5-1993

A Study of Significant Differences between the Mean Verbal Format & Visual Format Crume/Ellis WIlderness Anxiety Scale Scores of Fifth & Sixth Grade Students

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1993

A STUDY OF SIGNIFICANT DIFFERENCES BETWEEN THE MEAN VERBAL FORMAT AND VISUAL FORMAT CRUME/ELLIS WILDERNESS ANXIETY SCALE SCORES OF FIFTH AND SIXTH GRADE STUDENTS

A Thesis

Presented to

the Faculty of the Department of Recreation

Western Kentucky University

Bowling Green, Kentucky

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

by

Kelly Barr Rogers

May, 1993

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A STUDY OF SIGNIFICANT DIFFERENCES

BETWEEN THE MEAN VERBAL AND VISUAL FORMAT

CRUME/ELLIS WILDERNESS ANXIETY SCALE SCORES

OF FIFTH AND SIXTH GRADE STUDENTS

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ACKNOWLEDGMENTS

The writer wishes to thank those who have given valuable assistance leading to the completion of this study. Thanks to Principal Harold Dexter and the students who participated in the study at McNeill Elementary School, Bowling Green, Kentucky. Mr. Dexter's patience and cooperation helped tremendously during the test administration.

A special thanks to Dr. Chuck Crume, Major Professor, for his help with all aspects of this study. Dr. Crume's guidance, knowledge, and editorial skills have afforded the writer a great deal of education and understanding.

The writer also wishes to thank Dr. Elmer Gray, Agriculture Department, and Dr. William Kummer, Recreation Department, for serving as thesis committee members. Their editorial comments and guidance are greatly appreciated.

Finally, the writer thanks Molly Rogers for her patience and support throughout this study.

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A STUDY OF SIGNIFICANT DIFFERENCES BETWEEN THE MEAN VERBAL FORMAT AND VISUAL FORMAT CRUME/ELLIS WILDERNESS ANXIETY SCALE SCORES OF FIFTH AND SIXTH GRADE STUDENTS

Kelly Barr Rogers May, 1993 52 Pages
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ABSTRACT

The problem statement for this study was: "Will there be a significant difference between the mean verbal format and mean visual format CEWAS scores of fifth and sixth grade students?"

There would seem a need for this study due to the increasing number of participants in outdoor recreational activities. This increase introduces many environmental concerns which must be addressed in order to maintain present conditions at wilderness areas.

Data related to wilderness anxiety among fifth and sixth grade male and female students attending McNeill Elementary School in Bowling Green, Kentucky, were collected and analyzed for significant difference. Randomly selected pretest (verbal format) and posttest (visual format) groups completed the Crume/Ellis Wilderness Anxiety Scale,

which measures wilderness anxiety in seven specific areas and total score. Each of the seven factor scores and the total scores were tested for pre- and posttest significant difference among males and again among females.

Analysis of data related to the verbal format CEWAS pretest for males and females indicated that there was a significant difference between mean male and mean female CEWAS pretest scores. In light of the above, it was determined that the study populations should be separated into samples of males and females for pre- and posttest analysis.

Male paired t test results indicated that total mean group score and two factor mean scores produced significant difference at .05 or greater. Five factor mean scores failed to produce significant difference. Female paired t test results indicated that total mean group score failed to produce a significant difference (.05 or greater). This was also the case with five of the factor scores. A significant difference (.05 or greater) was found on two factors: (a) Sudden Attack and (b) Inclement Weather, the same factors that produced significant differences among males.

CHAPTER I

INTRODUCTION

Overview

In this quasi-experimental study, hypotheses were tested for significant difference between a wilderness anxiety instrument utilizing an audio-visual format and one using word association only.

The literature suggests that an increasing number of outdoor education programs have been developed and implemented in public as well as private schools. There is also a growing number of schools and organizations offering high adventure and risk/challenge activities as a part of their curriculum. Also, there is an increasing awareness of the importance of natural areas, and outdoor activities are gaining popularity. These activities and programs support the need for further research.

The primary intent of this study was the determination of whether or not audio-visual depictions of outdoor environmental conditions/subjects would significantly affect the test scores of fifth and sixth grade boys and girls taking the Crume/Ellis Wilderness Anxiety Scale (CEWAS). Test groups comprised of children in these elementary grade

levels were administered the CEWAS instrument. Group A was given the verbal association test only, while group B was given the test using audio-visual aids. Test results provided the data for statistical analysis.

Time constraints and test group availability were delimiting factors in this study; thus, an attempt was made within these delimitations to generate adequate data sufficient to produce at least pilot study results.

Background

This study was a logical step in the evaluation and testing of the Crume/Ellis Wilderness Anxiety Scale. The review of literature contains a more formal review of studies in which this instrument was used. The following provides a general review, including findings to date. The following also presents a logical argument for continued modification and testing of the CEWAS format.

Crume/Ellis Wilderness Anxiety Scale Original Validation Study

CEWAS was developed in 1984 at Western Kentucky University in an effort to study the biological and physical environmental factors which may produce anxiety in children. Data from a test sample of 226 junior high school students were analyzed as a part of the original validation study utilizing the CEWAS (Crume & Ellis, 1984).

CEWAS was then used as a part of a self-concept/ wilderness anxiety research project to measure wilderness

anxiety among children attending Kentucky Department of Fish and Wildlife Resources (KDFWR) camps. Three camps operated by (KDFWR) Curry, Wallace, and Webb were utilized as testing sites for the study. Pretest and posttest data were analyzed from randomized groups of male and female campers. Data from these studies were also analyzed to test for individual and between camp differences. Pretest data were used to produce male and female mean scores to be used as standards for future interpretation of CEWAS scores among fifth and six grade students (Crume & Lang, 1992).

Wilderness Anxiety and its Effect on Potential Behavior

Wilderness anxiety as a motivational factor in negative environmental behavior or "vandalism" was studied by Ellis, Crume, Stephenson, and Blackburn, (1986). Their intent was to show that wilderness anxiety could play a part in a person's exhibition of negative environmental behavior.

Several studies back the assumption that stress associated with environmental behavior can lead to aggressive behavior (Green & O'Neal, 1969; Konecni, 1975; Baron & Bell, 1976). Crume and Ellis (1984) theorized "...if negative environmental behavior is a form of aggression and if wilderness anxiety is a form of stress, it would follow that an individual's propensity toward negative environmental behavior may, in part, be a function of his/her fear of the wilderness" (p. 25).

November 1992 Analysis of Camp Wallace, Camp Currie, & Camp Webb Studies

The purpose of these studies was to investigate the impact of KDFWR's summer camping programs on the self-concept and wilderness anxiety of fifth and sixth grade participants. The studies were also used to generate mean Willoughby Schedule and CEWAS scores for male, female, and total groups at the three camps involved. However, the main reason these studies were conducted was to collect and analyze data in order to better understand the needs of the camp participants.

Regional diversity was also a factor considered in these studies. Diversity reflected in perceptions may also contribute to CEWAS score reliability. The following statements summarize important considerations presented in review of literature:

1) Fears and phobias of children and how they relate to the image one has of any number of settings, objects, and activities.

2) Anxiety associated with outdoor activities/settings has a relationship to the perception a child has of his/her natural environment.

3) There is a positive correlation between outdoor activities and self-concept.

4) There is a direct relationship between a child's fears and phobias and the way that child views his or her

environment.

Need for the Study

The above studies and others addressed in review of literature provide evidence that the CEWAS instrument measures levels of wilderness anxiety through association of words with perceived environmental conditions, objects, plants, or animals.

It seems logical to assume that test subjects may have different perceptions of the meanings of such conditions, objects, plants, or animals based upon personal experience. It is unclear whether or not these personal perceptions based upon an abstract response trigger (words) have a similar effect upon individual perceptions across the test group. It is also unclear if there would be a more consistent measurement across the group if all subjects were presented the same visual stimuli.

Purpose of the Study

The purpose of this study was to determine if a significant difference exists between mean CEWAS scores utilizing a verbal format and mean scores utilizing a visual format among fifth and sixth grade students.

As will be demonstrated in the review of the research literature, there seems to be a growing number of people engaging in outdoor activities. There is also evidence that children's perceptions of something can be influenced by a

past experience. If these past experiences trigger anxieties, they may play a significant role in a child's decision to participate in an outdoor activity. According to Ewert, "Fear can be both a motivating and debilitating factor which can play an important role in the outdoor environmental education setting" (1986, p. 38).

Problem Statement

The problem statement is "Will there be a significant difference between the mean verbal format and mean visual format CEWAS scores of fifth and sixth grade students?"

Null Hypotheses

The following hypotheses, stated in the null form, were tested:

HO 1: There will be no significant difference between the mean verbal format (pretest) CEWAS total scores of male and female students.

HO 2: There will be no significant difference between the mean verbal format and mean visual format CEWAS "total score" of fifth and sixth grade male students.

HO 3: There will be no significant difference between the mean verbal format and mean visual format CEWAS "Fear of Sudden Attack" of fifth and sixth grade male students.

HO 4: There will be no significant difference between

the mean verbal format and mean visual format CEWAS "Poisonous Plants" of fifth and sixth grade male students.

HO 5: There will be no significant difference between the mean verbal format and mean visual format CEWAS "Sharp Objects" of fifth and sixth grade male students.

HO 6: There will be no significant difference between the mean verbal format and mean visual format CEWAS "Venomous and Infectious Animals" of fifth and sixth grade male students.

HO 7: There will be no significant difference between the mean verbal format and mean visual format CEWAS "Inclement Weather" of fifth and sixth grade male students.

HO 8: There will be no significant difference between the mean verbal format and mean visual format CEWAS "Water" of fifth and sixth grade male students.

HO 9: There will be no significant difference between the mean verbal format and mean visual format CEWAS "Being Lost or Alone" of fifth and sixth grade male students.

HO 10: There will be no significant difference between the mean verbal format and mean visual format

CEWAS "Total Score" of fifth and sixth grade female students.

HO 11: There will be no significant difference between the mean verbal format and visual format CEWAS "Fear of Sudden Attack" of fifth and sixth grade female students.

HO 12: There will be no significant difference between the mean verbal format and visual format CEWAS "Poisonous Plants" of fifth and sixth grade female students.

HO 13: There will be no significant difference between the mean verbal format and visual format CEWAS "Sharp Objects" of fifth and sixth grade female students.

HO 14: There will be no significant difference between the mean verbal format and visual format CEWAS "Venomous and Infectious Animals" of fifth and sixth grade female students.

HO 15: There will be no significant difference between the mean verbal format and visual format CEWAS "Inclement Weather" of fifth and sixth grade female students.

HO 16: There will be no significant difference between the mean verbal format and visual format CEWAS "Water" of fifth and sixth grade female students.

HO 17: There will be no significant difference between the mean verbal format and visual format CEWAS "Being Lost or Alone" of fifth and sixth grade female students.

Delimitations of the Study

This study was delimited in its findings and may only be generalized to the group tested. Due to these delimitations, this study is considered a pilot study. The following outlines the delimitations:

1) The data collected were delimited to a two week testing period.

2) Data collected for this study were generated from fifth and sixth grade student's CEWAS test scores at McNeill Elementary School, Bowling Green, Kentucky.

Definition of Terms

1) Anxiety--"a feeling of apprehension, uneasiness, or dread toward a source which is primarily internal and which may not be totally recognized by the individual" (Shepard & Caruso, 1986, p. 12).

2) Conservation education--a study of the wise use of natural resources.

3) Environmental education--an interdisciplinary study of environmental units and how they interact.

4) Fear--"a normal emotional response to a perceived threat that may be real or imagined" (Sarafino, 1986, p.

15).

5) High adventure--activities and programs that include a degree of risk and are designed to challenge the individual through a set of stimulating outdoor activities.

6) Nature study--simple, truthful observations leading toward an understanding of the environmental whole, usually based upon discovery and personal interest.

7) Outdoor activity--activities such as fishing, canoeing, camping, rappelling, etc. as opposed to outdoor athletic activities such as baseball, football, etc.

8) Outdoor education--education in, about, and for the outdoors.

9) Phobia-- "a persistent fear reaction that is strongly out of proportion to the reality of the danger" (Rosenhan & Seligman, 1984, p. 200).

10) Self-concept--"the perception an individual has of self" (Hazelworth & Wilson, 1990, p. 33).

11) Stress--"a psychological strain produced by an occurrence or situation wherein a person experiences strong unpleasant emotional tensions" (Hershey & Lugo, 1970, p. 434).

12) Stress/risk--a form of high adventure activity where both stress and risk factors are present.

CHAPTER II

REVIEW OF LITERATURE

Introduction

In Chapter II, literature relating to children's perceptions of the natural environment as well as fears and phobias in childhood will be reviewed. Literature dealing with anxiety and self-concept will also be reviewed. The following statements summarize the literature to be reviewed in Chapter II:

1) Fears and phobias of children and how they relate to the image one has of any number of settings, objects, and activities.

2) Anxiety associated with outdoor activities/settings has a relationship to the perception a child has of his/her natural environment.

3) There is a positive correlation between outdoor activities and self-concept.

4) There is a direct relationship between a child's fears and phobias and the way that child views his or her environment.

Fears and Phobias: Effects Upon Children and Adolescents

Fears and phobias are complex. In general, psychologists tend to disagree as to their origin and

nature. Hershey and Lugo state that "...fear is what we feel when faced with real or imagined danger..."(1970, p. 187). The danger might be a first time airplane ride or an encounter with a black bear. The fear depends on the individual. Hershey and Lugo (1970), Kahn (1977), and Sarafino (1986) believe that an individual must perceive a "threat" in order for fear to be present.

Fear is not limited to activity; it has many variables. It can be considered a setting, a feeling, or simply a reaction (Kenny, 1963). It is complex; the variables involved are many. "Fear and the similar constructs of anxiety and stress are grounded in physiological and sociological/psychological concerns which include emotions, perceptions, and attitudes" (Ewert, 1986, p. 34). Crider's theory supports this assumption. He believes that "...either perceptual or imaginal mental processes can start a visceral disturbance which the person has learned to identify as fear" (1949, p. 219).

According to Sarafino, a fear response can be initiated if a person has a "...direct experience with negative events" (1986, p. 44). For example, a boy sees a man attack a woman in the park. The boy will no longer go to the park because of the fear of being attacked. The boy himself has never been attacked, but the sight of someone else being attacked places the fear of attack in the boy's mind.

Another aspect of fear involves the withholding of information (Ewert, 1986). Fear can be increased by not disclosing all the information about a particular object or place. A person's imagination may then take over and create a very horrifying image of a very harmless thing. For example, when a woman hears the word "dog," she may become extremely frightened. This reaction may be triggered by a negative experience with a dog during her childhood. Her image of a dog may be different from the image another person has of the same animal. The image a person has of a particular animal, place, person, etc., depends on past events and experiences of that person. According to Rosenhan and Seligman, "The vast majority (95 %) of animal phobias are reported by women" (1984, p. 199). Watson "...was certain that the fear of dogs proceeded from a traumatic experience in which the loud barking of a dog had triggered the original fear of loud sounds" (cited in Maurer, 1965, p. 266).

Fear can be more localized. For instance, a child may fear a particular animate or inanimate object, such as a snake or a gun. "A fear object, then, is any object or conceptualization that the child anticipates might cause injury, pain, or loss" (Robinson, Rotter, Fey, & Robinson, 1991, p. 190). Psychologists and psychiatrists have developed theories over time in an attempt to explain the

origins of fear. Maurer cites the behaviorist's position, which contends "...that fears are conditioned responses based upon associational ties with an innate fear" (1965, p. 266). While the behaviorist associates fear with birth, the maturational theorist believes that fear is a growth process. "They suggest that as the child matures and his or her cognitive capabilities increase, the individual will experience a series of fears which will appear at certain ages and later disappear" (Derevensky, 1979, p. 12). Freud and Josselyn have a much different explanation for the fears people experience. "Freudian and psychoanalytic theory suggests that children's fears are firmly rooted in their emotional involvement with their parents" (Derevensky, 1979, p. 12). Maurer stated that "...the Freudian considers fear as a displacement of the son's fear of the father who, so the child believes, will retaliate for the son's incestuous desire for his mother by castrating the son" (1965, p. 266).

The theories these groups propose seem different in content, yet both have two common factors: (1) "...fears are interrelated" (2) "...and caused by some underlying conflict" (Robinson et al., 1991, p. 190). No matter what the cause, fears produce a sizeable amount of stress in many peoples lives.

A fear considered abnormal is called a phobia. "While fear is normal and a phobia is abnormal, they are both on

the same continuum; they differ in degree, not in kind" (Rosenhan & Seligman, 1984, p. 199). The degree of a phobia also depends on the individual's experiences. Children outgrow many fears, but some persist into adulthood. A phobia is a "...defense mechanism through which the individual gets rid of an anxiety arousing impulse" (Crider, 1949, p. 218). It may also be a way of repressing a long forgotten fear, perhaps stemming from childhood (Bagsby, 1928). Although psychologists have not determined the exact underlying cause or causes of phobias, they have given reference to a couple of necessary factors. Miller, Barrett, and Hampe, (1974), agree that phobias involve an unreasonable fear of a particular "object" or "situation." A person may alter his/her life due to a phobia. For example, a person may have an extreme, irrational fear of heights. They may alter their travel route by several miles in order to avoid a bridge of some height. By taking a different route, the individual relieves the anxiety associated with crossing the bridge. This action may seem perfectly acceptable to the person driven by a phobia, yet very abnormal by the passengers. Fear of heights may seem abnormal, but it "...ranks among the most common fears in adulthood" (Sarafino, 1986, p. 160).

More research in this area and its relationship to wilderness anxiety may lead to a better understanding of

their relationship. Only then can psychologists truly understand the underlying complexities involved with fears and phobias.

Anxiety

Anxiety is much like fear, "...with the added apprehension that we don't know where the danger lies" (Hershey & Lugo, 1970, p. 190). This apprehension may cause a child to feel added discomfort in certain situations. Anxiety may overwhelm a boy as he walks through a room with no light. The room may be empty, therefore presenting no significant danger, or it may be full of sharp objects which could cause the boy harm. The anxiety felt by the boy is harbored in the fact that he can see nothing. Hershey and Lugo (1970) and Sarafino (1986) agree that the source, being unknown, plays an important role in anxiety. Priest and Baille (1987), as well as Carpenter and Priest (1989), relate their theory of adventure to the above citation. They equate adventure to uncertainty and risk with unpredictability. Therefore, it would follow that a person would be under a certain amount of anxiety in an uncertain or adventure situation.

Other factors seem to play a parallel role in the development of anxiety. According to Shepard and Caruso (1986) and Kahn (1977), depression is a correlating factor in anxiety. There also seems to be feelings of helplessness

and impending doom (Hilter & Menninger, 1963; Sarafino, 1986; Spielberger, 1972).

Freud had a somewhat different explanation for the roots of anxiety. He considered anxiety to be "...a signal which reminds the person of his helplessness without love and protection" (Hilter & Menninger, 1963, p. 24). A child who has wandered away from its mother while at a shopping mall could experience anxiety. The child may feel helpless and unprotected.

Anxiety can be both detrimental as well as beneficial. Without a certain amount of stress and anxiety, a person would exist merely as a rag doll: lifeless and without motivation. Hershey and Lugo state "...to avoid all anxiety is to stop living a normal life" (1970, p. 190). They elaborate by saying that "...low and moderate levels of anxiety generally produce higher scores on complex learning tasks and problem solving than high levels of anxiety or no anxiety" (Hershey & Lugo, 1970, p. 190). This is to say that people who are subject to low levels of anxiety seem to perform better. Emerson and Golins (1980), for example, suggest that by injecting an outdoor program with fear and stress, a student's decision-making capability, discipline, and personal awareness will be enhanced. On the other hand, too much anxiety can be detrimental to the student. Williams explains that "...an excessive amount of anxiety

causes a person to come apart at the seams and the situation becomes destructive" (1975, p. 31). As with most things, one must balance the amount of stress or anxiety he or she is subject to. This balance is essential to the growth and development of a child's psychological health.

Anxiety is a common factor in all lives, therefore necessitating a clear understanding of how it affects mankind.

Outdoor Activities and Self-concept

Outdoor education and recreational activities play important roles in the physical as well as mental development of both males and females. In the past a person needed to be an excellent outdoorsman to survive the rugged natural setting. Good orienteering, mountaineering, hunting, camping, and boating skills were prerequisites for traveling and exploration.

The study of nature as well as exploration of natural settings developed as a part of the western expansion. During the early to mid 1900's, people from all walks of life began to seek out new and intriguing outdoor activities. According to Crume, there have been six outdoor movements (1983). They are as follows:

1) nature study
2) elementary science
3) conservation education

4) outdoor education/recreation

5) environmental education

6) high adventure and risk/challenge.

Smaller, more specific, outdoor movements resulted from these primary movements.

In the early 1900's, The Boy Scouts of America was introduced to young men who began their own nature experience. By the 1950's, people were flocking to national parks and recreation areas in large numbers; camping and hiking gained tremendous popularity.

In the 1970's people began wanting more than just a casual hike in the woods or a weekend camping trip; they wanted a challenge. Outdoor activities such as rock climbing and white water rafting provided such challenges. A documented effect of participation in an outdoor adventure activity, such as rockclimbing, is a better self-concept. Self-concept is "...the perception an individual has of himself" (Hazelworth & Wilson, 1990, p. 33). Dickey (1975) believes that high adventure activities provide people with opportunities to test one's self and to mature as an individual. Such activities expose the participant not only to the natural environment but also to a challenging, sometimes life-threatening adventure. According to Whittaker (1981), outdoor adventure activities demand physical, intellectual, emotional, and psychological

involvement in activities at a more intense level than is usually encountered. A person is pushing beyond the normal existence during an adventure activity, thereby challenging his or her body, mind, and soul. Sir Edmund Hillary, the first man to set foot on the summit of Mt. Everest in 1953, did so because it offered a challenge beyond everyday existence. This seemed odd to most people in the 1950's, but today people use it as their excuse to venture into the unknown. According to Fletcher (1970), students who participated in the Outward Bound Schools of Great Britain experienced significant changes:

1) increased self-confidence
2) greater maturity
3) greater awareness of the needs of others
4) greater ability to mix well.

It would appear, as a result of their experiences while participating in the activities at this school, the student's self-concepts and overall outlook on life were improved. Many studies similar to the above indicate a positive correlation between outdoor adventure activities and positive changes in people's attitudes and self-concepts. Lovett (1971) indicated that people who participated in Outward Bound programs had a more positive concept, became more confident in decision making, and enjoyed better interaction with their peers. Fersch and

Smith (1971) found that students who participated in Project Adventure, a program offered at a Massachusetts' high school, showed positive change and significant change in internal control. Clifford and Clifford (1967) agree that change in self-concept can take place in the appropriate direction through the participation in survival training courses. Stuff (1966) concluded that, in comparison with a control group, girls who had completed an Outward Bound Course were more stable, more dependable, more critical, livelier, less sensitive, and less conventional. A two-year study of 60 adjudicated delinquents from the Massachusetts Youth Service showed that out of 42 boys who completed an Outward Bound Course, the recidivism rate was 20 % as compared with 40 % for the state of Massachusetts, and 50-60 % for the nation (Kelly & Baer, 1968).

The above studies indicate that outdoor education and adventure activities have the ability to change behavior in a positive way. Taking this into account, future research in the area of outdoor education and adventure activities is warranted.

CHAPTER III

METHODOLOGY AND DESIGN

Design

A quasi-experimental design utilizing test groups of fifth and sixth grade students was used in this study. According to Campbell and Stanley (1963), pre- and posttest designs are commonly used in educational research.

Treatment

The audio-visual format of the posttest was considered the treatment. It consisted of a caramate slide production rather than a written test format.

Population and Sample

The population included fifth and sixth grade students attending McNeill Elementary School in Bowling Green, Kentucky. Two intact study groups, (Group A and Group B) consisting of fifth and sixth grade classes were selected. Both groups were administered the CEWAS (verbal format), which utilized a word association schedule only. After a period of one week, the same two groups were administered CEWAS (visual format), which utilized a word association schedule along with a slide production. Group B was treated as a replication of Group A; the same testing procedures were used. Pretest male and female scores of Group A and

Group B were tested for significant difference to insure groups were from the same population.

Instrumentation

The Crume/Ellis Wilderness Anxiety Scale was used in this study to measure wilderness anxiety in seven specific areas and total score. Mean verbal format and visual format CEWAS scores were produced.

CEWAS was used as a part of the Camp Wallace, Camp Currie, and Camp Webb Studies for the purpose of measuring wilderness anxiety among fifth and sixth grade male and female campers attending Kentucky Department of Fish and Wildlife Resources (KDFWR) camps (Crume and Lang, 1992).

The Crume/Ellis Wilderness Anxiety Scale (CEWAS)

The CEWAS instrument was developed in 1984 at Western Kentucky University for the purpose of studying biological and physical environmental factors which may produce anxiety in children.

Data from a test sample of 226 junior high school students were analyzed utilizing a principal axis factor analysis. Squared multiple correlation coefficients were used as initial estimates of commonality. Factors with eigenvalues greater than unity were rotated to simple structure according to varimax criterion. Factor based scales were constructed by combining items with loadings of .35 or greater. Crombach's alpha was calculated as an

estimate of internal consistency of each of the resulting scales. The estimate of internal consistency for the entire scale was .96. Each of the seven scales produced reliability estimates in excess of .80 (Crume & Ellis, 1984).

Audio-Visual Format Instrument

The audio-visual format instrument used the same answer sheet as the verbal format instrument. The audio-visual format instrument used a caramate slide production rather than a written test format.

Color slides were selected depicting the subjects or condition described by words on the verbal format instrument. Slide selection was reviewed by a committee consisting of a child psychologist, a naturalist, and a 5th grade teacher for content appropriateness. After committee approval, a test/retest Pearson correlation coefficient for each item was generated. Items with a correlation coefficient of less than .80 were replaced, renewed, and retested.

Each slide was presented for ten seconds and the word from the verbal format was repeated twice. Students reacted by making an appropriate response indication on the scoring sheet during this period.

Testing and Data Processing

Before the instruments were administered, students were

informed that their answers would be anonymous and that the response to each question should be honest and reflect the person's true feelings. Test instruments were administered, collected, and placed in appropriate envelopes by classroom teachers.

The instruments were then scored, tabulated, and transcribed to data sheets. Data were then entered into a computerized data base and cross checked for accuracy.

Treatment of Data

Data were analyzed using the SOLO Statistical Package. Descriptive statistics and student t tests related to male and female differences were generated. An Alpha level of (.05) was used to test for significant difference between mean pre- and posttest scores.

CHAPTER IV

FINDINGS

Male and Female Pretest Comparison

Analysis of data related to the verbal format CEWAS pretest for males and females (see Table 1) indicated that there was a significant difference between male and female mean CEWAS pretest scores.

Table 1

Male and Female Pretest Comparison

Factor	n	Pretest $\bar{x}$	t	p
Male	40	53.53	-5.042	.001*
Female	30	94.03		

Note. n = Number; $\bar{x}$ = Mean; t = Student t value; p = Probability * = p of .05 or Less

Based upon the above analysis, it was determined that males and females should not be combined into one sample for pre- and posttest analysis. Table 2 relates to mean male pre- and posttest scores while Table 3 relates to mean female pre- and posttest scores.

Male Paired T-Test Results

The analysis of the male mean pre- and posttest scores, for the total group and each of the seven factors within the CEWAS instrument is reported in Table 2.

Total mean group score and two factor mean scores produced significant difference. Five factor mean scores failed to produce significant difference.

Table 2

Male Pre- and Posttest Comparison

Factor	n	Test $\bar{x}$		t	p
		Pre.	Post.		
Total	40	53.53	44.43	2.367	.023 *
Sudden Attack	40	19.48	14.98	3.159	.003 *
Poisonous Plants	40	2.88	2.35	.812	.422
Sharp Objects	40	8.05	6.30	2.013	.051
Venomous and Infectious animals	40	11.43	9.50	1.871	.069
Inclement Weather	40	1.58	3.20	-2.723	.009 *
Water	40	2.15	1.65	1.065	.294
Lost or Being Alone	40	7.98	6.45	1.341	.188

Note. n = Number; $\bar{x}$ = Mean; t = Student t value; p = Probability * = p of .05 or Less

Female Paired T-Test Results

The following table presents an analysis of the female mean pre- and posttest scores for the total group and each of the seven factors within the CEWAS instrument. Total mean group scores failed to produce a significant difference as did five of the factor scores. Significant differences were found for the Sudden Attack and Inclement Weather

factors.

Table 3

Female Pre- and Posttest Comparison

Factor	n	$\bar{x}$		t	p	
		Pre.	Post.			
Total	30	94.03	96.63	- .551	.586	
Sudden Attack	30	33.90	29.87	2.393	.023	*
Poisonous Plants	30	4.77	3.83	1.574	.126	
Sharp Objects	30	12.07	12.93	- .796	.433	
Venomous and Infectious animals	30	19.10	18.67	.466	.645	
Inclement Weather	30	4.43	7.23	-2.659	.013	*
Water	30	5.07	6.37	-1.540	.135	
Being Lost or Alone	30	15.03	16.13	- .691	.495	

Note. n = Number; $\bar{x}$ = Mean; t = Student t value;
p = Probability * = p of .05 or Less

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Based on the analysis of the data collected, the following null hypotheses were rejected:

HO 1: There will be no significant difference between the mean verbal format (pretest) CEWAS total scores of male and female students.

HO 2: There will be no significant difference between the mean verbal format and mean visual format CEWAS "total score" of fifth and sixth grade male students.

HO 3: There will be no significant difference between the mean verbal format and mean visual format CEWAS "Fear of Sudden Attack" of fifth and sixth grade male students.

HO 7: There will be no significant difference between the mean verbal format and mean visual format CEWAS "Inclement Weather" of fifth and sixth grade male students.

HO 11: There will be no significant difference between the mean verbal format and visual format CEWAS "Fear of Sudden Attack" of fifth and sixth grade

female students.

HO 15: There will be no significant difference between the mean verbal format and visual format CEWAS "Inclement Weather" of fifth and sixth grade female students.

The following null hypotheses were accepted:

HO 4: There will be no significant difference between the mean verbal format and mean visual format CEWAS "Poisonous Plants" of fifth and sixth grade male students.

HO 5: There will be no significant difference between the mean verbal format and mean visual format CEWAS "Sharp Objects" of fifth and sixth grade male students.

HO 6: There will be no significant difference between the mean verbal format and mean visual format CEWAS "Venomous and Infectious Animals" of fifth and sixth grade male students.

HO 8: There will be no significant difference between the mean verbal format and mean visual format CEWAS "Water" of fifth and sixth grade male students.

HO 9: There will be no significant difference between the mean verbal format and mean visual format CEWAS "Being Lost or Alone" of fifth and sixth

grade male students.

HO 10: There will be no significant difference between the mean verbal format and mean visual format CEWAS "Total Score" of fifth and sixth grade female students.

HO 12: There will be no significant difference between the mean verbal format and visual format CEWAS "Poisonous Plants" of fifth and sixth grade female students.

HO 13: There will be no significant difference between the mean verbal format and visual format CEWAS "Sharp Objects" of fifth and sixth grade female students.

HO 14: There will be no significant difference between the mean verbal format and visual format CEWAS "Venomous and Infectious Animals" of fifth and sixth grade female students.

HO 16: There will be no significant difference between the mean verbal format and visual format CEWAS "Water" of fifth and sixth grade female students

HO 17: There will be no significant difference between the mean verbal format and visual format CEWAS "Being Lost or Alone" of fifth and sixth grade female students.

The male group data indicated a significantly lower

level of anxiety scores when the visual format CEWAS instrument was utilized. The female group data indicated no significant difference between the verbal and visual formats. On the factor related to fear of Sudden Attack, both male and female group anxiety scores were significantly lower when the visual format was utilized. On the factor related to Fear of Inclement Weather male group mean scores indicated a significant increase in anxiety mean scores. The female group mean scores on this factor also indicated a significant increase in anxiety scores.

Discussion of Conclusions

It is evident from the above conclusions that the visual format had a significant effect upon the responses of study participants on at least two factors. It is also evident that the visual format had a greater effect upon the male subjects than upon the female subjects.

Exactly why the two groups responded differently is open to speculation. However, it seems logical that a picture provides a more precise image of the subject or condition than does an abstract word alone. According to the findings of this study it seems logical that females might respond differently to subjects or conditions than would their male counterparts.

Recommendations

Listed below is a set of recommendations that seem warranted in light of the findings of the study:

1. The CEWAS instrument be developed in video tape format to include both movement and sound.

2. This study be replicated utilizing the verbal, visual, and audio-visual formats of the CEWAS instrument.

3. Future studies be undertaken utilizing other groups based upon demographic variations.

4. A future study be undertaken which includes an instrument to measure subject's knowledge of the words used to describe subjects or conditions.

Discussion of Recommendations

There seems little doubt that fifth and sixth grade students possess a range of anxieties related to the natural environment. While it is not clearly understood how wilderness anxiety translates into behavior, it seems logical that a better understanding of anxieties could lead to improved strategies for environmental instruction and ultimately to better environmental behavior.

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APPENDIXES

APPENDIX A

CRUME/ELLIS WILDERNESS ANXIETY SCALE

Most people are afraid or bothered by some of the creatures that they might come into contact with in the outdoors. One person might be very afraid of something while another person might have little or no fear. One person might be very afraid of thunder storms while another person might have little or no fear. We want you to tell us the things that bother you. We also want to know just how much they bother you.

You will find a number of things that you might come into contact with when outdoors listed below. Each thing will have the number 0 1 2 3 4 beside it. We want you to black out one of these numbers. The number you black out will represent the degree to which you are bothered by the thing or the condition. The meaning of each number is given below.

0 I am not bothered by it at all and have no fear at all
1 I am only bothered by it a little but I have no fear of it
2 I am not really afraid of it but I am going to be careful when I am close to it
3 I am afraid of it and I don't like to be close to it
4 I am very afraid of it and I am not going any place I think it is

EXAMPLE

0 1 2 3 4 Bees 3 I am afraid of it and don't like to be close to it

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DO NOT WRITE YOUR NAME ON THE ANSWER SHEET-NO ONE WILL KNOW HOW YOU ANSWERED OR MARKED ANY OF THE ITEMS SO PLEASE MARK EACH ITEM AS HONESTLY AS YOU CAN-THANK YOU FOR YOUR HELP

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0 1 2 3 4 SNAKES
0 1 2 3 4 SPIDERS
0 1 2 3 4 BUGS
0 1 2 3 4 RATS
0 1 2 3 4 WILD ANIMALS
0 1 2 3 4 STRANGE SOUNDS
0 1 2 3 4 STRANGE PLACES
0 1 2 3 4 SICK ANIMALS
0 1 2 3 4 WILD ANIMALS

0 1 2 3 4 MICE
0 1 2 3 4 BATS
0 1 2 3 4 BIRDS
0 1 2 3 4 CRAYFISH
0 1 2 3 4 SKUNKS
0 1 2 3 4 WASPS
0 1 2 3 4 BEES
0 1 2 3 4 STRANGERS

17 $\overline{\vee}$

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0 1 2 3 4 POISON IVY
0 1 2 3 4 POISONOUS PLANTS

0 1 2 3 4 MUSHROOMS

3 $\overline{\vee}$

---

0 1 2 3 4 HAWKS
0 1 2 3 4 THORNS
0 1 2 3 4 BEING SHOT
0 1 2 3 4 BEING CUT

0 1 2 3 4 OWLS
0 1 2 3 4 BRIARS
0 1 2 3 4 SHARP THINGS

7 $\overline{\vee}$

---

0 1 2 3 4 SNAKES
0 1 2 3 4 LIZARDS
0 1 2 3 4 FROGS
0 1 2 3 4 WASPS
0 1 2 3 4 MAGGOTS

0 1 2 3 4 BEES
0 1 2 3 4 RATS
0 1 2 3 4 SPIDERS
0 1 2 3 4 TICKS

9 $\overline{\vee}$

---

0 1 2 3 4	STORMS	0 1 2 3 4	COLD WEATHER
0 1 2 3 4	WEATHER CHANGE	0 1 2 3 4	LIGHTNING
0 1 2 3 4	WIND	0 1 2 3 4	ICE
0 1 2 3 4	SNOW STORMS		

7 V _____

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0 1 2 3 4	FAST MOVING WATER	0 1 2 3 4	RIVERS
0 1 2 3 4	LAKES	0 1 2 3 4	OCEANS
0 1 2 3 4	SWIMMING	0 1 2 3 4	BOATS

6 V _____

---

0 1 2 3 4	GETTING LOST	0 1 2 3 4	CAVES
0 1 2 3 4	BEING ALONE	0 1 2 3 4	SINK HOLES
0 1 2 3 4	DARKNESS	0 1 2 3 4	CLOSE PLACES
0 1 2 3 4	HIGH PLACES	0 1 2 3 4	STARVING
0 1 2 3 4	DEEP WOODS		

9 V _____

ARE YOU A : _____ MALE _____ FEMALE

PLEASE DO NOT WRITE BELOW THIS LINE

_____

_____

_____

_____

_____

_____

_____

TOTAL =