An Analysis of Recreation Program and Nature Program Overt Behavior

by

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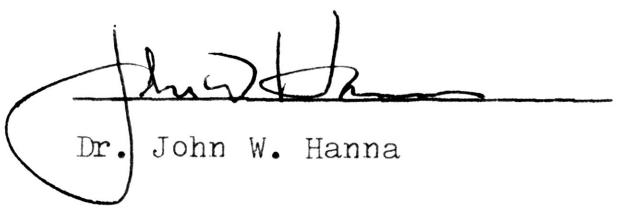

Dr. John W. Hanna

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ABSTRACT

Concern for the environment has prompted this study of the overt immediate behaviors of two environmental occurring programs: recreation and nature programs. Naturalistic Observation through time lapse photography is the method used to collect behavior data in these programs. Twelve behaviors, ranging from cooperative to disruptive, are observed and recorded on checklists for frequencies.

Nature programs produce a significantly higher frequency of involvement behavior, while recreation programs produce a higher frequency of inactive behavior.

The significant behaviors are analyzed for appropriateness to child development, program quality, and the natural environment. This analysis concludes that higher frequencies of involvement in nature programs is appropriate to child development and program quality. Involvement in nature programs is not necessarily an indicator of appropriate behavior for the natural environment.

Further research is recommended on nature programs and their possible resulting attitudes and behaviors.

Key Words of the Study

appropriate behavior
involvement behaviors
natural environment
naturalistic observation
nature programs
recreation programs

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INTRODUCTION

Purpose of the Study

It is the purpose of this study to examine the immediate differential effects of recreation and nature programs on the overt behaviors of urban children. After these behaviors have been examined and quantified, they will be compared for appropriateness in three areas: child development, program quality, and the natural environment. The hypothesis states that a higher frequency of appropriate behavior will occur in nature programs.

Twelve categories of behavior ranging from cooperative to disruptive will be specifically examined: sharing, assisting, respecting, participating, on task of activity at hand, attending, inactive, interrupting, selfish, damaging, manipulating, and hostile. These behaviors are specified as cooperative or disruptive by their operational definitions presented further in the text.

The subjects of this study are a group of twenty-five children from the city of Austin, Texas. Although these children meet daily in one central playground location, they are residents of different parts of the city. Since the children and the playground were chosen for their availability, they are a convenience sample.

Nature of Problem

Americans are beginning to realize that, '...environmentally the cities of North America may be the products of man's worst failure to date dealing with his surroundings. In terms of both natural resources and the quality of life, (both) are deteriorating in our cities,"(Reid,28 cited by McDermott, 33). The President's Council on Recreation and Natural Beauty has said, "Because most Americans live in cities, education in urban environmental problems as well as in traditional conservation matters is particularly important. A city child must rely upon the man-made world around him for what he learns to value,"(McDermott, 34). Steps are beginning to be taken to increase all childrens' awareness of the world around them. In addition to public school environmental education, some city governments have begun to support environmental awareness through Arboretums, Museums, and Nature Centers.

Many evaluations of these environmental programs have been completed. One study by Hounshell and Liggett showed that as environmental awareness increased, positive attitudes of the environment also increased (Mortonson, 3). However, positive environmental attitudes are not necessarily an indicator of positive environmental behavior.

"A disturbing paradox of this scientific age is the fact that its most profound implications have not sunk into our minds and become manifest in our behavior,"(Sears, 396 cited by Kostka, 2).

Few studies have been done on environmental behaviors. Even less research has been completed on environmental programs as the main factor of evaluation. Most other studies concentrate on the geographical environment or the subject's personal background. Therefore, this study will specifically examine and compare behavior in two environmentally related programs: recreation and nature programs.

Recreation and nature programs are both forms of structured play for children. "Play is a rich natural environment in which a child does his best learning. By observing a child at play...the observer can learn how the child views the world..." (Cliatt, 218).

For three reasons, the behaviors of urban children were examined: (1) 3/4 of the nation's children live in urban environments(McDermott, 33) (2) "The children of today will be the environmental decision makers of tomorrow,"(Kostka, 5). (3) Darwin first proposed that children could offer a better account of the nature and origin of human behavior. Human behavior in the environment is the information that this study seeks.

Scope of the Study

Past studies by David E. Day have shown the most practical way to examine the behavior of children is through naturalistic observation (Day, 12). As the name implies, naturalistic observation allows a child's spontaneous and unaffected behavior to be analyzed. The factors that affect the reliability of the observed behavior are the observer, the subject being observed, and the type of observation being used. This study used a non-participant type of observation: the children were not aware they were being observed.

Even though non-participation naturalistic observation is the most appropriate means for this study, the method has some limitations. External factors of inadequate leadership, and children with extreme ranges of behavior most often interfered with the purpose of this study. An account of these variables and how they were minimized follows.

Inadequate leaders may not be able to provide programs capable of stimulating a child's interests: thus the child may not behave in the most appropriate way for the activity.

Next, the backgrounds of each child within the study could not be obtained, because the children were not aware they were being observed. During the study, it became obvious that some of the children could not be be assumed to have "normal" behavior or backgrounds.

In order to maintain the reliability of this study, recreation and nature programs with inadequate leadership and children with extreme behavioral tendencies were eliminated from the data analysis.

Another limitation resulting from the non-participant observation methodology is the distance that must exist between the observing mechanism and the children in the study. The large distance made it practical for only non-verbal behavior to be examined: all verbal communications could not be heard or recorded.

Significance of the Problem

According to the President's Council on Recreation and Natural Beauty, "Much of the nation's environmental deterioration can be attributed to the fact that most Americans are ill-equipped by their education to understand the forces acting in the immediate world around them. Most children growing up in cities have little first hand knowledge of the natural environment and its processes"(cited by McDermott, 34).

Although recreation and nature programs are both forms of play that usually rely on parts of the natural environment, they use the natural environment for different purposes. Whereas nature programs use the environment to increase awareness of the natural environment through animals, plants, and water; recreation programs depend on the environment for physical activity settings such as playgrounds, athletic fields, and picnic areas.

Since recreation and nature programs use the natural environment in different ways, their outcomes in terms of behavior may also be different. If a signigicantly higher frequency of appropriate environmental behavior is shown to be produced by nature programs, then perhaps more such programs could be justified and provided in the future.

Historical Background

Previous studies of childrens' behavior have occurred in many different forms. The following examination of pertinent research literature shows how the methodology of this study evolved. First, the inadequate approaches will reviewed and then the chosen naturalistic observation method will be discussed.

Attitudinal Approaches

Studies that have relied on participant attitudes as the total determinant of behavior, are usually data based on attitudnal inventories or questionnaires. These studies rely on the premise that all behavior reflects a person's attitudes. However, unbiased attitudes are difficult to measure. The subject may not always be truthful when answering personal questions about behavior. Also, the wording of questionnaires and inventories can influence the subject to respond in a certain way.

This approach would be especially difficult to use with children. Children may not understand the meaning or importance of a behavioral study. Because a child's attitudes are constantly changing and forming, an attitudnal study would not necessarily measure a child's behavior.

Ecological Approach

"The best way to predict the behavior of a human is to know where he is," is the theory first suggested by Lewin (Day, 13). He believed that there is a consistent behavioral relationship between a person and his physical environment.

This theory does not account for the varied activities that can occur in one environment. For example, in parks many people seek solitude, while others are action motivated. A person's motivations and available opportunities must also be taken into account with his geographical location. In this study, the children are assumed to be motivated to play in structured programs since they are attending summer playground.

The Naturalistic Approach

The naturalistic observation approach allows the main objectives of this study to be combined in one method: (1) to compare a range of behaviors occurring in recreation and nature programs, (2) to examine the unaffected behavior of children.

This approach also allows two different programs to occur in one geographical location, which eliminates the possibility that behavior in recreation and nature programs differs because of the physical location.

Definitions of Terms

To fully comprehend this study, an understanding of the following terms is necessary.

1. Natural Environment -"the sum of all external conditions and influences affecting the life, development, and ultimately the survival of an organism (Studdard, 8 cited by Mortonson, 6).

2. Nature Program - opportunities offered by the Austin Natural Science Center consisting of structured visits for small groups of people who participate in planned, play activities led by naturalists (Kostka, 15). In this study, nature programs are outreach programs occuring at a recreation center: specifically, animal awareness, pioneering, outdoor cookery, and fire building.

3. Recreation Program - opportunities offered by the Austin Parks and Recreation Department consisting of structured summer activities for children that offer them play and amusement. The activities observed in this study were roller skating, supervised playground, arts and crafts, and monster make-up day.

4. Convenience Sample - a group of research subjects that are chosen for their accessibility and appropriateness to the study. The children observed in this study were all located at one recreation center during summer and winter day camp programs.

5. Appropriate Behavior - forms of behavior that are suitable to the programs they are observed in. Behavior will be determined suitable by the criteria of child development, program quality, and environmental conservation.

Organization of the Report

The following text of this report includes the main subdivisions of Methods and Materials Theory, Problemsoof the Study, Results Obtained, Analysis and Significance, the Conclusion, and recommendations.

The Methods and Materials subdivision includes sections on the time lapse photography method of observing, the observation checklist, and a description of the statistical mehtods used in the analysis.

Problems of the study encompass logistical, legal, and economic difficulties paired with their solutions.

A description of the statistical data along with illustrations composes the Results Obtained section.

The Analysis and Significance of certain behaviors is determined by examining their appropriateness to Child Development, Program Quality, and the Natural Environment.

A bibliography and appendix follow the conclusion and recommendations of this report. The appendix includes a sheet of the activities observed and a newspaper article entitled "Wildlife study produces hairy answers."

TEXT

Methods and Materials Theory

Before actual data was collected, a separate group of children were observed for a pre-test. Two hours were spent in both recreation and nature programs. During this time, all observable behaviors were written down to be compiled into a checklist of possible program behaviors.

Next, this preliminary checklist was compared with other naturalistic observation checklists. The final behavioral observation checklist for recreation and nature programs evolved through a combination of the preliminary checklist and a naturalistic observation checklist formulated by David E. Day (Day, 18). See Figures 1 and 2 for illustrations of these checklists.

The behaviors of the checklists were arranged from cooperative to disruptive on a vertical continuum. The behaviors were arranged and designated as cooperative or disruptive by their operational definitions.

Operational Definitions of Behaviors

Sharing - the child physically gives to other children and leaders: body movement is observed.

Assisting - the child physically helps other children and leaders: body movement is observed.

Respecting - the child does not invade other childrens' personal or activity space. This space depends on the activity. Body position will be observed.

Participating - the child is mentally involved in the activity beyond physical presence. Eye contact, facial expression, and body position are observed.

On Task - the child is focusing on the activity: eye contact, body position, and facial expression are observed.

Attending - the child is bodily attending the program: eye contact and bodily presence are observed.

Inactive - the child does not participate in the program. Body movement is observed.

Interrupting - the child disrupts others in the program: body movement is observed.

Selfish - the child refuses to take turns and will not share: body movement is observed.

Damaging - the child rips, tears, or soils property of own or others: body movement and surrounding objects are observed.

Manipulating - the child pushes and bosses other children: body movement is observed.

Hostile - the child uses physical violence to harm others and the environment. Hurting animals, people, and the surrounding environment by kicking, pushing, biting, throwing, and scratching will be observed.

Once the observation checklist was finished, the data collecting observations began. The data was collected by a non-participant observation means with unaware subjects. Because a human observer would have been obvious to the children in the study, a different approach was required. Several non-human means were explored: video recorders and time lapse cameras.

FIGURE 1

David E. Day's
Behavior Checklist Data Sheet

BEHAVIORS	Child's Name	Total	Comments
TASK INVOLVEMENT	Area Group Size Adult Role Focuses on task Resolves problem Completes task Leaves task Inattentive Wandering		
COOPERATION	Seeks participation Involved Accepts request Takes turns		
AUTONOMY	Selects activity Asks permission Chooses not Chooses to, group Rejects request		
VERBAL INTERACTION	Initiates conservation Engaged with Requests information Responds to child/adult Speaks to self Irrelevant communication		
MATERIALS	Incorporates Combines Abuses/misuses		
MAINTENANCE	Takes responsibility Volunteers Helps adult Waits		
CONSIDERATION	Observes Respects physical space Shares Help/sympathy Disturbs Threatens/strikes Other		
	Totals		

FIGURE 2

RECREATION/NATURE PROGRAM
BEHAVIOR CHECKLIST DATA SHEET

Program_____ Time_____ Group Size_____

Resource Area_____ Date_____ Ages_____

	Child Identification
CONSIDERATION	Sharing
	Assisting
	Respecting
INVOLVEMENT	Participating
	On Task
	Attending
DISTURBANCE	Inactive
	Interrupting
	Selfish
AGGRESSION	Damaging
	Manipulating
	Hostile
	totals

Comments_____

_____

_____

_____

_____

Time lapse photography was chosen as the most effective way to observe the natural behavior of children. Its use in previous leisure studies has proven that it can record overt behavior while going unoticed by its subjects (Hanna, 1981). A time lapse camera is simply a Super 8 movie camera with time settings for its shutter speed. The fast paced action of the recreation and nature programs required that the shutter open and close one frame per second.

Four, 80 foot reels of film were exposed to a combination of eight recreation and nature programs. Recreation programs consisted of roller skating, supervised playground, arts and crafts, and monster make-up day. Nature programs in this study were animal awareness, pioneering, fire building, and outdoor cookery. All of these programs were selected on the basis of leadership, the appropriateness to the study, and the scheduled time available to observe.

After the observations had been collected on film, the films were ready to be examined and recorded on the observation checklist. Each child in the study was observed in each of the eight programs for fifteen minutes: a total of two hours. The process involved watching the child for three series of five minute observations, interspersed by one minute frequency recordings on the checklists. The frequencies were then totaled for all of the children and their behaviors in all of the programs (See Table 1).

Table 2 illustrates the frequencies totaled for each behavior in recreation and nature programs. These frequencies were then statistically compared by a chi-square analysis of contigency. This analysis allowed each behavior to be analyzed for its relationship to recreation and nature programs. In the final analysis of significantly different frequencies, a program behavior had a criterion value of 3.8 at a .05 level of significance with one degree of freedom.

TABLE 1

Individual Activity Frequencies

Behavior Categories	Roller Skating	Playground	Arts & Crafts	Monster Day	Fire Building	Animal Awareness	Pioneering	Outdoor Cookery
Sharing	1	3	11	6	3	1	5	6
Assisting	7	1	4	4	6	1	2	3
Respecting	23	12	22	14	25	22	9	7
Participating	25	12	22	10	25	25	9	22
On Task	25	12	22	17	25	25	15	24
Attending	25	13	25	18	25	25	20	25
Inactive	1	7	11	1	1	1	2	1
Interrupting	3	2	2	2	1	7	1	3
Selfish	3	2	9	4	2	15	3	9
Damaging	0	1	1	11	5	4	1	0
Manipulating	1	5	1	4	2	6	1	0
Hostile	1	1	2	3	1	4	0	0

TABLE 2

Total Frequencies
of Recreation and Nature Programs

Behavior Categories	Recreation Programs	Nature Programs
Sharing	21	15
Assisting	16	12
Respecting	71	63
Participating	69	81
On Task	76	89
Attending	81	95
TOTAL COOPERATIVE	334	355
Inactive	19	5
Interrupting	9	12
Selfish	18	29
Damaging	13	10
Manipulating	11	9
Hostile	7	5
TOTAL DISRUPTIVE	77	70

Problems

The disadvantages of the methods and materials chosen for this study follow.

Logistical problems resulted from the time lapse photography observation method. The camera had to be camouflaged from the children. Camouflaging required the experimenter to arrive an hour early at the study site to allow time for camera set up.

Once the camera was placed in a logical location and activated, it was immobile. This proved to be a problem when the subjects were participating in a wide-spread activity: children were constantly moving in and out of the frame of focus. This problem was usually alleviated by placing the camera at a distance far enough for a wide frame of focus and focusing the lens at the center of activity.

This distance solution also helped to solve a legal problem. Filming observations of the children without their knowledge could be an invasion of privacy. To avoid this invasion, the children were filmed at a distance far away enough so they could not be identified.

This method of observation is not recommended to researchers with no access to Super 8 camera and projector equipment. The costs of buying this equipment would outweigh the benefits of a study.

Results Obtained

The chi-square contigency analysis of recreation and nature program behaviors reveals an overall low level of significant differences between them (See Table 3). The largest difference between the programs occur within the involvement group of behaviors. Nature programs show under a .05 level of significant difference in the participating, on task, and attending categories. The observed frequencies for these behaviors in nature and recreation programs, respectively, are participating: 69 and 81, on task: 76 and 89, and attending: 81 and 95. Figure 3 illustrates the frequency differences in graph form.

The significant difference between recreation and nature program inactive behavior inversely parallels the attending behavior category. 19 frequencies of inactive behavior occurred within recreation programs, while 5 frequencies occurred within nature programs.

The category of selfish behavior is significant to .10 level of confidence. 18 frequencies occurred in recreation programs and 29 frequencies occurred in nature programs.

Overall, the cooperative behaviors have a difference of $X^2=2.2$, while the disruptive behaviors differ by $X^2=.796$ Cooperative behaviors had 334 total frequencies in recreation programs and 355 in nature programs. Disruptive behaviors had 77 in recreation programs and 70 in nature programs.

TABLE 3

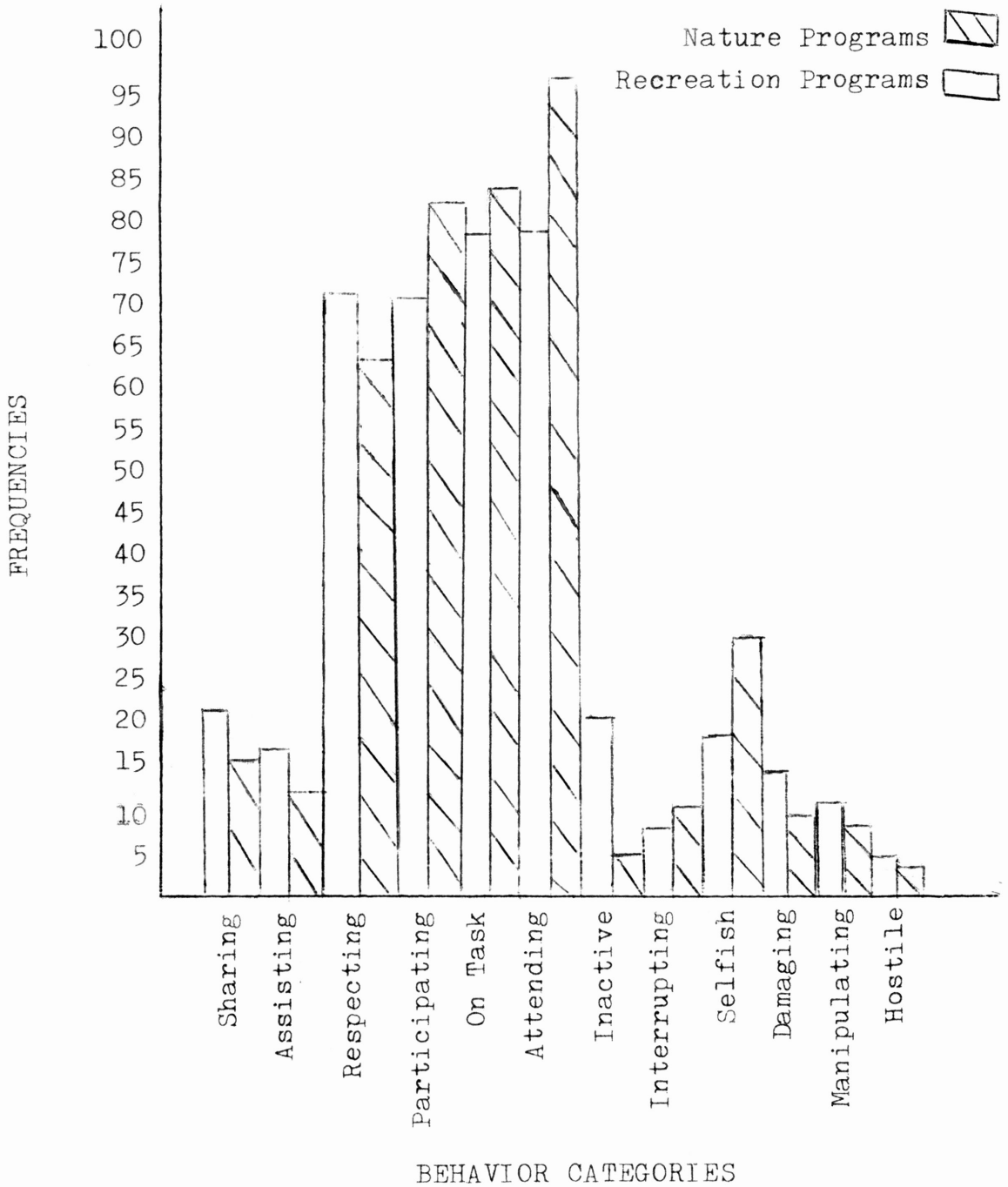
Chi-square and Confidence Interval Values

Behavior Categories	X^2	$\hat{P}$
Sharing	1.2	.26
Assisting	.66	.40
Respecting	1.4	.24
Participating	3.8 *	.05
On Task	5.8 *	.016
Attending	9.26*	.0014
TOTAL COOPERATIVE	2.22	.19
Inactive	9.26*	.0014
Interrupting	.478	.47
Selfish	3.35	.07
Damaging	.403	.51
Manipulating	.468	.49
Hostile	.342	.61
TOTAL DISRUPTIVE	.796	.55

* Denotes confidence level of 0.05 or less

FIGURE 3

Graph of Behavior Frequencies



Analysis and Significance

For this analysis, all behaviors with a significant difference of .05 or less will be examined for appropriateness to 1) child development 2) program quality and 3) environmental conservation. These behaviors include the involvement group of participating, on task, attending, and the inactive category of disruptive behavior.

Child Development

In the analysis of appropriate behavior for child development, David E. Day's criteria of "Growth Producing and Growth Inhibiting Behavior" can be used (Day, 15).

Growth Producing Behaviors

1. Many instances of adults and children working cooperatively.
2. Children have consideralble autonomy within expanding limits.
3. Most materials available to children with their use of them in constructive, developmental ways.
4. Much child-adult and child-child communication on activities at hand.
5. Children's efforts seemed to be focused on completing play or work. Much attention to what is going on.
6. Little acting out and aggression directed at other children.
7. Program directed by the staff but evolved with the participation of the children.

Growth Inhibiting Behaviors

1. Little long lasting adult-child contact

2. Unnecessary constraints for each learning-play area established by adults well in advance of children's use. The children's behavior in each learning area prescribed by the staff.

3. Only a few routine materials available. Most materials are not accessible to children; they are brought out and put away by staff.

4. Much child-to-child talk that is often transitory and uncommunicative.

5. Children were inattentive, listless, and easily distracted. Great amounts of random, undirected movement.

6. Children using toys in very aggressive games. Aggression often aimed at other children.

7. Not much of a program. The day seemed to be organized around one big teacher directed activity, between long periods of adult inattention to children.

The significant involvement behaviors of participating, on task, and attending correspond with Day's (15) "Growth Producing Behaviors"of 4) Communication and attention to activities at hand, and 5) Children's attention to to what is going on. According to Day's criteria, these involvement behaviors can be classified as growth producing for child development, at a significant level in nature programs. Inactive behavior is classified by Day as "Growth Inhibiting Behavior," and thus is inappropriate for child development.

Program Quality

The higher frequency of involvement in nature programs can also be an indicator of program quality. Children will not freely give their attention to a program that does not interest them.

According to David E. Day, the three factors that affect the behaviors of children and adults are "physical setting, arrangement of space, and presentation of materials. (Day, 12). The higher frequency of involvement behaviors in nature programs can be explained by evaluating nature program quality with these three factors.

Since the physical setting of nature programs and recreation programs was the same, physical setting can not be used as an explanation for a significant difference of involvement levels.

Arrangement of space varies from activity to activity. All nature programs in this study focused on a 4-12 feet distance. Recreation programs occurred within 4-100 feet distance. When participants are so widespread, their attention and involvement can also become widespread.

The type of program materials presented is probably the most important factor causing the higher frequency of involvement in nature programs. Nature programs often involve materials that are unfamiliar to children: especially urban children.

Program materials such as animals, fires and outdoor cooked food can attract and maintain a child's attention. Recreation programs, on the contrary, often use very familiar materials with the children: playgrounds, arts and crafts materials. Because the recreation program materials are more familiar to the children, perhaps their attention is not captured easily: this could result in a low level of involvement in recreation programs.

The three factors of physical setting, arrangement of space and presentation of materials can and should be used guidelines for any program to evaluate that programs' attributes.

Natural Environment

It can not be assumed from the results of this study that any of the significant behaviors are appropriate to the natural environment. For a behavior to be appropriate to the natural environment, it must be beneficial to that environment. High involvement and low inactiveness in nature programs does not indicate that any significant level of beneficial behavior occurred with the natural environment.

CONCLUSION

Summary of Findings

Although an overall low level of significant difference was produced between recreation and nature program behaviors, nature programs did produce a significantly higher frequency of involvement behaviors: attending, on task, and participating. These involvement behaviors can be used in three ways to justify further provision of nature programs.

1) Those programs that attract and involve the highest level of participation, should be provided more.

2) A program that is appropriate to child development should be made available to children.

3) A program that is appropriate to high program quality because of its space, setting, and materials should be offered over a non-quality program.

Since there are no established criteria for appropriate environmental behavior, the assumption that involvement in nature programs is appropriate to the natural environment can not be accepted from the data in this study.

The following recommendations will suggest how such data may be obtained for appropriate environmental behavior.

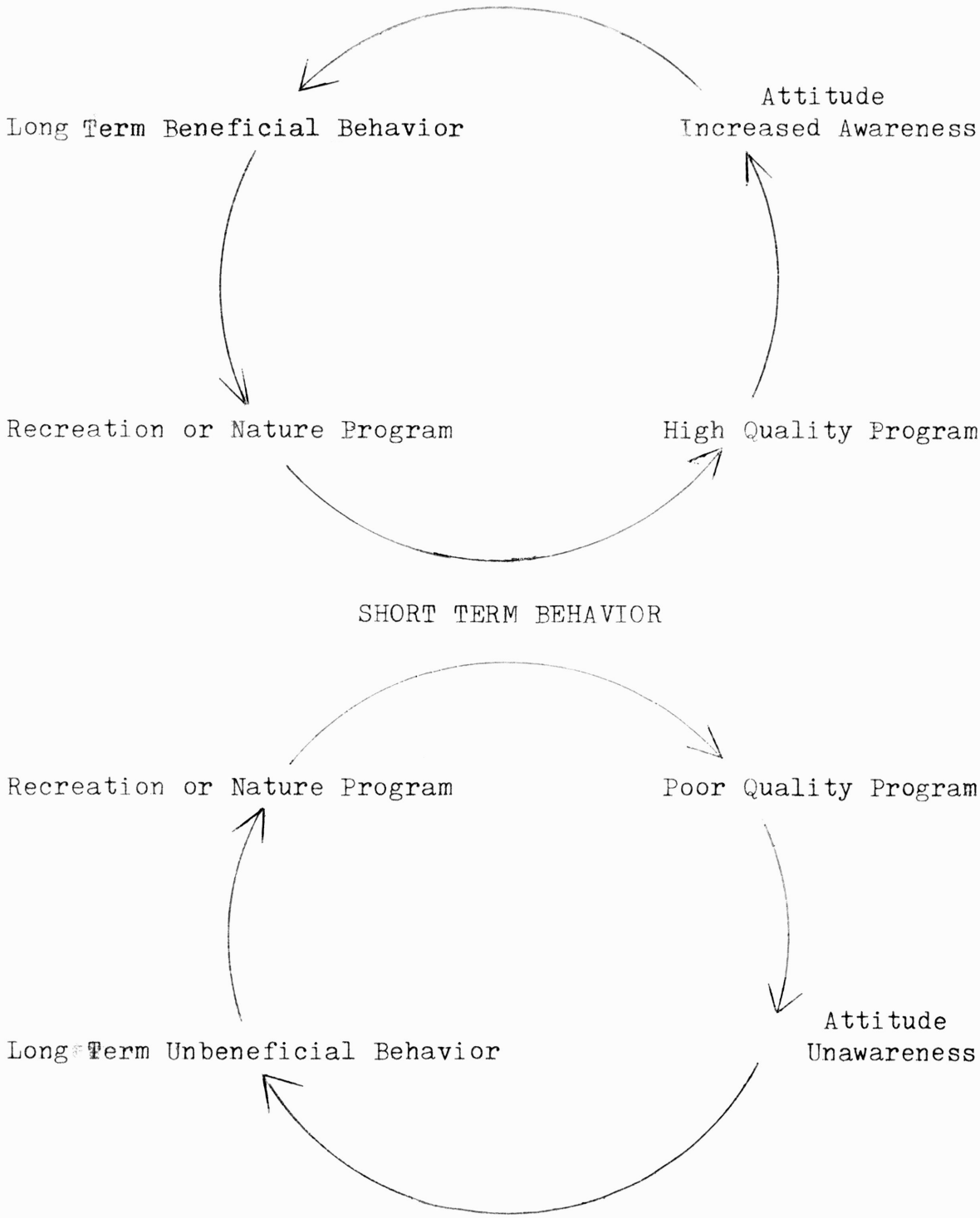
Recommendations

Because this study can not assume nature programs to be an appropriate behavior to the natural environment, further research needs to be done on nature programs alone and the long term post-program behaviors.

Any research that will focus on post nature program behaviors, should first determine the short-term immediate behaviors of the program. As this study has shown, these immediate short term behaviors can offer a valuable insight to the quality level of a program. Quality level of a program could determine the amount of influence a program will have on future attitudes and behavior. For example, a poor quality program may have no effects on environmental awareness wheras a high quality program would.

Basically, the research of nature programs should be a cycle that begins and ends with the program: each time renewing itself.(See Figure 4).

FIGURE 4
PROGRAM/BEHAVIOR CYCLE



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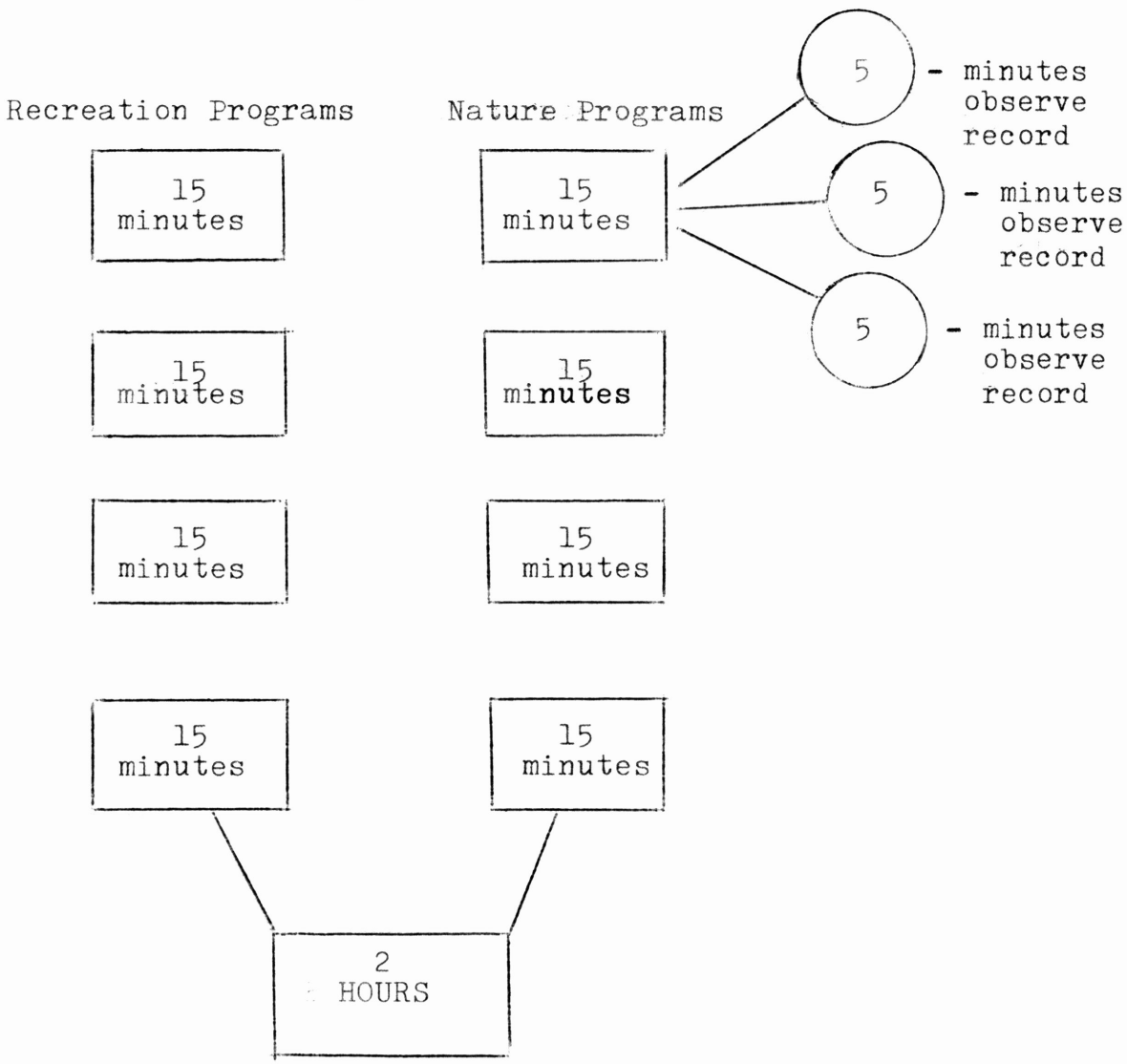
APPENDIX

ACTIVITIES OBSERVED

Recreation Programs	Nature Programs
Roller Skating	Animal Awareness
Arts and Crafts	Pioneering
Supervised Playground	Firebuilding
Monster Make-Up Day	Outdoor Cookery

TIME FRAME OF OBSERVATIONS



CRITERIA FOR ANALYSIS

CHILD DEVELOPMENT

Day's Growth Producing Behaviors

4) Communication on activities at hand.

5) Children's attention to what is going on.

Day's Growth Inhibiting Behaviors

5) Children were inattentive and distracted.

PROGRAM QUALITY

Arrangement of Space

Physical Setting

Presentation of Materials

NATURAL ENVIRONMENT

Beneficial/Appropriate

Harmful/Inappropriate

Wildlife study produces hairy answers

Beware the 10-legged spiders!

By PHILIP SHABECOFF
N.Y. Times News Service

WASHINGTON — A majority of Americans think that spiders have 10 legs, that an iguana is an insect and that a koala is a bear.

Americans' favorite creatures are dogs, horses, swans, robins, butterflies and trout, in that order. Their least favorite are cockroaches, mosquitos, rats, wasps, rattlesnakes and bats.

The vast majority of people in the United States like animals either as pets, as part of nature or as objects to be hunted or eaten. But most people know little about wildlife and that is likely to be secondhand. They have even less knowledge about conservation issues.

These are some of the findings of a study prepared for the Interior Department's Fish and Wildlife Service on public knowledge of and atttudes toward wildlife and related issues. The study, conducted by Dr. Stephen Kellert of Yale University, is based on interviews with 3,107 adult Americans.

Among other things, it found that Americans saw animals mostly in zoos or on television, not in their natural surroundings.

Ray Arnett, assistant Interior secretary for fish and wildlife and parks, said of the the study: "There appears to be a significant lack of understanding among large segments of our society about things that are of great importance to the future of wildlife conservation and management. This finding is disturbing to many wildlife professionals, including myself, because it indicates that the public is not prepared to make informed decisions about the complex wildlife problems and controversies that we will undoubtedly face in the remainder of this century."

Of the respondents to the survey, 14.5 percent had hunted and almost 45 percent had fished in the two previous years. One of four surveyed said he had done some birdwatching in the two-year period. Understandably, hunters, fishermen and birdwatchers tended to be among the most knowledgeable about wildlife.

But these groups' attitudes toward wildlife differed sharply, with hunters viewing animals from a utilitarian perspective as a source of food, fishers from a humanistic affection for wildlife and birdwatchers with an esthetic appreciation of birds and other fauna.

In general, the higher the education level of the respondents, the more they knew and were concerned about wildlife. The most knowledgeable about wildlife were residents of Alaska and the West Coast; the least knowledgeable were Southerners.

The study found that Americans tended to be fairly ignorant about domestic as well as wild animals. Almost half those surveyed, for example, thought veal comes from a lamb rather than a calf.

Those surveyed were particularly weak in their knowledge about endangered species. Fewer than one in four people, for example, knew that coyotes were not endangered. And only slightly more than one in 10 people identified raptors correctly as birds of prey rather than insects.

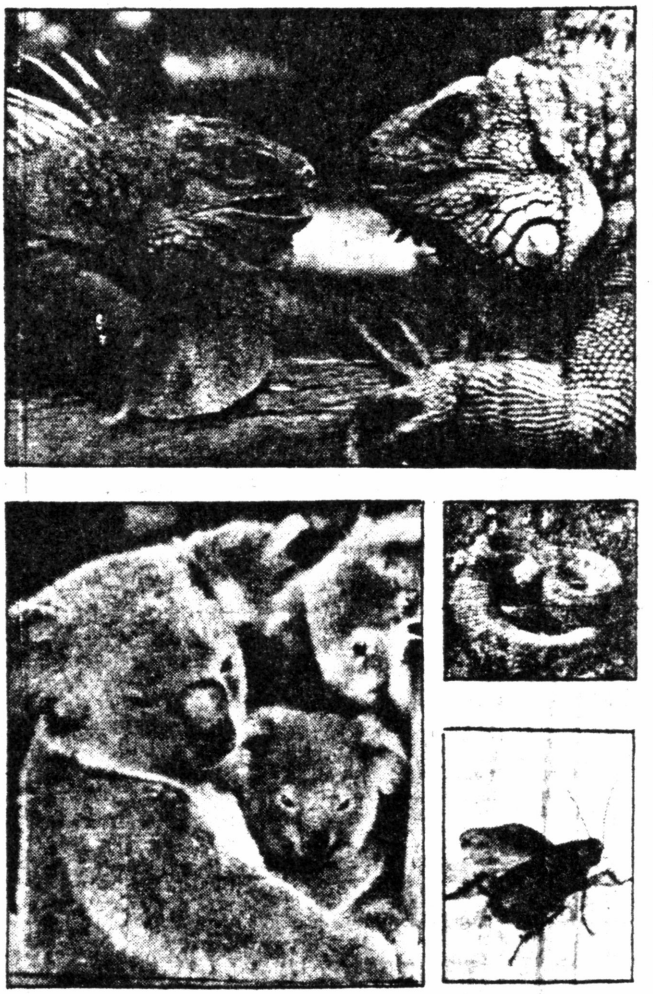
People tended to know more about creatures that could do them harm. Almost two-thirds of the sample were aware that "the copperhead, cottonmouth, coral snake and rattlesnake are all poisonous snakes."

Americans tend to favor animals that are aesthetically appealing, are biologically close to humans and have cultural or historical importance, such as eagles. Not surprisingly, biting and stinging animals were least favored.

While dogs were first on the list of preferred animals, cats ranked only 12th, just after turtles and ahead of ladybugs. Whales and wolves, despite the publicity given them in recent years, are not especially popular, ranking 16th and 21st.

The survey also indicated that public knowledge about controversial wildlife issues, such as the clubbing of baby seals and the taking of porpoises by tuna fishermen, is extremely limited.

Incidentally, spiders have eight legs, the iguana is a lizard and the koala is a marsupial.



Many Americans think iguanas (top) are lizards and that the koala is a bear. On snakes and cockroaches, they know what they are and they don't like them.