

AN ASSESSMENT OF THE EFFECTS OF TWO RESIDENTIAL
CAMP SETTINGS ON ENVIRONMENTAL ATTITUDE DEVELOPMENT,

by

William Rogers, Christy, Jr.

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APPROVED:

M. L. Driscoll, Co-Chairman

D. L. Hensley, Co-Chairman

C. Schwertz

D. R. Sebolt

R. R. Bos

October, 1982

Blacksburg, Virginia

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CHAPTER I

INTRODUCTION AND PURPOSE OF STUDY

The quality of the environment became a major concern during the decade of 1970's. The 4-H Program of the Cooperative Extension Service, with a long history of involvement in natural resources education, identified "the environmental crisis" as a major program emphasis for the 1980's:

The 4-H environmental improvement program must have high priority and resource allocations must be commensurate with the needs.

Program emphasis should be placed on building understandings of ecological principles and the relationship of man and his environment; contributing to solutions to the problems; and sharing citizenship responsibilities to optimize environmental resources.

(Brown, Note 1).

As a part of this commitment to an improved environment, the Cooperative Extension Service in each state sponsors an Environment and Natural Resources Program for 4-H members. One element of this program is an annual residential 4-H Conservation Camp designed to teach 4-H members the wise use of natural resources and protection of the environment against degradation. The 4-H Conservation Camp in Virginia emphasizes as its goal the development and inculcation of positive environmental attitudes.

Residential camps have been shown by research (Burrus-Bammel, 1978; Doty, 1960; George, 1966; Sharp, 1930/1972) to be conducive milieus for

teaching positive environmental attitudes. To date, however, little research has been reported which assessed the effect of the residential settings within a camp on the development of positive environmental attitudes. Therefore, the purpose of this study was to determine the effect residential camp setting had on the development of environmental attitudes.

Justification

During the 1970's a major concern arose over the quality of the environment. Out of this concern grew a commitment to the development of a strategy for educating mankind toward the understanding that all living and non-living parts of the biosphere are interdependent and that a responsibility exists to maintain the quality of the environment in a manner befitting all life (Brennan, 1970).

From this commitment came a new instructional discipline, Environmental Education. A goal for environmental education was set forth in a document entitled Framework for Environmental Education. This document was developed at the International Workshop on Environmental Education held October 13-22, 1975, at Belgrade, Yugoslavia. The workshop was sponsored by the United Nations Environmental Program (UNEP) and the United Nations Educational, Scientific, and Cultural Organization (UNESCO). Better known as The Belgrade Charter, it specifically stated a goal of environmental education:

To develop a world population which is aware of, and concerned about, the environment and its associated problems and which

has the knowledge, skills, attitudes, motivations, and commitment to work individually and collectively toward solutions of current problems, and the prevention of new ones (Bennett, 1976, p. 22).

The development of positive environmental attitudes was thus identified in The Belgrade Charter as a major focus of environmental education.

Professional environmental educators' support for attitude development, as a major objective of environmental education, has been extensive according to Collins, Herbkersman, Phelps, and Barrett (1979): "In the past several years, environmental educators have increasingly emphasized the needs for establishing new attitudes in students rather than dealing with environmental awareness at the cognitive level" (p. 18). In an environmental education guide written for teachers as a classroom resource, Barnes (1975) stated: "The prime aim of environmental education is to create an attitudinal change in students" (p. 6). Wagar (1970) postulated that the survivability of our society as it presently exists will depend upon attitudinal change:

Our way of life is less and less appropriate to survival, and the task of correcting the situation is enormous, involving no less than a restructuring of some long accepted (environmental) attitudes in the American way of life (p. 15).

Because the development of positive environmental attitudes has been considered so important, environmental educators have designed curricula that stress positive attitude formulation and inculcation (Bennett, 1972; Brennan, 1970; Burrus-Bammel, 1978; Kostka, 1976; Miller, 1979;

Millward, 1973b; Peck, 1975; Wagar, 1970) based upon research findings. These findings indicate that attitudes can be taught and measured (Doty, 1960; Hardy, 1962; Miller, 1979; Millward, 1973b), that definitive strategies can be developed for promoting positive attitude changes toward the environment (Andrews, 1978; Burrus-Bammel, Bammel, & Kidd, 1979; Carlson & Baumgartner, 1974; Coons, 1973; Millward, 1973b), and that attitudes, once established remain undiminished for at least twelve months (Cronbach, 1972).

The efficacy of studying attitudinal change has been a point of continuous debate for social psychologists for many years. Wicker (1969) reviewed literature concerning the relationship between attitude and behavior and concluded: "little evidence (exists) to support the postulated existence of stable, underlying attitudes within the individual which influence both his mental experiences and his actions" (p. 75). This view is vigorously rebutted by others who hold that the study of attitudes is crucial to the understanding of behavior (Allport, 1954; Brandwein, 1971; Burrus-Bammel, 1978; Cohen, 1964; Lauer, 1971). Fishbein and Ajzen (1974) reported that their findings indicated a positive relationship between attitude and behavior and that attitudes may, in some cases, be predictors of behavior.

One explanation for research studies not finding positive relationships between attitudes and behaviors centers on methodology. According to Lauer (1971), the methods typically used in attitude research may be faulty and thereby produce inconclusive results:

The fact that an attitude does not lead directly to a behavior

does not justify the assertion that attitudes play no role in behavior, or that attitude research lacks significant implications for social life....If that significance seems minimized by those studies that have found poor correlation between attitudes and behavior, the fault lies both in the failure to create research designs that reflect the complexity of the problem and in the tendency to exalt the importance of the proximate causes of overt behavior. (p. 247)

The value of attitude research should not be determined solely by the correlation of attitudes with behavior but should be based according to Lauer (1971), on the following six factors:

1. Attitudes influence various psychological processes. Attitudes control the learning of new information. Information presented to the individual that is counter to his pre-existing attitudes is less likely to be learned.
2. Attitudes function as an ecological variable. An individual's behavior is directly influenced by the attitudes of "significant others" comprising his reference group. A group with antagonistic attitudes toward an object similarly tend to influence the perception of the individual.
3. Attitudes function as selective mechanisms in interactive patterns. Individuals tend to choose associates with attitudes that are similar to their own.
4. Attitudes act as inhibitory factors on certain behavior. Attitudes act as inhibitors for certain behaviors. A major barrier to social

change is attitudes.

5. Attitudes affect the behavior of those who are objects of the attitudes. The attitude a person projects toward another contributes to the shaping of the other's self-concept which in turn influences his behavior.

6. Attitudes are formed out of the matrix of social behavior. People tend to develop attitudes consistent with their behavior. Changing the role or behavioral setting of an individual can change his attitudes.

The importance of attitude research, reflected by Lauer's six points, is in the study of change. Attitudes may be utilized as a barometer of change. As attitudes develop out of change, they may also reinforce the perpetuation of new behavior. "Whenever attitudes and behavior are discordant, we may predict that one or the other will change" (Lauer, 1971, p. 250-251).

Need for the Study

There is a general consensus among environmental educators that the residential camp provides a most conducive milieu for teaching environmental education (Marans, Driver & Scott, 1972; Myers & Kofke, 1976; Stapp, 1971). Some research has been conducted (and is reviewed in Chapter II) on attitude change in residential camps but little research was found which assessed the effect residential setting within the camp had on attitude development. Dr. Robert E. Millward, in a conversation with the investigator, stated:

There are pitifully few research studies, almost no recent ones, that were designed to measure the impact of camp setting on attitude. And I don't know of any study which assesses the effect different residential settings within a camp might have on the development of environmental attitudes. But it certainly sounds interesting. (Millward, Note 2)

The Virginia Cooperative Extension Service annually operates a five-day 4-H Conservation Camp for 4-H members between the ages of 12 and 19. The purpose of this natural resources camp as defined by Dr. Kenneth E. Dawson, Director of the Virginia 4-H Program, is to:

"Develop within the 4-H'er a basic philosophic attitude which considers the environment as a delicately balanced interdependent system limited in both size and resources" (Dawson, Note 3).

The camp's curriculum is focused upon helping the 4-H members reach an understanding of various ecosystems and how they can be managed and conserved to produce needed goods and services without destroying the resource. Extension Specialists from Virginia Polytechnic Institute and State University's Faculty in Forestry, Geology, Wildlife Management, Fisheries Science, Hydrology, and Soil Science provide the instruction for the camp, employing an experiential "learn-by-doing" educational methodology specifically designed to foster positive environmental attitude development. Use of Extension Specialists as instructors is consistent with research reported by King and McGinnis (1972): "The positive relationship between communicator credibility and attitude change has been one of the most stable and replicable effects in social psychology" (P. 39).

Campers live in one of two residential settings, either the central camp or the outpost camp. Campers in the central camp are housed in cabins and take their meals in the central dining hall. Outpost campers live in tents and cook all meals themselves. Both groups receive identical environmental education instruction delivered by the same instructors. During the week the two groups are isolated from one another, having no contact or interaction from the time they report to their group until they form for the closing camp ceremonies.

The expense of operating two separate, yet nearly identical, camps has prompted administrators of the Virginia 4-H Program to question whether one camp setting may be more effective than another in helping 4-H members develop positive environmental attitudes. Dr. Kenneth E. Dawson expressed the importance for determining the program effectiveness of the 4-H Conservation Camp:

We need to know what, if anything, the Conservation Camp is doing to accomplish our stated goal of positive environmental attitude development. There has been little or no evaluation of the camp to determine this. In these times of tight money and strict accountability, we must be able to justify the dollars and man hours being poured into the program or face discontinuing it. Each year, for the past four years, our total annual cost for the program has risen by 25 to 50 percent while the participation levels, even with half-scholarships, have fallen off. Since we are in essence running two camps during the same week I would like to know if either the outpost camp or the central camp,

both, or neither are effective in developing positive environmental attitudes. If one setting is shown to be more effective than the other in changing youngsters' attitudes toward the environment, then that setting is the one we will go with. (Dawson, Note 4)

Hypotheses

After a review of the literature (presented in Chapter II) the following null hypotheses were determined as questions arose for which answers could provide direction to program development.

Hypothesis one: There will be no significant difference in overall outdoor attitudes of campers assigned to the control group, central camp condition, or outpost camp condition of this investigation.

Hypothesis two: There will be no significant difference in environment attitudes of campers assigned to the control group, central camp condition, or outpost camp condition of this investigation.

Hypothesis three: There will be no significant difference in socialization attitudes of campers assigned to the control group, central camp condition, or outpost camp condition of this investigation.

Hypothesis four: There will be no significant difference in education attitudes of campers assigned to the control group, central camp condition, or outpost camp condition of this investigation.

Hypothesis five: There will be no significant difference in pollution attitudes of campers assigned to the control group, central camp condition, or outpost camp condition of this investigation.

Delimitations

The study was delimited to the following:

1. The population sample consisted of 4-H members voluntarily attending the Virginia 4-H Conservation Camp.
2. Subjects' ages ranged from 11 to 15 years old.

Limitations

The limitations of the study are the following:

1. The assessment of environmental attitudes was constrained, by the camp administration, to a single technique.
2. Teaching methods and materials employed by the Extension Specialists were designed to be consistent with the goal of the camp but no control was exercised over the instructors' presentations.

Summary

The purpose of this study was to determine the effect residential camp setting had on the development of environmental attitudes. Four-H members attending a five-day Conservation Camp were assigned to one of two residential camp settings in order to assess the impact camp setting had on the formation of positive environmental attitudes.

Instructors from Virginia Polytechnic Institute and State University's Extension Division Faculty provided the technical instruction for the six subject matter areas; Forestry, Wildlife Management, Hydrology, Soil Science, Geology, and Fisheries Science. Attitudes of the campers were assessed utilizing a Likert-type attitude scale.

Organization of the Study

The study is organized into five chapters. After Chapter I, in which the scope and purpose of the study are defined, four additional chapters are presented. Chapter II presents a review of related and specific research pertaining to attitude change in residential camp settings. Next, Chapter III discusses a description of the sample, the instrument, design of the study, and data analysis procedures. Chapter IV contains the results of the data analysis. Finally, Chapter V presents a summary of the study, the conclusions which were drawn concerning the hypotheses, and recommendations for further study.

CHAPTER II

REVIEW OF LITERATURE

The purpose of this study was to determine if a residential camp setting had an effect on the development of environmental attitudes by 4-H members attending a conservation camp. This review of literature centers on studies and related literature which utilized a residential camp setting as a factor in the changing of attitudes. The chapter is divided into two sections. Section one reviews studies conducted in a residential camp setting which measured attitude change. The second section examines literature related to the impact of camp setting on camper development.

Research Related to Attitude Change in a Residential Camp Setting

Utilizing the residential camp setting as an educational milieu is not a new concept; the idea was crystallized by L. B. Sharp in 1930 with the publication of his book, Education and the Summer Camp: An Experiment (1930/1972). Drawing upon the educational philosophies of John Dewey and William Kilpatrick, Sharp posited that a residential camp was the ideal setting for transmitting to children both cognitive and affective concepts. Especially germane to this setting would be teaching about natural materials, plant, and animal life. He maintained that providing children with an opportunity to participate in a variety of activities, to socialize with others, and to live in an isolated

setting removed from societal pressures and stigmas would develop within them a more favorable attitude toward others, the natural environment, and education.

Kilpatrick (1942) wrote that the total involvement of the learner through active participation is basic to information and attitude assimilation. "Before a thing can be learned, it has first to be lived. If it is a feeling, I can't learn it until I have first felt it....I learn only and exactly what I live" (p. 15). The residential camp was, Kilpatrick postulated, better than a school for educating children because in a camp they must live what they learn.

Kranzer (1958) studied a five-day school resident outdoor program. He found that the camp experience increased individual motivation, group acceptance, and stimulation of school work as compared to others not attending the school camp.

Olbricht (1958) conducted a study to determine the effectiveness of a camp in affecting attitude change. Four specific areas were studied: a) attitudes toward self, b) attitudes toward morals, c) attitudes toward Christian living, and d) attitudes toward Christian teaching. He reported a noticeable change of attitudes in all four categories had occurred as a result of a residential camp experience. Olbricht's study was important in that it was one of the first attempts to objectively measure attitude change in a residential camp setting.

The research of Doty (1960) was one of the first attempts to design a residential camp program for purposively influencing character

development. Doty presented a three dimensional model of a camp. The first dimension encompassed the physical setting of camp including structures, equipment, and the surrounding environment. Experiences available to and participated in by the campers was the second dimension. The third dimension related to the value of the camp experience.

During ten years of research on the value of camp, Doty and his associates developed a systematic program strategy for influencing attitudes and developed several attitudinal instruments to measure character development. Results indicated that a definite strategy could be developed to influence attitude changes, that attitudes could be taught and measured within the milieu of a residential camp.

Hardy (1962) conducted a study based upon Doty's (1960) methods to determine if attitudes could be learned in a residential camp setting and, if so, in what direction and to what degree did they change. Results indicated that attitudes could be learned in a residential camp setting and that it was possible to measure the direction and degree of change.

Jensen (1963) constructed an instrument to measure the attitudes of female campers between the ages of 13 to 15 toward program experiences which were indigenous to the natural environment or "real camping." A situational response scale was used to measure attitudes in the concept areas of: pioneering, primitive living, hazards in the out-of-doors, work as a part of living, nature curiosity, beauty in nature, conservation, and interrelatedness of nature. After several pilot tests and revisions the scale was reported to be reliable.

Jensen administered the scale to campers in 11 study camps and findings showed campers' attitudes toward "real camping" had significantly changed in the negative direction from the first scale administration to the final administration on the last day of camp. She concluded that a scale could be developed which would measure camp influences on attitude.

Two years after her first attitude study, Jensen (1965) followed with a study examining the effect of two teaching methods on attitudes toward program experiences indigenous to the natural environment. One group was taught outdoor living skills through camp classes and practice sessions while the other was taught outdoor skills as they were needed during actual experiences of cooking out and tripping. A Likert-type scale was developed to measure attitude change of female campers ages nine to fifteen.

Significant increases (.01 level) in positive attitudes toward program experiences in the natural environment were found for both groups but there was no difference between the two groups. Jensen concluded that either method was effective in changing attitude.

Measuring attitudes toward conservation was the focus of George's (1966) study. The conservation attitudes of high school students, college students, and adults were compared by using a 64-item Likert-type Attitude Toward Conservation Scale designed by George.

The conservation scores of the three groups were compared to determine differences in the three groups. A significant difference was found between the conservation attitudes held by high school

students, college students, and adults. Certain factors were more influential on attitude development. Age and education were the most discriminating characteristics of conservation attitudes in high school students. For college students it was age and sex, with sex and residence background identified for adults. Analysis of the impact of avocational activities on conservation attitudes found a 4-H conservation project experience and a 4-H residential conservation camp experience to be particularly effective in developing positive conservation attitudes.

Carlson (1972) studied the effect a resident outdoor education experience had on the perceptions intermediate school children developed toward their peers and the out-of-doors. Sixty-four children from three fourth, fifth, and sixth grade intact classrooms were subjects for her study.

Nineteen children from an intact room received a five-day resident outdoor experience while the 45 other subjects remained in their regular academic program. Three testing instruments were used in this pretest-posttest non-equivalent control group study: a) The Guess Who Inventory, b) The Selected Outdoor Pictures, and c) The Concept Factor Scale. The Guess Who Inventory and The Selected Outdoor Pictures Scales were developed by Carlson for use in this study.

Results showed no significant differences between those who went to camp and those remaining in an academic setting. Carlson concluded that a resident outdoor program had no influence on developing perceptions of peers or perceptions of the out-of-doors on intermediate school children.

A 12-day residential camp specifically designed to change participants' attitudes towards themselves, school, and the learning process was studied by Coons (1973). To determine if camp strategies could be developed for changing attitudes, two camp groups were formed. An "experimental camp" composed of 49 10-13 year old children and a "typical camp" group with 46 10-13 year olds were constituted through random assignment by school guidance counselors. The experimental variable employed to bring about attitude changes was termed "program structure." The program structure consisted of carefully designed activities requiring specific interpersonal interaction patterns.

"Typical camp" campers participated in a camp similar to others in the geographical area. Findings indicated that the experimental camp group developed significantly (.05 level) more positive attitudes than the typical camp group. Coons concluded that a camp program could be developed with the specific objective of predetermined attitude change of the participants through a residential camp experience.

Millward (1973a) evaluated the effects of a one-week resident school camp on the attitudes of sixth grade students toward the outdoors. The study was undertaken for two purposes: Millward wanted to: a) develop a scale for assessing attitude change toward outdoor concepts, and b) design a one-week camp program with the specific goal of influencing positive attitude change toward outdoor concepts.

The 37-item Millward Outdoor Attitude Inventory (MOAI) containing the four sub-categories of a) general environment, b) education, c) pollution, and d) socialization was administered to the campers one

week prior to their attendance at camp and again after having been at camp for four days. Results indicated there was an overall change in attitude with the scores of students improving each weekly session for the total three-session camp period.

Pretest to posttest total scores reflected a significant attitude change with third session campers having significantly higher posttest attitude scores than first session campers. Although sex of the campers, previous camping experience, and scouting experience were considered as possible variables affecting attitude scores, they were all found not to have a significant effect on the scores.

Natural resource camps and the resultant effects they had on changing participants' attitudes toward natural resource management was the focus of Carlson and Baumgartner's (1974) investigation. Two week-long natural resource camps in the Pacific Northwest were conducted by natural resource professionals for boys aged 13-19 years. One hundred thirty boys were selected based on an interest in natural resources and demonstrated leadership qualities.

The study was conducted to assess the effectiveness of selected teaching methods on changing participants' attitudes toward natural resource management. A bi-polar adjective scale was administered at the beginning of both camp sessions and again at the conclusion of the sessions. Findings indicated that attitudes toward the use and management of natural resources became more favorable. It was concluded that natural resource resident camps can play a major role in developing attitudes of future leaders.

Kofke (1975) studied the relationship between participation in

outdoor programs of the Girl Scouts and development of environmental attitudes. She found that Senior Scouts with six or more sessions at a resident camp had significantly higher environmental attitude scores than those Senior Scouts never having attended resident camp. Resident camp was also found to have a greater effect on environmental attitude formation than troop camping.

A one-week resident outdoor experience and its effect on the environmental attitudes of sixth grade students was found by Becker (1977) to have a significant impact on attitude change. Three hundred sixty sixth grade children in the Santa Cruz County, California public schools were selected in a stratified random sampling to participate in the study. From this sample half were put into a control group which received normal classroom instruction and half formed an experimental group that received normal classroom instruction plus a week-long resident outdoor school experience.

Both groups were pretested and posttested on a semantic differential attitude instrument designed to factor environmental attitude into five concept areas: environment, interdependence, conservation of natural resources, pollution, and human impact on the environment. Analysis of covariance was the statistical procedure applied with the level of significance set at .05. The experimental group exhibited a significantly greater positive change of attitude than did the control group on the posttest mean scores for two of the concept blocks: conservation of natural resources and human impact on the environment.

Chitwood (1977) examined the impact a Youth Conservation Camp (YCC)

had on enrollees' environmental attitudes, environmental knowledge, and locus of control. Fifty-eight subjects were pretested during the first week of the eight-week camp. Instruments utilized were the Environmental Knowledge and Opinion Survey (EKOS) and the Rotter Internal-External Scale.

Posttests were administered during the last week of camp. Results of data analysis showed that significant positive changes (at the .05 level of significance) were effected in environmental knowledge and attitude. A statistically significant positive relationship was found between scores on the environmental knowledge test and the environmental attitude test. Youth Conservation Camps were concluded to have a positive effect on environmental knowledge and attitude and a follow-up program for YCC graduates was recommended so that they may use their experience to positively influence others.

Development of a philosophical attitude which regards the environment as a total system was the goal of a resident camp environmental education program evaluated by Kidd, Burrus-Bammel, and Bammel (1978). The camp was conducted by professional resource managers and extension personnel from West Virginia University.

Twenty-nine males between the ages of 16-20 years were selected to attend the week-long resident camp. Twenty-three young men who had applied to attend but were not selected composed a posttest only control. A Likert-type scale containing 16 statements and a 15-item factual knowledge test were employed to reflect changes in environmental attitude and knowledge.

Results of Chi-square analyses indicated significant changes (.01 level) in environmental attitudes and factual knowledge occurred between pretesting and posttesting. Because control group scores varied significantly from the experimental group posttest scores but not from its pretest scores, Kidd et al. (1978) concluded that the resident environmental education camp program was the variable which caused participants to change their environmental knowledge and attitudes.

Miller (1979) examined the effect a sixth grade school camp had on self-concept, social, and environmental orientation attitudes of 110 sixth grade children. Three test administrations were given; a pretest was given on the first day at camp, a posttest on the last day at camp, and a post-posttest approximately three weeks following camp. Findings showed that significant (.05 level) changes occurred in self-concept and environmental orientation attitudes.

Concern with overpopulation was a concept that reflected positive significant changes while the concept of concern for the general environment showed a significant negative change. The statistically significant changes were noted in the post-posttest; the posttest manifested only limited gains.

Research Studies Utilizing the MGOAI

Millward (1973b) employed the use of two different teaching methods in a resident camp setting to determine if they had an effect on the formation of positive outdoor attitudes. Six teachers volunteered to staff the four-week resident camp program. Each of the teachers was randomly assigned to either the control or experimental group. Both

groups were given 20 hours of in-science education focused on outdoor strategies in recreation, language arts, social studies, nature crafts, plant and animal studies, and outdoor mathematics.

Additionally, teachers in the experimental group were taught strategies for effecting attitudinal changes within the campers. Approximately 75 sixth grade children attended each of the four one-week sessions.

The Millward-Ginter Outdoor Attitude Inventory (MGOAI), a revised form of the Millward Outdoor Attitude Inventory (MOAI) having previously been used by Millward (1973a), was employed to measure students' attitudes toward the environment, pollution, education, and socialization. The MOAI underwent revision in the summer of 1971 by Millward and Ginter in order to remove statements with cognitive orientation and replace them with affective ones.

Sub-categories of the MOAI were retained and expanded during the revision process. Attitude statements in each sub-category of the Millward-Ginter Outdoor Attitude Inventory (MGOAI) were based upon research findings. The four sub-categories included: a) environment, b) socialization, c) education, and d) pollution. Statements in the environment sub-category were based upon the research findings of George (1966), Jensen (1963), and Laug (1960). The socialization sub-category's statements were predicated upon the ideas of Dimock & Hendry (1929), Doty (1960), Jensen (1963), and Sharp (1930/72). Statements comprising the education sub-category reflected the work of Doty (1960), Jensen

(1963), and Laug (1960). The pollution subcategory contained statements that had been developed based upon information taken from environmental magazines, books, and college seminars.

Administration of the instrument took place one week prior to the student coming to camp, one week after camp, and three months after camp. Findings showed there was no significant difference in attitude scores between the experimental and control groups. Sex of the students and the weeks in which they attended camp were not found to be factors in influencing attitude changes.

Myers (1978) investigated the relationship between leadership components of a summer camp and camper development in the areas of self-concept, interpersonal affect, and environmental attitude. Seven resident camps in the northeastern United States provided the 100 staff and 122 camper subjects for the study. The Millward-Ginter Outdoor Attitude Inventory was selected for measuring positive and/or negative affect toward the natural environment.

Myers selected the MGOAI based upon criteria she established for determining the appropriateness of an instrument in measuring environmental attitudes. These criteria required that the instrument should be: a) designed for children 10-14 years of age, b) applicable to the camp experience in its language, c) capable of being computer scored, d) administered in less than 30 minutes, e) compatible with the study variables, f) standardized with predetermined levels of reliability and validity, and g) suitable for use with a non-clinical population. The MGOAI was administered three times during the eight-week investigation period; during the first week of the camp session, approximately halfway

through the eight-week session, and during the last week of camp. Significant positive changes (.05 level) in campers' attitudes toward the environment were noted.

Of the three elements studied (self-concept, interpersonal affect, and environmental attitudes) the strongest positive change was recorded in the area of environmental attitude. Myers concluded that, because of the relatively low pretest scores, changing attitudes toward the natural environment should be given more exhaustive treatment by introducing an environmental education program into summer camps. This program should include a strategy to determine if it is the environmental education program, or merely the camping experience taking place in the natural environment, which has a positive affect on environmental attitudes.

Studies and Research Related to the Impact of Camp Setting on Camper Development

The residential camp's "setting", that milieu in which camp program takes place, has been postulated by Goodrich (1959), Gump (1963), Harlow (1979), and Sharp (1930/1972) to be instrumental in the social, physical, mental, and emotional development of campers. Camp setting is a function of camp organization. According to Mitchell, Crawford, and Robberson (1970), camps are typically organized around one of two basic formats; the centralized camp or the decentralized camp.

The centralized camp is laid out much like an army camp. In the center of the complex is an open, usually grassed commons area flanked or surrounded by multiple-occupant sleeping quarters resembling either army barracks or small rural cabins. A dining hall and camp lodge are

generally located in an area adjacent to the sleeping quarters. The camp schedule is highly structured with activities planned for campers from rising to retiring by specialists in aquatics, field sports, arts and crafts, biology, equitation, and evening programs. Emphasis is placed upon all-camp activities or activities designed to involve a large group of campers thus allowing the maximum number of children to be taught various "subjects" through camp classes (Harlow, 1979; Mitchell et al., 1970).

Camps designed around the decentralized model organize the children into small "family" groups of six to eight campers and one or two counselors. Each family selects a site and establishes their own small camp in a natural area at least one-half mile from the base camp. The family is given responsibility for selecting and planning program activities, preparing meals, and dealing with the daily exigencies of the group. Guidance and counsel is provided to the group by the camp director. Focus of the camp is directed toward helping each individual to learn to live cooperatively and harmoniously with others in a real-life situation. Camp becomes life in microcosm. Acquisition of new skills becomes secondary in importance to the acquisition of patience, understanding and tolerance for others (Goodrich, 1959; Harlow, 1979; Sharp, 1940).

Testimonial literature has been written about the positive effects of decentralized camping (Gibson, 1936; Goodrich, 1959; Harlow, 1979; Sharp, 1940; Wilkinson, 1981) but research investigations germane to the study of camp setting and its effect on camper development were found by the investigator to be few in number and methodologically limited. Sharp

and Partridge (1947) studied the evolution of organized camping and described how its changing organizational focus from a decentralized to a centralized setting has reduced the camp's impact on camper development:

According to the dictionary, to camp means: "to pitch or prepare a camp to sleep out-of-doors," and this is precisely what the first camps attempted to provide for youngsters. But as time went on and camps grew in size it seemed to become more and more necessary to organize the camping experience and schedule activities. In other words, instead of taking care of greater numbers by setting up more small camps with all the inherent values therein, expansion came by developing larger and larger camps with centralized programs....Where this has happened there has been a tendency for the camp program to revolve around the equipment and facilities, and the youngsters have not had a chance to participate in the experience of living and planning their lives in small groups. (p. 17)

Murphy (1976) studied children from low socioeconomic backgrounds to determine if a decentralized camping experience would effect positive changes in self-concept. The experimental group was comprised of 237 children attending one of four decentralized camps for a two-week period. A control group was formed of 24 low socioeconomic children who had applied to attend camp but lacked the funds. A third group of 30 fee-paying, camp-attending children denominated as not being from a low socioeconomic status were utilized as a comparison group.

The Piers-Harris Self-Concept Scale and the Draw-a-Person Test were the instruments used to collect the data. A pretest was given to all groups on the day following the camper's arrival at camp and the posttest administered on the day before campers departed camp. Analysis of covariance was utilized to offset differences in the pretest scores.

Children in the experimental group were found to have significantly (.001 level) more positive self-concept scores after attending a decentralized camp program. No statistical differences were noted between groups.

Murphy suggested that future studies should include a centralized camp with which to compare the decentralized program. Other populations were suggested for study within this design.

Millward (1976) embraced the notion that specific program strategies should be designed to enhance positive environmental attitudes. These strategies, along with camp setting, should be researched as independent variables to determine the efficacy of each as a change agent. This attitude change-by-design strategy, according to Millward, should be identified as a major objective of the camp program from the outset and subjected to a careful assessment of its impact on campers.

Summary

The review of literature in this chapter was divided into two sections. The investigations reported in the first section examined research which had been conducted to determine if attitudes could be changed in a residential camp setting. Findings indicate that the

residential camp setting is effective as an educational milieu and that within this setting attitudes can be learned and measured.

Section two of the review dealt with studies and related literature which had been conducted to evaluate the impact camp setting had on camper development. Findings suggest that camp setting may have an effect on camper development but the results are inconclusive. No research was found during this literature review which addressed the question of which setting, the centralized or decentralized camp, is more effective in influencing campers' attitudes toward the environment. It was to that question that this study's hypotheses were directed.

CHAPTER III

METHODS

The purpose of this study was to determine the effect residential camp setting had on the development of environmental attitudes by 4-H members attending a conservation camp. Chapter III concerns the methods used in conducting this study and is divided into seven sections. These sections include: subjects, sampling procedures, instrumentation, data collection, treatment conditions, research design, and data analysis.

Subjects

Subjects for this study ($n = 90$) were members of the Virginia 4-H Program (CA: 11-15 years) who attended the Virginia 4-H Conservation Camp or applied to attend the camp but had to withdraw their application prior to the beginning of camp. Subjects attending the five-day residential camp were utilized in the two experimental conditions. Non-camping subjects composed the control group. Both male and female subjects were used in this investigation, but sex was not considered as a variable since other studies reported sex not to be a significant factor (Millward, 1973a, 1973b; Myers, 1978; Whiteman, 1965). All three groups had a ratio of approximately three males for every two females.

Sampling Procedures

Control Group

Thirty subjects assigned to the control group were randomly selected from those applicants (N = 53) having withdrawn their application to the 4-H Conservation Camp one week prior to the scheduled camping session. The Camp Director provided the investigator with a list of names and addresses for the 53 individuals who had withdrawn their applications. From this pool of 53 names the 30 subjects were selected by using a table of random numbers (Leedy, 1980). The control group selection process was completed prior to pretest data collection.

Experimental Conditions

Subjects (n = 60) were randomly selected from the individuals (N = 121) having had camp applications on file one week prior to the scheduled camping session. The subjects were then assigned using a random numbers table (Leedy, 1980) to one of two experimental conditions: central camp or outpost camp. The assignments to treatment conditions were completed prior to the subjects' arrival at camp.

Instrumentation

After consultation with experts in the field of conservation and environmental education (Millward, Note 5; Roth, Note 6), the Millward-Ginter Outdoor Attitude Inventory (MGOAI) was selected as the instrument used to measure the environmental attitudes of the subjects in this investigation. The MGOAI generated scores that served as the dependent

variable for this study.

Millward-Ginter Outdoor Attitude Inventory (MGOAI)

The MGOAI is a 43-item Likert-type scale designed specifically for use in a residential outdoor program to measure attitude change relating to the natural environment and defacement of the natural environment (Millward, 1973b). A copy of the MGOAI, the instructions for its administration, and a listing of statements within each sub-category are located in Appendix A.

After reviewing a variety of research studies related to the measurement of attitudes, the Likert scale was selected by Millward (1973b) for the following reasons: a) attitude change from pretest to posttest could be detected, b) no expert panel of judges was needed, c) the scale was easily administered, and d) the scale could be divided into sub-categories that would allow the measurement of attitudes related to specific outdoor topics which then could be analyzed separately or in conjunction with one or more of the other sub-categories.

Sub-categories of the MGOAI. The MGOAI is divided into four sub-categories; each sub-category can be scored separately. This division enables an investigator to determine which attitudinal concepts are most influenced by the residential setting and makes possible five separate attitude scores, a total outdoor attitude score and four sub-category scores. The sub-categories were developed in order to compare specific attitudinal concepts in the areas of: a) general environment, b) education, c) pollution, and d) socialization.

Statements (n = 16) contained in the general environment sub-category related to attitudes about plants, animals, nature, forests, astronomy, and aesthetics. The worth of outdoor subjects, the outdoor curriculum, and the efficacy of writing letters to public officials regarding environmental improvement were focal points for statements (n = 8) contained in the education sub-category. Statements (n = 10) relating to environmental degradation such as sewage, litter, and depletion of natural resources were placed in the pollution sub-category. The sub-category, socialization, contained statements (n = 9) related to cabin life, group planning, perception of teachers, making friends, and camp meals.

Scoring the MGOAI. Each of the 43 statements contained a Likert-type scale with five response categories ranging from SA (strongly agree) to A (agree) to U (undecided) to D (disagree) to SD (strongly disagree). The score range for each statement is from 1 to 5. A score of 5 on an individual attitude statement indicates a most positive attitude whereas a score of 1 indicates a most negative attitude. A score of 3 was assigned to the U (undecided) response foil and was considered a neutral or noncommitted attitude. Individual statement scores ranging from 2.5 to 3.5 were considered as neutral attitude scores with total scores between 108 to 150 defined as the range of neutral attitudes. Total scores from 151 to 193 were defined as positive attitudes while scores above 193 were defined as very positive attitudes. Total scores below 108 were defined as negative attitudes with total scores below 65 defined as very negative attitudes.

Numerical scores assigned to response categories were reversed for

negatively worded statements. Twenty-one statements were phrased positively while 22 were phrased negatively in order to prevent respondents from developing a stereotyped response set.

Reliability. Previous studies which used the MGOAI reported reliability estimates exceeding $r = .80$ (Millward, 1973b; Myers, 1978). Although reliability estimates had been established by those previous investigations, the investigator conducted a pilot study to estimate the stability of the measuring instrument. The pilot study yielded an estimate of reliability of .86 using the Kuder-Richardson Formula 20. This result was achieved by administering the instrument to a group ($N = 130$) of 4-H members (CA: 11-17 years). None of the individuals involved in the pilot study participated as subjects in the research project.

Data Collection Procedures

The procedures utilized in the present study for the collection of data are explained in this section. Data were collected from a control group and two experimental conditions.

Control Group

Pretest. Each of the 30 subjects selected for the control group was contacted by his/her Extension Agent during the week preceding the scheduled camping session and requested to report to the Cooperative Extension Office on the afternoon camp was to begin. Upon arrival, each subject was taken into the Extension Agent's office and there given a copy of the MGOAI. The Extension Agent, acting as test administrator, read the test directions aloud and instructed the subjects

to begin. Upon completion of the MGOAI each subject was requested to return in four days to complete the posttest.

Posttest. Control group subjects reported to their Cooperative Extension Office on the last scheduled day of camp to complete the posttest. Upon arrival each subject went into the Extension Agent's office and was there administered the MGOAI. Upon completion of the MGOAI, the Extension Agent explained the purpose of the study to each subject.

Experimental Conditions

Pretest. Subjects assigned to the experimental conditions arrived at Holiday Lake 4-H Educational Center and immediately checked-in with the Camp Director to receive their cabin or "family" assignment, health clearance, and camp schedule. The campers then met with the investigator and were administered the MGOAI. The test directions were read aloud and the subjects were instructed to begin. Set apart from the main camp area, the testing site was free from disruption for both the subjects and the test administrator.

After all subjects had completed the MGOAI the investigator asked them to report to the Program Director of their respectively assigned camp either the central camp or outpost camp for camp orientation. From this time until completion of the posttest, four days later, there was no interaction or communication between campers of the two camps.

Posttest. On the last day of camp both experimental groups were brought by their respective Program Directors to the investigator for administration of the MGOAI. The investigator read aloud the test

directions and instructed the subjects to begin. After all subjects had completed the MGOAI the investigator explained the purpose of the study to the subjects.

Pretest and posttest data were collected during the week camp was in session. Table 1 contains an overview of the data collection and treatment periods.

Treatment Conditions

Holiday Lake 4-H Educational Center, Inc., located in central Virginia approximately 20 miles northeast of Appomattox, Virginia was the residential camp chosen for the present study. Situated on 114 acre Holliday Lake and surrounded by the 20,000 acre Buckingham-Appomattox State Forest, the 157 acre Holiday Lake 4-H Educational Center functions as a summer camp for 4-H members and as a year-round resource center for both 4-H and non-4-H groups.

The camp facilities were built by the Resettlement Administration in 1937-38 and are structurally unchanged from the day they were built. Structures include a dining hall, 15 cabins housing ten campers and one counselor, a large bunk house containing 72 beds, and a small house converted into a camp office. Ancillary buildings of more recent vintage include a covered recreation area sheltering basketball courts and a covered outdoor pavillion containing tiered bench seats.

Camp cabins, bunk houses, and shower houses were situated close to the dining hall creating a central camp area. It was in this central

Table 1

Overview of Data Collection and Treatment Periods

	Pretest Data Collection Instrument and Day	Treatment Period	Posttest Data Collection Instrument and Day
Experimental Condition #1	MGOAI 1st Day Camp in Session	Central Camp Living Condition 5-Day Residential Camp	MGOAI Last Day Camp in Session
Experimental Condition #2	MGOAI 1st Day Camp in Session	Outpost Camp Living Condition 5-Day Residential Camp	MGOAI Last Day Camp in Session
Control Group	MGOAI 1st Day Camp in Session	No Camping Experience 5-Days at Home	MGOAI Last Day Camp in Session

camp area that the majority of the camp activities had been designed to take place. This central camp residential setting (or living condition) was one of the two independent or treatment variables present in this study.

Central camp condition. The 30 subjects in the central camp residential setting lived in wooden one-room cabins, 10 campers per cabin. An Extension Agent was assigned to each cabin as a live-in counselor, responsible for supervision of the cabin.

Meals were prepared and served in the camp's dining hall by paid kitchen staff. Male and female campers had separate bath houses where hot showers, toilet facilities, and wash basins were available. Soft drinks, candy, articles for personal hygiene, and crafts materials were available for purchase from the camp store.

Campers attended conservation education classes in the following subjects: Wildlife Management, Soil Science, Forestry, Geology, Fisheries Science, and Hydrology. Each class was taught by an Extension Specialist from Virginia Tech's Extension Division Faculty. Two disciplines were taught per day with each session lasting three hours. A class schedule is included in Appendix B .

Recreation and spare-time activities were available during the late afternoon and evening. These included: volleyball, ping pong, softball, canoeing, basketball, swimming, archery, horseback riding, horseshoes, and rifle safety. Selection for participation in any of these activities was an individual matter; campers chose activities of particular interest to them and attended each as an individual, not as a cabin group.

Outpost camp condition. The 30 subjects in the outpost camp residential setting were presented with conservation education classes that were identical to those presented to the central camp condition. The same instructors taught both groups using the exact methods and materials during the two presentations. A copy of the outpost camp conservation education class schedule is included in Appendix B.

The residential setting for campers in the outpost camp was located in a naturally forested area approximately 1.5 miles from the central camp in the Buckingham-Appomattox State Forest. Subjects arrived at the site on foot, having backpacked the equipment needed for living in the woods for five days. Upon arrival the Program Director for outpost camp assigned each of the 30 subjects and the three Extension Agents to one of three living groups or "families." Once divided, each family was instructed to find a suitable area to establish a campsite. Six two-man tents were pitched in each family campsite. Five tents contained two campers and a sixth housed an Extension Agent. Extension Agents were assigned to each family as a member of the group; not as a supervisor or leader.

Families developed a roster of camp duties to be rotated among the members. Jobs included: firebuilder, cook, wood gatherer, assistant cook, dishwasher, water carrier, sanitary engineer, leader-for-the-day, and camp cleaner. Rotation of camp duties took place each morning beginning with the breakfast meal.

Meals were prepared over an open wood fire. No food other than

that used for meals and an evening snack was available. There was no facility for bathing but soap and water was available for washing hands and faces. Toilet facilities were constructed by lashing poles together to form a latrine seat which was situated over a dry-pit latrine.

Recreation and spare-time activities were planned and performed by the outpost camp as an entire group. Activities included: orienteering, cooking demonstrations, campfire programs, a "night sounds" hike, song-fests, idea sharing, group discussions, and a creek swim.

Control group. The 30 subjects in the control group did not attend the 4-H Conservation Camp. Each subject had submitted an application to attend 4-H Conservation Camp, but for personal reasons had withdrawn his/her application. Therefore, no treatment was administered to this group.

Research Design

The research design used in this investigation was a modification of the non-equivalent control group design (Campbell & Stanley, 1963) with repeated measures. Two experimental conditions and a control group were involved in this study. Subjects comprising the groups were randomly selected from the population of camp attendees and then randomly assigned to treatment condition. A control group was randomly selected from those who applied to attend camp but withdrew their application.

Subjects in the two experimental conditions received the same instructional material, presented by the same instructors, utilizing

the same teaching methods and aids. The independent or treatment variable in this investigation was the camp residential setting; specifically, the central camp and the outpost camp. The dependent variable, environmental attitude, was represented by the MGOAI scores.

Data Analysis

In addition to the procedures followed for administration of the MGOAI, the data from the test booklets were transcribed by the researcher on the NCS Trans Optic 10 6992-32 Data Coding Sheets for input into the Virginia Tech Learning Resource Center's optical character recognition reader. These data were scored in accordance with instructions provided to the researcher by the author of the MGOAI.

The Statistical Analysis System's (SAS) (Helwig & Council, 1979) computer program was utilized to carry out the non-parametric statistical computations. The Kruskal-Wallis One-Way Analysis of Variance by Ranks Test (Hollander & Wolfe, 1973) was employed to determine if significant differences between the three experimental groups' mean attitude scores existed on either the pretest or posttest. A Wilcoxon Signed Rank Test (Hollander & Wolfe, 1973) was used to perform within group comparisons for determining if significant differences existed between pretest and posttest scores for each of the experimental groups. If results on the Kruskal-Wallis tests were found to be significant, a paired comparison's test (Hollander & Wolfe, 1973) was conducted to determine which group or groups differed from one another.

Although the data did not meet the assumptions for parametric analysis (Kerlinger, 1973; Shaw & Wright, 1967; Siegel, 1956), an analysis of variance (ANOVA) test was conducted by the investigator. The purpose for this analysis was to provide for comparability of results with other studies that employed the MGOAI as a measuring instrument and utilized a parametric analysis of variance test on the generated data. Appendix C contains the results of these analyses.

CHAPTER IV

RESULTS

The purpose of this study was to determine the effect resident camp setting had on the formation of environmental attitudes. Subjects were 4-H members attending 4-H Conservation Camp.

Chapter IV contains the statistical analysis of the findings of this investigation. It is divided into three sections. Part one describes the statistical procedures used in the analyses of the attitude data. The second section presents statistical analyses of the overall results of the attitude inventory. The final section contains a discussion of the findings.

Method of Analysis

Nonparametric statistical procedures were used to analyze the attitude inventory data. Analysis was performed at the Virginia Polytechnic Institute and State University's Computer Center using the Statistical Analysis System's computer program employing the Kruskal-Wallis One-Way Analysis of Variance by Ranks Test and the Wilcoxon Signed Rank Test (Helwig & Council, 1979). A paired comparisons test was conducted as a post hoc measure (Hollander & Wolfe, 1973).

Analysis of Data

This section contains the presentation of findings dealing with the hypotheses of this study. Five hypotheses were tested at the .05 level of significance. No significant difference was found between the control

group, the central camp condition, and the outpost camp condition on pretest overall outdoor attitude scores or sub-category environment, socialization, education, or pollution attitude scores (Tables 2-6). Any difference in posttest attitude scores could therefore be inferred to have resulted from attending camp.

Hypotheses

Hypothesis one. There will be no significant difference in overall outdoor attitude scores of campers assigned to the control group, central camp condition, or outpost camp condition.

Results of the Kruskal-Wallis One-Way Analysis of Variance by Ranks Test on posttest scores indicated there was a significant difference ($\chi^2 = 23.86$; $p = .0001$) on the overall outdoor attitude scores between the control group, the central camp condition, and the outpost camp condition (Table 7). A post hoc paired comparison's test showed that the scores of the outpost camp condition differed significantly from those of the control group and central camp condition (Table 8). Differences in pretest to posttest outdoor attitude scores were not significant for the control group and central camp condition, but a significant difference ($Z = 3.95$; $p = .0001$) was noted for the pretest-posttest scores of the outpost camp (Table 9). Thus, hypothesis one was rejected.

Hypothesis two. There will be no significant difference in environment attitude scores of campers assigned to the control group, central camp condition, or outpost camp condition.

There was a significant difference ($\chi^2 = 19.89$; $p = .0001$) on the

Table 2

Kruskal-Wallis Test of Mean Ranks for Pretest Outdoor Attitude Scores

Condition	Number	Sum of Ranked Scores	Expected Under Ho	Standard Deviation Under Ho	Mean Rank Score	χ^2
Control Group	30	1561.00	1365.00	116.83	52.03	5.59NS
Central Camp	30	1098.50	1365.00	116.83	36.62	
Outpost Camp	30	1435.50	1365.00	116.83	47.85	

NS $p > .05$ Alpha level = .05; Degrees of Freedom = 2; $\chi^2 = 5.99$.

Table 3

Kruskal-Wallis Test of Mean Ranks for Pretest Environment Attitude Scores

Condition	Number	Sum of Ranked Scores	Expected Under Ho	Standard Deviation Under Ho	Mean Rank Score	χ^2
Control Group	30	1525.00	1365.00	116.83	50.83	5.78NS
Central Camp	30	1085.00	1365.00	116.83	36.17	
Outpost Camp	30	1485.00	1365.00	116.83	49.50	

NS $p > .05$ Alpha level = .05; Degrees of Freedom = 2; $\chi^2 = 5.99$.

Table 4

Kruskal-Wallis Test of Mean Ranks for Pretest Socialization Attitude Scores

Condition	Number	Sum of Ranked Scores	Expected Under Ho	Standard Deviation Under Ho	Mean Rank Score	χ^2
Control Group	30	1455.50	1365.00	116.83	48.52	1.51NS
Central Camp	30	1223.00	1365.00	116.83	40.77	
Outpost Camp	30	1416.50	1365.00	116.83	47.22	

NS $p > .05$ Alpha level = .05; Degrees of Freedom = 2; $\chi^2 = 5.99$.

Table 5

Kruskal-Wallis Test of Mean Ranks for Pretest Education Attitude Scores

Condition	Number	Sum of Ranked Scores	Expected Under Ho	Standard Deviation Under Ho	Mean Rank Score	χ^2
Control Group	30	1576.00	1365.00	116.83	52.53	4.61NS
Central Camp	30	1142.00	1365.00	116.83	38.07	
Outpost Camp	30	1377.00	1365.00	116.83	45.90	

NS $p > .05$ Alpha level = .05; Degrees of Freedom = 2; $\chi^2 = 5.99$.

Table 6

Kruskal-Wallis Test of Mean Ranks for Pretest Pollution Attitude Scores

Condition	Number	Sum of Ranked Scores	Expected Under Ho	Standard Deviation Under Ho	Mean Rank Score	χ^2
Control Group	30	1579.00	1365.00	116.83	52.63	5.06NS
Central Camp	30	1126.00	1365.00	116.83	37.53	
Outpost Camp	30	1390.00	1365.00	116.83	46.33	

NS $p > .05$ Alpha level = .05; Degrees of Freedom = 2; $\chi^2 = 5.99$.

Table 7

Kruskal-Wallis Test of Mean Ranks for Posttest Outdoor Attitude Scores

Condition	Number	Sum of Ranked Scores	Expected Under Ho	Standard Deviation Under Ho	Mean Rank Score	χ^2
Control Group	30	1198.50	1365.00	116.83	39.95	23.86*
Central Camp	30	975.50	1365.00	116.83	32.52	
Outpost Camp	30	1921.00	1365.00	116.83	64.03	

* $p < .05$ Alpha level = .05; Degrees of Freedom = 2; $\chi^2 = 5.99$.

Table 8

Paired Comparison's Test for Posttest Outdoor Attitude Scores			
Mean Ranks	Central Camp 32.52	Control Group 39.95	Outpost Camp 64.03
32.52	—	NS	*
39.95		—	*
64.03			—

* $p < .05$ Alpha level = .05; Degrees of Freedom = 2;
 NS $p > .05$ Critical Value = 16.19.

Table 9

Wilcoxon Signed Rank Test of Difference
Between Pretest and Posttest Outdoor Attitude Scores

Condition	Number	Maximum Rank Sum of Differences	Expected Under Ho	Standard Deviation Under Ho	Z
Control Group	30	254.50	232.50	47.87	0.46NS
Central Camp	30	281.00	232.50	48.01	1.01NS
Outpost Camp	30	423.50	232.50	48.40	3.95*

* $p \leq .05$ Alpha level = .05; $Z = + 1.96$.

NS $p > .05$

environment attitude scores between the control group, central camp condition, and outpost camp condition (Table 10). The outpost camp was found to be significantly different from the control group and the central camp condition (Table 11). A significant difference ($Z = 3.34$; $p = .0008$) between the pretest and posttest environment attitude scores for the outpost camp was indicated (Table 12). Therefore, hypothesis two was rejected.

Hypothesis three. There will be no significant difference in socialization attitude scores of campers assigned to the control group, central camp condition, or the outpost camp condition.

There was a significant difference ($\chi^2 = 10.79$; $p = .0045$) between the outpost camp condition, the central camp condition, and the control group on the socialization attitude scores (Table 13). A significant difference was found between the central camp condition and the outpost camp condition, but no difference was found between the outpost camp condition, and the control group (Table 14). A significant difference ($Z = 3.14$; $p = .0017$) between the pretest and posttest scores was noted for the outpost camp condition (Table 15). Hypothesis three was rejected.

Hypothesis four. There will be no significant difference in the education attitude scores of campers assigned to the control group, central camp condition, or outpost camp condition.

A significant difference ($\chi^2 = 19.10$; $p = .0001$) on education attitude scores was shown between the control group, central camp condition, and the outpost camp condition (Table 16). The outpost camp

Table 10

Kruskal-Wallis Test of Mean Ranks for Posttest Environment Attitude Scores

Condition	Number	Sum of Ranked Scores	Expected Under Ho	Standard Deviation Under Ho	Mean Rank Score	χ^2
Control Group	30	1215.50	1365.00	116.83	40.52	19.89*
Central Camp	30	1007.50	1365.00	116.83	33.58	
Outpost Camp	30	1872.00	1365.00	116.83	62.40	

* $p \leq .05$ Alpha level = .05; Degrees of Freedom = 2; $\chi^2 = 5.99$.

Table 11

Paired Comparison's Test for Posttest Environment Attitude Scores

Mean Ranks	Central Camp 33.58	Control Group 40.52	Outpost Camp 62.40
33.58	—	NS	*
40.52		—	*
62.40			—

*p_<.05

Alpha level = .05; Degrees of Freedom = 2;

NSp_>.05

Critical Value = 16.19.

Table 12

Wilcoxon Signed Rank Test of Difference
Between Pretest and Posttest Environment Attitude Scores

Condition	Number	Maximum Rank Sum of Differences	Expected Under Ho	Standard Deviation Under Ho	Z
Control Group	30	242.50	232.50	47.46	0.21NS
Central Camp	30	272.00	232.50	48.12	0.82NS
Outpost Camp	30	391.50	232.50	47.59	3.34*

* $p < .05$ Alpha level = .05; $Z = + 1.96$.
NS $p > .05$

Table 13

Kruskal-Wallis Test of Mean Ranks for Posttest Socialization Attitude Scores

Condition	Number	Sum of Ranked Scores	Expected Under Ho	Standard Deviation Under Ho	Mean Rank Score	χ^2
Control Group	30	1331.00	1356.00	116.83	44.37	10.79*
Central Camp	30	1051.00	1365.00	116.83	35.03	
Outpost Camp	30	1713.00	1365.00	116.83	57.10	

* $p < .05$ Alpha level = .05; Degrees of Freedom = 2; $\chi^2 = 5.99$.

Table 14

 Paired Comparison's Test for Posttest Socialization Attitude Scores

Mean Ranks	Central Camp 35.03	Control Group 44.37	Outpost Camp 57.10
35.03	—	NS	*
44.37		—	NS
57.10			—

*p<.05 Alpha level = .05; Degrees of Freedom = 2;

NSp>.05 Critical Value = 16.19.

Table 15

Wilcoxon Signed Rank Test of Difference
Between Pretest and Posttest Socialization Attitude Scores

Condition	Number	Maximum Rank Sum of Differences	Expected Under Ho	Standard Deviation Under Ho	Z
Control Group	30	287.00	232.50	45.95	1.19NS
Central Camp	30	270.00	232.50	46.76	0.80NS
Outpost Camp	30	380.00	232.50	46.99	3.14*

* $p < .05$ Alpha level = .05; $Z = \pm 1.96$.

NS $p > .05$

Table 16

Kruskal-Wallis Test of Mean Ranks for Posttest Education Attitude Scores

Condition	Number	Sum of Ranked Scores	Expected Under Ho	Standard Deviation Under Ho	Mean Rank Score	χ^2
Control Group	30	1200.00	1365.00	116.83	40.00	19.10*
Central Camp	30	1029.00	1365.00	116.83	34.30	
Outpost Camp	30	1866.00	1365.00	116.83	62.20	

* $p < .05$ Alpha level = .05; Degrees of Freedom = 2; $\chi^2 = 5.99$.

condition scores were found to be significantly different from the other two groups (Table 17). A within group comparison (Table 18) showed that the outpost camp condition's posttest scores were significantly different ($Z = 3.77$; $p = .0002$) from its pretest scores. Based upon these findings, hypothesis four was rejected.

Hypothesis five. There will be no significant difference in the pollution attitude scores of campers assigned to the control group, central camp condition, or outpost camp condition.

Changes in the pollution attitude scores were similar to results reported for the education attitude scores. A significant difference ($\chi^2_2 = 16.76$; $p = .0002$) was found on the scores between the control group, the central camp condition, and the outpost camp condition (Table 19). The outpost camp's scores were found to be significantly different from the other two groups (Table 20).

On comparisons of pretest to posttest scores the outpost camp condition was found to differ significantly ($Z = 3.47$; $p = .0005$) from the other two conditions (Table 21). Predicated on results of these analyses hypothesis five was rejected.

Table 22 contains a summary of the results from the between group comparisons of the Kruskal-Wallis One-Way Analysis of Variance By Ranks Test. A summary of the results of the post hoc paired comparison's test is contained in Table 23. Results of the Wilcoxon Signed Rank Test for within group comparisons are summarized in Table 24.

Table 17

Paired Comparison's Test for Posttest Education Attitude Scores

Mean Ranks	Central Camps 34.30	Control Group 40.00	Outpost Camp 62.20
34.30	—	NS	*
40.00		—	*
62.20			—

* $p \leq .05$

Alpha level = .05; Degrees of Freedom = 2;

NS $p > .05$

Critical Value = 16.19.

Table 18

Wilcoxon Signed Rank Test of Difference
Between Pretest and Posttest Education Attitude Scores

Condition	Number	Maximum Rank Sum of Differences	Expected Under Ho	Standard Deviation Under Ho	Z
Control Group	30	263.00	232.50	45.46	0.67NS
Central Camp	30	297.50	232.50	47.46	1.37NS
Outpost Camp	30	409.00	232.50	46.79	3.77*

*p<.05 Alpha level = .05; Z = ± 1.96.

NSp>.05

Table 19

Kruskal-Wallis Test of Mean Ranks for Posttest Pollution Attitude Scores

Condition	Number	Sum of Ranked Scores	Expected Under Ho	Standard Deviation Under Ho	Mean Rank Score	χ^2
Control Group	30	1255.50	1365.00	116.83	41.85	16.76*
Central Camp	30	1016.50	1365.00	116.83	33.88	
Outpost Camp	30	1823.00	1365.00	116.83	60.77	

* $p < .05$ Alpha level = .05; Degrees of Freedom = 2; $\chi^2 = 5.99$.

Table 20

 Paired Comparison's Test for Posttest Pollution Attitude Scores

Mean Ranks	Central Camp 33.88	Control Group 41.85	Outpost Camp 60.77
33.88	—	NS	*
41.85		—	*
60.77			—

* $p \leq .05$ Alpha level = .05; Degrees of Freedom = 2;
 NS $p > .05$ Critical Value = 16.19.

Table 21

Wilcoxon Signed Rank Test of Difference
Between Pretest and Posttest Pollution Attitude Scores

Condition	Number	Maximum Rank Sum of Differences	Expected Under Ho	Standard Deviation Under Ho	<u>Z</u>
Control Group	30	234.00	232.50	45.39	0.03NS
Central Camp	30	266.50	232.50	47.27	0.72NS
Outpost Camp	30	396.50	232.50	47.24	3.47*

* $p < .05$ Alpha level = .05; $Z = + 1.96$.

NS $p > .05$

Table 22

Kruskal-Wallis Test of Mean Ranks for Pretest and Posttest MGOAI Scores

Condition	Overall		Environment		Socialization		Education		Pollution	
	Outdoor	Attitude	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
Control Group	52.03	39.95	50.83	40.52	48.52	44.37	52.53	40.00	52.63	41.85
Central Camp	36.62	32.52	36.17	33.58	40.77	35.03	38.07	34.30	37.53	33.88
Outpost Camp	47.85	64.03	49.50	62.40	47.22	57.10	45.90	62.20	46.33	60.77
	$\chi^2=5.59$ NS	$\chi^2=23.86$ *	$\chi^2=5.78$ NS	$\chi^2=19.89$ *	$\chi^2=1.51$ NS	$\chi^2=10.79$ *	$\chi^2=4.61$ NS	$\chi^2=19.10$ *	$\chi^2=5.06$ NS	$\chi^2=16.76$ *

*p_≤.05 Alpha level = .05; Degrees of Freedom = 2; $\chi^2 = 5.99$.

NSp>.05

Table 24

Wilcoxon Signed Rank Test of Difference Between Pretest and Posttest MGOAI Scores

Condition	Number	Overall Outdoor Attitude	Environment	Socialization	Education	Pollution
Control Group	30	0.46NS	0.21NS	1.19NS	0.67NS	0.03NS
Central Camp	30	1.01NS	0.82NS	0.80NS	1.37NS	0.72NS
Outpost Camp	30	3.95*	3.34*	3.14*	3.77*	3.47*

* $p < .05$ Alpha level = .05; $Z = \pm 1.96$.

NS $p > .05$

Discussion of Findings

The findings of this study indicate that overall outdoor attitudes among all three groups increased following the conservation camp (Appendix D). At the end of the resident experience, attitudes were significantly more positive for the outpost camp condition on the overall test and within the environment, education, and pollution sub-categories. The outpost camp living conditions were quite different from those in the central camp or those the control group experienced in their homes. Campers were thrust into unfamiliar surroundings and situations which could have induced in them a psychological dependency upon each other. This dependency perhaps galvanized them into a tight-knit group, much akin to the primitive hunting band, where their efforts were directed toward coping with the exigencies of the natural environment. Each of the campers in the outpost camp were treated as adults by the camp staff and as such may have felt s/he was equitably contributing to the collective welfare of the group. This feeling, in turn, could have contributed to a heightened concept of self-worth which instilled a greater sense of self-confidence for attempting unfamiliar tasks. The tasks required, although unfamiliar and untried, were within the technical and physical abilities of the campers. By performing these unfamiliar tasks successfully, a camper felt a genuine sense of accomplishment. These positive feelings were directed toward the environment where the successes were experienced, thus, positive attitudes were developed toward the outdoors.

Campers in the central camp experienced living conditions very closely akin to those of the control group in their homes. No great change was experienced; meals were prepared by a cook (mother) and eaten in the dining hall (dining room), hot showers and indoor plumbing were available in a shower house (bathroom), and activities of interest were selected by the individual camper (school pupil). Most situations were familiar to the central camp campers and the feelings of uncertainty and of the unknown were not as keenly felt as they were by the outpost camp campers. Whereas in the outpost camp there may have been feelings of social detachment among the campers which contributed to group unity, the central camp campers had no such influence and tended to function much as they were accustomed to function: as individuals. Thus, no bond was developed with their environment and positive attitude development was not significant.

No significant change was noted for the control group or central camp condition although overall outdoor attitudes for both of these conditions became more positive. Campers' mean attitude scores in all three groups fell into the positive attitude range both before and after camp.

The findings in this study concur with those of George (1966), Coons (1973), Kofke (1975), Kidd et al. (1978), and Miller (1979) regarding the acquisition of positive environmental attitudes. Subjects in each of those studies developed significantly more positive attitudes toward the environment as a result of attending a resident environmental edu-

cation program. Results of Murphy's (1976) study which assessed the effectiveness of using a decentralized camp setting for programs designed to change attitudes were consistent with the present study's findings.

The findings in this study did not concur with those reported by Jensen (1963), Carlson (1972), and Millward (1973b). Jensen (1963) found that campers' attitudes toward program experiences indigenous to the environment became significantly more negative after attending a resident program. Carlson (1973) and Millward (1973b) found that participation in a resident environmental education program had no effect on developing positive environmental attitudes. Their findings disagreed with findings in the present study in that this study found resident camp setting to have a significant effect on the development of positive environmental attitudes.

Summary

The results of the analyses indicated that subjects in the three conditions, outpost camp, central camp, and the control group, initially, did not significantly differ in the attitudes they held toward the environment. Subsequently, at the conclusion of the conservation camp, there resulted significant differences in environmental attitudes among the three conditions. The outpost camp significantly differed from the central camp and control group on overall attitudes towards the outdoors and specific attitudes towards environment, education, and pollution but no significant difference was found for socialization attitudes. Thus, hypotheses one, two, three, four, and five were rejected.

A significant difference in pretest to posttest results for the overall scores and sub-category scores was found for the outpost camp. No significant difference was found for the other two conditions.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Studies have been conducted which assessed attitudinal changes in a residential camp, but there is a paucity of information concerning the effect of residential camp setting on attitude development. Therefore, this study investigated two camp settings in a residential conservation camp for the purpose of determining if camp setting had an effect on the development of environmental attitudes by campers. Campers' perceptions of environmental attitudes were compared.

Ninety Virginia 4-H members comprised the sample for this study. Subjects were pretested with the Millward-Ginter Outdoor Attitude Inventory. Sixty of the subjects attended a five-day residential 4-H Conservation Camp where they were randomly assigned to live in one of two camp settings, either the central camp or the outpost camp. Campers in both camp settings were exposed to the same conservation and environmental education programs. The thirty control group subjects did not attend camp. All subjects were posttested with the same instrument utilized in the pretest.

A Kruskal-Wallis One-Way Analysis of Variance by Ranks Test was conducted to determine statistically significant differences between the three groups on pretest and posttest scores. The Wilcoxon Signed Rank Test was performed to analyze differences within the groups on the pretest to posttest scores.

Analysis of the data, at the .05 level of significance, indicated

that the outpost camp had a significant effect on the development of environmental attitudes. Scores on the posttests were significantly different for the outpost camp on both the within group and between group comparisons of outdoor attitudes. No significant differences were found for the control group or central camp condition on either within group or between group comparisons. Scores on the MGOAI sub-categories of environment, socialization, education, and pollution were all significantly different for the outpost camp condition on the pretest to post-test comparison. No significant differences were found for the control group or central camp on pretest to posttest scores. Environment, education, and pollution attitude scores for the outpost camp were found to be significantly different from the control group and the central camp. Socialization attitude scores of the outpost camp conditions were significantly different from the central camp condition but not significantly different from the control group.

Conclusions

The following conclusions are stated in relation to the five pre-established hypotheses with due consideration for the evidence provided by this study.

1. The subjects in the outpost camp setting had significantly higher outdoor attitude scores than did the control group or central camp; therefore, outpost camp setting did have a significant impact on development of positive environmental attitudes.
2. Scores on the environment attitude sub-category, which measured attitudes toward animals, plants, nature and forests were significantly

higher for the outpost camp setting than either the central camp or control group. Therefore, outpost camp setting did make a difference in developing positive attitudes toward animals, plants, nature and forests.

3. Campers in the outpost camp had significantly higher scores than did the central camp condition on socialization attitude scores but their scores were not significantly different from the control group's scores. Thus, camp setting's effect on socialization attitudes is inconclusive.

4. Subjects in the outpost camp setting scored significantly higher on the education attitude sub-category than either the central camp or control group. Thus, outpost camp setting did influence positive attitude formation on education attitudes which included the worth of outdoor subjects, the outdoor curriculum, and the effectiveness of letter writing for environmental improvement.

5. Scores on the pollution sub-category, which assessed attitudes toward indiscriminate littering, pollution, and depletion of natural resources, were significantly higher for the outpost camp than either the central camp or control group. Thus, outpost camp setting did have a significant effect on the development of positive attitudes toward indiscriminate littering, pollution, and depletion of natural resources.

Recommendations

As a result of this study the investigator recommends consideration of the following suggestions for further research:

1. A follow-up study should be conducted six months, one year, and 18 months following the camping experience in order to determine the long-range effects of camp setting on attitudes.

2. Further study should be done to measure the effects of camp setting on different variables such as self-concept, internal-external locus of control, and group interactions.

3. A standardized curriculum should be developed for use in each state's 4-H Conservation Camp so that a national study could be conducted incorporating comparable data from every state.

4. Further study should attempt to expand the study of the effects of camp setting to traditional summer camps.

5. Further study should be conducted to determine if camp setting has an effect on cognitive processes regarding the assimilation of information.

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APPENDICES

APPENDIX A

THE MILLWARD-GINTER OUTDOOR ATTITUDE INVENTORY

MILLWARD-GINTER OUTDOOR ATTITUDE INVENTORY

Directions for Administering the Outdoor Attitude Inventory

1. Distribute the test booklets to each camper.
2. Make certain each camper has a pencil for marking the test.
3. Then say: Print your name in the appropriate space along the top right-hand side of the test booklet.
4. Then say: I am going to read the directions about what you are to do. You are to read the directions on the first page silently as I read them aloud. (Proceed to read the directions on the cover page.)
5. Then say: Are there any questions about what you are to do? (Answer any questions that they might have.)
6. Then say: When I tell you to begin working you are to answer each statement according to how you feel. There are no right or wrong answers. This is not a test of speed. You are to answer all statements. When you finish, raise your hand and I will collect your test.
7. Then say: You may begin.

(Please do not interpret any of the test statements for the student. Please try to avoid looking at their answers during and after the testing session.)

Name _____

MILLWARD-GINTER OUTDOOR ATTITUDE INVENTORY

DIRECTIONS:

The following statements are about different things in the outdoors. The way you answer the statements will help counselors and camp directors know what you like and dislike about the outdoors. Here is an example of what you are to do.

	Strongly Agree	Agree	Undecided or Don't Know	Disagree	Strongly Disagree
	SA	A	U	D	SD
1. I enjoy going fishing.			Ⓢ		

YOU SIMPLY CIRCLE ONE OF THE FIVE SIGNS ON THE SHEET AS SHOWN ABOVE.

The five signs mean this:

SA = You STRONGLY AGREE or STRONGLY LIKE it.

A = You AGREE or LIKE it a little bit.

U = You are UNDECIDED or DON'T KNOW if you like or dislike it.

D = You DISAGREE or DON'T LIKE IT.

SD = You STRONGLY DISAGREE or STRONGLY DISLIKE it.

In the example above the person was undecided about fishing so he circled "U." If the person enjoyed fishing he probably would have circled "SA." In other words, THERE ARE NO RIGHT OR WRONG ANSWERS. All you do is read each statement carefully and circle one of the five signs according to how you feel about the statement. Please answer all statements. It is very important to give a truthful answer for this is how we can tell which activities campers like and dislike.

	Strongly Agree	Agree	Undecided or Don't Know	Disagree	Strongly Disagree
1. If You live in the city, you do not have to be concerned with soil conservation	SA	A	U	D	SD
2. Most wild animals are not dangerous if left alone.	SA	A	U	D	SD
3. No one should drop even one piece of paper outdoors.	SA	A	U	D	SD
4. Pollution is not really as bad as people say it is.	SA	A	U	D	SD
5. It would bother me to undress in front of other classmates in my cabin before going to bed.	SA	A	U	D	SD
6. We can get along without bees.	SA	A	U	D	SD
7. There are more interesting things to do than to learn about plants and animals in the outdoors.	SA	A	U	D	SD
8. I would enjoy living in the mountains.	SA	A	U	D	SD
9. My class alone cannot do much to improve the environment.	SA	A	U	D	SD
10. Working with other students in the outdoors is fun.	SA	A	U	D	SD
11. I get along well with teachers in the out-of-doors.	SA	A	U	D	SD
12. Learning in the outdoors is fun.	SA	A	U	D	SD
13. Time spent studying in the outdoors is a waste of time.	SA	A	U	D	SD
14. Protecting our forests is not important as we have other things to use in place of wood.	SA	A	U	D	SD

	Strongly Agree	Agree	Undecided or Don't Know	Disagree	Strongly Disagree
15. Snakes are helpful to the environment.	SA	A	U	D	SD
16. It is hard for a group of classmates to agree with one another when planning activities.	SA	A	U	D	SD
17. I enjoy working with a group of students outdoors.	SA	A	U	D	SD
18. I enjoy being with teachers in the outdoors	SA	A	U	D	SD
19. I think it is exciting to be alone in the woods if you are not lost.	SA	A	U	D	SD
20. Schools should spend more time teaching conservation.	SA	A	U	D	SD
21. Litter is not a problem where I live.	SA	A	U	D	SD
22. People cause more pollution than factories.	SA	A	U	D	SD
23. It is easy to make friends at camp during supper	SA	A	U	D	SD
24. If I am not interested in the outdoors, I should not have to learn about it.	SA	A	U	D	SD
25. It is not easy to make new friends at camp.	SA	A	U	D	SD
26. Animals that live in the water are not as important as animals that live on the land.	SA	A	U	D	SD
27. Outdoors is not a place for school--but for playing.	SA	A	U	D	SD

MGOAI Pollution Sub-Category

Statement	Statement Number
1. If you live in the city, you do not have to be concerned with soil conservation.	1
2. No one should drop even one piece of paper outdoors.	3
3. Pollution is not really as bad as people say it is.	4
4. My class alone cannot do much to improve the environment.	9
5. Litter is not a problem where I live.	21
6. People cause more pollution than factories.	22
7. When natural resources are used up on the earth we can get them from another planet.	29
8. I can improve my environment by writing to a senator.	30
9. Litter makes pollution.	39
10. There is little that I can do to stop pollution.	43

APPENDIX B

4-H CONSERVATION CAMP CLASS SCHEDULE

APPENDIX C

PARAMETRIC DATA ANALYSIS

Table 25

Analysis of Variance of Pretest Outdoor Attitude Scores				
Source	D	SS	MS	<u>F</u>
Conditions	2	1688.27	844.13	2.49NS
Error	87	29550.23	339.66	
Total	89	31238.50		

NS $p > .05$ Alpha level = .05; $\underline{F} = 3.10$.

Table 26

Analysis of Variance of Posttest Outdoor Attitude Scores				
Source	DF	SS	MS	<u>F</u>
Conditions	2	9564.16	4782.07	13.25*
Error	87	31400.73	360.93	
Total	89	40964.89		

* $p < .05$ Alpha level = .05; F = 3.10.

Table 27

Duncan's New Multiple Range Test for Posttest Outdoor Attitude Scores

Means	Central Camp 163.23	Control Group 170.60	Outpost Camp 187.83
163.23	—	NS	*
170.60		—	*
187.83			—

* $p \leq .05$ Alpha level = .05; Degrees of Freedom = 87.

NS $p > .05$

Table 29

Analysis of Variance of
Pretest Environment Attitude Scores

Source	Df	SS	MS	<u>F</u>
Conditions	2	320.27	160.13	2.24NS
Error	87	6211.83	71.40	
Total	89	6532.10		

NS $p > .05$ Alpha level = .05; $F = 3.10$.

Table 30

Source	Df	SS	MS	<u>F</u>
Conditions	2	1466.47	733.23	11.38*
Error	87	5607.13	64.45	
Total	89	7073.60		

* $P_{.05}$ Alpha level = .05; F = 3.10.

Table 31

Duncan's New Multiple Range Test for Posttest Environment Attitude Scores

Means	Central Camp 62.03	Control Group 65.06	Outpost Camp 71.70
62.03	—	NS	*
65.06		—	*
71.70			—

* $p < .05$ Alpha level = .05; Degrees of Freedom = 87.

NS $p > .05$

Table 33

Analysis of Variance of
Pretest Socialization Attitude Scores

Source	Df	SS	MS	F
Conditions	2	20.27	10.13	0.52NS
Error	87	1688.63	19.41	
Corrected	89	1708.90		

NS $p > .05$ Alpha level = .05; $F = 3.10$.

Table 34

Analysis of Variance of Posttest Socialization Attitude Scores

<u>Source</u>	<u>Df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>
Conditions	2	274.16	137.08	6.21*
Error	87	1920.30	22.07	
Total	89	2194.46		

* $p < .05$ Alpha level = .05; $F = 3.10$.

Table 35

Duncan's New Multiple Range Test
for Posttest Socialization Attitude Scores

Means	Central Camp 35.13	Control Group 33.53	Outpost Camp 37.76
35.13	—	NS	*
33.53		—	*
37.76			—

$p_{\leq .05}$ Alpha level = .05; Degrees of Freedom = 87.

$NS_{p > .05}$

Table 37

Analysis of Variance of Pretest Education Attitude Scores				
Source	Df	SS	MS	<u>F</u>
Conditions	2	101.76	50.88	2.09NS
Error	87	2120.07	24.37	
Total	89	2221.82		

NSp>.05 Alpha level = .05; F = 3.10.

Table 38

Analysis of Variance of Posttest Education Attitude Scores				
Source	Df	SS	MS	<u>F</u>
Conditions	2	486.49	243.24	11.09*
Error	87	1907.83	21.93	
Total	89	2394.32		

* $p \leq .05$ Alpha level = .05; \underline{F} = 3.10.

Table 41

Analysis of Variance of Pretest Pollution Attitude Scores				
Source	Df	SS	MS	<u>F</u>
Conditions	2	86.02	43.01	2.33NS
Error	87	1602.70	18.42	
Total	89	1688.72		

NSp>.05 Alpha level = .05; F = 3.10.

Table 42

Analysis of Variance of Posttest Pollution Scores

Source	Df	SS	MS	<u>F</u>
Conditions	2	436.87	218.43	9.86*
Error	87	1927.63	22.16	
Total	89	2364.50		

* $p < .05$ Alpha level = .05; F = 3.10.

Table 43

Duncan's New Multiple Range Test
for Posttest Pollution Attitude Scores

Means	Central Camp 37.70	Control Group 38.93	Outpost Camp 42.86
37.70	—	NS	*
38.93		—	*
42.86			—

$p \leq .05$ Alpha level = .05; Degrees of Freedom = 87.

NS $p > .05$.

APPENDIX D

MGOAI Pretest and Posttest Mean Raw Scores

MGOAI Pretest and Posttest Mean Raw Scores

Condition	Number	Test	Overall Outdoor Attitude	Environment	Socialization	Education	Pollution
Control Group	30	Pretest	168.57	64.30	34.10	31.10	39.07
		Posttest	170.60	65.07	35.13	31.57	38.93
Central Camp	30	Pretest	158.50	60.23	33.03	28.50	36.73
		Posttest	163.23	62.03	33.53	29.97	37.70
Outpost Camp	30	Pretest	166.43	64.17	33.97	29.93	38.37
		Posttest	187.83	71.70	37.77	35.50	42.87

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Data were analyzed by employing the Kruskal-Wallis One Way Analysis of Variance By Ranks Test, the Wilcoxon Signed Rank Test, and a post hoc paired comparison's test. Results of the analyses indicated that the posttest overall outdoor, environment, education, and pollution attitude scores for campers in the outpost camp setting were significantly more positive from those in the control group or the central camp setting. Socialization attitude scores were significantly different between the central camp setting and the outpost camp but were not significantly different from the control group. It was concluded that the outpost camp setting was effective in the development of positive overall outdoor, environment, education, and pollution attitudes. Outpost camp setting's effect on socialization attitudes was inconclusive.