

PACIFIC SOUTHWEST Forest and Range Experiment Station

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FIRE PREVENTION IN CALIFORNIA'S RIVERSIDE COUNTY HEADSTART PROJECT... an evaluation

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CONTENTS

	<i>Page</i>
Introduction	1
Place of Fire Prevention in Headstart	1
Causes of Fire-Starting Behavior in Children	2
Relation to Goals of the Program	2
Relation to Other Findings	2
Relation to Fire Prevention Education	3
Headstart Fire Prevention Kit	4
Evaluation of Classroom Use of Kit	5
Methods	5
Results	6
Resource Persons' Evaluation	8
Summary and Conclusions	12
Literature Cited	13
Appendix	15

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Richard J. Ernest, Rex Griggs, and John Ferguson, all of the California Division of Forestry, had the primary responsibility for developing the fire prevention materials, assisted by an advisory committee of Headstart personnel composed of Mrs. Lynch, Lucille Taylor, Mrs. Neumann, Miss Horsfield, Geraldine Yates, Anita Matthews, and Wilma Miller.

When the California Division of Forestry first attempted to incorporate fire prevention education in the Headstart Project in Riverside County, available materials were found to be generally unsuitable for use with preschool children. Division personnel, together with a committee of Headstart teachers, using such available items as were considered appropriate and devising new ones, developed a set of materials which they felt would be effective at the age level of the Headstart children. These materials were introduced into half of the Headstart classes (44 classes) in Riverside County

during the 1968-69 school year. The Fire Prevention Research unit of the Pacific Southwest Forest and Range Experiment Station agreed to evaluate the program. This paper reports the results of this evaluation.¹

Evaluation is an ongoing process that ideally should proceed from the original conception of the idea through its implementation to the adoption or rejection of the project. In this instance, evaluation was not requested until the pilot program was to be implemented, but we were able to establish a semi-controlled trial situation.

PLACE OF FIRE PREVENTION IN HEADSTART

Grass, brush, and timber fires started by children are an increasing concern to fire prevention agencies in many parts of the country. In 1954, children accounted for 10.5 percent of the 1,955 man-caused forest fires on land under the California Division of Forestry responsibility. Since that time, both the number and percentage of child-caused fires has increased steadily. In 1968, children were responsible for 23.5 percent of the 4,034 man-caused fires. Other populous parts of the country recognize a similar problem. Among the 20 Northeastern and Lake States, child-caused fires are not reported separately, but they are the major component of the general cause category—"Miscellaneous."² In the last 4 years reported (1964-1967), this category ranked first in 2 years and second in the other 2 years. In two of the States, New York and Vermont, which do show child-caused fires separately, these ranked fourth and third, respectively, in 1967.

The Division of Forestry's interest in reaching Headstart children with an effective fire prevention

program is based on findings that children responsible for fire starts are often quite young. A recent analysis of fire reports in the Los Angeles Forest area showed 12 percent of the children involved to be under 5 years old (Folkman 1966, p. 2) and nearly 75 percent 10 years old or younger. Analyses from other areas show a similar age distribution. Most efforts at fire prevention education in the schools, however, are generally directed at older children—usually about the fifth grade or 11 to 12 years. Through Headstart, the Division hopes to reach children early in their fire-experimenting stage.

The Headstart Project includes a large number of preschool children otherwise inaccessible to this type of educational approach. Although other preschool and kindergarten children may be reached later, there are indications that work with Headstart children is particularly appropriate. Research provides evidence of higher rates of accidents among children from poor families (Deutsch 1961, p. 95). If we consider this type of fire starting as basically a form of accident, we might expect Headstart children to be disproportionately subject to it. Observations of fire investigation officers in Riverside County suggest that the supposition may well be justified there.

Anticipated trends in population change, residential development patterns, and recreational activities are expected to intensify the problem of child-caused fires as more and more children are brought into closer contact with high fire-risk wildlands. The obvious danger to children and to others,

¹ Since this report was issued, the California Division of Forestry has used the findings in the study to develop an improved version of its fire prevention educational kit. This kit is available for purchase, at cost, from the State Forester, California Division of Forestry, 1416 Ninth Street, Sacramento, California 95814. Price is \$6.30 per kit.

² Personal correspondence from the office of Cooperative Forest Fire Control, Northeastern Area, State and Private Forestry, U.S. Forest Service, Upper Darby, Pa.

and the likelihood of both economic losses and other losses not easily measured, justify attempts to teach fire prevention to young children.

The families of Headstart children do little recreational camping. These children contribute to the forest-fire risk mainly as their home environment exposes them to high hazard grass and brushland.

Children are more frequently exposed, however, to the hazard of structural fires, and the possibility of injury or death to themselves and to others is much higher. The Headstart prevention program, therefore, places considerable emphasis on home fire safety and fire in general. It is not exclusively a forest-fire prevention educational effort.

CAUSES OF FIRE-STARTING BEHAVIOR IN CHILDREN

Relation to Goals of the Program

The aim of the fire prevention program in Headstart was to change the fire related attitudes, knowledge, and behavior of the children, so that child-caused fires would be reduced. Fire incidence is influenced by so many uncontrollable and unaccountable factors, such as weather and topography, that it could not be used as a direct measure of the change produced. Consequently, the program's success has been measured in terms of observable changes in the children's cognition, attitudes, and behavior in areas considered to be related to their fire activities.

Relation to Other Findings

The causes of fire-starting behavior are not well understood, but in developing the program, the Division assumed the influence of curiosity, lack of understanding of cause and effect relationships, imitation, aggression, and risk taking. (No attempt was made to deal with the last two causes directly because they were not considered amenable to the approach used in the program.) The characteristics of fire have made it a potent, fascinating, and awesome theme in folklore, ritual, and myth of virtually every primitive culture through the ages (Frazer 1930, Bachelard 1964). The literature suggests an almost universal interest among children, especially boys. This sex bias supports the psychoanalytical linkage of fire fascination to male psychosexual development. It is also quite clear that fire, like sexplay, is an object of the most general prohibition for children. There are no data on the relative frequency of fire play in different cultures.

The literature on firesetting is fragmentary, and most of it is of dubious validity. It consists mainly of isolated anecdotal reports based on very few cases, buttressed by psychoanalytical theorizing about persons who repeatedly started fires (Kaufman *et al.* 1961, Nurcombe 1964, Rothstein 1963, Siegel 1957,

Sturup 1955, Yarnell 1940). Fire investigation reports show that a small minority of children are involved in such multiple fire sets. Although they collectively account for only a small proportion of the total fires, they have nevertheless received most research attention. Siegelman and Folkman (1971) found the following characteristics associated with incendiarism in children: hyperactivity, aggression, psychomatic difficulties, learning problems, behavior problems, and family trauma. The frustration engendered by these handicaps usually precipitated an acting out of hostility that frequently involved fire. A tentative typology identifies two different types of children: (1) the withdrawn, anxious child, with anger directed against himself, and (2) the restless child, subject to antisocial behavior, with anger directed outside himself. Although for both, the anger stems from essentially the same pressures, firesetting means different things to these different types of children. To the first, it may represent a cry for help—a plea for adult authority to help him deal with feelings too big, too dangerous, for him to master himself. To the other it is a means of revenge—a further way to increase his potency to gain attention, and perhaps the awed admiration of adults. Probably both kinds of feelings are present to some degree in any deliberate setting of fires.

Most fires, however, are not the result of such pathological behavior. Many are accidental; others, although deliberately set, simply get out of control, a development neither anticipated nor desired.

Research on this most prevalent type of child-caused fires is virtually nonexistent. The findings from the studies of pathological cases have some bearing, but most insights as to its causation may be gleaned from the slightly more plentiful studies of other forms of childhood accidents. These works suggest that a child's natural curiosity, sometimes coupled with an attempt to imitate an adult or older child, may place him where his lack of knowledge of cause and effect prevents his control or prediction of

the consequences. The incident thus becomes part of the record of a fire control agency. The number of such incidents is large. The number of similar actions, similarly motivated, that do not result in a reportable fire accident is unknown but must be many times larger than the number of reported fires.

At one time considerable research attention was given to the concept of "accident proneness." More recent research has questioned the concept, especially as it was sometimes defined as the result of an unconscious desire to have an accident (start a fire). Statistically different accident rates for different individuals are observed, but a more parsimonious explanation is that the differential represents failure to learn skills in coping with potentially dangerous situations, rather than subconscious pressures to inflict pain on self or others. Clinical cases have been reported by various psychiatrists of a neurotic tendency on the part of some individuals to inflict self-injury through deliberate accidents, but it is questionable whether such "accident proneness" explains all or even most instances of high accident frequency. We would expect to find in any given period a certain proportion of the public suffering a high number of accidents by chance alone, since chance does play a part in most accidents.

Neither learning theory nor other studies give us a completely satisfactory model for understanding fire accidents. Evidence of higher accident rates among lower-class children is believed to be related to a low level of control of the environment by adults. In other groups, such control reduces the opportunities for accidents to happen. In addition to the economic and cognitive barriers to change, there is often a fatalistic attitude of parents that accidents are inevitable and that some danger always exists. The lower-class child has more independence at an early age, thus more opportunity within a limited sphere for individual exploration and activity. Consequently, he may have a higher early accident rate, but if he survives, he may have a more average one as he becomes physically capable and consequently better able to generalize.

Relation to Fire Prevention Education

Incomplete as it is, our understanding of why children start fires supports the attempt to educate them to use of fire safely. Given the child's fascination with fire, and the general use of fire in our society, it would be highly unrealistic for any prevention program to set as its goal the complete

elimination of fire play. To slow its increase, and perhaps reduce its incidence, would seem feasible, however. Of equal importance would be the direction of fire fascination into safer channels.

Literature on the teaching of fire prevention is limited. Usually fire prevention is incidental to conservation and natural resource programs. Reports³ evaluating such programs are generally descriptive or impressionistic, and include little or no data. The fire prevention component is not separately analyzed. The programs are generally aimed at the higher elementary grades or the high school levels.

A recent study reports an investigation into the specific teaching of conservation and forest fire prevention principles to boys and girls of kindergarten and early elementary grades (Gladden and Carkin 1970). The investigators found that significant learning did take place in the study population, in contrast to a control sample, in response to the instructional materials. The study did not attempt to determine whether or not principles learned produced desired changes in conservation-related behavior.

In the few years that the Headstart Project has been in existence, the U.S. Office of Economic Opportunity has sponsored a number of studies designed to evaluate the effects of the program on the participants' readiness for a regular school experience.⁴ These studies have used existing or improved measuring devices in such areas as cognitive skills, perceptual-motor functioning skills, and school-specific readiness skills. Although none of these

³ Typical of these reports are: Albert H. H. Dorsey, *The conservation curriculum improvement project: a statewide effort to promote interest and action in environmental education.*, Sci. Teacher 34: 49-51, 1967; Robert W. George, *A comparative analysis of conservation attitude in situations where conservation education is a part of the educational experience*, (unpublished Ph.D. thesis on file at Michigan State Univ.) 1966; R. G. Hanchey, *The teaching of conservation and resource at the sixth-grade level*, School Activities 33: 234-235, 1962.

⁴ The following are typical of these studies: Elmer Van Egmond, and others, *Operation Headstart—an evaluation*. Lesley College, Cambridge, Mass., 1966; Sherwood B. Chorost, Kenneth M. Goldstein, and Richard M. Silberstein, *An evaluation of the effects of a summer Headstart program*, Wakoff Research Center, Staten Island Mental Health Society, 657 Carleton Ave., Staten Island, N.Y. 10301, 1967; Douglas Holmes, and Monica Bychowski Holmes, *Evaluation of two associated YM-YWHA Headstart programs*, YM-YWHA of Greater New York, 33 west 60 St., New York, N.Y., 10023, 1965; Philip J. Porter, *Evaluation of a Headstart educational program in Cambridge, Massachusetts*, Harvard University, Cambridge, Mass., 1965.

instruments are directly appropriate to this study, they suggested methods of approach.

A prevention program must recognize that fire is fascinating to children and must satisfy their curiosity in acceptable ways. On the other hand, care must be taken that the program activity does satisfy this curiosity and not merely stimulate it. An opportunity seems necessary for each child to experiment directly with fire safely and under supervision.

Much of a child's play, including fire play, has the function, if not the conscious purpose, of providing practice in roles appropriate to later life. A prevention program, therefore, should include opportunities for the children to observe significant persons (parents, teachers, and others) using fire safely and legitimately; ideally such a program should provide opportunities for the children to participate.

The conceptual level required to perceive causal relationships is not reached suddenly. Instead, children develop pre-causal and causal explanations for events over a fairly long period. The age at which a stable notion of causality is achieved is probably determined by a combination of interrelated but not necessarily interdependent factors: intellectual level, verbal development, experience, and possibly some innate maturational factor. Children of the Headstart age are just approaching this conceptual level, and their stage of development is not easy to predict. Although generally impoverished in experience with school-oriented activities, Headstart children may be much more sophisticated than more protected upper-class children in other activities to which their home environment exposes them. Fire prevention programs should take this possibility into consideration.

Children with fire problems related to emotional and behavioral difficulties are not apt to be encountered at the preschool level. (A few were reported in interviews with teachers during the course of the study.) They generally begin to show up in the

second or third grade when reading problems and other difficulties in coping with school are added to home-centered frustrations. Although it may not be possible at this early age to identify potential "poor risks," some may be prevented from developing. A fire prevention program may provide the therapy needed to treat "the fire within" such children as they are educated about "the fire without."

A fire prevention program for the preschool child must recognize that he is moving out of dependence for safety upon his parents (or other adults) to greater reliance on his own ability to perceive and react to hazardous situations. Such a program has three somewhat conflicting requirements:

1. The child must be protected against excessive injury from accidents; underprotection places him in situations beyond his ability to control or interpret.
2. The child must be taught skills in avoiding accidents; he must learn to *see* danger in the environment and learn how to react to it. (This would seem to require some exposure to potential fire-producing situations.)
3. Finally, the child must not be overtrained to the point of ensuring his safety at too high a cost in other values—such as enterprise and achievement.

In summary, the goals of the California Division of Forestry fire prevention program in Headstart (i.e., to produce desirable and observable changes in the children's fire-related cognition, attitudes and behavior) appear consistent with the causes of fire-starting behavior of normal children, as these are currently understood, namely, curiosity, lack of understanding of fire cause-and-effect relationships, and imitative behavior. To some extent the program may also have some bearing on aggressive and risk-taking behavior of potential fire problem children. This was not an aim of the developers of the program, however, and there was some doubt whether its success could be evaluated.

HEADSTART FIRE PREVENTION KIT

Before use, the kit of fire prevention materials that had been assembled by Division and Headstart personnel was critically examined by the evaluation research staff and several early-childhood-education specialists. In general, the contents were found to be in harmony with the stated objectives of the program, but some changes in form or content was suggested. Time prevented any immediate action on these suggestions, however, other than the discarding of

several specific items considered to have a negative teaching effect.

The Headstart fire prevention materials were developed (1) to satisfy normal curiosity about fire; (2) to improve understanding of the cause-and-effect relationships between the child's actions and the production of fire, and his actions and the resulting harmful effects to himself, to other people, and to his environment; and (3) to develop or reinforce positive

attitudes toward fire-safe behavior, primarily by providing positive models of such behavior. The achievement of these objectives is expected to reduce the incidence of illegal fires started by children.

The kit consists of seven sections:

- Unit A. Teacher Information
- Unit B. Introduction to Fire
- Unit C. Fire Prevention
- Unit D. Introduction to Smokey
- Unit E. Christmas
- Unit F. Conservation
- Unit G. Smart Cookie—Dumb Cookie.

Unit A, the Teacher Information folder, contains a brief introduction to the objectives of the program and to the materials and supplemental aids provided. It also contains a table of contents, coloring sheets,

several posters, and a list of local fire prevention contacts. The other folders each contain a one- or two-page information sheet for the teacher, supplemental materials such as posters, coloring sheets, and adhesive badges, and in some instances leaflets to be sent home to the parents. An order form for any or all of four films is enclosed in each folder. These films are briefly described, but no suggestions are given on the form as to where they might most appropriately be used. The principal component of each folder, is a set of specially prepared 11- by 17-inch colored illustrations to be used in an aural-visual presentation. Suggested comment by the teachers is in Spanish and English on the reverse of each illustration. The content of the different units is described more fully in the section "Reactions to Specific Units and Items."

EVALUATION OF CLASSROOM USE OF KIT

The effectiveness of the Headstart fire prevention program was assessed in terms of observable changes in the children's cognition, attitudes, and behavior considered to be related to their fire activities. Specifically, the evaluation attempted to determine the extent to which the kit of materials achieved the three objectives that guided its preparation, as set forth in the preceding section.

Methods

Establishing Experimental and Control Groups

The population to be studied was about 1,500 children enrolled in the Riverside County Headstart Project. There were 88 classes, with about 15 children per class, in 30 locations throughout the county.

With the assistance of Headstart personnel, classes were matched as closely as data permitted on such characteristics as location (rural-urban, desert-non-desert), ethnic composition, parental occupation, and type of sponsoring organization. Classes in these 44 matched pairs were randomly assigned to either the experimental group or the control group. Two of the experimental classes did not participate in the test program at the end of the year, leaving 42 classes in this group. Although the selection of experimental and control classes was intended to isolate the experimental variable—the fire prevention educational experience—it was not possible to structure the

classes exactly as desired (*table 1* in Appendix) since no reassignments of pupils could be made. Significant differences between the two groups were detected for three of the characteristics studied—ethnic origin, family income, and whether or not the family was currently on welfare.

Under ethnic origin, we found that "other Caucasians" were significantly under-represented in the control classes. Whereas the category "not reported" was over-represented.

Children from families whose income was reported in the lowest category (\$1,500 or more below Economic Opportunity Board [EOB] poverty level) were over-represented in the control classes, whereas the next lowest (\$500 to \$1,499 below EOB poverty level) was similarly over-represented in the experimental classes.

The proportion of children from families currently on welfare was slightly higher in the experimental classes than in the control classes. Again, however, there was over-representation in the control classes of children for whom this information was not available.

The lack of complete comparability between the two groups must be recognized in weighing the findings of this evaluation. Much of the difference noted may, however, be more apparent than real, because actual data were lacking. The findings reported below do not indicate that any of the characteristics that were significantly different in the two groups were related to differences in test scores.

Handling Materials and Testing

The fire prevention materials were originally scheduled for use in November, or early December, 1968, but they did not become available to the classes until early January, 1969. The materials were used in the experimental classrooms during the remainder of the school year. Students in the control classes followed the regular curriculum and received no fire prevention education other than that which their teachers may customarily have given on their own initiative.

Teachers using the special materials were requested to keep logs of their use and associated activities. They were also asked to make subjective appraisals of pupil reaction to specific items from the kit of materials. Teachers' observations were supplemented by the reports of a specially trained person (Mrs. Taylor, co-author of this paper) not directly connected with the prevention program who visited the classrooms periodically to observe operations and interview teachers.

Toward the close of the school year, the children from the experimental and the control groups were tested and the results compared to determine the effects of the program. No pretest was used. Campbell and Stanley (1963, p. 195) advise against this when experimenting with the introduction of entirely new subject matter—particularly in the primary grades. The pretest, followed by a post-test using identical or highly similar unusual content, may distort the results as much as the experimental variable. Campbell and Stanley (1963) point out that the process of "blocking"—as used in our matching of pairs of extant, intact comparison groups, provide an increase in power of the significance test similar to that provided by the pretest.

The testing instruments were prepared⁵ in three parallel forms (see Appendix) so as to assess more comprehensively the effectiveness of the experimental program without unduly taxing the children tested. The forms A, B, and C, were given in rotation in each class so that approximately equal numbers of children were tested with each form. Two types of test items were used. One section required the child to select an illustration from a series of three to indicate his response to the situation presented by the

tester. There were 20 items in this section, 15 reflecting acquisition of concepts taught in the course, and 5 designed to assess affective changes. The second section was an oral question test, requiring "yes" or "no" answers. There were 25 items in this section, 18 information items, five affective items, and two probing fire experience. All test materials were translated into Spanish for use with children who might have problems with the English version, as judged by the teacher.

Individual testing in each class took two days. The picture test was given in two sessions and the oral in one, each session lasting from 10 to 15 minutes. Children were rewarded for their cooperation with Smokey Bear bookmarks, pins, etc. at each session. The tests were administered by a corps of specially trained women hired for the purpose. Several had facility in spoken Spanish.

Results

Test results did not clearly demonstrate the value of the new prevention materials, although scores on all tests of concept acquisition were consistently higher for the experimental classes than for the control classes (*table 2* in Appendix). No significant differences were detectable between the two groups in scores on the affective items, which were designed to reflect attitude changes related to fire and its use.

Some Influences on Test Scores

A number of influences undoubtedly tended to minimize the measured differences between the experimental and control classes. Those related to the prevention problem and the experimental materials will be considered more fully in the discussion of teacher reactions. Others include the method of using the materials and certain weaknesses in the testing.

The delay until midyear in getting the kits into classroom use seriously reduced the time available for a fair trial of the materials. A number of teachers felt that the fall of the year offered more appropriate occasions than the spring for using the materials. Their contention seems valid that had the kits been available for the full year, the results might have been more impressive.

To make the trial as nearly operational as possible, no attempt was made to influence the extent or manner of teachers' use of the materials. Similarly, teachers in the control classes were free to continue any prevention programs they were accustomed to presenting. This lack of control might be expected to reduce observable differences.

⁵ Testing materials were prepared under the direction of Dr. Carolyn Stern by the staff of the Headstart Evaluation and Research office, Department of Education, University of California, Los Angeles. Modifications in materials and testing procedures resulting from pretest experience were made by the Experiment Station staff.

From the data reported below on the relationship of age to test scores and from the observation of classroom activities, it is apparent that the materials generally were more suited to the maturity level of the older children than they were to the younger ones, and that this was also true of the testing instruments. Effective educational testing at any level presents many problems. In testing preschool children, most of these problems are compounded. Many of the problems were resolved, but there still remains some question as to how much the results, or lack of results, of the testing depend on the experimental variable and how much they depend on the testing devices themselves.

Relation of Scores to Characteristics of Children and Teachers

The relationship of individual test scores to various characteristics of the children was investigated. Data were available on ethnic origin, family income, age, sex, language spoken in the home, ability to speak English, welfare status of the family, and total number in the family. Only age proved to have a significant relationship to test scores. The children ranged in age from about 3-1/2 to over 6 years, with the great majority evenly divided between the 4- and 5-year-olds. The more mature children did much better on all of the tests, but particularly better on the pictorial section (*table 3* in Appendix). The difference between experimental and control classes was quite marked for the older children. Although no appreciable difference between experimental and control children 4 years old and under was detected on the pictorial sections of the concept acquisition tests, the younger experimental group children did a little better than the controls on the oral section.

Available data on such characteristics of the teachers as ethnic origin, age, and previous educational experience were also examined to determine their relationship to test scores. No relationship was established with any of these characteristics.

Responses to Individual Items

Examination of responses to individual test items showed that although experimental classes did consistently better, differences in the main were small, and only occasionally reached statistical significance (*tables 4,5* in Appendix). In a few instances, scores from control classes were higher than those from experimental classes, but these differences did not approach statistical significance, and were all in items for which the average scores for all groups were low.

Relation of Scores to Frequency of Use of Materials

Variability in the extent of individual teachers' use of the materials was found to be reflected in the children's test scores. On the basis of data from the teachers' logs, classes in the experimental set were divided into two groups: those in which the teachers had used four or more of the units at least one time and those in which the materials were used less than this. The classes of teachers who did not submit logs of their activities were included in the low use group on the assumption that their failure to submit logs was indicative of their lack of interest. This is a very crude and merely quantitative measure of use of the materials. Differences in average test scores, however, show that the distinction has some validity. The more interested teachers did produce greater change in their students than did those who made relatively little use of the materials. Mean scores on the pictorial section of the test were 48.3 for high use, 46.4 for low use, and 42.4 for controls. For the oral section, scores were 60.3, 52.9, and 50.6 respectively.

Most children in all classes were already aware of some of the attributes of fire—that it keeps us warm, but that it also hurts if we are burned. They generally recognized city firemen and associated them with putting out fires. Many of the children recognized Smokey Bear. Exposure to the fire prevention program, however, did increase children's awareness of these things.

Significant differences in average scores of children from experimental and control classes for specific items reveal that children exposed to the program became better able to differentiate between "good" fires and "bad" fires. They were better able to identify situations conducive to the starting of uncontrolled fires, and recognize safe and unsafe fire-related behavior. For example, an increased proportion of the children were aware that playing with matches is unwise, and they were also more familiar with the proper thing to do if they found matches. They had become more familiar with Smokey Bear and associated him more readily with trees and their protection from fire.

Although there was a definite improvement in the areas mentioned above, the majority of students tested, experimental and control, were unable to identify high fire hazard situations and they still did not know what to do if they saw a fire. They also had difficulty comprehending the time needed for trees to grow after a fire, and few recognized a forest ranger (although, as indicated above, most were already familiar with a city fireman).

In the individual items devised to measure emotional responses to fire, there was no more evident difference between experimental and control groups than in the aggregate scores of these items. It was expected that the educational experience might help allay any overfearful reactions to fire that might exist, as well as reduce any excessive fascination with it. Some teachers reported observing such changes in some of their pupils. It is possible that the test was not sensitive enough to detect them. On the other hand, the fears of intensified fascination with fire receive no support from either the test results or the observations by teachers and others.

Resource Persons' Evaluation

Most of the material in this section came from evaluation forms completed by the teachers using the kits and from observations of classroom activity and from discussions between teachers and the program observer. Other sources of information included meetings, both joint and separately, with Division of Forestry and Headstart personnel (especially the director and psychologist) and with members of the program testing team.

Of the 42 teachers in the experimental group, 33 (78.5 percent) turned in evaluation sheets at the end of the testing period. Two of the remaining nine left before the end of the year and their evaluation, if completed, could not be located. Two teachers reported extensive use of the materials, but did not complete the evaluation forms. The other five indicated that they had made little or no use of the kit.

General Reactions

The teachers, with few exceptions, agreed that preschool children should be taught fire prevention. They considered the kit, on the whole, a valuable teaching aid. It should be noted that there is a dearth of material of any kind for the preschool curriculum. These Headstart teachers, therefore, are inclined to welcome any additions.

Two of the teachers in the experimental group were strongly negative about the program. One felt that any teaching of fire prevention to preschool children was inappropriate, as "fires are started because of a lack of supervision on the part of the parents. Children of this age should not be expected to be responsible for their own safety, and education should be geared to parents rather than to their children." She felt that the children might be stimulated by the materials, and by the testing experience as well, to set fires. She did suggest that

the conservation unit could appropriately be used, provided the emphasis was on tree cultivation, rather than on forest fire prevention.

The other teacher felt that an intellectual approach to fire prevention would be ineffective—"children set fires because of adjustment problems." She also was concerned that the material might provoke fire-setting behavior.

These two teachers were among the five who made little or no use of the kits.

These issues concerned a few other teachers at first, but their attitudes were tempered by positive feelings about the materials provided and they were interested in trying out some of the units to observe the children's reactions. No adverse reactions were reported to have been precipitated by the use of the materials. On the contrary, one teacher stated that a child in her class who had formerly represented a fire problem was positively aided by the prevention lessons. He was now able to verbalize his concerns and direct his activities in more acceptable directions. A kindergarten teacher who had access to the materials reported a similar experience.

The California Division of Forestry personnel and the Headstart Teacher Committee who served as advisors in the development of the kit had expected that teachers would feel free, in fact encouraged, to contribute to the program by making adaptations and developing followup activities. Observation and teacher reports revealed that the materials had stimulated considerable creative work by some teachers. Several found the materials valuable as a springboard to experience in music, language development, and science, and to open communication with the children's families. It is evident, however, that if the kit is to have maximum value, most teachers will require more specific lesson plans and instructions, as well as patterns for followup activity.

Relatively few teachers ordered the supplementary materials available to them—films, tree seedlings, letters from Smokey, and so forth. Many of those who did order the supplementary materials that were suggested in the kits failed to receive them, or did not get them in time for them to be used.

The responses to specific questions on the evaluation sheets reveal some of the ways the teachers used the materials. Responses are summarized in *tables 6 and 7* in the Appendix.

The teachers' approach to time planning did not vary greatly. Approximately one hour was spent on each unit by the teachers reporting, for a total of five hours for the entire program. Periods of 15 or 20

minutes were most popular for sessions, with little variation among units.

There was apparently a strong tendency to use the entire content of a unit in one lesson. Several teachers requested that the units be broken down into shorter lessons. Although some teachers did this themselves, most did not and attempted to reinforce the material by repetition.

Most of the teachers reported that their lessons were prepared directly from the materials provided, but with supplementation from their own resources. It was the classroom observer's impression, however, that a somewhat larger percentage than indicated worked directly from the prepared materials without supplementation. Very few teachers used the material only as a resource or for display.

The coloring sheets were most frequently mentioned in relation to supplementary activities. Coloring was frequently done in the class, but the sheets were usually sent home with the children. Teachers frequently reported parents' desire for such tangible evidence of their children's school activities.

The posters supplied were also much used, generally as classroom displays. All the posters observed had been painted or crayoned before being displayed. Other supplementary activities were infrequently carried out. About one-fourth of the teachers, however, reported the use of controlled fire experiments in conjunction with their use of the Introduction to Fire Unit.

Most of the classes were taught in English, but Spanish, or a mixture of Spanish and English was used in approximately one-fifth of the presentations.

In their general comments on the materials, many teachers noted that Smokey Bear was popular with the children. Virtually all children already knew about Smokey. These teachers felt that there would be greater interest in all of the units in the kit if Smokey were incorporated as a unifying theme. Several teachers reported using the Smokey Bear unit first in order to provide stronger motivation for the remaining units.

Several teachers felt that the story cards in all units except Unit G, Smart Cookie, Dumb Cookie, contained too many elements. The comment was made frequently that the language was too complicated for the younger children. The term "fire prevention," for example, was considered too difficult by a few teachers. Objections were made to inclusion of printed words on the posters, since the children could not read them.

Although the development committee had been concerned to make the artwork in the unit picture

stories, and handout materials suitable to the pre-school level, these still received criticism from some teachers as too sophisticated. Other teachers objected to the artwork for esthetic reasons.

For all units, all or nearly all the teachers responding answered yes to the question whether the unit was a desirable addition to the regular curriculum (*table 8* in the Appendix). There was similar agreement that children's behavior would be changed by their exposure to the units. The teachers also expressed a desire to use the materials again the following year. It should be noted, however, that no response was obtained to these three questions from two-fifths to nearly one-half of all the teachers in the program. We have no way of assessing the attitudes of those not responding, although it may be assumed that the more enthusiastic teachers would respond.

Reactions to Specific Units and Items

Reactions of teachers and various resource persons to specific items are reported as they were communicated to the evaluation personnel.

Tabulations of information from the teachers' evaluation sheets provides some indication of the interest level engendered in the teachers (and by indirection, in the children) by each of the five units used. (Because materials were distributed after the holiday season, Unit E, Christmas, was not used as such, although individual items from the folder may have been incorporated in other units.) The number of teachers using a particular unit at least once was similar for all five units (*table 6* in Appendix), although three of the 33 teachers who reported using the Introduction to Fire Unit did not use the kit again after that. From the total number of lessons given, and the average number per teacher, it would appear that Introduction to Smokey evoked the most interest and Conservation the least.

Unit A. Teacher Information

The brief introduction to the fire prevention program included in this unit emphasizes that it is not designed to restrict or limit the teachers' own plans or activities in any way. As has been noted, however, this freedom was not particularly appreciated. Many teachers would have felt more comfortable, apparently, with a more structured approach.

The four posters (FPE 32-35) included in this unit were displayed by the majority of teachers. It was generally agreed that the posters stimulated desired reactions in the children, especially FPE 32 and 34, both of which show the consequences of improper fire use. A few teachers did object to some details of

the artwork in FPE 34 (such as complicated style, use of wooden matches instead of more familiar book matches).

Of nine different coloring sheets in this unit, only three represent approved behavior. It was questioned whether any of the sheets should represent inappropriate behavior, particularly since the children could not read the words "YES" and "NO" which were prominent on the sheets. One teacher felt she partly solved the problem by coloring the "YES" green and "NO" red and associating this with the traffic signals familiar to the children.

Unit B. Introduction to Fire

The stated objectives of this unit were (1) to introduce children to various types of fire, (2) to show how fire under control aids man, and (3) to point out some dangers if fire is misused.

A sequence of 13 pictures stress positive uses of fire and consequences of misuse. Cause and effect relationships are treated impersonally, in the main, although the role of father and mother is brought in in several instances. Poster 44b-12 portrays the consequence of a child's playing with a match, but otherwise the role of the child in fire use is not brought out. The impersonal wording on poster 44b-2 implies that children may legitimately use matches.

The teacher's information sheet mentions that many children, through curiosity, may experiment with fire and suggests that teachers may wish to conduct experiments with fire for the children. Specific examples, procedures, and precautions are not given, however. Handouts for parents include trash burning tips, safety precautions with gas heaters, and a warning to keep matches away from children. (Teachers and parents could provide models for proper fire behavior and positive attitudes toward fire if they translated this kind of brief generalized advice into specific action.)

Many teachers said that the kit should emphasize more positive uses of fire, and asked for more specific suggestions for conducting fire experiments. Activities used or suggested by one or more teachers were as follows:

3. Lighting birthday candles.
4. A cookout or hot dog roast during a visit to a city park or available forest picnic area, a barbecue at the home of one of the children, and cooking experience in the classroom.
5. Burning incense.
6. Taking children outside and showing them the danger of throwing matches, cigarettes, etc., on dry grass.

5. Outside experiments on the effectiveness of dirt, water, blowing, etc., in putting out a fire.

1. Melting candles and crayons in preparation for craft projects.

2. Visiting a city dump at trash burning time.

Not all teachers accepted the idea of providing fire positive activities. They felt, instead, that the emphasis should be on teaching children to avoid stoves, heaters, and other sources of burn injury. A few felt that it would be setting a bad example for the teacher to light matches and to conduct fire experiments. Several reported that school and fire department rules precluded fire experimentation.

Other supplementary activities suggested for this unit were the following:

1. Learn to dial "operator" on telephone to report a fire.
2. Learn how to put out a fire on clothing.
3. Have a fire drill.
4. Arrange for a visit from Smokey.
5. Paint, or finger paint, flame shapes.
6. Make a red fire truck.
7. Dramatic play with blocks, enacting firemen putting out a fire.
8. Make play dough cakes with candles.

Unit C. Fire Prevention

The objectives of the unit on fire prevention, were to teach Headstart children (1) to use fire properly, (2) to recognize fire hazards and eliminate them, and (3) to accept the responsibility of preventing fires. Much of the unit is devoted to the concept of National Fire Prevention Week and its commemoration of the Chicago fire of 1871. (This would seem to be extraneous to the stated objectives of the unit and of the total program.)

Pictures 44c-14, 15, and 16 showing children happily engaged in disapproved behavior with fire may be more effective in teaching the pleasure of such activity than poster 44c-17 is in teaching the unpleasant consequences.

The teacher's information leaflet points out the prevalent causes of fire, but contains no suggestions as to how this information and other materials in the folder might be used in achieving the objective of the unit.

The reaction to this unit was generally positive. The children were, on the whole, reportedly attentive and interested. From the teachers' comments it was evident that more emphasis should be given to specific things families can do to prevent fires, and that illustrations of unsafe fire behavior be eliminated.

Comments on the handouts for parents were diversified. Some teachers felt there were too many different ones; others that there were not enough. Many complained that certain ones were inappropriate for their particular area. It was apparent that many difficulties with the handouts would be removed if teachers understood that they were not necessarily expected to use all of the examples provided, but were to select those appropriate to their situation. It was also apparent that some teachers were not particularly aware of existing fire hazards, or that they shared the feelings of parents who felt powerless to effect changes.

Some teachers expressed a need for additional handouts covering such areas as trash cleanup in garage, house, and yard; cooking hazards (splattering grease, curtains near stove, etc.); defective wiring of stoves and appliances; defective electrical cords; etc. Handouts covering accident prevention materials in addition to fire prevention (for example, keeping medicines and poisonous substances out of reach of children) were also desired.

On the coloring books featuring Sniff and Snuff, there was a general feeling that the figures were too small and complex for preschool children. A few teachers felt that Sniff and Snuff unnecessarily confused the fire prevention program, and that one symbol of fire prevention, Smokey Bear, was enough.

Unit D. Introduction to Smokey

The content of folder D sought (1) to help children recognize Smokey as the symbol of forest fire prevention, (2) to make them aware that Smokey knows what he is talking about (from personal experience?), and (3) to make children realize all people should follow Smokey's rules.

The picture materials are a simplified version of the story of Smokey Bear. Smokey is presented as a model from which positive attitudes toward fire may be established. This unit contains a letter for parents informing them of their child's having learned the story of Smokey and giving specific ways in which the parents can reinforce the lesson.

The teachers reported overwhelming enthusiasm for Smokey Bear and his story. Even 3-year-olds enter school knowing Smokey. Many supplementary activities were used or suggested for this unit:

1. Hand puppets made of picture of Smokey glued to small brown paper bags.
2. Stickers used to make posters.
3. Collages of Smokey. Yarn pasted on picture for fur; beads, buttons, or marbles for eyes, fabric or paper hat.

4. Other bear stories, and Smokey story on flannelboard.

5. Door poster collage of Smokey made out of cardboard on which children glued fabric pieces to make mosaic pants.

6. "I Help Smokey" folders made for color sheets.

7. Teddy bear brought to school and dressed as Smokey.

8. Trip to airport to see real jet (like one that transported Smokey).

9. Golden Book of Smokey the Bear.

10. Construction paper pictures of Smokey and forest in box lids. Children tore and pasted leaves. Trunks were made of brown colored soap and water foam (could also use flour, salt and water dough). Bear pictures were dittoed and colored by the children.

11. Stickers mounted on cardboard, placed on tinkertoy standards and used in forest diorama.

Criticisms of the illustrations of the Smokey story, FPE 44d 2-11, were limited. However, a few teachers thought that the language and content could be simplified even further for young children.

Unit E. Christmas

The Christmas folder sought to strengthen the Smokey Bear fire prevention image and remind parents and children of special holiday fire hazards.

Because the kit was not distributed until January, this unit received little use. Some teachers distributed the ash trays at parent meetings or sent them home with the children on the last day of school. Several teachers objected to their distribution because it would seem to indicate that the Division of Forestry and Headstart sanctioned smoking. It was suggested that they might better be utilized as molds for making painted clay or plaster paperweights.

Unit F. Conservation

The objective of the Conservation Unit was to teach Headstart students that (1) natural resources (especially trees) are good, necessary and useful, (2) natural resources must be protected from fire, and (3) many years are required to replace a forest destroyed by fire.

The series of 12 illustrations demonstrate that there are different kinds of trees and they provide different benefits to man. The effect of fire on trees and the necessity of protecting them from fire are also stressed, along with the importance of replanting areas where trees have been destroyed or used.

The teacher information leaflet suggests that the

class might participate in an Arbor Day celebration or other tree planting experience.

Although several teachers found this unit interesting to the children, a few reported it boring. Less time and fewer sessions were spent on this unit than on any other except the Christmas unit (*table 6* in Appendix). This unit may have suffered more than the others from the delay in reaching the classrooms. In this area, fall would have been a better time for tree planting. The unit's position next to last in the kit may also have influenced its use. Teachers showed considerable interest, however, in developing follow-up activities—visits to building sites or lumber yards to see different kinds of wood and collect scraps for use in class; trip to friend's yard to pick oranges from tree, stressing "trees give us food"; collecting pictures of objects made of wood; and so forth.

A few teachers reported that the concept of the time required to grow a tree was too difficult for the children. They also found the unit poster, *How a Tree Grows*, far beyond the children's comprehension. Teachers seemed at a loss as to how to use it. It probably should be greatly simplified or eliminated.

Unit G. Smart Cookie—Dumb Cookie

The objectives of this unit as stated, were to teach Headstart children that (1) they must follow safety rules in order to be protected, (2) life can be very unpleasant if rules are not known or not followed, and (3) playing with matches and experimenting with fire without parental supervision is very dangerous.

Fire prevention is developed as a part of general safety in this unit. The actions of a positive model (a stick character with a smiling cookie for a head named Smart Cookie) are contrasted with a negative model (Dumb Cookie) in a number of potentially unsafe situations. The expectation is that children will identify with the positive model. Adhesive-backed "Smart Cookies" are provided for the children to wear to reinforce this concept.

Resource people generally and a few teachers felt that the negative model "Dumb Cookie" was inappropriate; most teachers felt that it was extremely effective. Next to the Smokey Bear unit, this was the most popular unit, judging from the interview and narrative comments and from the amount of time allotted to it. Although most teachers approved the inclusion of a broad span of accident prevention material, a few objected to this, preferring a focus on fire prevention.

Reasons given for the success of the unit were the simplicity of the stick figures and the use of a clear-cut model (Smart Cookie) with whom the children could readily identify. The teachers who approved the use of "Dumb Cookie" felt that children clearly did not choose him as a model. In several instances, however, children identified others with "Dumb Cookie," and this was the type of behavior that was considered undesirable by those who opposed use of the negative model.

All teachers who commented reported the children enthusiastic about the adhesive-backed "Smart Cookies" provided each child.

SUMMARY AND CONCLUSIONS

Folkman, William S., and Jean Taylor.

1972. **Fire prevention in California's Riverside County Headstart Project. . .an evaluation.** Berkeley, Calif., Pacific SW. Forest & Range Exp. Sta. 29 p. (USDA Forest Service Res. Paper PSW-79)

Oxford: 431.3-094.8: 432.14-01.

Retrieval Terms: forest fire prevention programs; fire prevention education; children-with-matches-fires; Headstart Project.

An especially designed series of fire prevention lessons were taught to preschool children in the Headstart Project in Riverside County, California. The lessons, with related educational materials, were developed by the California Division of Forestry and by a committee of Headstart Project teachers. Teachers in one-half of the classes in the county used these

lessons during the 1968-1969 school year. The effectiveness of these materials was evaluated by the fire prevention research unit of the Pacific Southwest Forest and Range Experiment Station. Evaluation included observing classroom reaction and testing children at the end of the year.

This evaluation of an experimental fire prevention

education program conducted with Riverside Headstart children documents the feasibility of this type of educational approach with preschool children. The findings do not suggest that this, alone, is the solution to the serious and growing problem of child-caused fires. Children's natural fascination with fire, the general pervasiveness of fire use in our society, and the conceptual maturity of this age level make such efforts only a beginning step in a continuing process of education in the individual's relation to his environment. Ideally, this should extend through a lifetime.

The tests and observations reveal both strengths and weaknesses in the program materials as presently developed. These are documented in the body of this report. The response of the Riverside Headstart teachers to the materials and the intense interest in them shown in educational circles throughout the country testify to a growing awareness of the problem and to the paucity of available materials to meet it.

The Headstart kit was most successful in meeting the cognitive goals of the program. That is, improvements were observed in the children's understanding of certain cause-and-effect relationships concerning fire behavior. Positive changes in curiosity about fire and attitudes toward fire were less apparent. Modifications in the materials or, more importantly, in the instructions for their use, and the addition of suggestions for enrichment activities related to them, appear likely to improve materially goal achievement possibilities. Specific examples are detailed in the report. The main effect of these suggestions would be to involve the children in meaningful activities rather than rely so heavily on verbal transmission of information.

In the opinion of the evaluators, the format of the materials provided encouraged an aural-visual type of teaching method. For young children particularly,

this method is relatively ineffective, even for cognitive concepts. To achieve the goals of satisfying curiosity and changing attitude, active learning through experience is undoubtedly necessary.

The assumption apparently made by the planners of the program that teachers, as professional educators, would know how to adapt the materials provided and extend them into effective learning situations is not warranted. In Unit B, Introduction to Fire, for example, even the most innovative teacher would benefit from detailed suggestions on how to carry out meaningful and satisfying fire experiences for the children, including specific precautions to be observed.

The problem of how to expose children to fire safely has not been satisfactorily solved, but experiences with fire seem essential to genuine satisfaction of the child's curiosity. Most teachers would prefer to leave this responsibility to the parents, and this may be wise, but the fire prevention implications of permissible classroom activities using fire (or heat), such as cooking and birthday candles, are not exploited as fully as they might be.

Most of the units would benefit from the inclusion of a letter to parents similar to the one in Unit D, Introduction to Smokey. Such a letter, explaining in general what the children have been learning, and specific suggestions on how parents might supplement or reinforce this learning, would probably increase the effectiveness of the program. Parents would be much more apt to provide the desired positive models of fire-use behavior with such assistance, especially if this were preceded by an explanation of the total program at an early parent-teacher meeting.

The momentum of this initial effort should not be lost. Further experimentation and modification is needed, but much can be done in an ongoing program provided with built-in evaluation procedures.

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APPENDIX

Tables

Table 1—Characteristics of Headstart children in experimental and control classes

Characteristic	Experimental classes (n=512)	Control classes (n=430)
	<i>Percent</i>	
Ethnic origin: ²		
Negro	21	22
Mexican-American	44	45
Other Caucasian	21	14
American Indian	2	3
Other	4	2
Not reported	8	14
Total	100	100
Age:		
6 years and over	2	1
5	37	32
4	40	42
Under 4 years	5	5
Not reported	16	20
Total	100	100
Family income: ³		
Above EOB poverty level	24	25
\$ 0 - 499 below	14	14
\$ 500 - 1499 below	29	22
\$1,500 - or more below	11	17
Not reported	22	22
Total	100	100
Sex:		
Male	45	49
Female	49	46
Not reported	6	5
Total	100	100
Child speaks English:		
Yes	84	79
No	8	11
Not reported	8	10
Total	100	100
Family now on welfare: ⁴		
Yes	45	39
No	42	43
Not reported	13	18
Total	100	100

¹ Data from records of Economic Opportunity Board.

Differences between experimental and control classes statistically significant at the following level of probably, by chi-square test:

² 1 percent level.

³ 2 percent level

⁴ 5 percent level

Table 2—Test results of Headstart children in experimental and control classes

Test form	Experimental classes			Control classes		
	No. of tests	Mean score	Standard deviation	No. of tests	Mean score	Standard deviation
Conceptual items						
Pictorial Section:						
Form A	187	49.2	18.0	160	44.5	16.4
Form B	174	44.0	17.8	142	39.5	17.1
Form C	151	51.3	19.0	132	43.8	19.1
Oral Section:						
Form A	186	62.5	15.9	151	57.1	17.0
Form B	164	63.0	15.8	137	56.2	17.2
Form C	145	50.3	16.4	130	46.9	16.4
Affective items						
Pictorial Section:						
Form A	187	37.4	20.8	160	33.7	21.5
Form B	174	38.5	23.9	142	38.4	24.2
Form C	151	36.8	21.4	132	35.6	22.3
Oral Section:						
Form A	186	25.8	21.9	151	29.5	21.7
Form B	164	41.9	27.1	137	40.6	28.8
Form C	145	46.1	26.7	130	48.0	24.6

Table 3—Test scores of experimental and control classes by age group

Test scorer	Five or more years		Under five years	
	Experimental classes	Control classes	Experimental classes	Control classes
	<i>Percent</i>			
Pictorial Section:				
61-100	33	21	12	11
31-60	52	51	68	69
0-30	15	28	20	20
Total	100	100	100	100
Mean Score	51.0	44.6**	43.4	40.2
Oral Section:				
61-100	64	48	55	43
31-60	31	46	39	47
0-30	5	6	6	10
Total	100	100	100	100
Mean Score	61.3	55.5**	57.7	52.6*

¹ Forms A, B, and C combined.

**Differences between experimental and control classes statistically significant at 2 percent level of probability by chi-square test.

*Differences between experimental and control classes statistically significant at 5 percent level of probability by chi-square test.

Table 4–Response of children in experimental and control classes to individual items in the various forms of the pictorial test

Item	Form A			Form B			Form C		
	Exp. (n=186)	Cont. (n=160)	Dif.	Exp. (n=171)	Cont. (n=142)	Dif.	Exp. (n=150)	Cont. (n=132)	Dif.
	<i>Percent</i>								
1 ¹	35.6	33.5	2.1	60.8	52.1	8.7	64.7	59.8	4.9
2	55.8	43.0	12.8**	78.9	74.6	4.3	68.0	62.9	5.1
3	43.6	46.8	-3.2	32.7	26.8	5.9	66.7	73.5	-6.8
4	35.6	35.4	.2	45.0	51.4	-6.4	46.6	37.1	9.5
5	18.6	15.9	2.7	16.4	17.6	-1.2	14.7	14.4	.3
6	50.5	53.2	-2.7	52.6	49.3	3.3	60.0	59.1	.3
7	85.6	81.0	4.6	28.6	30.3	-1.7	23.3	15.9	7.4
8	44.1	51.2	-7.2	56.1	45.1	11.0*	64.7	47.7	17.0**
9 ¹	40.4	39.9	.5	45.0	42.2	2.8	32.7	34.8	-2.1
10 ¹	52.6	46.8	5.8	35.7	34.5	1.2	18.6	18.2	.4
11	21.8	13.3	8.5*	28.1	16.9	11.2*	53.3	42.4	10.9
12	51.0	44.3	6.7	43.3	35.2	8.1	36.7	28.8	7.9
13 ¹	24.5	23.4	1.1	19.9	26.1	-6.2	34.7	24.2	10.5
14	54.2	46.2	8.0	22.8	23.2	-	64.7	48.5	16.2**
15	55.8	53.2	2.6	54.4	50.0	4.4	56.0	50.0	6.0
16	55.3	47.5	7.8	56.7	43.7	13.0*	44.7	32.6	12.1*
17	45.7	30.4	15.3***	88.3	76.1	12.2*	71.3	59.1	12.2*
18	76.6	72.2	4.4	33.9	26.8	7.1	64.0	59.1	4.9
19	39.9	42.4	-2.5	28.7	25.4	3.3	40.0	25.8	14.2**
20 ¹	33.0	27.2	5.8	34.5	37.3	-2.8	34.7	40.9	-6.2

¹ Affect item: fire positive answer reported.

*Statistically significant at 5 percent level by chi-square test.

**Statistically significant at 2 percent level by chi-square test.

***Statistically significant at 1 percent level by chi-square test.

Table 5–Response of children in experimental and control classes to individual items in the various forms of the oral test

Item	Form A			Form B			Form C		
	Exp. (n=185)	Cont. (n=151)	Dif.	Exp. (n=162)	Cont. (n=137)	Dif.	Exp. (n=143)	Cont. (n=130)	Dif.
	<i>Percent</i>								
1	48	36	12*	91	86	5	41	48	-7
2	52	46	6	51	43	8	75	62	13**
3	51	45	6	74	58	16***	32	31	1
4	55	50	5	75	64	11*	54	52	2
5	36	38	-2	34	27	7	25	25	0
6	64	54	10	86	80	6	71	63	8
7	82	79	3	90	82	8	39	25	13**
8	75	73	2	79	66	13**	75	73	2
9	67	59	8	72	68	4	31	42	-11
10	81	75	6	81	78	3	51	39	12*
11	79	70	9	31	34	-3	43	40	3
12	52	43	9	56	52	4	53	53	0
13	83	80	3	70	66	4	75	71	4
14 ¹	31	41	-10	9	8	1	47	45	2
15 ²	70	70	0	67	74	-7	59	60	-1
16 ¹	12	16	4	64	64	0	63	65	-2
17 ²	20	24	4	23	27	-3	31	32	-1
18 ¹	42	42	0	48	46	2	45	48	-3
19	82	72	10	43	39	4	37	28	9
20	70	64	6	73	61	12*	24	24	0
21	58	55	3	58	47	11	57	61	-4
22 ¹	10	15	-5	42	44	-2	57	63	-6
23	20	22	-2	71	66	5	62	52	10
24	69	66	3	79	66	13**	59	56	3
25 ¹	32	36	-4	47	42	4	16	20	-4

¹ Affect item, fire positive answer reported.

² Fire experience, affirmative response.

*Statistically significant at 5 percent level by chi-square test.

**Statistically significant at 2 percent level by chi-square test.

***Statistically significant at 1 percent level by chi-square test.

Table 6—Frequency and duration of use by teachers of units in fire prevention kits ¹

Item	Unit B	Unit C	Unit D	Unit F	Unit G
Teachers reporting No.	33	28	30	29	28
Lessons given No.	83	65	94	57	68
Average lessons for teacher reporting No.	2.5	2.3	3.1	2	2.4
Teachers using unit:					
Once No./Pct.	9 (27.3)	8 (28.6)	5 (17.7)	17 (58.6)	12 (42.9)
Twice No./Pct.	10 (30.3)	9 (32.2)	10 (33.3)	5 (17.3)	4 (14.3)
Three times No./Pct.	5 (15.2)	6 (23.1)	2 (6.7)	2 (6.9)	5 (18)
Four times No./Pct.	7 (21.2)	4 (14.3)	10 (33.3)	1 (3.4)	3 (10.6)
Five or more times No./Pct.	2 (6)	1 (3.6)	3 (10)	4 (13.8)	4 (14.2)
Lessons lasting:					
60 minutes No./Pct.	3 (3.6)	3 (4.5)	6 (6.4)	5 (8.8)	5 (7.5)
45 minutes No./Pct.	4 (4.8)	2 (3.1)	2 (2.2)	4 (7)	4 (5.7)
30 minutes No./Pct.	32 (38.6)	30 (46.2)	24 (25.5)	20 (25.1)	33 (48.4)
15 or 20 minutes No./Pct.	44 (53)	30 (46.2)	62 (65.9)	28 (49.1)	26 (38.4)
Average duration of lesson Min.	24.2	24.5	22.3	26.4	28
Average total time spent on lesson for teacher reporting Min.	61	57	70	52	68

¹ Units A (Teacher Information) and E (Christmas) not included in tabulation. Unit B is Introduction to Fire; C-Fire Prevention; D-Introduction to Smokey Bear; F-Conservation; and G-Smart Cookie-Dumb Cookie.

Table 7—Manner of use by teachers of material from units in fire prevention kit ¹

Item	Unit B		Unit C		Unit D		Unit F		Unit G	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Lessons in which:										
All material was used	55	66.1	41	63.1	48	52.1	42	73.7	60	88.2
Part of material was used	28	33.7	24	36.9	46	47.9	15	26.3	8	11.8
Teachers who:										
Worked directly from prepared materials	12	36.4	8	28.6	8	26.7	12	41.5	8	28.6
Used own materials to supplement prepared material	17	51.5	12	46.4	11	36.7	14	48.2	14	50.0
Used prepared materials as resource only	0	.0	0	.0	1	3.3	0	.0	1	3.6
Used prepared material for display only (lessons based on own materials)	1	3.0	1	3.6	0	.0	0	.0	0	.0
Did not check or report more than one	3	9.1	7	25	10	33.3	3	10.3	5	17.8
Teachers using supplemental materials or activities:										
Films	4	12.1	2	7.2	9	30.0	3	10.3	1	3.6
Phonograph records	4	12.1	3	10.8	17	56.7	2	6.9	1	3.6
Posters	18	54.5	18	64.6	19	63.3	19	65.5	14	50.0
Field trip to forestry station	1	3.0	1	3.6	1	3.3	1	3.4	0	.0
Field trip to fire station	3	9.1	0	.0	2	6.7	0	.0	0	.0
Cookout with fire-making experiment	0	.0	0	.0	1	3.3	0	.0	1	3.6
Controlled fire experiment	8	24.3	2	7.2	1	3.3	0	.0	0	.0
Cooking lesson, fire control	1	3.0	1	3.6	1	3.3	0	.0	4	14.3
Color sheets:										
Used	24	22.7	25	89.3	23	76.7	14	48.3	12	42.8
Sent home	17	51.5	17	60.7	17	56.7	9	31.0	13	46.4

¹ Units A (Teacher Information) and E (Christmas) not included in tabulation. Unit B is Introduction to Fire; C-Fire Prevention; D-Introduction to Smokey Bear; F-Conservation; and G-Smart Cookie-Dumb Cookie.

Table 8—Response of teachers of experimental classes to the units of the fire prevention kit¹

Questions	Answers by number and percent of teachers responding									
	Unit B		Unit C		Unit D		Unit F		Unit G	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Do you think this unit is a desirable addition to the regular curriculum?										
Yes	24	96.0	22	100.0	24	96.0	24	96.0	22	100.0
No	0	.0	0	.0	1	4.0	1	4.0	0	.0
Undecided	1	4.0	0	.0	0	.0	0	.0	0	.0
Total	25	100.0	22	100.0	25	100.0	25	100.0	22	100.0
Do you think the children's behavior will change as a result of this unit?										
Yes	24	92.3	22	95.7	24	100.0	20	87.0	22	95.7
No	0	.0	0	.0	0	.0	1	4.3	0	.0
Undecided	2	7.7	1	4.3	0	.0	2	8.7	1	4.3
Total	26	100.0	23	100.0	24	100.0	23	100.0	23	100.0
Would you like to give it again next year?										
Yes	25	100.0	23	95.8	25	96.1	23	95.8	22	100.0
No	0	.0	1	4.2	1	3.9	1	4.2	0	.0
Undecided	0	.0	0	.0	0	.0	0	.0	0	.0
Total	25	100.0	24	100.0	26	100.0	24	100.0	22	100.0

¹ Units A (Teacher Information) and E (Christmas) not included in tabulation. Unit B is Introduction to Fire; C-Fire Prevention; D-Introduction to Smokey Bear; F-Conservation; and G-Smart Cookie-Dumb Cookie.

Tests

PICTORIAL TEST

FORM A - SELECTION ITEMS (BLUE BOOKLET)

- (PINK) 1. Juan and Pedro went on a camping trip. (POINT) Juan helps his father build a fire and (POINT) Pedro helps his father catch fish. Which would you like to do?
- LP
1. Juan y Pedro fueron a campar. (POINT) Juan le ayuda a su padre hacer fuego y (POINT) Pedro le ayuda a su padre a pescar. ¿A tí qué te gustaría hacer?
- (GREEN) 2. Point to the bottle that has poison in it.
2. ¿Cuál es la botella que tiene veneno?
- (YELLOW) 3. (POINT) This man builds a fire near his car. (POINT) This man builds a fire in a special fire pit. (POINT) This man builds a fire in an open space near some twigs. Point to the picture that shows the man lighting a campfire in the best place.
3. (POINT) Este hombre hace un fuego cerca de su carro. (POINT) Este hombre hace un fuego en un lugar especial para hacer fuegos. (POINT) Este hombre hace un fuego en un lugar abierto cerca de unas ramitas. ¿Cuál es el hombre que está haciendo un fuego en el mejor lugar?
- (BLUE) 4. (POINT) This girl is cutting bread by herself. (POINT) This girl takes the knife and bread to her mother for cutting. (POINT) This girl takes the bread to her mother. Which is the right thing to do?
4. (POINT) Esta niña está cortando el pan solita. (POINT) Esta chica le da el cuchillo y el pan a su mamá para que lo corte. (POINT) Esta niña le lleva el pan a su mamá. ¿Qué es lo que tú debes hacer?
- (WHITE) 5. (POINT) Here is fire on the kitchen stove. (POINT) Here are some towels near a heater. (POINT) Here is fire in a barbeque. Which picture shows the place for a bad fire to start?
5. (POINT) Aquí hay un fuego en la estufa de la cocina. (POINT) Aquí hay algunas toallas cerca del calentador. (POINT) Aquí hay un fuego en la barbacoa. ¿Cuál es el cuadro que muestra el lugar donde puede comenzar un incendio peligroso?
- (PINK) 6. (POINT) This boy crosses the street without waiting for the light to change to green. (POINT) This boy waits for the green light. (POINT) This boy chases a ball into the street. Point to the right thing to do.
6. (POINT) Este chico atraviesa la calle sin esperar que la luz roja cambie a la verde. (POINT) Este chico espera a la luz verde. (POINT) Este chico atraviesa la calle corriendo tras una pelota. ¿Qué es lo que tú debes hacer?
- (GREEN) 7. (POINT) This is a ranger. (POINT) This is a policeman. (POINT) This is a fireman. Point to the one who puts out fires in the city.
7. (POINT) Este es un guardiabosques. (POINT) Este es un policía. (POINT) Este es un bombero. ¿Cuál es el que apaga los incendios en la ciudad?

- (YELLOW) 8. (POINT) This lady throws the match on the ground. (POINT) This one puts water on the match. (POINT) This one blows it out. Point to the picture that shows where a bad fire may start.
8. (POINT) Esta señora tira el fósforo al suelo. (POINT) Esta le pone agua encima. (POINT) Esta lo sopla. ¿Adónde puede comenzar un incendio peligroso?
- (BLUE) 9. (POINT) Angela likes to play fireman with the boys. (POINT) Carmen LP likes to play ball with the boys. Which would you like to do?
9. (POINT) A Ángela le gusta jugar a los bomberos con los muchachos. (POINT) A Carmen le gusta jugar a la pelota con los muchachos. ¿A tí qué te gustaría hacer?
- (WHITE) 10. (POINT) These children are watching the man put out a fire. (POINT) LP These children are watching the man fix the street. Which would you like to do?
10. (POINT) Estos niños miran a los hombres que estan apagando el incendio. (POINT) Estos niños miran a los hombres que están arreglando la calle. ¿A tí qué te gustaría hacer?
- (PINK) 11. (POINT) Here are some old rags and trash near a gas can. (POINT) Here is a fireplace. (POINT) Here is a kitchen stove. Point to the picture that shows where a bad fire may start.
11. (POINT) Aquí hay unos trapos, basura y una lata de gasolina. (POINT) Aquí hay una chimenea. (POINT) Aquí hay una estufa. ¿Adónde puede empezar un incendio peligroso?
- (GREEN) 12. Point to the thing that is specially made to put out fires in big buildings.
12. ¿Cuál es la cosa especial que apaga incendios en los edificios grandes?
- (YELLOW) 13. (POINT) Here the children are playing with water. (POINT) Here they RP are playing with fire. Point to the picture that shows what you like to do.
13. (POINT) Aquí los niños estan jugando con agua. (POINT) Aquí estan jugando con fuego. ¿A tí qué te gustaría hacer?
- (BLUE) 14. (POINT) This girl puts the campfire out with water. (POINT) This girl throws papers on the fire. (POINT) This girl had a picnic and left all the papers and trash under the tree. Point to the girl who is doing the right thing.
14. (POINT) Esta muchacha apaga el fuego de campamento con agua. (POINT) Esta muchacha echa papeles en el fuego. (POINT) Esta niña estuvo de picnic y dejó todos los papeles y la basura debajo del árbol. ¿Cuál es la niña que hace lo que se debe hacer?
- (WHITE) 15. Maria's mommy told her to stir the soup. (POINT) Here she tries to reach it from the floor. (POINT) Here she stands on a broken box. (POINT) Here she stands on a chair. Point to the picture that shows the best way for her to do it.
15. La mamá de María le dijo que revolviere la sopa. (POINT) Aquí trata de alcanzar la sopa desde el suelo. (POINT) Aquí María se para sobre un cajon roto. (POINT) Aquí se para sobre una silla. ¿Cuál es la mejor manera de hacerlo?

- (PINK) 16. (POINT) Here is a boy helping his father work with a fire torch.
(POINT) Here is a boy playing with a burning stick. (POINT) Here is a boy helping his father build a fire in a barbeque pit. Point to the bad thing to do.
16. (POINT) Aquí está un niño que ayuda a su padre soldar con una antorcha. (POINT) Aquí un niño juega con una rama encendida. (POINT) Aquí un chico ayuda a su papá hacer un fuego en la barbacoa. ¿Cuál hace lo que no debe hacer?
- (GREEN) 17. (POINT) Here is a forest. (POINT) Here is a desert. (POINT) Here is a seashore. Point to where Smokey lives.
17. (POINT) Aquí está un bosque. (POINT) Aquí está un desierto. (POINT) Aquí está una playa. ¿Adónde vive Smokey?
- (YELLOW) 18. (POINT) Here are some children coloring in a book. (POINT) Here are some children playing jump rope. (POINT) Here are some children playing with matches. Point to the bad thing to do.
18. (POINT) Aquí unos chicos colorean en un libro. (POINT) Aquí otros chicos saltan con una cuerda. (POINT) Aquí los chicos juegan con unos fosforos. ¿Cuáles hacen lo que no se debe hacer?
- (BLUE) 19. (POINT) This boy is throwing papers on a fire. (POINT) This boy is building a fire in the forest. (POINT) This boy is learning what fire can do. Point to the one who makes fire his friend.
19. (POINT) Este niño está tirando los papeles al fuego. (POINT) Este niño está haciendo un fuego en el bosque. (POINT) Este niño está aprendiendo para qué sirve el fuego. ¿Cuál es el que está haciéndose amigo del fuego?
- (WHITE) 20. (POINT) Here the children are using a fire torch to build something from metal. (POINT) Here the children are using a nail and hammer to build something from wood. What would you like to do?
20. Aquí los niños usan una antorcha para hacer cosas de metal. (POINT) Aquí los niños usan un clavo y un martillo para hacer cosas de madera. ¿A tí qué te gustaría hacer?

FORM B - SELECTION ITEMS (GREEN BOOKLET)

- (PINK) 1. Maria and Juanita are helping their mother make tortillas. (POINT)
RP Maria is frying them and Juanita is mixing the batter. Point to which you would like to do.
1. María y Juanita le están ayudando a su mamá hacer tortillas. (POINT) María las está mezclando y (POINT) Juanita las está friendo. ¿A tí qué te gustaría hacer?
- (GREEN) 2. Point to the one that is bad to drink.
2. ¿Cuál es la que no debes beber?

- (YELLOW) 3. We celebrate Fire Prevention Week because of a big fire started by one of these animals. Point to the animal that started the fire.
3. Celebramos la Semana de Prevención de Incendios, Fire Prevention Week, porque uno de estos animales hizo un incendio. ¿Cuál es el que comenzó el incendio?
- (BLUE) 4. (POINT) Here is girl cutting out paperdolls by an open fire. (POINT) Here is a girl throwing papers on a fire. (POINT) Here is a boy sitting on a chair cutting out paperdolls. Point to the right thing to do.
4. (POINT) Aquí una niña corta muñecas de papel junto al fuego. (POINT) Aquí esta chica echa papeles en la chimenea. (POINT) Aquí un chico corta muñecas de papel sentado en una silla. ¿Cuál de estas cosas debes hacer tú?
- (WHITE) 5. (POINT) Here is a fire burning in a fire pit. (POINT) Here are some leaves near a chimney. (POINT) Here is a fire burning in a barbeque. Point to the picture that shows the place a bad fire may start.
5. (POINT) Aquí hay un fuego de campamento. (POINT) Aquí hay algunas hojas cerca de la chimenea. (POINT) Aquí hay un fuego en la barbacoa. ¿Adonde puede comenzar un fuego peligroso?
- (PINK) 6. (POINT) Here is a boy flying a kite. (POINT) Here is a boy running across the street between cars. (POINT) Here is a boy playing with fire. Which is the right thing to do?
6. (POINT) Aquí un chico juega con un papelote. (POINT) Aquí otro chico atravieza la calle corriendo entre dos coches. (POINT) Y este chico juega con un fuego. ¿Qué es lo que tú debes hacer?
- (GREEN) 7. (POINT) This is a ranger. (POINT) This is a policeman. (POINT) This is a fireman. Point to the man who saved Smokey.
7. (POINT) Este es un guardiabosques. (POINT) Este es un policía. (POINT) Este es un bombero. ¿Cuál salvó a Smokey?
- (YELLOW) 8. (POINT) This is a fire burning a big building. (POINT) This is a fire in a fireplace. (POINT) This is a fire in a torch. Point to the bad fire.
8. (POINT) Este es un fuego en un edificio grande. (POINT) Este es un fuego en la chimenea. (POINT) Este es un fuego en una antorcha. ¿Cuál es el fuego malo y peligroso?
- (BLUE) 9. When a house catches fire, (POINT) Manuel likes to stand and watch the firemen and (POINT) José runs home to his mother. What would you do if you saw a fire?
- LP 9. Cuando una casa se enciende, (POINT) a Manuel le gusta pararse y mirar a los bomberos. (POINT) José corre a casa donde está su mamá. ¿Qué harías tú?
- (WHITE) 10. (POINT) These children are coloring in a book. (POINT) These children are watching the fire in the fireplace. Which would you like to do?
- RP 10. (POINT) Estos niños están pintando en un libro de colores. (POINT) Estos niños están mirando al fuego en la chimenea. ¿A tí qué te gustaría hacer?

- (PINK) 11. (POINT) Here is a fire burning on a stove. (POINT) Here is one electric plug in an outlet. (POINT) Here are many electric plugs in an outlet. Point to the picture that shows where a bad fire may start.
11. (POINT) Aquí hay un fuego en la estufa. (POINT) Aquí esta una clavija enchufada en la pared. (POINT) Aquí hay muchas clavijas enchufadas en la pared. ¿Adonde puede comenzar un fuego peligroso?
- (GREEN) 12. Point to the fire extinguisher.
12. ¿Cuál es el extintor de incendios?
- (YELLOW) 13. (POINT) These children are playing with matches. (POINT) These children are playing with marbles. Which would you like to do?
13. (POINT) Estos niños estan jugando con fósforos. (POINT) Estos niños están jugando a las canicas. ¿A tí qué te gustaría hacer?
- (BLUE) 14. (POINT) This boy saw a fire start in the forest and threw water on it. (POINT) This boy tells a grown-up about it. (POINT) This boy hides behind a tree and watches the fire burn. Point to the boy doing the right thing.
14. (POINT) Este niño vio un incendio en el bosque y le tiró agua. (POINT) Este niño se lo fue a contar a una persona grande. (POINT) Este niño se escondio detras de un árbol y miró al fuego encenderse. ¿Cual es el que hace lo que es correcto?
- (WHITE) 15. (POINT) This lady throws the burning match on the ground. (POINT) This one throws the burning match into a trash can. (POINT) This one blows the burning match out. Point to the picture that shows the best way to put out the match.
15. (POINT) Esta señora tira el fósforo encendido al suelo. (POINT) Esta tira el fósforo encendido en la basura. (POINT) Esta sopla el fósforo encendido. ¿Cual es la mejor manera de apagar el fosforo?
- (PINK) 16. (POINT) This girl throws water on a campfire. (POINT) This girl throws papers on a fire. (POINT) This girl is blowing the match out. Point to the bad thing to do.
16. (POINT) Esta muchacha le tira agua al fuego de campamento. (POINT) Esta muchacha tira papeles al fuego. (POINT) Esta niña esta apagando el fósforo a soplidos. ¿Qué cosa no debes hacer?
- (GREEN) 17. Point to Smokey.
17. ¿Cual es Smokey?
- (YELLOW) 18. (POINT) This lady is smoking in bed. (POINT) This lady is building a fire in the fireplace. (POINT) This lady is lighting candles on a birthday cake. Point to the bad thing to do.
18. (POINT) Esta señora fuma en la cama. (POINT) Esta señora hace fuego en la chimenea. (POINT) Esta señora prende las velitas del pastel. ¿Qué cosa no se debe hacer?
- (BLUE) 19. (POINT) This is a fire on a stove. (POINT) This is a fire in a wastebasket. (POINT) This is a fire in a forest. Point to the picture that shows how fire can be our friend.

19. (POINT) Este es un fuego en la estufa. (POINT) Este es un fuego en la basura. (POINT) Este es un fuego en el bosque. ¿Cuál es el cuadro que muestra como el fuego puede ser nuestro amigo?
- (WHITE) 20. (POINT) These children are cooking over a campfire. (POINT) These LP children are putting up a tent. Which would you like to do?
20. (POINT) Estos niños están cocinando en un fuego de campamento. (POINT) Estos niños están levantando una tienda de campaña. ¿A tí qué te gustaría hacer?

FORM C - SELECTION ITEMS (YELLOW BOOKLET)

- (PINK) 1. Sylvia and Rosita like to play house. (POINT) Sylvia takes care RP of the babies and (POINT) Rosita cooks the food. Point to which you would like to do.
2. A Silvia y a Rosita les gusta jugar a la casita. (POINT) Silvia cuida los niños y (POINT) Rosita cocina. ¿A tí qué te gustaría hacer?
- (GREEN) 2. (POINT) This boy holds a grown-up's hand while crossing the street. (POINT) This boy runs across the street. (POINT) This boy waits for the green light. Point to the boy doing the bad thing.
2. (POINT) Este chico toma la mano de un grande al cruzar la calle. (POINT) Este chico cruza la calle corriendo. (POINT) Este chico espera que cambie la luz roja a la luz verde. ¿Cuál es el niño que hace lo que no debe hacer?
- (YELLOW) 3. Point to the picture that shows what can happen to a boy when he plays with matches.
3. ¿Cuál es el cuadro que muestra lo que le puede pasar a un niño si juega con los fósforos?
- (BLUE) 4. (POINT) This boy is pouring a drink of milk. (POINT) This boy is eating some pills. (POINT) This boy is pouring a drink from a bottle with this mark on it. Point to the right thing to do.
4. (POINT) Este chico toma leche. (POINT) Este se come unas pastillas. (POINT) Este chico vacía una botella marcada con este simbolo. ¿Qué cuadro muestra lo que se debe hacer?
- (WHITE) 5. (POINT) Here is a fire burning on a stove. (POINT) Here is a fire burning in a fireplace. (POINT) Here are some curtains near a gas heater. Point to the picture that shows the place a bad fire may start.
5. (POINT) Aquí hay fuego en la estufa. (POINT) Aquí hay fuego en la chimenea. (POINT) Aquí hay unas cortinas cerca del calentador de gas. ¿Adónde puede comenzar un incendio peligroso?
- (PINK) 6. (POINT) This boy is riding his bike with "no hands". (POINT) This boy is riding with his hands on the handlebars. (POINT) These boys are riding double. Which is the right thing to do?
6. (POINT) Aquí un chico anda en su bicicleta sin manos. (POINT) Este chico anda en bicicleta con las manos en el manubrio. (POINT) Este chico lleva otro niño sobre el manubrio. ¿Cuál hace lo que debe hacer?

- (GREEN) 7. (POINT) This is a ranger. (POINT) This is a policeman. (POINT) This is a fireman. Point to the man who takes care of the forest.
7. (POINT) Este es un guardabosques. (POINT) Este es un policía. (POINT) Este es un bombero. ¿Quién es el que cuida los bosques?
- (YELLOW) 8. (POINT) Here is a fire burning in a fireplace. (POINT) Here is a fire burning on a stove. (POINT) Here is a fire burning in a forest. Point to the picture that shows a bad fire.
8. (POINT) Aquí hay un fuego en la chimenea. (POINT) Aquí hay un fuego en la estufa. (POINT) Aquí hay un incendio en el bosque. ¿Cuál es el fuego peligroso?
- (BLUE)
LP 9. Juan and Pedro were walking down the street when they heard a fire engine. (POINT) Juan got very excited and ran after the fire engine. (POINT) Pedro didn't like fires so he ran home. Which would you do?
9. Juan y Pedro caminaban por la calle cuando oyeron una bomba. (POINT) Juan se entusiasmó y corrió tras la bomba. (POINT) A Pedro no le gustaron los incendios y corrió a casa. ¿Qué harías tú?
- (WHITE)
LP 10. (POINT) Here the children are watching the fire burning in the fireplace. (POINT) Here the children are watching TV. Which would you like to do?
10. (POINT) Aquí los niños están mirando el fuego en la chimenea. (POINT) Aquí hay niños mirando la televisión. ¿A tí qué te gustaría hacer?
- (PINK) 11. (POINT) Here is a gas can near a fire. (POINT) Here is a fire in a barbeque. (POINT) Here is a fire in the fireplace. Which picture shows the place a bad fire may start?
11. (POINT) Aquí hay una lata de gasolina cerca del fuego. (POINT) Aquí hay un fuego en la barbacoa. (POINT) Aquí hay un fuego en la chimenea. ¿Adónde puede comenzar un incendio peligroso?
- (GREEN) 12. Which picture shows what you would use to let the fire station know there is a big fire?
12. ¿Qué cosa usarías para avisar a la estación de bomberos que hay un incendio grande?
- (YELLOW)
RP 13. (POINT) These children are playing in the sand. (POINT) These children are playing with matches. Which would you like to do?
13. (POINT) Estos niños están jugando en la arena. (POINT) Estos niños están jugando con fósforos. ¿A tí qué te gustaría hacer?
- (BLUE) 14. (POINT) These children found some matches and played with them. These children gave the matches to a grown-up. (POINT) These children hid the matches in a drawer. Point to the children who are doing the right thing.
14. (POINT) Estos niños encontraron unos fósforos y jugaron con ellos. (POINT) Estos le dieron los fósforos a una persona grande. (POINT) Estos escondieron los fósforos en un cajón. ¿Cuales hacen lo que está bien?

- (WHITE) 15. These boys were asked to clean up the papers in the yard. (POINT) Miguel put them in a trash can. (POINT) Pedro swept them into the street. (POINT) Juan put them in a burning incinerator. Which picture shows the best place to put the papers?
15. El papá de estos niños les pidió que quitaran los papeles del jardín. (POINT) Miguel los puso en un bote de basura. (POINT) Pedro los barrió hasta la calle. (POINT) Juan los puso en un horno encendido. ¿Cuál es el mejor lugar para poner los papeles?
- (PINK) 16. (POINT) This boy saw a fire in a trash can and took a stick and knocked it over. (POINT) This boy got a pail of water and threw it into the trash can. (POINT) This boy ran and pulled the fire alarm. Which picture shows the bad thing to do?
16. (POINT) Este muchacho vio un fuego en un bote de basura y lo volteó con un palo. (POINT) Este muchacho le tiró agua. (POINT) Este muchacho corrió y tiró la alarma para incendios. ¿Cuál hace lo que no debe hacer?
- (GREEN) 17. Point to the tool Smokey Bear carries to remind him of his job.
17. ¿Qué cosa lleva Smokey para acordarse de su trabajo?
- (YELLOW) 18. (POINT) This girl is playing with dolls. (POINT) This girl is starting a fire by herself. (POINT) This girl is helping her mother start a campfire. Point to the bad thing to do.
18. (POINT) Esta niña juega con sus muñecas. (POINT) Esta niña enciende solita un fuego en la chimenea. (POINT) Esta niña ayuda a su mamá encender un fuego de campamento. ¿Cuál hace lo que es malo?
- (BLUE) 19. (POINT) This boy is playing with matches. (POINT) This boy is cooking hot dogs over a campfire. (POINT) This boy is fishing. Which boy makes fire his friend?
19. (POINT) Este muchacho está jugando con fósforos. (POINT) Este muchacho está cocinando hot dogs en un fuego de campamento. (POINT) Este muchacho está pescando. ¿Cuál es el muchacho que hace del fuego un amigo?
- (WHITE) 20. (POINT) This girl is lighting the candles. (POINT) This girl is blowing out the candles. Which would you like to do?
20. (POINT) Esta niña está encendiendo las velas. (POINT) Esta niña está apagando las velas a soplidos. ¿A tí qué te gustaría hacer?

ORAL TEST

FORM A

- Can a fire be put out with papers?
¿Se puede apagar un fuego con papeles?
- Should you leave papers and trash in your house?
¿Debes dejar papeles y basura en tu casa?

3. Are Sniff and Snuff bad?
¿Son malos Sniff y Snuff?
4. Do some trees give us food?
¿Hay algunos árboles que nos den alimento?
5. Is Smokey Bear's main job catching robbers?
¿Es el trabajo más importante del oso Smokey el coger ladrones?
6. Should you throw paper on a fire?
¿Debes echar papeles en la fogata?
7. Do firemen put out fires in the city?
¿Son bomberos los que apagan los fuegos en una ciudad?
8. Can little fires get to be big fires?
¿Pueden unos fuegos chiquitos hacerse grandes?
9. Can lightening start fires?
¿Pueden los rayos prender fuegos?
10. Can fire keep us warm?
¿Puede un fuego calentarnos?
11. Will wood burn?
Puede quemarse la madera?
12. Are tables and chairs made from trees?
¿Vienen las mesas y las sillas de los árboles?
13. If you burn your fingers will it hurt?
¿Si te quemas los dedos, te va a doler?
14. Are you afraid of big fires?
RP ¿Te da miedo los fuegos grandotes?
15. Have you ever seen a big fire?
¿Has visto un fuego grande?
16. Do you like firemen?
LP ¿Te gustan los bomberos?
17. Have you ever been burned by fire?
¿Ya te has quemado con un fuego?
18. Would you feel good to see a house burning?
LP ¿Te gustaría ver quemarse una casa?
19. Does Smokey Bear carry a shovel?
¿Lleva una pala el oso Smokey?
20. Do trees help us keep cool?
¿Pueden los árboles darnos sombra?
21. Did Smokey Bear's parents die in a fire?
¿Se murieron los papás del osito Smokey en un fuego?
22. Do you think most fires are bad?
RP ¿Crees que casi todos los fuegos son malos?
23. Do trees grow fast?
¿Pueden crecer rápidamente los árboles?

24. Is it smart to play with matches?
 ¿Es bueno inteligente jugar con fósforos?
25. Is watching fire burn fun for you?
 LP ¿Te gusta mirar arder a un fuego?

FORM B

1. Can a fire be put out with water?
 ¿Puede apagarse un fuego con agua?
2. Should you leave papers and trash piled up outside your house?
 ¿Debes dejar papeles y basura amontonados fuera de tu casas?
3. Are Sniff and Snuff good guys?
 ¿Son buenos chicos Sniff y Snuff?
4. Should you stand close to a fire?
 ¿Debes pararte cerca de un fuego?
5. Is Smokey Bear's main job being a mailman?
 ¿Es el trabajo mas importante del oso Smokey el ser un cartero?
6. Can fire burn a tree?
 ¿Puede quemar un fuego a un arbol?
7. Do rangers help Smokey?
 ¿Ayudan a Smokey los guardiabosques?
8. Is it all right to play with matches?
 ¿Se puede jugar con fosforos?
9. Can grown-ups put out fires?
 ¿Pueden los grandes apagar los fuegos?
10. Can fire cook food?
 ¿Se puede cocer la comida con fuego?
11. Will trees grow back fast after a fire?
 ¿Después de un fuego en el bosque pueden crecer rápidamente los árboles?
12. Are pencils made from trees?
 ¿Vienen los lápices de los árboles?
13. Can playing with matches hurt you?
 ¿Pueden lastimarse jugando con fósforos?
14. Do you think most fires are bad?
 RP ¿Crees que casi todos los fuegos son malos?
15. Have you ever seen a big fire?
 ¿Has visto jamás a un fuego grandote?
16. Do you like to see candles burn?
 LP ¿Te gusta ver quemar una vela?
17. Have you ever started a fire?
 ¿Jamás has prendido un fuego?

18. Do you think it is fun to watch fires burnin
LP ¿Te gusta mirar arder un fuego?
19. Did Smokey Bear's fur get burned?
¿Se-quemo' la piel del oso Smokey?
20. Does Smokey like trees?
¿Le gustan a Smokey los árboles?
21. Did Smokey ride in an airplane?
¿Viajó Smokey en un avión?
22. Are you afraid of fire?
RP ¿Le tienes miedo al fuego?
23. Do trees grow very slowly?
¿Crecen despacito los árboles?
24. Is it bad to play with matches
¿Es malo jugar con fósforos?
25. Would you like to see a forest fire?
¿Te gustaría ver a un fuego en el bosque?



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