presented in the Appendix (Tables H and I).

The children in the four groups (Operant, Causal, Current Events, and No Treatment) selected their peers and themselves to play hypothetical roles in A Class Play. Changes in social impact of children in the classroom was measured by the following variables: total number of roles a child was chosen for, percent of negative roles a child was chosen for, and percent of negative roles a child chose for himself. No significant difference was found among the four groups on these variables. Again, as in all the preceding analyses, a significant amount of variability in the data was accounted for by pre-test scores, the covariants in the analyses of covariance. The post-tests' adjusted mean scores for the three variables of A Class Play are listed in the Appendix (Tables J, K, and L).

The four groups (Operant, Causal, Current Events and No Treatment) were compared on the following school and classroom behaviors:
absenteeism, tardiness, academic achievement, conduct grade, and school habits and attitudes. Again there was no significant differences among the four groups on the preceding behaviors, and the correction for differences in pre-test scores among the four groups was effective in reducing the variability of the data. The post-tests' adjusted means for the school and classroom behaviors are listed in the Appendix (Tables M, N, O, P, and Q).

The intercorrelations of the post-test scores on the seventeen dependent variables are presented in Table 3 and an index to the variables is presented in Table 4. Significant correlations between the dependent variables are identified by an asterisk ($\alpha = .001$). The unusually small $\alpha$, indicating the probability that an error has occurred when the correlation is said to be significant, was chosen to minimize the incorrect identification of significant correlations. Since correlations were calculated between every possible combination of the seventeen variables, the chances of making errors are much greater than the $\alpha$ level implies. Therefore, the significant level, $\alpha = .001$, should be interpreted with considerable latitude; the probability of correlations being mistakenly identified as significant is greater than .001.

Significant correlations were reported among the scores of the California Test of Personality. The Personal Adjustment score and the Social Adjustment score correlated .93 and .92, respectively, with the Total Adjustment score. The correlation between the Personal Adjustment score and the Social Adjustment score was .72. There also was a
<table>
<thead>
<tr>
<th>Variables</th>
<th>PA</th>
<th>SA</th>
<th>TA</th>
<th>Consistency</th>
<th>Security</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA</td>
<td>0.72*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TA</td>
<td>0.93*</td>
<td>0.92*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consistency</td>
<td>0.35</td>
<td>0.47</td>
<td>0.44</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security</td>
<td>0.31</td>
<td>0.40</td>
<td>0.38</td>
<td>0.84*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F1</td>
<td>0.30</td>
<td>0.40</td>
<td>0.38</td>
<td>0.10</td>
<td>0.02</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F2</td>
<td>-0.38</td>
<td>-0.30</td>
<td>-0.37</td>
<td>-0.07</td>
<td>-0.04</td>
<td>-0.18</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F3</td>
<td>-0.30</td>
<td>-0.21</td>
<td>-0.28</td>
<td>-0.09</td>
<td>-0.12</td>
<td>-0.20</td>
<td>0.72*</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>F4</td>
<td>-0.16</td>
<td>-0.26</td>
<td>-0.23</td>
<td>-0.11</td>
<td>-0.03</td>
<td>-0.52*</td>
<td>0.40</td>
<td>0.33</td>
<td>1.00</td>
</tr>
<tr>
<td>Times Selected</td>
<td>-0.02</td>
<td>-0.14</td>
<td>-0.08</td>
<td>0.03</td>
<td>-0.10</td>
<td>-0.35</td>
<td>-0.07</td>
<td>0.12</td>
<td>0.15</td>
</tr>
<tr>
<td>Neg. Peer</td>
<td>-0.47</td>
<td>-0.43</td>
<td>-0.49</td>
<td>-0.01</td>
<td>-0.09</td>
<td>-0.31</td>
<td>0.52*</td>
<td>0.59*</td>
<td>0.28</td>
</tr>
<tr>
<td>Neg. Self</td>
<td>-0.48</td>
<td>-0.49</td>
<td>-0.53*</td>
<td>-0.23</td>
<td>-0.29</td>
<td>-0.22</td>
<td>0.39</td>
<td>0.41</td>
<td>0.16</td>
</tr>
<tr>
<td>SHA</td>
<td>-0.03</td>
<td>-0.04</td>
<td>-0.03</td>
<td>0.05</td>
<td>0.05</td>
<td>-0.06</td>
<td>0.43</td>
<td>0.66*</td>
<td>0.10</td>
</tr>
<tr>
<td>Academic</td>
<td>0.47</td>
<td>0.45</td>
<td>0.50</td>
<td>0.21</td>
<td>0.14</td>
<td>0.32</td>
<td>-0.82*</td>
<td>-0.66*</td>
<td>-0.50</td>
</tr>
<tr>
<td>Absent</td>
<td>0.22</td>
<td>0.40</td>
<td>0.33</td>
<td>0.18</td>
<td>0.27</td>
<td>0.15</td>
<td>0.02</td>
<td>0.10</td>
<td>0.11</td>
</tr>
<tr>
<td>Tardy</td>
<td>0.01</td>
<td>0.19</td>
<td>0.11</td>
<td>0.06</td>
<td>-0.03</td>
<td>0.09</td>
<td>0.09</td>
<td>0.30</td>
<td>-0.21</td>
</tr>
<tr>
<td>Conduct</td>
<td>0.11</td>
<td>0.19</td>
<td>0.16</td>
<td>0.10</td>
<td>-0.01</td>
<td>-0.45</td>
<td>-0.72*</td>
<td>-0.04</td>
<td></td>
</tr>
</tbody>
</table>

*α = .001
<table>
<thead>
<tr>
<th>Variables</th>
<th>Times Selected</th>
<th>Neg. Peer</th>
<th>Neg. Self</th>
<th>SHA</th>
<th>Academic</th>
<th>Absent</th>
<th>Tardy</th>
<th>Conduct</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consistency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Times Selected</td>
<td>1.00</td>
<td>0.08</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neg. Peer</td>
<td>0.27</td>
<td>0.48</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neg. Self</td>
<td>0.17</td>
<td>0.33</td>
<td>0.31</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHA</td>
<td>0.01</td>
<td>-0.62*</td>
<td>-0.53*</td>
<td>-0.43</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic</td>
<td>-0.12</td>
<td>0.09</td>
<td>-0.14</td>
<td>0.08</td>
<td>0.03</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absent</td>
<td>-0.10</td>
<td>0.24</td>
<td>0.17</td>
<td>0.23</td>
<td>0.05</td>
<td>0.17</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Tardy</td>
<td>-0.08</td>
<td>-0.44</td>
<td>-0.36</td>
<td>-0.81*</td>
<td>0.53*</td>
<td>0.04</td>
<td>-0.23</td>
<td>1.00</td>
</tr>
<tr>
<td>Conduct</td>
<td>-0.08</td>
<td>-0.44</td>
<td>-0.36</td>
<td>-0.81*</td>
<td>0.53*</td>
<td>0.04</td>
<td>-0.23</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* $\alpha = .001$
**TABLE 4**

INDEX OF THE DEPENDENT VARIABLES

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA</td>
<td>Personal Adjustment on California Test of Personality</td>
</tr>
<tr>
<td>SA</td>
<td>Social Adjustment on California Test of Personality</td>
</tr>
<tr>
<td>TA</td>
<td>Total Adjustment on California Test of Personality</td>
</tr>
<tr>
<td>Consistency</td>
<td>Consistence Score on the Institute of Child Study Security Test</td>
</tr>
<tr>
<td>Security</td>
<td>Security Score on the Institute of Child Study Security Test</td>
</tr>
<tr>
<td>F1</td>
<td>First factor of the Behavioral Classification Project, Appreciative, Concerned, Obedient Social Orientation vs Unappreciative, Aggressive Disobedience</td>
</tr>
<tr>
<td>F2</td>
<td>Second factor of the Behavioral Classification Project, Intellectual &amp; Scholastic Retardation vs Alert, Socialized, Scholastic Achievement</td>
</tr>
<tr>
<td>F3</td>
<td>Third factor of the Behavioral Classification Project, Disobedient, Sullen, Hyperactive Aggressiveness</td>
</tr>
<tr>
<td>F4</td>
<td>Fourth factor of the Behavioral Classification Project, Fearful, Desurgent, Seclusiveness vs Sociableness</td>
</tr>
<tr>
<td>Times Selected</td>
<td>Total Number of Roles Child was Selected for in A Class Play</td>
</tr>
<tr>
<td>Neg. Peer</td>
<td>Percent of negative roles a child was chosen for in A Class Play</td>
</tr>
<tr>
<td>Neg. Self</td>
<td>Percent of negative roles a child chose for himself in A Class Play</td>
</tr>
<tr>
<td>SHA</td>
<td>School Habits and Attitudes</td>
</tr>
<tr>
<td>Academic</td>
<td>Academic Achievement</td>
</tr>
<tr>
<td>Absent</td>
<td>Absenteeism at School</td>
</tr>
<tr>
<td>Tardy</td>
<td>Tardiness at School</td>
</tr>
<tr>
<td>Conduct</td>
<td>Conduct Grade</td>
</tr>
</tbody>
</table>
significant negative correlation, -.53, between the Total Adjustment score and the percent of negative roles the children chose for themselves in A Class Play.

The Security and Consistency scores on the Institute of Child Study Security Test did not correlate significantly with any of the other 15 variables. However, there was a significant correlation between the Security score and the Consistency score of .84.

There were only two significant correlations among the four factors of the Behavioral Classification Project (BCP); however, there were several significant correlations between the second and third factors and variables other than the BCP scores. A significant negative correlation, -.52, was reported between the first factor (Appreciative, Concerned, Obedient Social Orientation vs. Unappreciative, Aggressive Disobedience) and the fourth factor (Fearful, Desurgent Seclusiveness vs. Sociableness). The correlation of -.52 indicated that children who had an appreciative, concerned, obedient social orientation were more sociable. Also the second factor (Intellectual and Scholastic Retardation vs. Alert, Socialized Scholastic Achievement) correlated significantly, .72, with the third factor (Disobedient, Sullen, Hyperactive Aggressiveness). The correlation of .72 indicated that children who were intellectually and scholastically retarded were also more disobedient, sullen, hyperactive and aggressive. The second factor (Intellectual and Scholastic Retardation vs. Alert, Socialized Scholastic Achievement) also correlated significantly with the percent of negative roles children were chosen for .52, and the
children's academic achievement, -.82. The intellectually and scholastically retarded child as measured by the BCP was chosen for a greater number of negative roles in A Class Play and received lower academic grades. The third factor (Disobedient, Sullen, Hyperactive Aggressiveness) correlated significantly with the following variables: the percent of negative roles children were chosen for (.59), score on poor school habits and attitudes (.66), children's academic achievement (-.66), and a positive grade on conduct (-.72). The disobedient, sullen, hyperactive aggressive child was more likely to be chosen for negative roles in A Class Play, had poor school habits and attitudes, and had lower academic and conduct grades.

No significant correlations were reported between the total number of roles children were chosen for in A Class Play and the remaining sixteen variables. However, significant negative correlations did occur between remaining factors of A Class Play and the children's academic achievement. A correlation of -.62 occurred between the percent of negative roles children were chosen for and their academic achievement, and a correlation of -.53 occurred between the percent of negative roles children chose for themselves and their academic achievement. As was discussed in the preceding paragraphs, the percent of negative roles children were chosen for also correlated significantly with the second factor of the BCP (Intellectual and Scholastic Retardation vs. Alert, Socialized Scholastic Achievement) and with the third factor of the BCP (Disobedient, Sullen, Hyperactive Aggressiveness).
Also as previously reported, the percent of negative roles children chose for themselves correlated significantly with the Total Adjustment score on the California Test of Personality (-.53).

The significant correlations between the school and classroom behaviors (absenteeism, tardiness, academic achievement, conduct grade, and school habits and attitudes) and the remaining twelve dependent variables have been discussed in the preceding paragraphs. Significant correlations within the five school and classroom behaviors were limited to two: the children's score on school habits and attitudes correlated -.81 with their conduct grade, and the children's academic achievement correlated .53 with their conduct grade. The correlation of -.81 indicated that children who had poor school habits and attitudes did not receive good conduct grades. Based on the correlation of .53, children who received good conduct grades also received good academic grades. Significant correlations were not reported between the children's absenteeism and the other variables and children's tardiness and the other variables.
DISCUSSION

The present study was designed to evaluate the effect of a behavioral education program on the adjustment of fourth grade children. The behavioral education program was basically a behavioral science curriculum which emphasized the importance of understanding human behavior. Data collection on changes in the adjustment of the children varied from general information on mental health assets and liabilities to specific school and classroom behaviors.

Since only one of the seventeen variables was significant, the program was not successful in improving fourth grade pupils' adjustment as measured by the instruments used in this study. On the one significant variable (fourth factor of the BCP, Fearful, Desurgent, Seclusiveness vs. Sociableness) the children in the two experimental groups, Operant group and Causal group, and the children in one of the control groups, Current Events group, obtained more positive scores on this factor than children in the other control group No Treatment group. There were no significant differences between the children in the experimental groups, Operant group and Causal group, and the children in the Current Events group. Hence, it appeared that the increase in sociableness as measured by the BCP was not a result of the behavioral science classes. Perhaps there was an increase in sociableness simply as a result of the experimenter's meeting with the children, since the same experimenter taught the three groups. Also it should be
mentioned that the significant difference could have occurred by chance since only one of the seventeen variables was significant.

The present study did emphasize the importance of controlling variables which might bias the experimental results. For each of the seventeen variables, a significant correction was made in post-test scores because of differences in pre-test scores among the groups. In experiments of this type, a statistic such as the analysis of covariance is necessary to control for initial differences among the subjects which might directly influence the post-test scores, the measure of success of the experiment. Another important technique to control for variables which might contaminate the experimental results was the establishment of a "treatment" control group such as the Current Events group. The children in the Current Events group participated in a program similar to the children in the experimental groups, Operant group and Causal group, except the children in the Current Events group were taught about current events rather than about behavior sciences. The Current Events group was a necessary control for variables which might influence the results of the experiment such as the initiation of a new program and teacher into the ongoing fourth grade curriculum.

In an attempt to place additional controls on extraneous variables the children in all four groups were selected from two classes in the same school. Since all children were from the same school as opposed to each group coming from a different school, they were exposed to the same teachers, principal, and school program. However, this
particular control may have minimized some of the effects of the behavioral science classes. Since the children went to the same school and classes, the children in the behavioral science classes probably shared some of their experiences with their classmates who were in the control groups. Perhaps in future studies distal control groups in other schools should be established.

The intercorrelations of the post-test scores for the seventeen dependent variables indicated that what some of the instruments measured correlated highly with what another instrument measured (Tables 3 & 4). Perhaps several of the instruments were measuring the same characteristics in this sample of fourth grade children. However, it is important to remember that the probability of errors being made in depicting a correlation as being significant is greater than the $\alpha$ level of .001. The $\alpha$ level of .001 loses much of its meaning when correlations are made between every possible combination of the seventeen variables, a total of 136 correlations. Hence, interpretation of the significant correlations must be done with much latitude.

The intercorrelations among the seventeen variables appeared to provide a description of the non-achieving child. Correlations indicated that the child who received lower academic grades was also considered by his teacher to be a behavioral problem. The teacher gave the non-achieving child a lower grade in conduct and ascribed more disobedient, aggressive behaviors to him. Also his peers appeared to place him in a more "negative light" since they chose him to play more
negative roles in A Class Play. The non-achieving student's self-concept seemed to coincide with his peers' judgements, since he chose himself to play more negative roles in A Class Play.

The intercorrelations appeared to indicate that the fourth grade teachers' attitudes and expectations had an important influence on the students' behavior. Many of the dependent variables which were based on the teachers' judgements such as the BCP factors, the academic grades, and the conduct grades correlated highly with the other measures of the students' behavior. Perhaps much of the students' behavior resulted from the teachers' attitudes and expectations.

Based on the number of high correlations among the variables, perhaps some of the variables have provided redundant information. For example the academic achievement score correlated highly with five variables: factor two of the BCP, factor three of the BCP, percentage of negative roles children were chosen for in A Class Play, percentage of negative roles a child chose for himself in A Class Play, and children's conduct grades. Also the conduct grade score correlated highly with factor three of the BCP, a score on school habits and attitudes, and an academic achievement score. Perhaps the academic achievement score and the conduct score would not be needed as variables in future research which included the variables with which they correlated.

Factor three of the BCP also appeared to provide some redundant information since it not only correlated highly with the two preceding factors, academic achievement and conduct grade scores, but also
correlated highly with the following variables: factor two of the BCP, percentage of negative roles a child was chosen for in *A Class Play*, and a score on school habits and attitudes.

Minimal correlations were reported among some of the variables. Perhaps those variables for which low intercorrelations were listed in Table 3 have provided specific information on the children which was not measured by the remaining variables. The variables which correlated least with the other variables were attendance, tardiness, and times selected to participate in *A Class Play*. Perhaps the absence of correlations indicated that the teachers' attitudes could not influence these variables. Also the first and fourth factors of the BCP and the Security and Consistency scores of the Institute of Child Study *Security Test* correlated minimally with the remaining variables.

Even though there was a significant difference among the four groups on only one of the seventeen variables, factor IV of the Behavioral Classification Project, it is informative to compare rankings of the four groups.

In Table 5 the four groups (Causal, Operant, Current Events, and No Treatment groups) were ranked according to the average amount of positive change on each of the seventeen dependent variables. On the instruments which appear to be measuring the most stable individual traits, the *California Test of Personality* (CTP) and the Institute of Child Study *Security Test*, there existed no particular trend in the rankings. However, on the Behavioral Classification Project (BCP), A
<table>
<thead>
<tr>
<th></th>
<th>CTP</th>
<th>Security Test</th>
<th>BCP</th>
<th>A CLASS PLAY</th>
<th>School and Class Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Personal</td>
<td>Social</td>
<td>Total</td>
<td>Consistency</td>
<td>Security</td>
</tr>
<tr>
<td>Causal</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Operant</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Current Events</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>No Treatment</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Note.—The rankings are based on adjusted mean scores which were rounded to the nearest tenth. A rank of 1 indicates the greatest amount of positive change while a rank of 4 indicates the least amount of change.
Class Play, and the School and Classroom Behaviors there appeared to exist a trend in the rankings which favored the experimental groups, Operant and Causal groups. For example, on factor I and IV from the BCP, on the percent of negative roles chosen by self and percent of negative roles chosen by peers from A Class Play, and on school attitude and absenteeism from the School and Classroom Behaviors, the experimental groups were ranked 1 and 2 (greater positive change) and the control groups were ranked 3 and 4 (less positive change). On the BCP, A Class Play, and the School and Classroom Behaviors the experimental groups received a rank of 1 or 2 exactly 18 times from a possible 24 times; the control groups received a unique rank of 1 or 2 exactly 6 times of a possible 24 times. Even though the difference among the four groups was not great enough to be significant, perhaps these rankings indicate behaviors which are most likely to be positively effected by future research similar to the present study.

The instructor was pleased with the development of the behavioral science classes, insofar as the active participation of the children appeared to indicate an involvement with the curricular materials and an understanding of the basic concepts of behavior, whether operant or causal principles were stressed. The children in both the Operant and Causal groups frequently expressed a desire to extend the class time, whereas the children in the Current Events group appeared to be much less enthusiastic. On several occasions children in the Current Events group chose to remain in their classroom rather than
come to the group; such a refusal to attend the behavioral science classes never occurred in the Operant or Causal groups. Perhaps since the behavioral science materials concerned things which were relevant to the fourth graders, they became more involved in the curriculum. Materials concerning the students' behavior might be used in other subject areas to help motivate and increase the students' involvement.

Children in both experimental groups became able to intellectualize about their behavior and the behavior of their peers, and they successfully solved simulated conflict situations. During classes 9, 10, and 11, the children in the Operant and Causal groups discussed behaviors occurring in the classroom. Two disruptive behaviors which were reported in both groups were: a child climbed out a classroom window and a child came late to school. In each example the children were able to list causes or consequences of the behaviors depending on the orientation of their group. After identifying a particular consequence, such as attention from the other children in the class, or a particular cause, such as feeling lonely or not a part of the group, the children discussed how these disruptive behaviors could be changed. Also, the behavior problems which occurred in the groups were successfully handled in most cases by the students and experimenter using principles governed by the orientation of each group. During classes 14 and 15, behaviors which had occurred in the group such as "talking out" were discussed. The children participated in experiments to change such behaviors as "talking out." However, the understanding.
exhibited by the students in the groups evidently did not generalize to situations outside of the group or was not great enough to change the behaviors that were measured by the seventeen variables. Perhaps the instruments used to collect the data on the students' behavior were not sensitive enough to measure changes in their behavior.

In future research of this nature, classroom observation and recordings of specific behaviors should be used to measure changes in the students. Another aspect of the present study that must be considered in future research is whether or not the frequency and length of the behavioral science classes were optimal. Maybe too much was expected in too short a time since the classes met only twice weekly for 21 half hour sessions. This class schedule was a poor approximation of an average elementary class during the school year. Perhaps with a refinement of instruments and a closer approximation to a regular class, a significant change in fourth grade students' behavior could be recorded.
SUMMARY

The present study was a primary preventive approach to adjustment problems of fourth grade children. The approach entailed a behavioral science curriculum designed to help fourth grade children to better understand human behavior, particularly their own. By developing a better understanding of human behavior it was hypothesized that the children would show generalized positive changes in their behavior as measured by the following variables.

1. The number of times a child was chosen to play roles in A Class Play.
2. The percentage of negative roles he is chosen for in A Class Play.
3. The percentage of negative roles he chose for himself in A Class Play.
6. A Personal Adjustment score as measured by the California Test of Personality.
7. A Social Adjustment score as measured by the California Test of Personality.
8. A Total Adjustment score as measured by the California Test of Personality.

9. The first factor of the Behavioral Classification Project; Appreciative, Concerned, Obedient Social Orientation vs. Unappreciative, Aggressive Disobedience.

10. The second factor of the Behavioral Classification Project; Intellectual and Scholastic Retardation vs. Alert, Socialized Scholastic Achievement.

11. The third factor of the Behavioral Classification Project; Disobedient, Sullen, Hyperactive Aggressiveness

12. The fourth factor of the Behavioral Classification Project; Fearful, Desurgent Seclusiveness vs. Sociableness

13. A score on School Habits and Attitudes

14. A score on the Academic Achievement based on the student's grades.

15. Days absent at school

16. Days tardy at school

17. A Conduct Grade

Data on the preceding variables were also used to compare two different approaches of teaching children about their behavior—an Operant approach and a Causal approach. The Operant approach was designed to help children understand behavior in terms of its consequences. The Causal approach was designed to help children understand behavior in terms of the underlying causes which preceded the behavior.
Forty-nine fourth grade students were randomly assigned to four groups:

1. An Operant group—a behavioral science curriculum based on operant principles was presented to the students.

2. A Causal group—a behavioral science curriculum based on causal principles was presented to the students.

3. A Current Events group—a current events curriculum was presented to the students. The Current Events group differed from the Operant and Causal groups only in the content of the curriculum.

4. A No Treatment group—the students in this group continued in their daily programs without any innovations.

The Operant group, the Causal group, and the Current Events group met separately for 21 half hour classes. The general mechanics of the classes remained consistent over the three groups; however, the materials and discussion differed greatly between the experimental groups, Operant group and Causal group, and the Current Events group. The behavioral science materials presented in the two experimental groups were similar; however, the two groups differed greatly in how the materials were discussed. That is to say, children in the Operant group discussed behavior in terms of its consequences, and children in the Causal group discussed the same or similar behaviors in terms of its causes.

Pre-test and post-test data were collected on the preceding
seventeen variables. Analyses of covariance were used to compare the four groups on post-test scores on each variable. The pre-test scores were the covariants in the analyses. Further comparisons were made among the four groups with orthogonal comparisons. There was a significant difference among the four groups on only one of the seventeen variables. The significant variable was the fourth factor of the Behavioral Classification Project Fearful, Desurgent Seclusiveness vs. Sociableness. The children in the Operant, Causal and Current Events groups were more sociable than the children in the No Treatment group. However, there was not a significant difference between the experimental groups and the Current Events group. Hence, the behavioral science classes did not appear to be responsible for the change on this factor. Though the responses of the children in the Operant and Causal classes appeared to indicate a good understanding of the behavior principles being taught, the dependent variables did not indicate a change in the children's adjustment.
REFERENCES


Levitt, E. E. Effect of a causal teacher-training program on authoritarianism and responsibility in grade school children. *Psychological Reports*, 1955, 1, 449-458. (a)
Levitt, E. E. Punitiveness and "causality" in grade school children. *Journal of Educational Psychology*, 1955, 46, 494-498. (b)


Muuss, R. E. A Comparison of "high causality" and "low causality" oriented sixth grade children in respect to a perceptual "Intolerance of Ambiguity Test." *Child Development*, 1960, 31, 521-536. (a)


Muuss, R. E. Mental health implications of a preventive psychiatry program in the light of research findings. *Marriage and Family Living*, 1960, 22, 150-156. (c)


Ojemann, R. H. *Developing a program for education in human behavior*. Iowa City: State University of Iowa, 1959.


Roen, S. R. Teaching the behavioral sciences in the elementary grades. *Journal of School Psychology*, 1967, 5, 205-216. (c)


(a)

Witmer, L. The hospital school. *Psychological Clinic*, 1907, 1, 138-146. (b)
# TABLE A

**ADJUSTED MEANS ON THE FOURTH FACTOR OF THE BEHAVIORAL CLASSIFICATION PROJECT**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Adjusted* Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operant</td>
<td>-5.1</td>
</tr>
<tr>
<td>Causal</td>
<td>-4.5</td>
</tr>
<tr>
<td>Current Events</td>
<td>-2.8</td>
</tr>
<tr>
<td>No Treatment</td>
<td>-0.7</td>
</tr>
</tbody>
</table>

* The larger negative scores indicate greater sociableness.
TABLE B

ADJUSTED MEANS ON THE FIRST FACTOR OF THE

BEHAVIORAL CLASSIFICATION PROJECT

<table>
<thead>
<tr>
<th>Groups</th>
<th>Adjusted* Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operant</td>
<td>48.3</td>
</tr>
<tr>
<td>Causal</td>
<td>49.0</td>
</tr>
<tr>
<td>Current Events</td>
<td>39.8</td>
</tr>
<tr>
<td>No Treatment</td>
<td>44.3</td>
</tr>
</tbody>
</table>

* The larger scores are in the direction of appreciative, concerned, obedient social orientation
### TABLE C

**ADJUSTED MEANS ON THE SECOND FACTOR OF THE BEHAVIORAL CLASSIFICATION PROJECT**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Adjusted* Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operant</td>
<td>-5.2</td>
</tr>
<tr>
<td>Causal</td>
<td>-7.9</td>
</tr>
<tr>
<td>Current Events</td>
<td>-5.1</td>
</tr>
<tr>
<td>No Treatment</td>
<td>-7.8</td>
</tr>
</tbody>
</table>

*The larger negative scores are in the direction of alert, socialized, scholastic achievement.*
### TABLE D

ADJUSTED MEANS ON THE THIRD FACTOR OF THE

BEHAVIORAL CLASSIFICATION PROJECT

<table>
<thead>
<tr>
<th>Groups</th>
<th>Adjusted Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operant</td>
<td>21.7</td>
</tr>
<tr>
<td>Causal</td>
<td>29.1</td>
</tr>
<tr>
<td>Current Events</td>
<td>24.6</td>
</tr>
<tr>
<td>No Treatment</td>
<td>19.4</td>
</tr>
<tr>
<td>Groups</td>
<td>Adjusted Means</td>
</tr>
<tr>
<td>-------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Operant</td>
<td>50.1</td>
</tr>
<tr>
<td>Causal</td>
<td>45.5</td>
</tr>
<tr>
<td>Current Events</td>
<td>52.9</td>
</tr>
<tr>
<td>No Treatment</td>
<td>47.3</td>
</tr>
</tbody>
</table>
TABLE F
ADJUSTED MEANS FOR CTP'S SOCIAL
ADJUSTMENT SCORE

<table>
<thead>
<tr>
<th>Groups</th>
<th>Adjusted Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operant</td>
<td>50.4</td>
</tr>
<tr>
<td>Causal</td>
<td>50.6</td>
</tr>
<tr>
<td>Current Events</td>
<td>51.3</td>
</tr>
<tr>
<td>No Treatment</td>
<td>51.2</td>
</tr>
</tbody>
</table>
TABLE G

ADJUSTED MEANS FOR CTP'S TOTAL
ADJUSTMENT SCORE

<table>
<thead>
<tr>
<th>Groups</th>
<th>Adjusted Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operant</td>
<td>100.4</td>
</tr>
<tr>
<td>Causal</td>
<td>96.0</td>
</tr>
<tr>
<td>Current Events</td>
<td>104.1</td>
</tr>
<tr>
<td>No Treatment</td>
<td>98.6</td>
</tr>
</tbody>
</table>
### TABLE H

ADJUSTED MEANS FOR THE CONSISTENCY SCORE OF THE

INSTITUTE OF CHILD STUDY SECURITY TEST

<table>
<thead>
<tr>
<th>Groups</th>
<th>Adjusted Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operant</td>
<td>28.3</td>
</tr>
<tr>
<td>Causal</td>
<td>32.9</td>
</tr>
<tr>
<td>Current Events</td>
<td>35.2</td>
</tr>
<tr>
<td>No Treatment</td>
<td>30.0</td>
</tr>
</tbody>
</table>
TABLE I
ADJUSTED MEANS FOR THE SECURITY SCORE OF THE
INSTITUTE OF CHILD STUDY SECURITY TEST

<table>
<thead>
<tr>
<th>Groups</th>
<th>Adjusted Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operant</td>
<td>70.5</td>
</tr>
<tr>
<td>Causal</td>
<td>67.7</td>
</tr>
<tr>
<td>Current Events</td>
<td>71.5</td>
</tr>
<tr>
<td>No Treatment</td>
<td>70.1</td>
</tr>
</tbody>
</table>
TABLE J
ADJUSTED MEANS FOR THE NUMBER OF ROLES
A CHILD WAS CHOSEN FOR IN A CLASS PLAY

<table>
<thead>
<tr>
<th>Groups</th>
<th>Adjusted Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operant</td>
<td>22.2</td>
</tr>
<tr>
<td>Causal</td>
<td>17.7</td>
</tr>
<tr>
<td>Current Events</td>
<td>21.8</td>
</tr>
<tr>
<td>No Treatment</td>
<td>18.6</td>
</tr>
</tbody>
</table>

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
TABLE K

ADJUSTED MEANS FOR THE PERCENT OF NEGATIVE ROLES

A CHILD WAS CHOSEN FOR IN A CLASS PLAY

<table>
<thead>
<tr>
<th>Groups</th>
<th>Adjusted Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operant</td>
<td>38.1</td>
</tr>
<tr>
<td>Causal</td>
<td>46.8</td>
</tr>
<tr>
<td>Current Events</td>
<td>54.1</td>
</tr>
<tr>
<td>No Treatment</td>
<td>54.7</td>
</tr>
</tbody>
</table>
**TABLE L**

**ADJUSTED MEANS FOR THE PERCENT OF NEGATIVE ROLES A CHILD CHOSE FOR HIMSELF IN A CLASS PLAY**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Adjusted Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operant</td>
<td>24.2</td>
</tr>
<tr>
<td>Causal</td>
<td>25.7</td>
</tr>
<tr>
<td>Current Events</td>
<td>30.3</td>
</tr>
<tr>
<td>No Treatment</td>
<td>30.0</td>
</tr>
</tbody>
</table>
### TABLE M

**ADJUSTED MEANS FOR THE NUMBER OF DAYS ABSENT**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Adjusted Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operant</td>
<td>3.2</td>
</tr>
<tr>
<td>Causal</td>
<td>2.6</td>
</tr>
<tr>
<td>Current Events</td>
<td>3.6</td>
</tr>
<tr>
<td>No Treatment</td>
<td>3.5</td>
</tr>
</tbody>
</table>
### TABLE N

**ADJUSTED MEANS FOR THE**  
**NUMBER OF DAYS TARDY**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Adjusted Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operant</td>
<td>.2</td>
</tr>
<tr>
<td>Causal</td>
<td>.5</td>
</tr>
<tr>
<td>Current Events</td>
<td>1.0</td>
</tr>
<tr>
<td>No Treatment</td>
<td>.5</td>
</tr>
</tbody>
</table>
### TABLE 0
ADJUSTED MEANS FOR THE ACADEMIC ACHIEVEMENT SCORE

<table>
<thead>
<tr>
<th>Groups</th>
<th>Adjusted* Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operant</td>
<td>20.9</td>
</tr>
<tr>
<td>Causal</td>
<td>22.1</td>
</tr>
<tr>
<td>Current Events</td>
<td>20.1</td>
</tr>
<tr>
<td>No Treatment</td>
<td>21.2</td>
</tr>
</tbody>
</table>

* Larger scores indicate greater achievement
**TABLE P**

**ADJUSTED MEANS FOR A CONDUCT GRADE**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Adjusted* Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operant</td>
<td>2.9</td>
</tr>
<tr>
<td>Causal</td>
<td>2.9</td>
</tr>
<tr>
<td>Current Events</td>
<td>2.9</td>
</tr>
<tr>
<td>No Treatment</td>
<td>3.0</td>
</tr>
</tbody>
</table>

*Larger scores indicate better conduct*
### TABLE Q

ADJUSTED MEANS FOR A SCORE ON SCHOOL HABITS AND ATTITUDES

<table>
<thead>
<tr>
<th>Groups</th>
<th>Adjusted* Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operant</td>
<td>.7</td>
</tr>
<tr>
<td>Causal</td>
<td>.7</td>
</tr>
<tr>
<td>Current Events</td>
<td>1.8</td>
</tr>
<tr>
<td>No Treatment</td>
<td>1.2</td>
</tr>
</tbody>
</table>

* Lower scores indicate better habits and attitudes
VITA

John Robert Kagey was born in Dayton, Virginia on April 22, 1944. He attended the public schools in Dayton, graduating from Turner Ashby High School in June, 1962. The following September, he entered Randolph-Macon College, Ashland, Virginia, and in June, 1966, he received a Bachelor of Science degree with a major in mathematics. In September, 1966 Mr. Kagey enrolled in the Department of Psychology's graduate program at Louisiana State University, Baton Rouge, Louisiana. After completion of three years of graduate work, he began a one year, clinical internship at Georgia Mental Health Institute, Atlanta, Georgia. In September, 1970, Mr. Kagey completed his internship and accepted a position as a Research Assistant with the Atlanta Public School System. After one year with the Atlanta School System, he returned to Louisiana State University in September, 1971 to complete his academic requirements in the Department of Psychology's Doctor of Philosophy program.
Candidate: John Robert Kagey

Major Field: Psychology

Title of Dissertation: The Adjustment of Fourth Grade Children: A Primary Prevention Approach in Behavioral Education

Approved:

Major Professor and Chairman

Dean of the Graduate School

EXAMINING COMMITTEE:

Date of Examination:

November 2, 1971