CHANGES IN STUDENT-TEACHER PERCEPTIONS
FOLLOWING A RESIDENTIAL OUTDOOR PROGRAM

by

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ABSTRACT

Positive changes in student-teacher relationships have long been postulated to be one of the desirable outcomes of Residential Outdoor Programs. This study examines changes of students' perceptions of their teachers as well as changes in teachers' perceptions of individual student personalities and interpersonal relationships within their classes following a Residential Outdoor Program.

A detailed description of the actual Residential Outdoor Program examined in the study is presented. The program was evaluated in terms of predefined criteria for conducting a program effecting positive student-teacher relationships. The Program was judged to have met these criteria.

Using pre-program and post-program scores from the Teacher Pupil Relationship Inventory, students participating in a Residential Outdoor Program were found to have changed their perceptions of their teachers in a positive direction when compared to students who had not participated in such a program.

Teachers participating in the Residential Outdoor Program provided the information required for Bales Interaction Process Analysis. Using this information, the teachers were found to have changed their perceptions of some individual student personalities following the Residential Outdoor Program. Although no commonalities were found in these perception changes, the individual perception shifts were documented and interpreted.

Following the Residential Outdoor Program, it was inferred
that the teachers perceived the interpersonal relationships within the classes to be more unified than had been the case prior to the Residential Outdoor Program. Isolated individuals and groups within the classes were perceived to have been drawn into the main relationship networks of the classes following the Residential Outdoor Program.

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Dr. Walter B. Boldt
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CHAPTER I
THE PROBLEM IN ITS SETTING

General Problem

The general problem investigated in this study is the change in teacher-student and student-teacher relationships presumed to take place among intermediate grade subjects in a residential outdoor education program. More specifically, the study is primarily concerned with the changes in students' perceptions of their relationship with the teacher, and changes in teacher perceptions of individual student personalities and the interpersonal relationships within the class. Factors possibly contributing to these changes are examined.

Residential Outdoor Programs are educational programs conducted at rural or semi-rural sites where students and teachers live together in a communal situation away from the students' normal residences for a period of time of at least three days. In the literature and in practice these sites are referred to as "outdoor schools", "school camps", "residential outdoor centres", "wilderness education centres" and the like. The program is everything that happens at the site: "the planned and unplanned; the organized and unorganized; the tangible and intangible; informal as well as formal" (Kreiger, 1970, p.36).

Intermediate Grades consist of grades 4 to 7 inclusive. They include students generally between the ages of 9 and 13 years.
Historical Context of the Problem

The first formal venture of public schools into the domain of camping, and thus into residential outdoor programs, appears to have occurred in 1919 when Camp Roosevelt was established by the Chicago Public School System (Gibson, 1946). This camp, and others that soon followed, was designed on the traditions of previous private and social agency camps. The skills of wilderness living and improvement of health, which were the foundations of camps beginning with the Round Hill Camp established by George Bancroft and Joseph Cogswell in 1823 (Mand, no date), were the objectives of the new school camps or residential outdoor programs. The participants were expected to "learn standards of clean living, discover high ideals, match wits with the elements and learn to take care of themselves" (Miller, 1936, p.471).

With the approach of the 1930's, residential outdoor programs included the development of social skills. Germany appeared to be a leader in the field (Curtis, 1936), but American camps, too, began to function increasingly as social laboratories. The former purposes of developing health, morality and wilderness survival skills, were not abandoned, but emphasis shifted to "social adjustment *(live together successfully, happily and harmoniously) and personality growth (emotional stability and maturity) " (Sharman et al., 1938, p.115).

During the 1940's and early 1950's the goals of "conservation education" were added to all the prior aims of residential outdoor programs and became a major goal. The leader in this field, and the model that many emerging camps followed,
was the Clear Lake Camp near Battle Creek, Michigan (Elliot and Smith, 1974). This was the beginning of an era in which the objectives of residential outdoor programs included learnings in subject matter areas of the schools, most particularly in the field of science, along with the previous health, personality, moral and social development goals.

The decade 1955-65 saw the development of residential outdoor centres as "laboratories for learning" (Smith, 1966). As stated by Freeburg: "In the larger outdoor classroom educators have found a unique teaching medium for revitalizing school curriculum. They are using first-hand experience to augment verbal classroom learning" (Freeburg, 1961, p.14). "The medium of Outdoor Education...gives a meaning to content and thereby makes subject matter more interesting, manageable, challenging and applicable for many members of the class" (Brown, 1961, p.3). Thus, the residential outdoor program developed into an extension of the traditional school curriculum. Despite the fact that all areas of the curriculum were encompassed by these residential outdoor programs, science continued to be the dominant subject area.

The period from 1965 to the present has seen a more specific focus of residential outdoor programs on aspects of science in the areas of ecological and environmental studies. Residential outdoor centres began to act on the principle that "outdoor education connotes instruction about the natural environment through direct and immediate experience, usually with emphasis on conservation and ecology" (Herbert, 1966, p.71). This shift in focus is probably due, in large part, to
the "increasing concern and attention now being given to environmental quality" (Smith, 1970, p.4). With this shift, certain areas of science became even more predominant as the focal school subject for residential outdoor centres.

In British Columbia today it would appear that residential outdoor programs are primarily designed to achieve ecological and conservation objectives, while the original health, moral, personal, survival and social skills objectives are subordinate (Woodward, 1973). In one study, practicing outdoor teachers listed "ways of making students aware of the impact of humans on their environment" and "ways of helping students understand the need to conserve the natural environment" as the two most important components of an outdoor education teacher training program, while "facilitating social interaction among students" ranked tenth on the same list (Tufuor, 1978). However, a comprehensive study of outdoor programs in British Columbia conducted in 1975 showed that most residential outdoor programs still place a considerable emphasis on the development of personality and interpersonal behavior (Bateson & Worthing, 1976). A nationwide survey conducted in 1972 summarized the eight most common important goals of operating outdoor programs. Included in the list is the statement that residential outdoor programs can "help pupils to develop a better understanding of themselves, their teacher and their total education" (Passmore, 1972, p.14).

It seems reasonably clear that, despite the shifting tide of focal goals which have occurred during the evolution of residential outdoor programs, personality and interpersonal
behavior goals continue to pervade the programs. If one examines the specific objectives based on these goals one finds that one of the most predominant objectives is to improve the relationship between student and teacher. Typical objectives of this type are:

To promote the development of social relations and individual responsibility through group living experiences, particularly in residential outdoor education, where there are unique opportunities for student-teacher planning and participation in the camp community (Smith et al., 1972, p.31).

Good rapport is established between the teacher and the pupil - one that makes guidance more functional. Teachers gain new perceptions and knowledge of individual pupils (Smith, 1957, p.7).

The situations which occur outdoors allow for social interaction between students, and between teacher and students in real life situations. With this comes a greater appreciation of others (Ontario Teachers' Federation, 1970, p.4).

In the outdoor school activities the teacher is in a better position to establish genuine rapport with participating students (Major & Cissel, 1971, p.4).

The citations in the literature make it evident that the development of teacher-student and student-teacher perceptions and relationships is an important and pervasive objective and postulated outcome of residential outdoor programs.

Theoretical Context of the Problem

A psychological model which is useful for understanding individuals' psychological characteristics and interpersonal behaviors in groups has been developed by Bales (1970). Bales postulates a:

Three dimensional spatial model which may be used to visualize and describe the positions of participants in a group and to infer what their relations are likely to be (Bales, 1970, p.vi).
The axes of the model are labeled "up-down", "positive-negative" and "forward-backward". At this point, these labels are simply used for directional convenience. The dimensions can, however, be psychologically interpreted once individuals have been located within the space.

The model identifies 26 key intersection points plus the origin as shown in Fig. 1.1. These points are associated with certain personality traits presumed to characterize individuals located at, or in the proximity of, these points or associated with vectors directed towards these points.

Bales states that individuals lying on or near the vectors directed from the origin to the intersection points show personality characteristics that are moving as follows:

- **U**: Toward material success and power
- **UP**: Toward social success
- **UPF**: Toward social solidarity and progress
- **UF**: Toward group loyalty and cooperation
- **UNF**: Toward autocratic authority
- **UN**: Toward tough-minded assertiveness
- **UNB**: Toward rugged individualism and gratification
- **UB**: Toward value-relativism and expression
- **UPB**: Toward emotional supportiveness and warmth
- **P**: Toward equalitarianism
- **PF**: Toward altruistic love
- **F**: Toward conservative group beliefs
- **NF**: Toward value-determined restraint
- **N**: Toward individualistic isolationism
- **NB**: Toward rejection of social conformity
- **B**: Toward rejection of conservative group belief
- **PB**: Toward permissive liberalism
- **DP**: Toward trust in the goodness of others
- **DPF**: Toward salvation through love
- **DF**: Toward self-knowledge and subjectivity
- **DNF**: Toward self-sacrifice for values
- **DN**: Toward rejection of social success
- **DNB**: Toward failure and withdrawal
- **DB**: Toward withholding of cooperation
- **DPB**: Toward identification with the underprivileged
- **D**: Toward devaluation of the self
- **Avg**: (origin) Towards a balanced average in all directions.
Figure 1.1: Three Dimensional Spatial Model of Bales.
This typology of personality traits is based on extensive factor analyses of scores obtained using a specially developed instrument, Interaction Process Analysis (IPA), and several other psychological instruments such as: The Minnesota Multiphasic Personality Inventory (Hathaway & McKinley, 1951) and The Sixteen Personality Factor Questionnaire (Cattell et al., 1951). Also included in the factor analysis was information on overt behavior of individuals in groups and value statements by individuals before, during, and after group interaction. A more detailed description of these traits is given in Personality and Interpersonal Behavior (Bales, 1970).

Bales goes on to use the positions of individuals in the three dimensional space, and proximity measures between individuals, to:

1. Obtain a conception of the most probable coalitions among subgroups of members;
2. Locate potential leaders and strategically-placed persons in these coalitions;
3. Locate probable isolates;
4. Form estimates of the likelihood that the coalitions will link up with each other to form more powerful subgroups;
5. Locate who are the strategically-placed persons to make these linkages;
and so on for many similar problems (Bales, 1970, p.34).

Bales argues that individuals within this space have:

A strong pervasive tendency to direct their communication upward, as if they were seeking status for their ideas and values, if not for themselves (Bales, 1970, p.36).

The members of any group therefore tend to form alliances, coalitions or even unconscious relationships with members in close proximity but higher in the power direction (upwards). Individuals may also link themselves with members lower in the
power direction for the purposes of support. In this way, a network of coalitions is formed within the group. Bales further contends that these links will continue to form within the group unless an individual has no other individual in close enough proximity, "in which case the given person will remain either an individual isolate, or will remain the terminating upper member of a network of those further downward linked to him" (Bales, 1970, p.37).

The model is dynamic in the sense that individuals are seen as constantly moving within the space as situations and roles change, and as time progresses. Networks of relationships are altered or replaced as individuals change their status within the group.

Bales also points out that the role an individual plays in a group, and therefore his position or location in the group space, is often determined by the behavior of other group members and the evaluation of the individual by other group members. Two other major factors influencing the role a person plays are basic personality characteristics and previous life experience. At the same time, a change in situation can change the role of the individual and his overt behavior. This change has often been witnessed in residential outdoor programs. Since a change in situation or role can alter factors contributing to the spatial position of the individual, it follows that a diversion to a new or different situation, where an individual's position in the group space is altered, can result in a change of his or her position in the original group space upon return to the original situation. This alteration of the individual's
position in the group space will alter the coalitions formed and therefore alter the entire network of interactions within the group. In the context of education, the phenomenon of change in an individual's behavior and group interaction in the classroom following residential outdoor programs has often been noted by participating teachers.

This three-dimensional model can serve as a theoretical construct for estimating the overt personality characteristics of individuals and the interpersonal relations in a group at any given point in time. A series of graphical depictions of the group space described by the model, recorded over time, can display both the amount and the nature of changes in interpersonal relationships.

A theoretical basis for describing the nature of the ideal relationship that should exist between the student and the teacher can be found in studies on therapist-patient relationships in psychotherapy. Fiedler (1950) and Heine (1950) conducted extensive studies with practicing psychotherapists to determine whether there was a consensus on therapist-client relationships which were most and least conducive to successful therapy. The results support the notion that there is an ideal relationship.

Lewis, Lovell and Jesse (1965) present a strong case, based on the works of Fiedler (1950), Rogers (1957), and Lewis and Wigel (1964), that an ideal student-teacher relationship should parallel the ideal therapist-client relationship as identified by Heine and Fiedler. The argument rests on Rogers' (1957) identification of the necessary and sufficient psychological
conditions for any constructive personality change involving interacting individuals. Knoblock and Goldstien (1971) also recognized the parallel nature of these relationships. They constructed a twenty item inventory of perceptions by the student which would illustrate this ideal student-teacher relationship. Appendix B presents a list of behavioral statements used by Heine, Lewis et al., and Knoblock and Goldstein to typify conditions most and least indicative of the ideal relationships.

Empirical evidence that these behavioral statements are indicators of a positive teaching and learning situation has been provided by Lewis et al. (1965). This evidence will be further explained during elaboration of the instrumentation in Chapter 3.

Experiential Context of the Problem

Since 1965 the researcher has had considerable involvement with numerous residential outdoor programs, conducted under the auspices of both schools and summer camp agencies. As a director of outdoor education for a large school district in British Columbia, the researcher has witnessed and taken an active part in programs which have mirrored the various stages of historical development noted in the previous section, from predominantly social oriented programs to highly academic programs. Despite the orientation of the programs, experience suggests that positive growth in teacher-student and student-teacher perceptions and relationships is a frequent outcome of programs
where students and teachers live and work together in a new environment away from home and the traditional school.

Since residential outdoor programs foster significant departures from the situations, roles and tasks of the traditional school or classroom, they facilitate the emergence of new views of participant personalities. The following testimonials of experiences to this effect are typical:

It gives them (the participants) an opportunity to sort of stretch themselves. Some strange things happen to youngsters when they come to camp. Not just new vital experiences in classwork, but new outlooks on the personality of their classmates and new values of living with people (Schramm, 1969, p.140).

What impressed me most was that many of us showed another side of our personality. Some who are leaders in the class became timid outdoors. Some of the least likely students became leaders (Ontario Teachers' Federation, 1970, p.5).

Documentation of residential outdoor program experiences consistently pay tribute to the change in student-teacher relationships that occur:

...teachers who have embarked upon such enterprises have reported these social gains:
1. Understanding of classmates.
2. Improved relationships and communication between teachers and students. (Vivian & Rillo, 1970, p.6).

The natural world is a wonderful leveller. Often children are heard to remark on a first field trip, 'I didn't know teachers had old clothes.' On a particular occasion as a class returned from a lengthy hike, a light rain began to fall. In a true spirit of democracy it soaked the teacher as well as the students, and at this point the teacher heard a boy on the trail comment, 'He looks just like one of us' (Ontario Teachers Federation, 1970, p.5).

I asked the classroom teachers whether camp really had made a difference in their relationship to the children. They said it had. They knew the pupils better and more personally, and had a common experience to talk about (Schramm, 1969, p.187).

A comment which has been reported by a teacher, and a
comment which the investigator has heard many times from teachers, perhaps expresses the magnitude of the perceived change.

I'll say this. I've been able to get closer to my pupils up here this week and talk with them more frankly about their real feelings than I was ever able to do at home... I'd give anything to be able to come up here with them early in the fall, and get started on this kind of a relationship at the beginning of the school year (Schramm, 1969, p.140).

Further, it has been suggested that these goals and achievements can better be realized, or perhaps only be realized, in a residential outdoor situation and not in the normal school or classroom.

...you would see no sullen docility - which is never entirely absent indoors. Instead, you would see more friendliness - between student and student, and between student and teacher - than the walls of a classroom would ever encourage...Relations between teachers and students show a healthy improvement (Conrad, 1947, p.40).

Again and again they come back to the fact that the camping experience gives them a chance to study and know children in a way that nothing else can... The children are together during the entire twenty-four hours of the day. The teacher sees them in work and play combinations and group situations that would never occur any place except camp... Nothing else in the usual school program...permits such disclosure of group structure and the individual's relation to it. Teachers have said over and over that the camping experience is worth having if for no other reason than the chance it gives them to see the actual social make-up of the class (Sack, 1953, p.501).

The many sides of the personality which are almost automatically drawn out when teacher and pupil share a real experience may never be seen in the more restricted atmosphere of the classroom... One of the significant benefits that comes to teachers and pupils who share in the vivid and adventurous experiences that outdoor education offers is that of a better understanding of each other (Smith, 1957, p.31).
Educational Context of the Problem

The literature and studies regarding the impact of the teacher-student relationship on education as a whole is highly ambiguous and even contradictory. Despite numerous attempts to gauge the effect of this factor on teaching and learning, we remain very largely ignorant of how teachers affect the intellectual and emotional development of the pupils they teach, and more significantly we remain largely ignorant of how best to go about developing the knowledge (Nuthall & Church, 1973, p.9).

This is not surprising if one examines the nature of the many other variables involved in the overall educational process. The fact is that the number and complexity of the variables and their interactions makes rigorously controlled studies for establishing the effects of particular variables, such as teacher-student relationships, almost unmanageable (Hargreaves, 1972).

However, theory and trained intuition have led most educators to take the position that teacher-student and student-teacher relationships are important to the overall educational process. The argument takes its basis from the long-standing conclusion that education is a social process.

The principle that development of experience comes about through interaction means that education is a social process" (Dewey, 1938, p.58).

This position has withstood the test of time and has been stated in many ways by many authors:

...one of the most central features of education is its social quality (Hargreaves, 1972, p.2).

The most fundamental thing about classroom experience is that it is social; it is a continual set of interactions with other people. I call this the most fundamental thing because there is no escape; the
demands are there and they must be met... These interactions are most fundamental for another reason: they make a difference in the learning process...Social interactions set the conditions under which learning occurs (Thelan, 1954, p.vi).

If one concurs with these views then the interactions between students and teachers become one of the primary focal points of education, and educational research as well.

The conduct of these interactions between student and teacher is governed, in part, by teacher perceptions of student characteristics.

Student characteristics...affect teachers' perceptions of students. In particular, they affect teacher expectations and attitudes regarding students, and this in turn affects the way the teachers deal with the students (Brophy & Good, 1974, p.29).

Other studies have shown that the nature of these interactions is strongly influenced by student attitudes towards the teacher as well as the expectations and perceptions that the teacher has of the students (Herrell, 1971; Klein, 1971). In addition, Hoyt's (1955) investigations conclude that the knowledge that teachers have of pupil characteristics can alter the students' attitudes towards, and perceptions of, teachers. The process of changing student-teacher interactions, then, seems to depend on a continual feedback loop which can be substantively altered by increasing student knowledge and perceptions of teacher characteristics or increasing teacher knowledge and perceptions of student characteristics.

The teacher must know relevant facts about each individual student....Attitudes and behaviors of teachers and students are heavily influenced by the information that they have, or think that they have, on hand (Brophy & Good, 1974, p.29).
...if educators are able to discover the feelings, fears and wishes that move people emotionally they can more effectively engage pupils from any background (Weinstein & Fantini, 1971, p.10).

If residential outdoor programs can provide, to both students and teachers, new personal information regarding each other, a change in perceptions and interpersonal behavior is highly probable.

Further, according to current views of personality and interpersonal behavior, a person's conduct in a group is often only a reflection of one dimension of his personality. A change in the person's role, group structure, group activity or task may lead to a manifestation of another dimension of his personality.

Bales states that:

You see only his interpersonal behavior which may reflect only one side of his personality, elicited by this particular group, its structure and his role in it... (Bales, 1970, p.10).

A change in the structure or role of a class from the traditional school should then facilitate the exposure of new personality information upon which both students and teachers may alter their mutual perceptions. This provides input for the feedback loop, stimulating new student-teacher and teacher-student relationships. Since present-day residential outdoor programs are usually conducted in the context of the regular science curriculum of the schools, science teachers in particular should be aware of the potential merit of residential outdoor programs for bringing about constructive changes in personality and interpersonal behavior.

As residential outdoor programs have developed, and more
and more children have taken part in the programs, residential outdoor schools, their objectives, structure and facilities, have come more and more to mirror the normal or traditional schools, which are "...often designed to shut the child away from life in order to make it easy for the teacher to pursue book-learning..." (Partridge, 1943). As early as 1947, leaders in the field of residential outdoor programs cautioned that the high degree of organization and scheduling, the employment of more and more specialists to lead "departments" of the camps, the increasing use of "assembly line gadgets where the child is simply the last step in a pre-fabricated construction experience" (Sharp & Partridge, 1947, p.8) and the tendency of the camp program to revolve around equipment and facilities rather than the student were:

...moving camping away from the original meaning of the term and, at worst, have robbed the youngster of the very experience for which he should be going to camp (Sharp & Partridge, 1947, p.18).

It is this current trend in residential outdoor programs which has given the impetus for the proposed study: a potentially significant educational venture, which may have crucial personal and social consequences, is threatened by extinction for lack of understanding of what can be accomplished. The purpose of this study is to shed some light on changes in interpersonal perceptions and relationships of teachers and students that experience suggests do take place, and theory suggests should take place, in residential outdoor programs. Hopefully, the study will re-kindle the flame of enthusiasm for a venture which is so uniquely suited to meeting some of the most pressing social needs of this era: personal and
social growth and development. Piaget is supposed to have said that there should be two classrooms, one where the teacher is, and one where the teacher is not. Residential outdoor centres are places where the teacher should be, but as Kelly puts it:

...textbooks and lessons should be left at home... Teachers need to accompany (their classes) but not to carry on their classes as usual in a new setting (Kelly, 1972, p.3).

Specific Problems of the Study

From the above discussion it is clear that a change in both student and teacher perceptions of the personality characteristics and interpersonal relationships should take place in residential outdoor programs. There is also strong evidence to postulate an ideal student perception of his or her relationship with the teacher. Therefore, when examining the students' relationship with the teacher, or the students' perception of that relationship, direction may be taken from previous studies. No such evidence exists to postulate an ideal teacher perception of student personality characteristics or interpersonal relationships. Therefore, the examination of these perceptions must be more general and exploratory in nature.

In order to examine the general problem then, three specific problems for investigation are proposed:

1. What effect does participation in a residential outdoor program have on students' perceptions of their relationships with the teacher?

2. What is the nature of the change in teacher perceptions of student personality characteristics after completion of a residential outdoor program?
3. What is the nature of the change in teacher perceptions of the interpersonal relationships within the class after completion of a residential outdoor program?

Basic Assumptions of the Study

This study is structured around five assumptions concerning education, interpersonal relationships and perceptions, and residential outdoor programs:

1. An individual's perceptions of others has a major influence on his or her interpersonal interaction with others.

2. Positive experiences in interpersonal interaction will facilitate positive change in future interpersonal interactions.

3. A better understanding by the teacher of personality characteristics of the pupils and social structure of the class will promote a better teaching and learning situation.

4. An improved student perception of his or her relationship with the teacher, as determined by the statements of Lewis et al. (1965), will facilitate a better teaching and learning situation.

5. Certain aspects of residential outdoor programs are conducive to the promotion of positive change in interpersonal perceptions and interactions.
CHAPTER II
REVIEW OF RELATED STUDIES

A review of the literature shows only one study pertaining to student-teacher relationships which has been done specifically in the field of residential outdoor programs. There are, however, several studies which have been done in associated areas which are of interest to, and support the rationale of this particular study.

Peterson (1963) found positive effects on student-teacher relationships through praise, individual conferences and other emotional supports when working in schools. At the same time, Kleindienst (1957) showed the similar relationships of the educational process in classrooms and school camps. She implied that factors pertaining to education in general were applicable to all portions of a school program. As such, the findings of Peterson (1963) are most likely generalizable to residential outdoor programs.

The need to understand the group process and to improve work skills and attitudes were reported by Berger (1958) and O'Hare (1964).

Jensen (1965), Davidson (1965) and Krieger (1970) all examined positive self-concept changes through residential outdoor programs. Although these studies came to few substantive conclusions, the necessity of examining the various dimensions of affective outcomes due to residential outdoor programs was affirmed by each of them.

Doty (1960), in a ten year study of YMCA camps,
concentrated on character development with reference to establishment of operational objectives in camping experiences. She found that positive changes in specified character traits can occur during residential outdoor programs.

The study closest in scope to this particular study was conducted by Vogan (1970). She established an instrument "to provide a behavioral guide and an evaluative tool for the teacher participating in the outdoor experience". This instrument lists objectives which are postulated to effect positive student-teacher relationship changes and behavioral criteria necessary for attainment of those objectives. Appendix D contains the items of this instrument.

Although necessary criteria for attainment of the objectives were proposed, Vogan made no attempt to examine actual student-teacher relationship changes. Rather, she proposed that further research would be required to examine the nature and degree of student-teacher relationship changes during residential outdoor programs. One of the major goals of this study is to accomplish the above proposal of Vogan.
CHAPTER III
METHODOLOGY OF THE STUDY

Specific Problems of the Study

For the convenience of the reader, the specific problems of the study are restated below:

1. What effect does participation in a residential outdoor program have on students' perceptions of their relationships with the teacher?

2. What is the nature of the change in teacher perceptions of student personality characteristics after completion of a residential outdoor program?

3. What is the nature of the change in teacher perceptions of the interpersonal relationships within a class after completion of a residential outdoor program?

Population And Sample

The target population for the study was all students in intermediate grades taking part in residential outdoor programs in the province of British Columbia.

The determination of the accessible population and the actual selection of the experimental groups of students was limited by the difficulty of simultaneously obtaining the consent of camp owners, school boards and their officials, school principals, participating teachers and parents of classes which had already planned a residential outdoor program for the fall of 1980.
The above logistical problems of sampling prohibited random selection and assignment of students. In an attempt to compensate for this problem, as recommended by Campbell and Stanley (1963), comparison groups, matched for grade level, socio-economic status, general geographical location, and teacher variable of willingness to participate in residential outdoor programs had to be selected following identification of the experimental groups. This imposed further restrictions on the location of appropriate subjects for the study.

Four classes in a semi-urban school district fitting the previously mentioned requirements were finally located. These classes constitute the accessible population and all four classes were used in the study.

Three of the classes were grade five classes and were used in the study in their entirety. The fourth class was a split grade four-five class and only the grade five portion of the class was used. When considering male-female ratio, intelligence, socio-economic status of families, ethnic makeup, and the like, there was nothing apparently unusual about any of the classes used in the study. As such they may, in all probability, be thought of as typical grade five classes in the lower mainland suburban communities of the province of British Columbia.

Two of the classes, hereafter referred to as Classes A (n=26) and B (n=14), participated together in the residential outdoor experience as experimental groups. The other two groups, hereafter referred to as Classes C (n=21) and D (n=23), were used as comparison groups.
Treatment

The treatment used in this study was a residential outdoor program as previously defined in the study. Programs of this type are highly complex and differ on many aspects of site, facilities, staff, time-tableing, programs, etc. In addition, numerous unanticipated and unpredictable events can occur during the experience which will modify the planned program. For example, weather conditions may prohibit the conduct of an anticipated activity. As such it was impossible, and probably undesirable, to determine in advance the precise treatment used in this study. In order more clearly to define the treatment, the researcher accompanied the classes as a participant-observer for the time period of the residential outdoor program. An account of the activities of the class during the week was recorded and is considered to constitute the treatment. In the description of the treatment, particular attention was paid to the criterion behaviors defined by Vogan (1970) as being important in the development of student-teacher relationships. A list of the criteria used is contained in Appendix D.

For each of the listed criterion behaviors the following questions were answered

1. Is the criterion behavior appropriate to this situation? (if the answer is "no" then ignore the following questions and go on to the next criterion behavior.) As an example, if no other classes will be using the site, the criterion behaviors with respect to contacting other classes are not appropriate to the situation.
2. Was the criterion behavior exhibited?
3. How often was the criterion behavior exhibited?
4. When was the criterion behavior exhibited?
5. How was the criterion behavior exhibited in each instance?

In order to provide data for the description of the
treatment a monitoring process of daily activities and procedures was established.

Since this study dealt with changes in student-teacher relationships, the activities of the participating classroom teachers as they interacted with students were of primary concern. For this reason the individual classroom teachers formed the basis of the monitoring process and it was their activities and interactions which were observed and recorded rather than the activities of other on-site teachers, teacher aides and accompanying supervisors. To accomplish an equality of observation time on each classroom teacher, the researcher began the first time period where the teachers were physically separated by observing Teacher A. During the second time period where the teachers were physically separated, observations were taken on Teacher B. This procedure was continued, alternating between teachers during each time period that the teachers were separated. In addition, each teacher was interviewed periodically to ensure accuracy of the researcher’s observations and to provide information on the time periods when the researcher was not able to monitor their activities and interactions.

To supplement the above data, the logistical structure of the program in terms of physical living procedures and recreation/instruction/free time organization was documented. This was done by recording types of activities undertaken by individuals and groups, the personnel structure for each activity, the duration of each activity, the place of conduct of each activity, the director of the activity, and how the
activity was carried out. The information was obtained from teachers' day books, written plans and field observations. During interviews with the teachers, checks were made to ensure agreement between what was planned and what was actually conducted. Any discrepancies were noted and suitable alterations to the written record were made.

A description of the treatment used in this study follows.

The residential outdoor program studied in this thesis was a three-day experience with a "Heritage Studies" theme. The site was an operating rural farm in south-western British Columbia. Accommodation was provided in a group of log cabins forming a "heritage village" on the farm site. Also included in the village were a pioneer store building and an old schoolhouse. There was no thermostatically controlled heating, electrical power or running water provided. Heating for the cabins was accomplished by wood-fired cook stoves and water was drawn from a central piped-in supply. Three unisex pit toilets were located on the edges of the village. Gas lamps provided light and students slept on foam mats in bunks or on the floor of sleeping lofts. The entire village had been constructed to simulate pioneer conditions with minor alterations to provide for student safety and health.

Transportation to the site was provided by train and a school bus carried the students and their equipment the last 22 km. The return trip was accomplished entirely by school bus.

The weather during the program was cloudy with frequent light showers and occasional heavy rain. The temperatures ranged from four degrees Celsius to twelve degrees Celsius. Although
the weather was not conducive to staying outside for long periods of time, the students were well prepared with appropriate clothing and the activities proceeded as had been planned.

Students in the two experimental classes were pooled and then divided into four cabin groups and three study groups. Tables 3.1 and 3.2 display the structure of these groups. For the purposes of this report the students in class A will be numbered and referred to as students "A01" to "A26". Students in class B will be numbered and referred to as students "B01" to "B14". Classroom teachers will be referred to as "CTA" and "CTB". In addition to the classroom teachers there were three on-site teachers and/or teacher aides and two volunteer helpers accompanied the class for the experience. They will be referred to as "TA1", "TA2", "TA3", "H1" and "H2" respectively. The researcher will be referred to as "R".

Table 3.1
Personnel Structure of Cabin Groups

<table>
<thead>
<tr>
<th>Cabin Group 1 (CG1)</th>
<th>Cabin Group 2 (CG2)</th>
<th>Cabin Group 3 (CG3)</th>
<th>Cabin Group 4 (CG4)</th>
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<tbody>
<tr>
<td>A01</td>
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<td>B05</td>
<td>B13</td>
<td>A23</td>
<td>B07</td>
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<td>B10</td>
<td>H2</td>
<td>A25</td>
<td>B09</td>
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Table 3.2
Personnel Structure of Study Groups

<table>
<thead>
<tr>
<th>Study Group 1 (SG1)</th>
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<th>Study Group 3 (SG3)</th>
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<tbody>
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<td>A02</td>
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The more formal structure of the program consisted of three study activities, three organized recreation activities, and an organized evening of "heritage crafts".

The three study activities were: S1) Pioneer Cooking, S2) Log Construction and S3) Farm Studies.

Pioneer Cooking (Study Activity S1)

The Pioneer Cooking activity varied according to the time of the activity and thus the meal to be prepared. In all instances students in the study group worked under teacher guidance to prepare and serve meals to the entire camp. All cooking was done in the village cabins on wood stoves. Recipes were provided for all dishes and students worked from basic ingredients. Eggs were gathered from the poultry house and potatoes were collected from a large root cellar. Some vegetables were harvested from the garden, while other vegetables were provided in bulk. Honey produced on the farm was
also used in cooking. After the meal, the same students were responsible for washing dishes and cleaning up. The actual food prepared was:

Day 1 Supper
Meat Loaf
Soda Bread
Boiled Potatoes
Fruit Salad
Orange Juice

Day 2 Lunch
Potato Soup
Baking Powder Biscuits
Fresh Fruit
Apple Juice

Day 2 Supper
Chicken Drumsticks
Baked Beans
Cole Slaw
Apple Crisp
Orange Juice

Individual cabin groups prepared their breakfasts in their own cabins on both days. A supply of juice, oatmeal, sugar, milk, bread, butter, jam, peanut butter, bacon and freshly collected eggs was available. Menu varied according to individual tastes but included such things as scrambled eggs, fried eggs and french toast.

The first day's lunch was brought from home by individual students. On the last day, each student made a packed lunch, according to his or her own individual tastes, during the breakfast period. Students were supplied with bread, butter, jam, peanut butter, sliced meats, cheese, fruit and canned juice.

Log Construction (Study Activity S2)

The log construction study groups examined types and methods of log cabin building. Students examined both chinked
and chinkless construction as well as saddle and V methods of notching. The cabins in the village had been constructed using a variety of log construction methods and the old store was of hewn plank, dovetail construction. These structures provided excellent study examples for the students. The students were then provided equipment and green logs and attempted to duplicate the methods.

A discussion of roofing materials and methods led to activities involving the manufacture and use of cedar shakes. Each student made their own mallet from green alder using bow saws and hatchets. These mallets and commercially manufactured froes were used to split shakes from provided bolts. The students proceeded to lay a shake roof, using their own shakes on a prepared, ground level roof frame located behind the old schoolhouse. After the students were satisfied with their construction, they crouched under the roof and the teacher aide tested the roof by pouring a bucket of water over the completed structure.

The activity ended with a log sawing contest using two-man crosscut saws.

Farm Studies (Study Activity S3)

The farm study groups spent their time in the poultry house, barn, hay loft and fields of the farm. Activities for each group varied according to the chores that were required to be done during the time period of the activity. However, the activities always included feeding of animals, cleaning of pens, milking and gathering, candling and weighing eggs.

Animals available on the farm included chickens, ducks,
pheasants, doves, rabbits, horses, cattle (both beef and dairy), sheep, goats and swine. All students had the opportunity to at least view and touch all the types of animals. In addition, the students had the opportunity to examine various types of both manual and powered farm equipment.

The three recreation activities were: R1-Bees and Honey, R2-Gold Panning and R3-Exploratory Hike.

Bees and Honey (Recreation Activity R1)

The farm has a specially constructed bee study house and several active hives of bees. Students examined these bee hives, as well as methods of comb collecting and honey extracting. Comb was sampled and students spun out honey to be used in cooking. Life cycles of bees and uses of apian products were discussed.

Gold Panning (Recreation Activity R2)

Students went to sand bars on the nearby river to attempt methods of extracting placer gold from gravel and sand. Rockers and sluices were tried along with the more traditional gold pan. Although no visible gold was recovered heavy mineralized black sand was obtained. Discussions were conducted on both the historical aspects of gold production in British Columbia and the scientific concepts underlying the operational procedures of placer gold extraction.

Exploratory Hike (Recreation Activity R3)

This activity varied according to the capabilities and interests of the individuals participating. Trails up the mountain, providing excellent views of the valley below, were explored.

The evening of "pioneer crafts" consisted of three
activities conducted in two cabins: Cabin 1- Beeswax candle
dipping, Cabin 2- Soap making from lye and animal fat, and Goat-
milk ice cream making.

Students divided between the two cabins and began their
assigned activities. After the initial candle making group
finished dipping their candles, the students rotated between
cabins. The students who had begun by making candles, completed
the soap and ice cream that the previous group had started.
After completion of the activities the ice cream provided a bed-
time snack and each student had a beeswax candle and a bar of
soap to take home.

The timetable and personnel makeup for the program was as
follows: (if no personnel structure is indicated then the
activity applied to the total group)

**DAY 1**

08:45 - Board train and depart
10:40 - Leave train and board bus
11:20 - Arrival at the site, unload, brief on safety, sanitary
facilities, water, site, wood, stoves, lamps, etc.
12:00 - Lunch at the physical challenge course (rope course and
maze)
12:45 - Break into study groups and begin first study session
   S1-Cooking    S2-Logs    S3-Farm
   SG2          SG1        SG3
   CTA          TA1        TA2
   CTB          H1         TA3
   R            H2
15:15 - Free time
15:45 - Structured recreation
   R1-Bees    R2-Gold    R3-Hike
   SG1        SG3        SG2
   TA2        TA1        CTA
   R
17:00 - Dinner
17:35 - Free time
18:35 - Square dancing outdoors under the lights in front of the
   barn
19:30 - Songs and stories in the loft
20:30 - Hot chocolate, wash and brush teeth, free time
21:30 - Bed and lights out
DAY 2

07:30 - Breakfast, clean cabins, morning jog and free time
09:30 - Second study period
    S1-Cooking  S2-Logs  S3-Farm
    SG3        SG2        SG1  
    CTA        TA1        TA2
    CTB        H1         TA3
    R          H2          R
11:30 - Free time
12:00 - Lunch
12:30 - Free time
13:10 - Third study period
    S1-Cooking  S2-Logs  S3-Farm
    SG3        SG2        SG1
    SG1        SG3        SG2
    CTA        TA1        TA2
    CTB        H1         TA3
    R          H2          R
15:30 - Free time
16:00 - Structured recreation
    R1-Bees    R2-Gold    R3-Hike
    SG3        SG2        SG1
    TA1        TA1        CTA
    R
17:15 - Free time
17:30 - Dinner
18:00 - Free time
18:30 - Songs and stories in the old schoolhouse
19:00 - Pioneer crafts
21:00 - Ice cream, songs and stories
21:30 - Wash, brush teeth, free time
22:00 - Bed and lights out

DAY 3

07:00 - Breakfast, make bag lunches, pack up, clean cabins and free time
09:45 - Structured recreation
    R1-Bees  R2-Gold  R3-Hike
    SG2      SG1      SG3
    TA2      TA3      CTA
    R        R        R
11:00 - Work clearing rocks off trails on the site
11:30 - Lunch and try the physical challenge course
12:00 - Bus loaded and departure
13:15 - Break and jog to falls
14:20 - Arrive back at school

In terms of the objectives and criteria of Vogan (1970) as displayed in Appendix D, both teachers were judged to have met the applicable criteria. What follows is a brief description of the conduct of the teachers during the course of the residential
outdoor program. This description, coupled with the foregoing logistical description of the program, documents the correspondence of the program used in this study with the criteria of Vogan (1970).

Both teachers had read or taken courses in Outdoor Education. They had previously taken students to the same site and had met and planned this trip with the district Outdoor Education coordinator and on-site staff.

Their dress was appropriate to the setting and situation (older clothes, pants, boots, etc.). The timetable reported above was the actual observed schedule and roughly, but not exactly followed the planned schedule. Discrepancies occurred when activities ran longer or shorter than was anticipated. However, priority was given to the actual time required for an activity rather than adhering strictly to the planned time structure. Sufficient free time to allow for individual interests was provided.

Teachers were very open with the students, often sharing personal thoughts, needs and experiences with individuals or small groups. They also encouraged students individually to share their own personal thoughts.

The teachers encouraged students to teach them and the group new songs and stories. They carried on their own recreation/free time pursuits (jogging, photography, knitting, reading, etc.) and encouraged students to join them. They also participated with students in student organized games and activities (kick the can, arm wrestling, joke telling, etc.).

All the study activities were very student oriented with
very little teacher interference. Required written work was confined to reading recipes. Any other written work was left to the option of the student. Traditional school rules and routines were relaxed and emphasis was placed on individual responsibility and decision making.

A careful study of the foregoing observations, in terms of Vogan's (1970) criteria, reveals that the applicable criteria were met to a reasonably high degree by both teachers, and that Vogan's (1970) criteria do serve to describe the treatment adequately.

Instruments

Interaction Process Analysis

An understanding of the development of student-teacher and teacher-student relationships requires some understanding of the nature of human or interpersonal relations as a whole: how people interact as individuals and as groups. It is generally agreed that man's social interaction is controlled by diverse factors with perceptions being one of the most fundamental factors. Combs and Snygg (1957) point this out when they state: "perceptions are the very fabric of which human relations are made". Solley and Murphy (1960) identify perception as an inferred process, with the results of perception observable through individuals' behavior and the conditions of behavior. Overt interpersonal behavior is therefore an indicator of a person's perceptions underlying his or her interpersonal relations.

An examination of the teacher's relationship with the
students then depends upon an understanding of the interpersonal perceptions of the teacher, including perceptions of the students' personalities, social groups and the structure of the interpersonal interactions within the class. The methods of Interaction Process Analysis (IPA) as developed by Bales (1970) allows examination of perceptions that group members form of each other. The methods may also be used for eliciting the group interpersonal relationship perceptions of group members.

The interpretive and diagnostic theory (of Interaction Process Analysis) takes the form of a three-dimensional spatial model which may be used to visualize and describe the positions of the participants in a group, and to infer what their relations with each other are likely to be (Bales, 1970, p.vi).

These methods utilize three parallel forms of a twenty-six question instrument, the items of which are to be answered 'yes' or 'no'. Items are then scored according to developed keys, leading to three scores for each member of the group. These scores represent a point in the three-dimensional space. Expected personality characteristics can then be inferred by the location of the individual within the space, and interpersonal networks can be predicted through relative positions and proximity measures between the individuals.

Any one form can be used to give subjective impressions of individual characteristics and group structure, but the reliability of the impressions can be enhanced by using more than one form. An examination of the items of the three forms indicated some possible redundancy and possibly some comprehension problems with a few items. Appendix A contains the original parallel items collected from the three forms, and keys
for scoring.

For the purposes of this study, one question from each set of three parallel items was deleted to compensate for the possibility of the above mentioned problems. The eliminated items are marked with an asterisk in Appendix A. The order of the items was randomized producing a form of fifty-two questions which were to be answered "yes" or "no" by the teacher for each student in the group.

In order to standardize administration of the instrument an APPLE II mini-computer was used to present the instructions and the questions on the video screen and the computer keyboard was used to record the responses to the items. A listing of the mini-computer program used by the study is included in Appendix E.

Each item of the instrument was scored according to the keyed answers as identified by Bales, adding one point to the student's score in the categories "U", "D", "F", "B", "N", and/or "P" as appropriate for each student. As an example; if the response for student A to question 13 was "yes" and the key for question 13 "yes" was DB, then 1 point was added to student A's score in the "D" category and 1 point was added to his or her score in the "B" category.

After all items were scored, the summary score for each student was obtained by taking the absolute difference between the "U" score and the "D" score and assigning the label "U" or "D" according to whichever was the larger of the two absolute values. Scores on "F" or "B" and "P" or "N" were obtained in an identical manner. As an example; if student A ended with scores
of "U"=24, "D"=12, "F"=34, "B"=2, "P"=20, and "N"=16 then his or her summary score would be calculated as follows: 24U-12D= 12U; 34F-2B= 32F; 20P-16N= 4P

In order to use the interpretive techniques as described by Bales, which are based on a single 26 item form yielding a maximum score of 18 in any given direction, the numerical values obtained from the 52 item instrument were divided by two. The final scores in our previous example would then be: 12U/2= 6U, 32F/2= 16F, and 4P/2= 2P. Each student was then assigned a score consisting of three numerical values and labels corresponding to simple coordinates and directions which were then used to plot the individual's location within the group space.

The personality characteristics of individuals as described by Bales (1970) were then inferred from significant directional components of the individual's score. Bales recommends that any directional component having a corresponding numeric value less than three should not be considered significant and should be ignored for interpretive purposes. In the above example, since student A's summary score was 6U 16F 2P, only the combination of "U" and "F" would be interpreted. This study follows Bales' recommendation and no score less than three was interpreted.

Probable coalitions, networks, leaders, and isolates were then identified by connecting members who were in close enough proximity. These connections, as directed by Bales, were made beginning from the individual with the highest score in the "D" category and working through each individual towards the highest score in the "U" direction. Distances between individuals were calculated by obtaining the square root of the sum of the three
squared algebraic differences between matching coordinates. This is the three dimensional equivalent of calculating the hypotenuse of a right-angled triangle. As an example; if student A's summary score was 6U 16F 2N and student B's summary score was 1U 2B 3N then the distance between them would be calculated as follows:

\[
\text{Student A: } 6U \quad 16F \quad 2N \\
\text{Student B: } 1U \quad 2B \quad 3N \\
\text{Difference: } 5 \quad 18 \quad 1
\]

\[
(5 \times 5 + 18 \times 18 + 1 \times 1) = 25 + 324 + 1 = 350
\]

The distance root of 350 is 18.71 units. Note that the algebraic difference between 16F and 2B is 18. If the scores had been 16F and 2F then the algebraic difference would have been 14. Figure 3.1 illustrates the placing of student A and student B within the spatial model.

Figure 3.1: Graphical Depiction of the Application of IPA Data to Two Students.
Bales provides an empirically derived rule of thumb regarding the estimation of a cut-off point beyond which the distance between individuals is too far to infer a probable coalition. He sets this estimate to be 58% of the radius of the group space. In the case of this study, the maximum radius was 18 yielding an estimated cut-off distance of 10.44. In our previous example the distance between student A and student B was 18.71 and therefore would be judged to be too far to infer a coalition.

Following connection of individual points to form networks of coalitions, probable leaders and isolates were then identified. Those members who had no connections with any other members of the group were identified as isolates. Leaders were identified as the terminal upper members of a network. All of the above procedures were carried out precisely as Bales recommends.

Bales contends that subjective impressions are a valid source of information on which to plot individuals within the group space. He suggests that the use of subjective impressions from only one source will bias and distort the model according to the perceptions of the single source. If teachers involved with residential outdoor programs complete the modified procedures of IPA, the information they provide should then indicate their perceptions of student personalities, social groupings and interpersonal behavior. These perceptions should not then be used to estimate actual student personality traits or actual coalitions, networks, isolates and leaders. The information can only be used to estimate the perceptions the
individual teacher has of student personalities and class interpersonal relationships. The information gathered from the above procedures then may or may not reflect the actual character or social position of any one student but it does reflect the teacher's perception of the student at the time of the administration of the instrument.

When considering the teacher's perceptions of students, Interaction Process Analysis seemed highly suited for the purposes of this study; however, the items used by IPA have a very high reading and comprehension level. As such, the IPA was not suitable for probing student perceptions of the teacher, and alternate instrumentation for administration to the students was required. Details of this methodology follow.

**Teacher Pupil Relationship Inventory**

In order to examine the nature of the students' perception of his or her relationship with the teacher, the study utilized the **Teacher Pupil Relationship Inventory**.

This instrument is an adaptation of an inventory developed in the field of psychotherapy where the first form was used by Heine (1950) to determine the nature of the therapist-patient relationship. The twenty items of Heine's instrument were derived from an inventory by Fiedler (1950) and were postulated to present perceptions which were most conducive and least conducive to an ideal therapist-patient relationship.

According to Lewis, Lovell and Jessee (1965), the ideal relationship between a student and teacher is very much the same as the ideal psychotherapeutic relationship. The writers
conclude that, "...the good therapeutic relationship is not unique to therapy but can be matched in interpersonal relationships that do not have a stated goal of therapy" (Lewis et al., 1965). The essential elements of this ideal relationship are embodied in the statements of the researchers as listed in Appendix B. The items used by Heine were then modified to reflect teacher-student relationships in education, rather than therapist-patient relationships in psychotherapy, and renamed the Teacher Pupil Relationship Inventory (TPRI).

The coefficient of reliability of the instrument based on a sample of grade fives, using the Kuder-Richardson 20 formula, was given as 0.75 by Lewis et al (1965). Further, the researchers found that "...sixth graders with high TPRI scores received significantly higher achievement-test total scores than did those students with low TPRI scores" (Lewis et al., 1965). In the study, the achievement tests used were the Reading Comprehension, Word Usage, Arithmetic Concepts, and Arithmetic Problem Solving subtests of the Iowa Test of Basic Skills.

The items used by Lewis and his co-workers were further modified by Knoblock and Goldstein in 1971. The items were shortened and the wording simplified to make them more suitable for elementary students. The readability of the items for elementary students appeared to be improved but recalculated reliability coefficients were not reported. However, when they administered the form to students for the purpose of rating a teacher, the scores correlated 0.72 with scores obtained from peer teacher ratings of the same teacher using the original form. This seems indicative of a relatively high reliability for
the new pupil form of the TPRI. A copy of the items used on all three forms is included in Appendix B.

Since the modified instrument is short and suitable for rapid administration to elementary students, and since the scores on the instrument have been shown to be related to academic achievement, the instrument appeared to be suitable for the present study. Furthermore, the items appear to reflect student perceptions that, according to teachers involved in residential outdoor programs, show marked change as a result of the programs. On these grounds, a modified form of the TPRI was used in this study to indicate the nature of the students' perceptions of their relationships with the teacher.

A critical factor in utilizing the TPRI in this study is its suitability for detecting real change in student perceptions of their relationship with the teacher. However, since the reported reliabilities were calculated using KR-20 on the original form and no new reliability coefficients were reported for the modified form, this study also examined the psychometric properties of the elementary form. Since new psychometric properties had to be estimated, the researcher also made some changes in an attempt to improve the reliability of the instrument. For example, since the study is concerned with the students' perceptions of their relationship with their teacher at the exact point in time when the instrument was administered, the wording of the items was altered to reflect the present rather than the past tense and all references to the teacher were reworded to "my teacher". Also, a four point Likert scale, anchored by "strongly agree" and "strongly disagree", was used
as a response format rather than the original "yes-no" response mode in an attempt to increase the sensitivity of the instrument. A copy of the items used in this study is included in Appendix C.

Each item was scored 1 (strongly disagree) to 4 (strongly agree) with scoring on negative polarity items reversed. A student's total score was obtained through simple addition of his or her item scores. Each student then had a single total score ranging from a possible low of 20 to a possible high of 80.

Students receiving a high score on the instrument were considered to perceive a more positive relationship with the teacher. A perception of a more negative relationship with the teacher was indicated by a low score.

Change over the time period of the residential outdoor program was of major interest in this study, therefore the instrument had to be stable over time given no change in student perceptions. Students having no contact with their teachers should retain relatively stable perceptions of their relationships with their teachers. As such, stability of the instrument was estimated using test-retest procedures on a sample of intermediate students on summer vacation. Since alterations had also been made to the wording of the items and the response format, internal consistency measures of reliability were also re-examined using the same sample.

The piloting of the instrument to estimate its psychometric properties was conducted in August using a sample of students from the lower mainland area of British Columbia attending a
summer camp. All students normally lived in urban or semi-urban locations but attended various schools and had different teachers. The male-female ratio and the makeup of the group by grade and age are illustrated in Tables 3.3 and 3.4.

Table 3.3
Composition of Pilot Group by Sex and Age

<table>
<thead>
<tr>
<th>AGE</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>1</td>
<td>6</td>
<td>12</td>
<td>5</td>
<td>6</td>
<td>3</td>
<td>0</td>
<td>33</td>
</tr>
<tr>
<td>Female</td>
<td>0</td>
<td>7</td>
<td>11</td>
<td>7</td>
<td>8</td>
<td>3</td>
<td>1</td>
<td>37</td>
</tr>
<tr>
<td>Total</td>
<td>1</td>
<td>13</td>
<td>23</td>
<td>12</td>
<td>14</td>
<td>6</td>
<td>1</td>
<td>70</td>
</tr>
</tbody>
</table>

Table 3.4
Composition of Pilot Group by Sex and Grade

<table>
<thead>
<tr>
<th>GRADE</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>4</td>
<td>9</td>
<td>12</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td>33</td>
</tr>
<tr>
<td>Female</td>
<td>2</td>
<td>14</td>
<td>8</td>
<td>9</td>
<td>3</td>
<td>1</td>
<td>37</td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>23</td>
<td>20</td>
<td>15</td>
<td>5</td>
<td>1</td>
<td>70</td>
</tr>
</tbody>
</table>

The test was administered by supervisors at the camp during lunch on the first day of camp and again on the last day of camp, nine days later. Students were instructed to respond to the instrument by considering the teacher they spent most of their time with during the 1979-80 school year. None of these teachers were in attendance at the camp, or had anything at all to do with the camp. As such, there was no reason to believe that the students' perception of their referent teacher would change between the first and second administrations of the instrument. Students' scores on the TPRI were expected to remain
constant between administrations.

Item analysis statistics and internal consistency measures from the results were calculated using the LERTAP package. Correlations of sex, grade and age with the individual total scores, and between pretest and posttest individual scores were obtained using the CORN program.

The range on the pretest was from a low of 29 to a high of 79. The mean was 53.66 and the standard deviation was 12.25. The internal consistency reliability, as estimated by Hoyt's procedure, was .89, with a standard error of measurement of 3.92.

On the posttest the range was from a low of 27 to a high of 76. The mean was 52.11 and the standard deviation was 11.86. The internal consistency reliability was again .89 with a standard error of measurement of 3.77.

The test-retest stability, as estimated by the correlation between pretest and posttest scores, was .88. The range of change scores was from a low of -14 to a high of +12. The mean of the change scores was -1.55 with a standard deviation of 3.96. In addition, the instrument appeared to be equally stable throughout the range of scores with no noticeable regression effects for extreme scores.

Correlations of age and grade with individual total scores were non-significant, leading the researcher to believe that the psychometric properties of the instrument are relatively stable over the age and grade range of the pilot group.

The fact that there was a mean change score of -1.55 was of some concern. The t-value for that difference, as calculated
applying the test between means using dependent samples (Glass and Stanley, 1970), was -3.50 which is significant at p. = .001. Since the change from pretest to posttest is significant, this fact had to be taken into account in the study. Based on the pilot data, it was expected that, given no change in student perceptions of their teachers, posttest scores would be lower than pretest scores. No direct attempt was made to investigate this result. It may, however, be attributable to a combination of students' sensitization to the type of judgements required by the items of the instrument and to the response format. Further investigation of this problem should be carried out in the future to account for this phenomenon.

An example of a study which might be used to investigate this problem is to administer the instrument to two randomly assigned groups where the order of the items for the groups is altered. Examination of item scores between the two groups could lead to a detection of the type of sensitization suggested.

It was concluded that, despite the tendency for students to score lower on the second administration, the instrument could be used to compare groups in this study. This conclusion appears warranted in light of the high pretest-posttest correlation coefficient, indicating good stability over the time period necessary in this study.

Based on the results of this pilot the TPRI appeared to be suitable psychometrically for the purposes of this study.
Design of the Study

Since randomization of subjects and treatments was impossible, Design 10, the non-equivalent control group design of Campbell and Stanley (1963) was employed to structure the study. All students in the treatment classes and comparison classes were pretested using the TPRI at the same time, two days before the residential outdoor program. The experimental classes then took part in the program while the comparison classes proceeded with school in their normal fashion. All four classes were then posttested, again using the TPRI on the Monday following the residential outdoor experience. Teachers in the experimental classes completed the IPA information on the same days that the TPRI was administered to the students.

Specific Problem # 1

1. What effect does participation in a residential outdoor program have on students' perceptions of their relationships with the teacher?

On the basis of what has been previously stated about the problem, the following research hypothesis was deemed worthy of investigation:

If intermediate grade students participate in a residential outdoor program described as the treatment in this study, then their perceptions of their relationships with their teacher will change in a positive direction as identified by the TPRI.

The corresponding statistical hypotheses to be tested are:

H0.1: With regard to students' perception of their
relationship with their teacher, there will be no significant difference between the mean for the treatment group and the mean for the comparison group not exposed to a residential outdoor program, as measured by the modified form of the TPRI following the residential outdoor program.

H1.1: With regard to students' perception of their relationship with their teacher, there will be a significant difference between the mean for the treatment group and the mean for the comparison group not exposed to a residential outdoor program, as measured by the modified form of the TPRI following the residential outdoor program.

H1.2: The mean of the experimental group will be greater than the mean of the comparison group as measured by the TPRI following the residential outdoor program.

In order to compensate for initial differences between groups on student perceptions of their teachers, analysis of covariance using the pretest as the covariate and the posttest as the dependent variable, as described in Kirk (1968), was employed to test the statistical hypotheses. In employing the pretest as a covariate, the high correlation between the covariate and the dependent variable was recognized. However, no other suitable covariate was available to the researcher.
Specific Problem # 2

2. What is the nature of the change in teacher perceptions of student personality characteristics after completion of a residential outdoor program?

This problem was not suited to a test of statistical hypotheses. Unlike Specific Problem # 1, little is known regarding how teacher perceptions of student personalities should change in order to facilitate a better teaching and learning situation. As such the nature of the investigation of this problem had to be more descriptive and analytical in nature.

To address this problem an analysis was made of the change in teacher perceptions of students' personalities as determined from responses to the Interaction Process Analysis instrument by the teachers. Teachers were asked to complete the IPA information both before and after the residential outdoor program. Wherever the interpretive label for any student changed from before to after the residential outdoor experience, the change was noted and the interpretation of that change was presented and discussed. Bales notes that any difference less than three units should not be interpreted, therefore where the teacher's perception of an individual changed by more than three units in any direction the discrepancy was noted and a description of the change in perception, as indicated by Bales' (1970) personality typologies, was presented. This was done regardless of whether or not the interpretive label for the student changed. An analysis of these changes was then undertaken in order to detect specific trends.
Specific Problem # 3

3. What is the nature of the change in teacher perceptions of the interpersonal relationships within a class after completion of a residential outdoor program?

This problem is similar in nature to Specific Problem # 2. Its examination was again descriptive and analytic in form.

To examine this problem an analysis was made of the change in teacher perceptions of interpersonal relations as inferred from the Interaction Process Analysis responses of the teacher. Using the plots of the group space obtained from Specific Question #2, perceived coalitions, networks, leaders and isolates were identified for both before and after the residential outdoor program. Any discrepancy between the analyses of the first and second estimates of the teachers' perceptions of group interactions was noted and the nature of these changes was described. The educational significance of these changes was explored using Bales' theory of personality and interpersonal behavior.
CHAPTER IV
RESULTS OF THE STUDY

Specific Problem # 1

For the convenience of the reader, the statistical hypotheses to be tested in this analysis are restated below:

H0.1: With regard to students' perception of their relationship with their teacher, there will be no significant difference between the mean for the treatment group and the mean for the comparison group not exposed to a residential outdoor program, as measured by the modified form of the TPRI following the residential outdoor program.

H1.1: With regard to students' perception of their relationship with their teacher, there will be a significant difference between the mean for the treatment group and the mean for the comparison group not exposed to a residential outdoor program, as measured by the modified form of the TPRI following the residential outdoor program.

H1.2: The mean of the experimental group will be greater than the mean of the comparison group as measured by the TPRI following the residential outdoor program.

Scoring of student responses and item analysis were carried out using the LERTAP computer package. Internal consistency measures confirmed that the subjects responded to the items of the TPRI instrument in a similar manner to the subjects in the pilot study. As an example, reliabilities were calculated for
each administration of the instrument to each class with the resulting internal consistency measures ranging from .74 to .90.

Means and standard deviations obtained for each class on each administration of the TPRI are displayed in Table 4.1.

Table 4.1
Class Means and Standard Deviations for the TPRI.

<table>
<thead>
<tr>
<th>Treatment Condition</th>
<th>Class</th>
<th>n</th>
<th>Pretest Mean</th>
<th>Pretest St.Dev.</th>
<th>Posttest Mean</th>
<th>Posttest St.Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental</td>
<td>A</td>
<td>26</td>
<td>64.42</td>
<td>8.13</td>
<td>66.62</td>
<td>6.25</td>
</tr>
<tr>
<td>Experimental</td>
<td>B</td>
<td>14</td>
<td>58.36</td>
<td>10.55</td>
<td>60.64</td>
<td>8.87</td>
</tr>
<tr>
<td>Comparison</td>
<td>C</td>
<td>21</td>
<td>56.67</td>
<td>7.97</td>
<td>52.43</td>
<td>8.23</td>
</tr>
<tr>
<td>Comparison</td>
<td>D</td>
<td>23</td>
<td>62.52</td>
<td>8.71</td>
<td>59.57</td>
<td>10.51</td>
</tr>
</tbody>
</table>

The scores for each student on each administration of the TPRI, treating each class as a group, were then tested for homogeneity of variance-covariance using the Bartlett-Box homogeneity of dispersion test as calculated by the OWMAR computer program. The calculated F-ratio was 1.164 corresponding to a probability level of .28. This led to the conclusion that assumptions of homogeneity of variance-covariance were tenable.

Analysis of covariance, using initially the design, classes nested within treatment conditions, was performed using the MULTIVARIANCE computer program. The pretest was employed as the covariate and the analysis was performed on the adjusted posttest means. The results are displayed in Table 4.2.

During the MULTIVARIANCE analysis the test for equal slopes of regression was carried out. The F-ratio, the test statistic, was 2.876 corresponding to p = .0416. This would suggest that
Table 4.2
Analysis of Covariance Table.

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covariate</td>
<td>1</td>
<td>2525.39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classes within Groups</td>
<td>2</td>
<td>72.49</td>
<td>1.7582</td>
<td>&lt;.1791</td>
</tr>
<tr>
<td>Treatment</td>
<td>1</td>
<td>919.44</td>
<td>22.3018</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Residual</td>
<td>79</td>
<td>41.23</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The regression slopes were probably not equal: a violation of one of the underlying assumptions of analysis of covariance. The consequences of the violation of this assumption have been studied and reported. A 1968 unpublished study by Peckham was referenced by Glass, Peckham and Sanders (1972). Peckham found that analysis of covariance is robust with respect to the above violation, particularly where the departure from homogeneity was not extreme. "As the degree of heterogeneity increased the analysis became more conservative with respect to making a Type I error." (Glass, Peckham and Sanders, 1972) This robustness held even in quasi-experimental studies where the groups differed with respect to covariate means. A recent study by Levy (1980) seems to confirm the conclusions of Glass, et al., particularly when the departure from homogeneity is not extreme. The position on this matter taken in this study is that the consequences of the violation of the assumption of homogeneity of regression slopes will probably not lead to spurious significant differences.

Since the violation of an assumption, despite the consequences, should be a matter of concern to the reader, the data was also analyzed from the perspective of repeated measures and the perspective of analysis of residuals. The results of
these two further analyses are presented in Appendix F.

Referring back to Table 4.2, since the classes within groups term is not significant, an examination of the simple treatment conditions, collapsing the nested factor, was deemed appropriate. As can be seen, the effect of the treatment was highly significant, leading to rejection of hypothesis H0.1 in favor of the alternative hypothesis H1.1. There is a significant difference between classes which participated in a residential outdoor program and classes which did not participate.

In order to test hypothesis H1.2, calculation and examination of adjusted posttest means was required. The adjusted posttest means, as calculated by the MULTIVARIANCE program were:

Experimental Group Mean = 63.048
Comparison Group Mean = 56.578

Since the adjusted experimental group mean is higher than the comparison group mean, statistical hypothesis H1.2 was held tenable. The experimental classes scored higher on the average than the comparison classes, in the postulated direction.

With both statistical hypotheses H1.1 and H1.2 being confirmed, the corresponding research hypothesis, if intermediate grade students participate in a residential outdoor program described as the treatment in this study, then their perceptions of their relationships with their teacher will change in a positive direction as identified by the TPRI, is judged to be confirmed.
Specific Problem #2

Responses made by the teachers on the IPA, both before and after the residential outdoor experience, were scored using the APPLE II mini-computer and the program documented in Appendix E. Tables 4.3 and 4.4 give scores, interpretive labels and changes from pretest to posttest for individual students in the experimental classes, based upon the responses of the teachers.

Table 4.3

IPA Data for Class A

<table>
<thead>
<tr>
<th>Student Number</th>
<th>Pretest Score</th>
<th>Interpretive Label</th>
<th>Posttest Score</th>
<th>Interpretive Label</th>
<th>Pre-Post Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>A01</td>
<td>3U9P3F</td>
<td>UPF</td>
<td>9D3P4F</td>
<td>DPF</td>
<td>-12,-6,+1</td>
</tr>
<tr>
<td>A02</td>
<td>4D8P2B</td>
<td>DP</td>
<td>6D2P4B</td>
<td>DB</td>
<td>- 2,-6,-2</td>
</tr>
<tr>
<td>A03</td>
<td>4D5P3B</td>
<td>DPB</td>
<td>7D7P3B</td>
<td>DPB</td>
<td>- 3,+2, 0</td>
</tr>
<tr>
<td>A04</td>
<td>8D1P4F</td>
<td>DF</td>
<td>4D3P1B</td>
<td>DPB</td>
<td>+ 4,+2,-5</td>
</tr>
<tr>
<td>A05</td>
<td>2D8N8B</td>
<td>NB</td>
<td>3D3N0</td>
<td>D</td>
<td>- 1,+6,+8</td>
</tr>
<tr>
<td>A06</td>
<td>5D1P2F</td>
<td>D</td>
<td>8D2N1B</td>
<td>D</td>
<td>- 3,-3,-3</td>
</tr>
<tr>
<td>A07</td>
<td>0 3P2B</td>
<td>P</td>
<td>2U8P4F</td>
<td>PF</td>
<td>+ 2,+5,+6</td>
</tr>
<tr>
<td>A08</td>
<td>0 8P1B</td>
<td>P</td>
<td>1D6P0</td>
<td>P</td>
<td>- 1,-2,+1</td>
</tr>
<tr>
<td>A09</td>
<td>2U10P1B</td>
<td>P</td>
<td>2U12P2F</td>
<td>P</td>
<td>0,+2,+3</td>
</tr>
<tr>
<td>A10</td>
<td>3D4P1B</td>
<td>DP</td>
<td>2D6P2F</td>
<td>P</td>
<td>+ 1,+2,+3</td>
</tr>
<tr>
<td>A11</td>
<td>4U7P2F</td>
<td>UP</td>
<td>1U8P0</td>
<td>P</td>
<td>- 3,+1,-2</td>
</tr>
<tr>
<td>A12</td>
<td>1D6P0</td>
<td>P</td>
<td>1D1P0</td>
<td>P</td>
<td>0,+4, 0</td>
</tr>
<tr>
<td>A13</td>
<td>1U9P3F</td>
<td>PF</td>
<td>2U10P3F</td>
<td>PF</td>
<td>+ 1,+1, 0</td>
</tr>
<tr>
<td>A14</td>
<td>5U8P6F</td>
<td>UPF</td>
<td>4U3P2F</td>
<td>UP</td>
<td>+ 1,-5,-4</td>
</tr>
<tr>
<td>A15</td>
<td>8U6P5F</td>
<td>UPF</td>
<td>2D4P1B</td>
<td>P</td>
<td>-10,-2,-6</td>
</tr>
<tr>
<td>A16</td>
<td>6D8P1B</td>
<td>DP</td>
<td>7D12P1B</td>
<td>DP</td>
<td>- 1,+4, 0</td>
</tr>
<tr>
<td>A17</td>
<td>1U6P1F</td>
<td>P</td>
<td>4D3P1F</td>
<td>P</td>
<td>- 5,-3, 0</td>
</tr>
<tr>
<td>A18</td>
<td>9D7P2F</td>
<td>DP</td>
<td>9D9P1F</td>
<td>DP</td>
<td>0,+2,-1</td>
</tr>
<tr>
<td>A19</td>
<td>8D5P1F</td>
<td>DP</td>
<td>4D9P2F</td>
<td>DP</td>
<td>+ 4,+4,+1</td>
</tr>
<tr>
<td>A20</td>
<td>09P3F</td>
<td>PF</td>
<td>1U9P4F</td>
<td>PF</td>
<td>+ 1, 0,+1</td>
</tr>
<tr>
<td>A21</td>
<td>1U10P2B</td>
<td>P</td>
<td>4D8P2B</td>
<td>DP</td>
<td>- 5,-2, 0</td>
</tr>
<tr>
<td>A22</td>
<td>2U8P4F</td>
<td>PF</td>
<td>4U12P0</td>
<td>UP</td>
<td>+ 2,+4,-4</td>
</tr>
<tr>
<td>A23</td>
<td>3D3P3F</td>
<td>DPF</td>
<td>4U9P3F</td>
<td>UPF</td>
<td>+ 7,+6, 0</td>
</tr>
<tr>
<td>A24</td>
<td>7D7P1B</td>
<td>DP</td>
<td>7D4P0</td>
<td>DP</td>
<td>0,-3,+1</td>
</tr>
<tr>
<td>A25</td>
<td>7U7P0</td>
<td>UP</td>
<td>7U8P2F</td>
<td>UP</td>
<td>0,+1,+2</td>
</tr>
<tr>
<td>A26</td>
<td>1U8P2F</td>
<td>P</td>
<td>4U8P5F</td>
<td>UPF</td>
<td>+ 3, 0,+3</td>
</tr>
</tbody>
</table>

If one examines the mean change of scores on each axis for
Table 4.4
IPA Data from Class B

<table>
<thead>
<tr>
<th>Student Number</th>
<th>Pretest Score</th>
<th>Interpretive Label</th>
<th>Posttest Score</th>
<th>Interpretive Label</th>
<th>Pre-Post Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>B01</td>
<td>5D7P4F</td>
<td>DPF</td>
<td>5D8P4F</td>
<td>DPF</td>
<td>0,+1,0</td>
</tr>
<tr>
<td>B02</td>
<td>1D6N5B</td>
<td>NB</td>
<td>6U5N6B</td>
<td>DPF</td>
<td>+7,+1,-1</td>
</tr>
<tr>
<td>B03</td>
<td>1D10P3F</td>
<td>PF</td>
<td>2D11P5F</td>
<td>PF</td>
<td>-1,+1,+2</td>
</tr>
<tr>
<td>B04</td>
<td>5D7P4F</td>
<td>DPF</td>
<td>5D9P5F</td>
<td>DPF</td>
<td>0,+2,+1</td>
</tr>
<tr>
<td>B05</td>
<td>5D2P3F</td>
<td>DF</td>
<td>9D3N2B</td>
<td>DN</td>
<td>-4,-5,-5</td>
</tr>
<tr>
<td>B06</td>
<td>1D7P5F</td>
<td>PF</td>
<td>2D13P3F</td>
<td>PF</td>
<td>-1,+6,-2</td>
</tr>
<tr>
<td>B07</td>
<td>4U12P10F</td>
<td>UPF</td>
<td>4U12P9F</td>
<td>UPF</td>
<td>0,0,-1</td>
</tr>
<tr>
<td>B08</td>
<td>4D6P6F</td>
<td>DPF</td>
<td>7D7P2F</td>
<td>DPF</td>
<td>-3,+1,-4</td>
</tr>
<tr>
<td>B09</td>
<td>6U7P8F</td>
<td>UPF</td>
<td>6U5P7F</td>
<td>UPF</td>
<td>0,-2,-1</td>
</tr>
<tr>
<td>B10</td>
<td>5U0 2B</td>
<td>U</td>
<td>11U2N1B</td>
<td>U</td>
<td>+6,-2,+1</td>
</tr>
<tr>
<td>B11</td>
<td>4D7P5F</td>
<td>DPF</td>
<td>5D9P5F</td>
<td>DPF</td>
<td>-1,+2,0</td>
</tr>
<tr>
<td>B12</td>
<td>4D5P5F</td>
<td>DPF</td>
<td>6D9P4F</td>
<td>DPF</td>
<td>-2,+4,-1</td>
</tr>
<tr>
<td>B13</td>
<td>4U9P0</td>
<td>UP</td>
<td>7U7P2F</td>
<td>UP</td>
<td>3,-2,2</td>
</tr>
<tr>
<td>B14</td>
<td>2U8P8F</td>
<td>PF</td>
<td>2D11P7F</td>
<td>PF</td>
<td>-4,+3,-1</td>
</tr>
</tbody>
</table>

As can be seen from Tables 4.3 and 4.4, there were 14 significant interpretive label changes in Class A, and 3 significant interpretive label changes in Class B. In addition, 3 students in Class A and 4 students in Class B showed changes greater than 3 points on at least one axis, despite retaining their original interpretive labels. Each of these cases was interpreted using Bales' (1970) descriptions of types. These each teacher, in Table 4.5, it is obvious that the teachers' overall perception of their classes did not change significantly. This result aids the researcher in interpreting those individual changes which are judged to be interpretable without a concern for the confounding effects of a shift in the teachers' perceptions of the classes as a whole. Table 4.5 gives the mean score changes and standard deviations of the changes of perception of each teacher on each axis. There were, however, numerous individual changes which were interpretable according to the procedures of Bales (1970).
Table 4.5

Means and Standard Deviations of Score Changes for Each Teacher on Each Axis.

<table>
<thead>
<tr>
<th>Axis</th>
<th>Teacher</th>
<th>Mean Score Change</th>
<th>St.Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>U-D</td>
<td>A</td>
<td>-0.84</td>
<td>4.06</td>
</tr>
<tr>
<td>U-D</td>
<td>B</td>
<td>0.00</td>
<td>3.31</td>
</tr>
<tr>
<td>P-N</td>
<td>A</td>
<td>+0.54</td>
<td>3.54</td>
</tr>
<tr>
<td>P-N</td>
<td>B</td>
<td>+0.71</td>
<td>2.81</td>
</tr>
<tr>
<td>F-B</td>
<td>A</td>
<td>-0.12</td>
<td>3.14</td>
</tr>
<tr>
<td>F-B</td>
<td>B</td>
<td>-0.71</td>
<td>2.02</td>
</tr>
</tbody>
</table>

interpretations, and diagrams of the positional changes for each case are presented below. In the figures, dotted lines indicated the perception of the teacher prior to the residential outdoor program and solid lines indicate the perception of the teacher after the experience.

Student A01 changed from a score of 3U9P3F, type UPF, to a score of 9D3P4F, type DPF. Both UPF and DPF types seem to be task or value-oriented and strong on friendly and likeable character traits. The basic difference between the types is that where the UPF type is seen to be ascendant and leadership oriented, often initiating group tasks, the DPF type is seen to be a follower and to be more submissive. In addition, Student A01 showed a 6 point drop on the P-N axis while retaining the P label. This axis reflects a gregarious-isolationist or friendly-unfriendly aspect of personality. The teacher now seems to view the student as slightly less friendly and gregarious, and more of a follower than a leader, than before the residential outdoor program. A graphical representation of this change is presented in Figure 4.1.

Student A02 changed from a score of 4D8P2B, type DP, to a score of 6D2P4B, type DB. Type DP is seen as calm, non-assertive
Figure 4.1: Graphical Depiction of Teacher's Perception Changes Regarding Student A01.

and friendly with a tendency to imitate those that he or she likes. On the other hand, the DB type is seen as anxious and negative to leadership advances and authority. The DB type is not blatantly disobedient but must be urged to comply. The teacher now sees this student as less friendly and less cooperative than was previously the case. A graphical representation of this change is presented in Figure 4.2.

Student A04 changed from a score of 8D1P4F, type DF, to a score of 4D3P1B, type DP. Types DF and DP are similar in that they are both seen as submissive or non-assertive, and conventional. The major difference is that where the DF type is seen as impersonal and inhibited, the DP type is responsive to, and trusting of, others. As well as the typology change, the rating of this student on the U-D axis increased 4 points. This change is interpreted as a new perception of the student as
Figure 4.2: Graphical Depiction of Teacher's Perception Changes Regarding Student A02.

being less submissive than had been previously perceived. In total, the teacher views the student as more person-oriented and less submissive after the experience than before. A graphical representation of this change is presented in Figure 4.3.

Student A05 changed from a score of 2D8N8B, type NB, to a score of 3D2N0, type D. Type NB is seen to be unfriendly, autonomous and resistant to authority. Words which are used to describe this type are evasive, stubborn, obstinate and cynical. The individual is seen to reject social roles expected of him or her. Insecurity is one of the personality traits noted. The D type is somewhat similar in that he or she tends to devalue the self. The D type is, however, seen to be passive and acceptant of whatever situation exists. The teacher now sees the student as less unfriendly and less delinquent, but slightly more withdrawn. A graphical representation of this change is
Student A07 changed from a score of 03P2B, type P, to a score of 2U8P4F, type PF. Both P and PF types are seen to be friendly, agreeable and equalitarian, with the PF type seen as more task and value-oriented. The increase on the F-B axis corresponds to a view of the student as more persistent and conforming while the increase on the P-N axis reflects an increasing perception of the student in the friendly direction. A graphical representation of this change is presented in Figure 4.5.

Student A10 changed from a score of 3D4P1B, type DP, to a score of 2D6P2F, type P. The interpretation of this typological change reflects a difference in submissiveness. The P type is seen as more autonomous and less of a follower than the DP type.
Figure 4.4: Graphical Depiction of Teacher's Perception Changes Regarding Student A05.

Figure 4.5: Graphical Depiction of Teacher's Perception Changes Regarding Student A07.
In this particular case, however, the change in score which led to the typological change is only of the magnitude of 1, leading the researcher to regard this change as a chance change due to possible measurement error. For this reason, the change in interpretation of this case will be ignored for the final analysis of all changes. A graphical representation of this change is presented in Figure 4.6.

Figure 4.6: Graphical Depiction of Teacher's Perception Changes Regarding Student A10.

Student A11 changed from a score of 4U7P2F, type UP, to a score of 1U8P0, type P. The UP type is seen to be more extraverted and leadership-oriented than the P type while remaining friendly and sociable. The P type is also seen as less ascending in a social situation. Again, as for Student A10, the interpretive change resulted from a minor score change and could
plausibly have resulted from measurement error. This case will therefore also be ignored in the final interpretation of the total changes. A graphical representation of this change is presented in Figure 4.7.

Figure 4.7: Graphical Depiction of Teacher's Perception Changes Regarding Student A12.

Student A12 did not change on the interpretive label but the magnitude of the score of the P-N axis changed from 6P to 10P. This change is viewed as an increase in the success of the individual in social interaction and in friendliness. The P type is seen to be individualistic while still retaining identity with the group. The score change reflects a perception which places the student more strongly into the above position. A graphical representation of this change is presented in Figure 4.8.
Figure 4.8: Graphical Depiction of Teacher's Perception Changes Regarding Student A12.

Student A14 changed from a score of 5U8P6F, type UPF, to a score of 4U3P2F, type UP. Both of these types are seen to be ascendant and friendly. The UPF type, however, is more goal and value-oriented than the UP type, who is neither clearly for, nor clearly against, group goals and values. It should be noted that the teacher's perception of this student also decreased 5 points on the P-F axis reflecting a less strong perception of the friendly characteristics of the student. The teacher now sees the student as less friendly and less task or value-oriented than previous to the experience. A graphical representation of this change is presented in Figure 4.9.

Student A15 changed from a score of 8U6P5F, type UPF, to a score of 2D4P1B, type P. The UPF type is seen to be friendly and ascendant, often assuming a leadership role within the group on task or value-oriented projects. In comparison, the P type,
while remaining friendly is seen as equalitarian and neither ascendant nor submissive. Since the magnitude of this perceived change is one of the strongest detected in this study, further comment on this particular case seems appropriate. This student was highly successful and dominant in the classroom situation. The student is strong in academic achievement and had occupied a position of security as a leader. When removed from the classroom to the outdoor situation, the skills and qualities which had served this student well in the classroom were no longer as important. The student had problems adjusting to the lifestyle and conditions of the program. Student A15 feigned numerous injuries and illnesses in an attempt to avoid attempting tasks at which it would be difficult to excel. When this tactic failed, the student elicited the support of willing students, who were doing well in the program, to provide aid and
assistance. In doing so, Student A15 admitted to those individuals that help was both wanted and needed. This type of case, where a student who excels in the classroom has unaccustomed problems coping with and succeeding in the outdoors, has often been referred to by outdoor educators. The documentation of the teacher's perceptual change on this student supports the previous anecdotal claims of outdoor educators in describing the influences of residential outdoor programs. A graphical representation of this change is presented in Figure 4.10.

![Graphical Depiction of Teacher's Perception Changes Regarding Student A15.](image)

Student A16 is another case where the interpretive label, in this case DP, did not change. The change that was detected for this student was a 4 point increase on the P-N axis. The DP
type person is seen as friendly and non-assertive. In addition, the DP type tends to trust and identify with others. The change in perception of the teacher reflects a stronger teacher opinion of the student in the friendly and loving direction. It should be noted that this student provided the most aid and support for Student A15 in that individual's attempts to avoid failure and to cope with the outdoor situation. A graphical representation of this change is presented in Figure 4.11.

![Graphical Depiction of Teacher's Perception Changes Regarding Student A16.](image)

Student A17 changed from a score of 1U6P1F, type P, to a score of 4D3P1F, type DP. Both type P and type DP are viewed as sociable and friendly. The DP type reflects a greater tendency to admire and identify with others, as well as exhibiting a more submissive nature. The change reflected here is that the teacher
perceived the student as being more influenced and led by others after the residential outdoor experience than before. A graphical representation of this change is presented in Figure 4.12.

![Graphical Depiction of Teacher's Perception Changes Regarding Student A17.](image)

Figure 4.12: Graphical Depiction of Teacher's Perception Changes Regarding Student A17.

Student A19 retained the interpretive label DP, but the scores on the U-D and P-N axes both increased 4 points. This reflects a new perception by the teacher which is stronger in the likeable and sociable directions. The teacher also now perceives the student to be somewhat less of a follower and more dependent on the self than had been previously perceived. A graphical representation of this change is presented in Figure 4.13.
Figure 4.13: Graphical Depiction of Teacher's Perception Changes Regarding Student A19.

Student A21 changed from a score of 1U10P2B, type P, to a score of 4D8P2B, type DP. This change is almost identical to the change in perception of Student A17, and the interpretive comments made for that student are equally applicable to Student A21. A graphical representation of this change is presented in Figure 4.14.

Student A22 changed from a score of 2U8P4F, type PF, to a score of 4U12P0, type UP. Types PF and UP are both seen as agreeable and friendly. The differences arise from the interpretation that the PF type is more task and value-oriented, and is neither submissive nor assertive. The UP type is more assertive but group task or value goals tend to be de-emphasized in favor of maintaining a happy friendly group atmosphere. The teacher therefore now perceives this student as more attentive to social success and less oriented towards task accomplishment.
Student A23 changed from a score of $3D3P3F$, type DPF, to a score of $4U9P3F$, type UPF. Both UPF and DPF types appear task or value-oriented, friendly and loving. However, where the DPF type assumes a submissive role, often seeking leadership from others, the UPF type takes the initiative of assuming a leadership role. The teacher perceives this student to have changed from a follower to more of a leader. The increased score on the P-N axis also reflects an increased perception of the student as likeable and friendly. A graphical representation of this change is presented in Figure 4.16.

Student A26 changed from a score of $1U8P2F$, type P, to a score of $4U8P5F$, type UPF. Type UPF differs from type P in that
Figure 4.15: Graphical Depiction of Teacher's Perception Changes Regarding Student A22.

Figure 4.16: Graphical Depiction of Teacher's Perception Changes Regarding Student A23.
the UPF type assumes leadership and is more assertive, while working towards task or value-oriented group goals. The P type is more equalitarian, being less concerned with task-relevance and displaying neither submissiveness nor assertiveness. As such, the teacher perceives this student as being more assertive and goal-oriented than previously perceived. A graphical representation of this change is presented in Figure 4.17.

![Graphical Depiction of Teacher's Perception Changes Regarding Student A26.](image)

Student B02 changed from a score of 1D6N5B, type NB, to a score of 6U5N6B, type UNB. Types NB and UNB have the common traits of resistance to authority and stubbornness, coupled with individualism and autonomy. However, where the NB type is neither ascendant nor actively rebellious, the UNB type can be dominating and openly hostile. Also, where the goal of the NB
type seems to be simply rejection of social conformity, the UNB type seems oriented towards gratification of self and appears more self-centered and self-confident. The change in the teacher's perception may reflect a greater understanding of the motivation of this student's overt behavior. The student did not do well within the structure of the school classroom. In the outdoor setting, the student succeeded and even excelled in many tasks. This student was also supported by Student B10 and the change perceived in this student may have been amplified by the perceived change of Student B10. A graphical representation of this change is presented in Figure 4.18.

![Figure 4.18: Graphical Depiction of Teacher's Perception Changes Regarding Student B02.](image)

Student B05 changed from a score of 5D2P3F, type DF, to a score of 9D3N2B, type DB. Type DF is described as being
submissive, impersonal, inhibited and willing to follow a value or task-oriented leader, while fearing disapproval of others. In comparison, the DB type appears unresponsive, isolated, self-sufficient, and even unfriendly and resentful. This type seems indifferent to task or value-oriented goals and appears to reject objectives of social success. From the observations of the researcher during the residential outdoor program, this change is difficult to explain or justify. This student was, however, quite unremarkable to the researcher, and it is very conceivable that subtle behaviors of the student were overlooked by the researcher while being detected by the teacher. A graphical representation of this change is presented in Figure 4.19.

Student B06, while not changing in the interpretive label, changed score on the P-N axis from 7P to 13P. This change reflects a more intense teacher perception of the likeable, friendly and loving personality qualities of the student. A graphical representation of this change is presented in Figure 4.20.

Student B08 changed from a score of 4D6P6F, type DPF, to a score of 7D7P2F, type DP. Both of these types seem friendly and submissive, displaying traits of trust and gentleness. The difference between the types is that where the DPF type is more task and value-oriented, the DP type seems more involved with the group on an individual basis; people are more important than the task at hand. This change indicates that the teacher now perceives the student as more person-oriented and less goal-
Figure 4.19: Graphical Depiction of Teacher's Perception Changes Regarding Student B05.

Figure 4.20: Graphical Depiction of Teacher's Perception Changes Regarding Student B06.
Figure 4.21: Graphical Depiction of Teacher's Perception Changes Regarding Student B08.

oriented than was previously the case. A graphical representation of this change is presented in Figure 4.21.

Student B10 did not change in interpretive label but the score increased 6 points on the U-D axis. This increase is a reflection of an increase in power, assertiveness and leadership within the group. The student was a strong figure within the regular classroom and excelled in the outdoor situation. As such, more students looked to this student for aid and leadership. Student B10 and B02 were close friends within the classroom environment and this connection continued in the outdoors. It is highly possible that Student B10, by treating Student B02 as an unofficial but obvious "deputy", was responsible for the increase on the U-D axis that was noted for Student B02. A graphical representation of this change is presented in Figure 4.22.
Student B12 also did not change in interpretive label but increased 4 points on the P-N axis. The interpretation of this change is identical to the interpretation of the change in Student B06. A graphical representation of this change is presented in Figure 4.23.

Student B14 decreased 4 points on the U-D axis while retaining the original PF interpretive label. This change reflects a decreased perception in the power, assertive, dominance direction. The teacher now perceives the student to be less assertive and more willing to be led than prior to the experience. This interpretation must be tempered by the fact that neither the pre nor post score on the U-D axis was sufficiently strong to be interpreted alone. A graphical representation of this change is presented in Figure 4.24.

An examination of the totality of the recorded individual
Figure 4.23: Graphical Depiction of Teacher's Perception Changes Regarding Student B12.

Figure 4.24: Graphical Depiction of Teacher's Perception Changes Regarding Student B14.
changes failed to yield any changes which appeared to be systematically or logically linked. The changes appear on the surface to be haphazard and unconnected. Since no patterns or "typical" expected changes could be discerned by the researcher, informal discussions were held with Teacher A in an attempt to gain a further understanding of the perception changes for selected students. It was also hoped to verify some of the interpretations from the procedures of Bales (1970). Scoring and initial interpretations of the changes were accomplished soon after the residential outdoor program so the experience was still quite fresh in the mind of Teacher A when the discussions took place.

The discussions centered around three types of questions posed by the investigator regarding several students:

1) The teacher was asked to describe the personality of the student to the best of their ability.

2) The teacher was then asked whether their perceptions of the student had changed after the residential outdoor program, and, if so, how had it changed.

3) If the teacher noticed any change, the teacher was asked whether there were any particular incidents or student behaviours that they could identify that might have stimulated their perceptual change of the student.

The results of these discussions indicated that the interpretations from the procedures of Bales (1970) were, in general, congruent with the verbal descriptions of the students' personalities made by the teacher. Any discrepancies were a result of teacher omissions rather than conflicts with Bales'
(1970) inferences. Since the researcher did nothing to stimulate further description, for fear that the criticism of "leading the witness" might be leveled, this error of omission would be expected.

The teacher was also aware of, and described many of the detected perception changes and could often describe incidents or a series of observations which had caused the teacher to alter perceptions and evaluations of the students. As an example, the observations of the researcher used to describe the changes of student A15 and A16 in the previously presented interpretations were also verbalized by the teacher.

The lack of a perceived pattern in the changes coupled with the ability of the teacher to explain and justify the noted changes has led the researcher to conclude that there are no changes in teachers' perceptions of students that can be delineated a priori due to participation in a residential outdoor program. However, changes do occur, and despite the fact that the exact nature of these changes cannot be predicted, they may be detected and described.
Specific Problem # 3

The positional coordinates for each student in the group space were used to calculate the distances between individuals. Procedures used were as described in the instrumentation section of Chapter III. A simple program for a TRS-80 mini-computer was written and employed to do the calculations. Using these calculated distances and the previously mentioned techniques, probable coalitions, networks, leaders and isolates were identified.

Figure 4.25 illustrates the inferred social structure within Class A prior to the residential outdoor experience. Distances between members of the network are given by the bracketed numbers in this and the following Figures.

As can be seen, the inferential process depicts the teacher as perceiving one major network with Student A15 positioned as the leader. Student A05 is identified as an isolate, being too far from any other student to infer a coalition.

Figure 4.26 depicts the same class after the residential outdoor experience.

An examination of the social structure inferred from the responses of the teachers following the residential outdoor program indicates that various members have moved position within the network. However, the major differences between the two occasions are a change of leadership and the linking of the former isolate to the network.

Student A15 has moved from a leadership position to a position about half way down the network. Student A25 has moved up to take the leadership position formerly occupied by Student
Figure 4.25: Perceived Social Structure of Class A Prior to the Residential Outdoor Program.

A15. For a possible understanding of the change in Student A15's position the reader is referred to the previous section of this Chapter where the personality perception change of Student A15 is discussed.

Student A05, while initially identified as an isolate, has moved firmly into the network. This student is now seen as being close enough to at least one other member of the group to infer a coalition.

In this class, following the experience, the teacher
Figure 4.26: Perceived Social Structure of Class A Following the Residential Outdoor Program.

perceived a single social network with no member of the class isolated and each individual linked to every other individual in some way.

Figure 4.27 illustrates the inferred social structure of Class B before going on the residential outdoor program.

In this case the inference is that the teacher perceives the class to be divided into two separate networks. Students B02 and B10 form one network with Student B10 being inferred to be the leader. The rest of the class forms the second network with
Figure 4.27: Perceived Social Structure of Class B Prior to the Residential Outdoor Program.

Student B09 as the leader.

The social structure of this class as inferred from the perceptions of the teacher following the residential outdoor program is illustrated in Figure 4.28.

In this instance the two networks have merged to become one, with Student B10 now being inferred the leader. Student B02 remains directly connected only to Student B10, but in this way forms an indirect link with the entire group. Student B09 has lost the former leader role but remains high in the social structure. Again, various students have shown minor movement within the network.

Here again, the teacher's perception of the social structure of the class changed, following the residential outdoor program, to a perception of a single network with no isolates and each student linked to every other student in some way.

In the analysis of this problem both teachers changed from their initial perception of the class social organization, which
Figure 4.28: Perceived Social Structure of Class B Following the Residential Outdoor Program.

included isolates and more than one social network, to a perception of a single integrated network for the whole class. The teachers now see their own classes as being more socially cohesive.
CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

Conclusions of the Study

Educators involved with residential outdoor programs have long postulated that student-teacher relationships change for the better during the time period of the outdoor program. Theory has been used as a basis to support those conjectures. This study has shown that student-teacher perceptions can and do change as a result of a residential outdoor program.

This study has demonstrated that students involved in residential outdoor programs change their perception of their teacher in a direction which is generally accepted to be more conducive to a positive teaching and learning situation. It has found that teachers involved in the program change their perception of individual student personalities. The tendency of the teacher to view the class social organization as a more cohesive entity following participation in a residential outdoor program has also been shown.

In totality, the changes in interpersonal perceptions and relationships of teachers and students that experience suggests do take place, and that theory predicts should take place in residential outdoor programs, have been demonstrated and documented.

From the discussions of Chapter 1, these changes cannot help but substantially contribute to both the academic development and social well-being of the participating students. The teacher, now knowing additional relevant facts about
students, should be able to more effectively engage them in the educational process. Based on the arguments presented in Chapter I, the overall educational situation of the class should have improved. Perhaps residential outdoor programs are a more effective educational program than the traditional classroom program for realizing the social development goals of education.

Limitations and Recommendations of the Study

In the findings presented in the first three paragraphs of this chapter, the study has been quite conclusive. The findings, however, pose and indicate many more interesting questions than were investigated by the study.

This study made no attempt to determine the actual personalities or personality changes of individual students, but rather it examined the change in teacher perceptions of individual student personalities. It was assumed that the teacher's perceptions would become more realistic due to the additional information available regarding individual students. However, an investigation of the congruence between actual and perceived student personalities, both before and after the conduct of a residential outdoor program would assist greatly in an evaluation of the effect of the documented change.

In a similar manner, the study made no attempt to identify interpersonal relationships between students but only analyzes the teacher's perceptions of these relationships. The congruence of the actual interpersonal relationships and those perceived by the teacher is another area equally worthy of investigation.

The change in the teachers' perceptions of social networks
documented in this study is not sufficient to generalize to other programs. The fact that the two teachers involved in this study moved to a perception of a single cohesive network within their classes only indicates a trend which could be testable in further studies. The effect of, and duration of, perceived leadership and isolate changes within the social network(s) is another area which requires investigation in order to more fully illuminate the social effects of residential outdoor programs.

This study has only investigated the student-teacher relationship component of the social outcomes of residential outdoor programs. While only the students' perceptions of their teachers were studied, equally important outcomes regarding the students' perceptions of self, peers and school in general should also be examined in future studies. Another area worthy of investigation is the possibility that residential outdoor programs may alter the perceptions of parents and "relevant others" regarding the students' educational process. This in turn may influence the academic success and emotional adjustment of the student. Obviously if we are to more fully understand the social impact of residential outdoor programs, many more aspects of the phenomenon must be addressed.

An extension of this study that might be of considerable interest would be to examine the relationship between student and teacher perception shifts. "What is the nature of the teacher's shift of perception on students who radically shifted their perceptions of the teacher?" And "What is the nature of shifts in students' perceptions of the teacher for those students that the teacher now views in a different manner?"
would be questions posed in such a study.

This study investigated a program which was judged to meet the criteria as established by Vogan (1970) for programs conducive to positive student-teacher relationship changes. Sufficient detail of the actual treatment and the treatment groups has been provided to enable the reader to judge the generalizability of the findings to any other particular situation. However, it may be that the proposed criteria vary in importance; that some criteria are crucial to positive student-teacher relationship change while others are not so important. Documentation of additional residential programs which meet some of the criteria but not others, or possible actual manipulation of the components of the residential outdoor program, could lead to a realization of the relative importance of the various criteria. This knowledge would permit the designers of residential outdoor programs to ensure the inclusion of the critical criteria while being more selective about the inclusion of other criteria. In this way, the information would be invaluable in ensuring the continuation of the beneficial outcomes documented by this study.

The problem of sampling greatly restricts the generalizability of this study. However, with the hypothesized changes in student perceptions of their relationship with their teacher actually being found to occur, the study has provided strong evidence to support the experiential and speculative claims of many outdoor educators and in this way has established indirect evidence for generalization of the findings to the target population. During the course of the study, some
additional data were collected on the Grade 4 part of Class B. Additional data was also collected from Class C after they had taken part in a residential outdoor program. This additional data, while not a part of the main study, is analyzed in Appendix G and provides some evidence supporting the possible generalization of the findings.

Most importantly, the positive change in students' perceptions of their teachers and the nature of the change in teacher's perceptions of student personalities and interpersonal relationships within the class, coupled with the descriptive data framed by the criteria of Vogan (1970), should provide direction for future research in this area.
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APPENDIX A

INTERPERSONAL RATINGS, FORMS A, B AND C

The following are the combined items of the original three forms of the IPA developed by Bales. Each set of three questions is presented in the order: Form A, Form B, Form C; and is followed by the directional scoring key for those questions. Items with asterisks will be deleted in this study.

1. Does he (or she) seem to receive a lot of interaction from others?

1. Is his (or her) rate of participation generally high?

* 1. Does he (or she) tend to address, the group as a whole rather than individuals?

   YES = U       NO = D

26. Does he tend to devalue himself?

26. Does he seem to confine his participation mostly to only giving information when asked?

* 26. Is his total rate of participation generally very low?

   YES = D       NO = U

* 2. Does he seem personally involved in the group?

2. Does he seem to assume that he will be successful and popular?

2. Does he seem to rate himself highly on all good or socially popular traits?

   YES = UP       NO = DN
22. Does he seem resentful?

22. Does he seem only to participate when others ask him for his opinion?

* 22. Does he tend to be somewhat depressed?

YES = DN  NO = UP

3. Does he seem valuable for a logical task?

* 3. Does he seem to see himself as a good and kind parent?

3. Does he seem likely to be rated highly on "leadership"?

YES = UPF  NO = DNB

23. Does he seem to accept failure and withdrawal for himself?

23. Does he seem preoccupied with feelings of dislike for others?

* 23. Does he tend to believe that others dislike him?

YES = DNB  NO = UPF

4. Does he assume responsibility for group leadership?

4. Is his rate of giving suggestions on group tasks high?

* 4. Does he seem to feel he represents some impersonal higher plan for the group?

YES = UF  NO = DB

24. Does he seem to withhold cooperation passively?

24. Does he show many signs of tension and passive resistance?

* 24. Is laughter his main or only mode of participation in the group?

YES = DB  NO = UF
5. Does he speak like an autocratic authority?

5. Is his rate of receiving disagreement generally high?

* 5. Does he make inhibitory demands and want to enforce discipline?
   
   YES = UNF       NO = DPB

* 25. Does he seem to identify with some group of underprivileged persons?

25. Does he seem unlikely to arouse dislikes?

25. Does he seem to be appealing for understanding?

   YES = DPB       NO = UNF

6. Does he seem dominating?

6. Does he seem to make others feel he dislikes them?

* 6. Does he tend to rate others low on self-confidence?

   YES = UN       NO = DP

18. Does he seem to make others feel he admires them?

* 18. Does he seem calm understanding?

18. Does he seem to have a general trust in the goodness of others?

   YES = DP       NO = UN

7. Does he seem to demand pleasure and gratification?

7. Does he receive a lot of laughter?

* 7. Does he guess that others will rate him high on domination?

   YES = UNB       NO = DPF
19. Does he seem to believe that equality and humanitarian concern for others is important?

19. Does he seem to be submissively good?

* 19. Does he tend to believe that aggression and sex can be replaced by tender love?

   YLS = DPF  NO = UNB

* 8. Does he seem to think of himself as entertaining?

8. Does he seem very extroverted?

8. Does he make many jokes or show many fantasies?

   YES = UB  NO = DF

* 20. Does he seem very introverted, serious and shy?

20. Does he seem often to ask for suggestions or for task-leadership?

20. Does he seem to be very acceptant of authority?

   YES = DF  NO = UB

9. Does he seem warm and personal?

* 9. Does he seem able to give a lot of affection?

9. Does he seem to be able to make others feel less anxious?

   YES = UPB  NO = DNF

* 21. Does he seem to believe that it is necessary to sacrifice the self for higher values?

21. Does he seem to feel anxious, fearful of not conforming?

21. Does he seem to plow persistently ahead with great inertia?

   YES = DNF  NO = UPB
* 10. Does he **arouse your admiration**?

10. Does he **seem friendly** in his behavior?

10. Is his **rate of asking others for their opinions** high?

   YES = P   NO = N

14. Does he seem to feel that his **individual independence** is very important?

* 14. Does he **seem unfriendly** in his behavior?

14. Is his **rate of disagreement** generally high?

   YES = N   NO = P

* 11. Does he seem especially to be **addressed** when others have **serious opinions** about which they want **confirmation**?

11. Is his rate of **giving agreement** generally high?

11. Does he seem generally **prone to feel admiration** for others?

   YES = PF   NO = NB

* 15. Does he seem to feel that others are generally **too conforming** to conventional social expectations?

15. Does he seem **pessimistic about group ideals**?

15. Does he have a tendency to feel others are **dominating**?

   YES = NB   NO = PF
12. Does he seem to stand for the most conservative ideas and beliefs of the group?

12. Does he tend mostly to give opinion or analysis when he participates?

12. Is he generally very strongly work-oriented?

   YES = F       NO = B

16. Does he seem to reject religious beliefs generally?

16. Does he seem preoccupied with wishful fantasies?

16. Does he tend to see others as too acceptant of authority?

   YES = B       NO = F

13. Does he always seem to try to speak objectively?

13. Does he seem to emphasize moderation, value-determined restraint?

* 13. Does he tend to arouse guilt in others?

   YES = NF       NO = PB

17. Do you feel liking for him or her?

17. Does he seem to make others feel they are entertaining, warm?

* 17. Do others tend to address their jokes and fantasies to him?

   YES = PB       NO = NF
APPENDIX B

HISTORICAL ITEMS OF THE TPRI

The following is a comparison of the items used by Heine, Lewis et al., and Knoblock and Goldstein. Items with asterisks are indicative of a positive relationship while the remaining items are indicative of a negative relationship.

<table>
<thead>
<tr>
<th>HEINE'S ITEMS</th>
<th>LEWIS ET AL'S ITEMS</th>
<th>KNOBLOCK AND GOLDSTEIN'S ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>*1) The therapist never let me feel that he rather than I was to take responsibility for solving my problems.</td>
<td>1) The teacher always lets me feel that I was to take responsibility for what I learned.</td>
<td>1) The teacher always lets me figure out my school work.</td>
</tr>
<tr>
<td>2) It seemed to me that the therapist didn't take his work too seriously.</td>
<td>2) It seemed to me that the teacher didn't take his work very seriously.</td>
<td>2) The teacher is a hard worker. (the item on this form is positive)</td>
</tr>
<tr>
<td>*3) The therapist got across the feeling that we were really working together to understand my problem.</td>
<td>3) The teacher got across the feeling that we were really working together to help me learn.</td>
<td>3) The teacher made me feel we were working together.</td>
</tr>
<tr>
<td>*4) There was definitely a feeling of mutual trust in my relations with the therapist.</td>
<td>4) I felt sure that I could trust the teacher and he seemed to feel that he could trust me.</td>
<td>4) The teacher and I trust one another.</td>
</tr>
<tr>
<td>5) The therapist seemed to want me to maintain pretty close control over my emotions when I was with him.</td>
<td>5) The teacher seemed not to want me to show it when I was very happy or sad.</td>
<td>5) The teacher didn't want me to show when I was happy or sad.</td>
</tr>
</tbody>
</table>
6) I had the feeling that the therapist was so sympathetic that he couldn't really be helpful.

*7) The therapist was a very natural, unaffected sort of person.

8) Aside from anything else, the therapist was a likeable fellow.

9) I somehow caught the feeling that the therapist couldn't regard me as an equal.

10) It seemed as if the therapist always lapsed into wordy explanations when he might have let me finish.

11) I had the feeling that there was one person I could really trust.

12) I never had the feeling that the therapist really understood what I was trying to get across.

13) The therapist always seemed to know what I was trying to get across to him.

6) The teacher was kind but couldn't really help me.

7) The teacher acted just like himself, sort of natural.

8) The teacher was a likeable person.

9) The teacher thought he was better than me.

10) The teacher always talked a lot and didn't let me finish what I wanted to say.

11) I felt I could really trust my teachers.

12) I never felt that the teacher really understood what I was trying to say and do.

13) The teacher always knew what I was trying to do.
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>14) The therapist often seemed to be lost in his own thoughts rather than attending to what I said.</td>
<td>14) The teacher often seemed to be lost in his own thoughts rather than thinking about what I said.</td>
<td>14) The teacher often paid more attention to what he was thinking than to what I said.</td>
</tr>
<tr>
<td>*15) I never had the feeling that the therapist was in over his depth in trying to help me.</td>
<td>15) I had the feeling that the teacher knew what he was doing in trying to teach me.</td>
<td>15) I had the feeling that the teacher always knew what he was trying to teach me.</td>
</tr>
<tr>
<td>*16) The therapist was anything but cold and distant.</td>
<td>16) It was easy to talk to the teacher. He seemed interested.</td>
<td>16) It was easy to talk to the teacher. He seemed interested.</td>
</tr>
<tr>
<td>17) I always had the feeling that I was just another patient as far as the therapist was concerned.</td>
<td>17) I always had the feeling that I was just another student as far as the teacher was concerned.</td>
<td>17) I felt the teacher didn't really like me.</td>
</tr>
<tr>
<td>18) I often felt, &quot;I'd better not tell the therapist that&quot;.</td>
<td>18) I often felt, &quot;I'd better not tell the teacher that&quot;.</td>
<td>18) There were many things I really couldn't tell the teacher.</td>
</tr>
<tr>
<td>*19) The therapist seemed to be in pretty good control of himself at all times.</td>
<td>19) The teacher seemed to be in pretty good control of himself at all times.</td>
<td>19) The teacher hardly ever lost his temper.</td>
</tr>
<tr>
<td>20) I was a little afraid really to tell the therapist what I thought about myself.</td>
<td>20) I was a little afraid really to tell the teacher what I thought about myself and the class.</td>
<td>20) I was a little afraid to tell the teacher what I was feeling about myself and the class.</td>
</tr>
</tbody>
</table>
APPENDIX C
TEACHER PUPIL RELATIONSHIP INVENTORY

The following are the items of the TPRI used in this study. For female teachers, the masculine pronouns were changed to the feminine form. The altered pronouns are marked below with a "*".

1. My teacher always lets me figure out my school work.
2. My teacher is a hard worker.
3. My teacher makes me feel we are working together.
4. My teacher and I trust each other.
5. My teacher doesn't want me to show when I am happy or sad.
6. My teacher is kind but can't really help me.
8. My teacher is a likable person.
9. My teacher thinks he* is better than me.
10. My teacher always talks a lot and doesn't let me finish what I want to say.
11. I feel I can really trust my teacher.
12. I never feel that my teacher really understands what I am trying to say and do.
14. My teacher often pays more attention to what he* is thinking than to what I say.
15. I have the feeling that my teacher always knows what he* is trying to teach me.
16. It is easy to talk to my teacher. He* seems interested.
17. I feel my teacher doesn't really like me.
18. There are many things I really can't tell my teacher.
19. My teacher hardly ever loses his* temper.
20. I am a little afraid to tell my teacher what I am feeling about myself and the class.
APPENDIX D

EVALUATIVE CRITERIA OF VOGAN

The following is a listing of the objectives leading to the development of positive teacher-student relationships and criteria for evaluating the accomplishment of the objectives as identified by Vogan.

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>CRITERIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) prior to the experience:</td>
<td>1. become acquainted with the site to be used</td>
</tr>
<tr>
<td>a. to gain a feeling of self-confidence and ease about the experience</td>
<td>2. have an overnight outdoor experience</td>
</tr>
<tr>
<td>b. to exhibit sincerity about the purpose of the experience</td>
<td>3. talk with teachers who have been to the site</td>
</tr>
<tr>
<td>c. to seek an awareness of the potential of the experience</td>
<td>4. attend meetings and workshops offered that pertain to the experience</td>
</tr>
<tr>
<td>d. to work with students in planning</td>
<td>5. to take special steps to prepare for those specific areas in which work will be done on the trip</td>
</tr>
</tbody>
</table>

1. speak in positive terms to associates and students
2. establish personal goals
3. encourage discussion and positive attitudes among students
1. prepare with students a list of things related to the trip that you could do upon returning
2. read several articles concerning outdoor education
3. talk with students who have been camping and find out what types of things were important to them
1. work as a participant as well as an advisor
2. explore the various ways of grouping for activities, as well as ideas for individual pursuits
3. include in thinking ideas of what you would like to learn and do (as a person, not teacher)
e. to guide students in determining goals and behavior patterns

1. to prepare, with the students, lists of academic and non-academic things to do
2. work with students in arranging a final list with attention to length of time and major emphasis of the program
3. assist the students in preparing working guides for accomplishing their goals
4. prepare a list of activities that require agreement among students regarding behavior
5. give guidance to the class in determining the behavior to be used and assist them in preparing a copy for each student

f. to assist students in developing evaluative tools

1. talk with the students about the purpose of evaluations
2. guide students in determining what things need to be evaluated
3. work with them in determining appropriate ways to evaluate each area
4. give guidance in preparing the tools for evaluation

g. to assist students in preparing to coordinate activities with other class groups

1. secure the names and addresses of classes and teachers who will be at the site at the same time
2. encourage student representatives to write to the other groups to inquire about their interests and to tell them of your plans
3. invite other groups to participate in activities if the class wishes it
4. help the class to consider areas of events that will require coordinated efforts—such as living space, dining room, etc.
2) during the outdoor experience:
   a. to contribute to the experience
      1. professionally
      2. personally
   b. to be an active 'learner'
   c. to encourage an 'openness' about conversational topics

1. give some direct instruction to your class as is appropriate
2. prepare appropriate aids, materials, etc....continuation in this area would relate closely to on-going role: academic, student 'counselor', necessary decisions, etc.

1. as appropriate in planning, share a hobby with the class
2. participate in planned class recreational program
3. dress appropriately to the occasion
4. carry out personal interest pursuits, if planned also by the group, and share the interest if student response would so indicate

1. participate in at least one activity as a learner
2. try to learn at least one new thing as taught by a student
3. participate in special opportunities provided by consultants and other resources

1. try to list the various topics discussed with students during informal conversations--identify those not usually pursued in the classroom
2. observe co-workers to see if you can find topics that they consider 'verboten'
3. see if you can list a new--non school oriented--bit of information about each of your students. This should be gathered through conversation, not questioning
d. to use the available time more effectively

1. schedule yourself 'free-time' and be around and available if students wish to talk with you (doesn't need to be announced)
2. use a set amount of time each day for personal renewal--walking, coffee, reading, hobby, etc. (this need not be too extensive, but necessary to be at best)
3. see that each student has un-scheduled time for personal pursuits
4. consider carefully the time spent walking slowly and talking--identify the values of these unhurried moments

e. to assist students in more effective use of the facilities

1. become familiar with the facilities and resources
2. go over the available facilities with students and discuss the possible uses of such
3. prepare the students concerning the rules pertaining to the use of facilities and interpret the reasons

f. to develop 'forgetfulness' about classroom routines

1. develop teaching approaches that use natural materials and do not require a textbook
2. plan with students about the amount and nature of written work to be done at camp
3. each time you say--"we must stop and go to ...," or a similar phrase, make a note of it and put down the reason it must be so (except meals, etc.) evaluate the reasons daily--is it necessary each time?
4. avoid seating students in a 'class' manner
5. overcome any feeling of necessity to have the class always together in order to do things--develop a buddy system for activities
3) following the experience:
   a. to share with the students in the evaluation
   1. prior to leaving the site, determine a time for the total evaluation
   2. follow the evaluation method designed before camp
   3. discuss with students the need for evaluation in any new areas as a result of the experience—if yes, proceed
   4. discuss, explain, and carry out with the students any other evaluations as may be requested by others
   b. to bring back to the classroom and use new skills and ideas
   1. not including the class list of ideas for follow-up activities, can you identify at least four new things you are or can use in the classroom now, that you would not have prior to the experience?
   2. identify at least four things that you and your students share in the way of new ideas or skills that are or can become a part of your classroom activities.
APPENDIX E

MINI-COMPUTER PROGRAM

The following is the mini-computer program used to pose the IPA questions and record the teachers' responses.

```
10 HOME
20 PRINT "HOW MANY STUDENTS IN THE CLASS";
30 INPUT Z
40 HOME
60 FOR I=1 TO Z
70 HOME:PRINT "PLEASE TYPE IN THE NAME OF STUDENT ";I;" AND PRESS RETURN":INPUT A$(I)
80 NEXT
90 HOME
100 FOR J = 1 TO 52
110 READ Q$,D,N,B
120 FOR I=1 TO Z
140 GET Y$: IF Y$="" THEN 140
150 IF Y$="Y" THEN R=B:G=D:H=N:GOTO 180
160 IF Y$="N" THEN R=-B:G=-D:H=-N:GOTO 180
170 GOTO 180
190 NEXT
200 NEXT
210 HOME:PRINT "THANK YOU!"
220 GET L$:IF L$ = "" THEN 220
230 FOR I=1 TO Z
240 HOME
250 PRINT A$(I); " ";
260 FOR J=1 TO 52
270 PRINT " ";J;" = ";CHR$(S(I,J)); " ";
280 NEXT
300 GET L$:IF L$ = "" THEN 300
310 NEXT
320 PRINT:PRINT "DID YOU GET THEM ALL?": INPUT M$
330 IF LEFT$(M$,1)="N" THEN 230
340 HOME
350 INPUT "TEACHER'S NAME IS ";W$
360 HOME
370 D$=" ":
380 PRINT D$;"OPEN "+W$
390 PRINT D$;"WRITE "+W$
400 FOR I=1 TO Z
410 PRINT A$(I)
420 PRINT U(I)
430 PRINT P(I)
440 PRINT F(I)
450 NEXT
460 PRINT D$;"CLOSE "+W$
470 END
480 DATA "DOES HE/SHE SEEM TO MAKE OTHERS FEEL HE/SHE DISLIKES
```
DATA "DOES HE/SHE SEEM TO PLOW PERSISTENTLY AHEAD WITH GREAT INERTIA?", -1, -1, 1
DATA "IS HIS/HER RATE OF GIVING SUGGESTIONS ON GROUP TASKS HIGH?", 1, 0, 1
DATA "DOES HE/SHE SEEM ONLY TO PARTICIPATE WHEN OTHERS ASK HIM/HER FOR HIS/HER OPINION?", -1, -1, 0
DATA "DOES HE/SHE SEEM TO BE SUBMISSIVELY GOOD?", -1, 1, 1
DATA "DOES HE/SHE TEND MOSTLY TO GIVE OPINION OR ANALYSIS WHEN HE/SHE PARTICIPATES?", 0, 0, 1
DATA "DOES HE/SHE TEND TO SEE OTHERS AS TOO ACCEPTANT OF AUTHORITY?", 0, 0, -1
DATA "DOES HE/SHE SEEM TO HAVE A GENERAL TRUST IN THE GOODNESS OF OTHERS?", -1, 1, 0
DATA "IS HE/SHE GENERALLY VERY STRONGLY WORK ORIENTED?", 0, 0, 1
DATA "DOES HE/SHE SEEM TO RATE HIMSELF/HERSELF HIGHLY ON ALL GOOD OR SOCIALLY POPULAR TRAITS?", 1, 1, 0
DATA "DOES HE/SHE HAVE A TENDENCY TO FEEL THAT OTHERS ARE DOMINATING?", 0, -1, -1
DATA "DOES HE/SHE SEEM GENERALLY PRONE TO FEEL ADMIRATION FOR OTHERS?", 0, 1, 1
DATA "DOES HE/SHE SEEM TO WITHHOLD COOPERATION PASSIVELY?", -1, 0, -1
DATA "DOES HE/SHE RECEIVE A LOT OF LAUGHTER?", 1, -1, -1
DATA "DOES HE/SHE SEEM TO CONFINE HIS/HER PARTICIPATION MOSTLY TO ONLY GIVING INFORMATION WHEN ASKED?", -1, 0, 0
DATA "DOES HE/SHE ASSUME RESPONSIBILITY FOR GROUP LEADERSHIP?", 1, 0, 1
DATA "IS HIS/HER RATE OF RECEIVING DISAGREEMENT GENERALLY HIGH?", 1, -1, 1
DATA "DOES HE/SHE SPEAK LIKE AN AUTOCRATIC AUTHORITY?", 1, -1, 1
DATA "DOES HE/SHE SEEM FRIENDLY IN HIS/HER BEHAVIOR?", 0, 1, 0
DATA "DOES HE/SHE ALWAYS TRY TO SPEAK OBJECTIVELY?", 0, -1, 1
DATA "DOES HE/SHE SEEM TO MAKE OTHERS FEEL THEY ARE ENTERTAINING, WARM?", 0, 1, -1
DATA "IS HIS/HER RATE OF DISAGREEMENT GENERALLY HIGH?", 0, -1, 0
DATA "DOES HE/SHE SEEM DOMINATING?", 1, -1, 0
DATA "DOES HE/SHE TEND TO DEVALUE HIMSELF/HERSELF?", -1, 0, 0
DATA "IS HIS/HER RATE OF GIVING AGREEMENT GENERALLY HIGH?", 0, 1, 1
DATA "DOES HE/SHE SEEM TO ACCEPT FAILURE AND WITHDRAWL FOR HIMSELF/HERSELF?", -1, -1, -1
DATA "DOES HE/SHE SEEM TO DEMAND PLEASURE AND GRATIFICATION?", 1, -1, -1
DATA "DOES HE/SHE SEEM VERY EXTROVERTED?", 1, 0, -1
DATA "DOES HE/SHE SEEM UNLIKELY TO AROUSE DISLIKES?", -1, 1, -1
DATA "DOES HE/SHE SEEM TO ASSUME THAT HE/SHE WILL BE SUCCESSFUL AND POPULAR?", 1, 1, -1
DATA "DOES HE/SHE SEEM TO FEEL THAT HIS/HER INDIVIDUAL INDEPENDENCE IS VERY IMPORTANT?", 0, -1, 0
DATA "DOES HE/SHE SEEM PREOCCUPIED WITH WISHFUL FANTASIES?", 0, 0, -1
DATA "IS HIS/HER RATE OF ASKING OTHERS FOR THEIR OPINIONS THEM?", 1, -1, 0
"HIGH?",0,1,0,
810 DATA "DOES HE/SHE SEEM TO BELIEVE THAT EQUALITY AND HUMANITARIAN CONCERN FOR OTHERS IS IMPORTANT?",-1,1,1
820 DATA "DOES HE/SHE SEEM TO BE APPEALING FOR UNDERSTANDING?",-1,1,-1
830 DATA "DOES HE/SHE MAKE MANY JOKES OR SHOW MANY FANTASIES?",0,0,-1
840 DATA "DOES HE/SHE SHOW MANY SIGNS OF TENSION AND PASSIVE RESISTANCE?",-1,0,-1
850 DATA "DOES HE/SHE SEEM LIKELY TO BE RATED HIGH ON LEADERSHIP?",1,1,1
860 DATA "DOES HE/SHE SEEM OFTEN TO ASK FOR SUGESTIONS OR FOR TASK LEADERSHIP?",-1,0,1
870 DATA "DOES HE/SHE SEEM TO BE PREOCCUPIED WITH FEELINGS OF DISLIKE FOR OTHERS?",-1,-1,-1
880 DATA "IS HIS/HER RATE OF PARTICIPATION GENERALLY HIGH?",1,0,0
890 DATA "DOES HE/SHE SEEM RESSENTFUL?",-1,-1,0
900 DATA "DOES HE/SHE SEEM TO EMPHASIZE MODERATION, VALUE-DETERMINED RESTRAINT?",0,-1,1
910 DATA "DOES HE/SHE SEEM TO BE VERY ACCEPTANT OF AUTHORITY?",-1,1,1
920 DATA "DOES HE/SHE SEEM WARM AND PERSONAL?",1,1,-1
930 DATA "DOES HE/SHE SEEM TO BE ABLE TO MAKE OTHERS FEEL LESS ANXIOUS?",1,1,-1
940 DATA "DO YOU FEEL LIKING FOR HIM/HER?",2,0,1,-1
950 DATA "DOES HE/SHE SEEM VALUABLE FOR A LOGICAL TASK?",1,1,1
960 DATA "DOES HE/SHE SEEM TO FEEL ANXIOUS, FEARFUL OF NOT CONFORMING?",-1,-1,1
970 DATA "DOES HE/SHE SEEM PESSIMISTIC ABOUT GROUP IDEALS?",0,-1,-1
980 DATA "DOES HE/SHE SEEM TO MAKE OTHERS FEEL HE/SHE ADMIRERS THEM?",-1,1,0
990 DATA "DOES HE/SHE SEEM TO RECEIVE A LOT OF INTERACTION FROM OTHERS?",1,0,0
1000 DATA "THANK YOU",0,0,0
APPENDIX F
ADDITIONAL METHODS OF ANALYSIS

In addition to the analysis of covariance performed in Chapter 4, two alternate forms of analysis were performed on the data.

Repeated Measures

A repeated measures analysis was performed using the MULTIVARIANCE computer program. For this analysis the design was treated as a three factor design with one dependent variable. The factors were defined as:

A) Group with two levels (experimental and comparison)
B) Classes within groups with two levels per group (A and B within experimental and C and D within comparison)
C) Occasion (pretest and posttest)

The dependant variable used was scores on the TPRI.

This design is described as a "Repeated Measures in the N-Sample Case" in Bock (1975). In treating the design in this fashion, any treatment effect on the groups will be contained within the Group by Occasion interaction. In other words, the treatment groups should change in a different manner than the comparison groups from one occasion to the next.

Table F.1 presents the pretest and posttest means for both the Classes within Groups factor and the simple Groups factor.

An examination of the Classes within Groups by Occasion term produced an F-ratio of .0614 corresponding to a probability level of .94. With no significant Classes within Groups by Occasion term being found, the nested factor was collapsed permitting an examination of the Groups by Occasion interaction.
The calculated F-ratio for the Group by Occasion interaction in this study was 4.7649 corresponding to a probability level less than .03. As such one may conclude that there is a significant Group by Occasion interaction in the present study (p<.05).

Table F.1
Pretest and Posttest Means for Classes and Treatment Conditions.

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest Mean</th>
<th>Posttest Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class A</td>
<td>64.42</td>
<td>66.62</td>
</tr>
<tr>
<td>Class B</td>
<td>58.36</td>
<td>60.64</td>
</tr>
<tr>
<td>Experimental Group</td>
<td>62.30</td>
<td>64.53</td>
</tr>
<tr>
<td>Class C</td>
<td>56.67</td>
<td>52.43</td>
</tr>
<tr>
<td>Class D</td>
<td>62.52</td>
<td>59.57</td>
</tr>
<tr>
<td>Comparison Group</td>
<td>59.73</td>
<td>56.16</td>
</tr>
</tbody>
</table>

With a significant Group by Occasion interaction being detected, graphical procedures as described in Winer (1971) were used to examine the nature of that interaction. Figure F.1 displays the interaction components of both the Classes within Groups by Occasions interaction and the Groups by Occasions interaction.

As can be seen from the graph, the mean of the scores of the experimental groups went up between the pretest and the posttest whereas the scores for the comparison groups decreased between the first and second administration. It should be noted that the decrease in the mean score for the comparison group was not unexpected in light of the findings of the pilot study. The interpretation of this interaction is that the experimental groups improved in their perceptions of their teachers when
compared to the groups which did not take part in a residential outdoor program.

The interpretation of this analysis confirms the interpretation of the analysis of covariance in Chapter 4 of the body of the text.

Figure F.1: Repeated Measures Groups by Occasion Interaction and Classes within Groups by Occasions Interaction.
Analysis of Differences between Predicted and Observed Scores

This analysis was performed by calculating the difference between scores that students would be expected to obtain on the posttest, given that there was no treatment intervention, and the actual score they obtained with a treatment intervention. It is similar to the analysis of covariance but differs in that the regression equation for predicting the posttest scores of the experimental students was obtained from the comparison sample of students.

The comparison group scores were used to construct a regression equation to predict an expected posttest score for any student based on his or her performance on the pretest, given that no effect of the treatment would exist. This equation was determined to be:

\[
\text{Predicted Posttest Score} = 0.8761 \times \text{Pretest Score} + 3.8295
\]

The validity of using the above equation is substantiated by the fact that the comparable regression equation for the pilot study, which was again based on the assumption that no change in student-teacher perception would occur, was \(0.8456 \times \text{Pretest Score} + 6.7693\). This equation is almost identical to the equation developed on the basis of the comparison group responses.

This equation was then applied to predict a posttest score for each student in the experimental classes based upon his or her pretest score. This predicted score, then, was the score that a student would be expected to obtain given that there was no change in his or her perception of the teacher. This score was then compared to the obtained posttest score by subtracting
the predicted score from the observed score to yield a difference score for each student in the experimental classes. If no treatment effects were present, the mean of the difference scores for the experimental classes should not be significantly different from zero. If the treatment had a positive effect, the mean of the difference scores should be significantly higher than zero.

The means and standard deviations of the difference scores of the two experimental classes, as well as their combined mean and standard deviation are displayed in Table F.2.

Table F.2

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>St.Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class A</td>
<td>6.35</td>
<td>6.69</td>
</tr>
<tr>
<td>Class B</td>
<td>5.69</td>
<td>7.28</td>
</tr>
<tr>
<td>Total Group</td>
<td>6.11</td>
<td>8.82</td>
</tr>
</tbody>
</table>

With the thought that the two experimental class means might be significantly different from one another, the hypothesis of equal means was tested using a t-statistic. The calculated t-value for the difference hypothesis was 0.1258 which is non-significant.

Since there was not a significant between class difference, the classes were pooled to test whether the mean difference score for the experimental classes was significantly different from zero. The t-value calculated for this test was 5.673 which is significant beyond alpha = .001.

Since the mean for the experimental group was significantly
higher than zero, the conclusion was that the experimental group scored significantly higher than would be expected based upon the comparison classes' scores \( (p<.001) \); the treatment had a positive effect. This analysis again confirms the analysis of covariance performed in the body of the text.
APPENDIX G

ANALYSIS OF ADDITIONAL DATA

Grade 4's

During the administration of the TPRI to class B the researcher, desiring to be as unobtrusive as possible, administered the instrument to the whole class regardless of grade level. As such, TPRI scores were available for the Grade 4 part (n=9) of Class B. These students did not attend the residential outdoor program but were not considered to be a comparison class for the purposes of the study. The reasons for not including them were twofold: they were not in the same grade as the students in the study, and there was a possibility that they might feel some resentment at being left behind during the time period of the residential outdoor program. However, some ability to generalize may be gained through an examination of their scores on the TPRI.

By applying the regression formula and following the procedures for obtaining difference scores between predicted and observed posttest scores, as previously described in Appendix F, the mean difference score can be obtained for the group. The obtained mean difference score for this group was 0.581 with a standard deviation of 5.81. This mean is not significantly different from zero; the group is like the comparison group and unlike the experimental group.

The mean for the Grade 4's on the pretest was 56.22 with a standard deviation of 9.80. On the posttest, the mean was 54.78 with a standard deviation of 12.74. Figure G.1 illustrates these...
means plotted on the Groups by Occasions graph developed in Appendix F.

As can be seen, the line is not unlike the line for the comparison group and differs markedly from the experimental group line.

The results of both the above analyses indicate that the Grade 4 part of Class B was behaving, on the TPRI, much in the
manner of the comparison group.

Despite the problems of using the Grade 4 part of Class B as a comparison group, the fact that they behaved as would be expected given no change in perception of their teacher, has further supported the conclusions of the analysis within the body of the text.

Class C

Following the completion of the study, Class C participated in a residential outdoor program which was almost identical to the program used by Classes A and B. The students in Class C were administered the TPRI, for a third time, the day following their return to the classroom. This meant that these students had completed the instrument three times. While the pilot data suggested that there should be a drop in scores between the first and second administration of the TPRI, the researcher knows nothing regarding the behavior of scores between the second and third administrations. As such, the data obtained from the third administration may or may not be reliable. However an inspection of the results may give further evidence of the generalizability of the findings of this study.

By treating the scores of the second administration as pretest scores and the scores from the third administration as posttest scores, a comparison of this group to the groups of the study may be undertaken.

The mean of the class on the second administration was 52.43 with a standard deviation of 8.22. On the third administration (following the residential outdoor program) the
mean was 53.81 with a standard deviation of 10.28. Figure G.2 illustrates Class C embodied within the Groups by Occasions interaction graph from Appendix F.

Figure G.2: Second and Third Testing of Class C Compared to the Group by Occasions Interaction.

As can be seen, the slope of the line for Class C is unlike the comparison group slope and is almost identical to the slope for the experimental group.

By following the procedures for obtaining differences
between the expected and observed posttest scores, a mean difference score for Class C of 4.047 with a standard deviation of 6.383 was obtained. This mean is significantly different from zero. The conclusion is that Class C is now more like the experimental classes and does not fit the pattern of the comparison classes.

The above two sets of analyses are in no way conclusive. They do, however, indicate that the findings of the study are potentially generalizable to other classes and other residential outdoor programs.