THE RELATIONSHIP OF PARENTAL CHILD REARING ATTITUDES AND PRESCHOOLERS' CREATIVE POTENTIAL TO THE SELECTION OF STRUCTURED AND UNSTRUCTURED PLAY ACTIVITIES

By

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PREFACE

The ability to generate new ideas, to propose unique solutions, and create original products is vital to a society striving for progress but teeming with unsolved problems. Yet, children often seem to lose their creative spark during the educational process amid the pressure to conform, produce, and succeed. Parents and educators alike are concerned with the environment most conducive to ensuring competency but preserving and developing creative expression. This study seeks to assess the relationship of both the home and school environment to the creative expression of young children.

In fulfilling this study, I wish to express my sincere appreciation to Dr. James D. Moran, III, my major adviser, for his continual insight, advice, and guidance. Thanks is also extended to Dr. Elaine Wilson and Dr. Kathryn Castle for their suggestions, guidance, and utmost patience in the completion of my work.

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ABSTRACT

The flexibility and originality scores of 34 preschool children were assessed and the structure of their activity selections were rated, including indications of teacher presence. For 22 children, Parental Attitude Research Instruments were also available to determine the degree of Authoritarianism, Hostility-Rejection, and Democracy in parental child rearing. No significant relationship was found between any of the PARI variables and children's creative potential or structure of activity selections. However, children scoring high on creative potential were shown to select more activities and centers in which the teacher was present than did low creative children. Teacher presence and high activity structure were also found to be related.

THE RELATIONSHIP OF PARENTAL CHILD REARING ATTITUDES AND PRESCHOOLER$" CREATIVE POTENTIAL TO THE SELECTION OF STRUCTURED AND UNSTRUCTURED PLAY ACTIVITIES

The services of creative individuals are vital for generating the flow of original ideas necessary to maintain a technological society. E. P. Torrance (1973) describes creativity as a natural process through which an individual recognizes a problem for which he or she has no learned response, retrieves and combines previous experiences and knowledge to generate possible responses and solutions, and evaluates and tests these solutions to select the most appropriate for implementation. Torrance (1962) also suggests that the appropriate environment can foster the creative process. The environment most conducive for promoting creative abilities will provide ample time to explore and discover a variety of materials and resources which will stimulate the formation of new ideas and products.

Play experiences often provide children that opportunity to explore materials. Dansky and Silverman (1973), 1975) demonstrated that the young child's ability to produce alternate uses for objects is enhanced by a brief period of play. The play is often influenced by the structure of materials, although the nature of the influence is unclear. Pepler & Ross (1981) found play materials which elicit divergent thinking to promote more varied responses on divergent problem-solving tasks. Similarily, Pulaski (1970) found that low

structure objects elicited more pretend theme changes in the play of five year olds. However, McLoyd (1983) demonstrated high structure objects to elicit more play themes while low structure objects generated more alternate uses for the play materials.

Adult expectations (or children's perception of those expectations) can influence the structure of play experiences and the resulting creative output. Structured materials were found by Moran, Sawyers, & Moore (in press) to lead to less flexibility in thinking for preschoolers. They also found that the structure of instructions associated with play materials affected the children's flexibility scores, but to a lesser degree than the structure of materials. The authors suggested structured materials had less of an effect following unstructured instructions because of differences in children's perceived demands for conformity from the adult.

Through the selection of toy purchases and the techniques for regulating behavior in the home, parents determine the structure and atmosphere of play for children. Bishop and Chance (1971) found that children of mothers who enhanced the playfulness of the home play environment showed evidence of greater creative potential. The parents most likely to encourage play were more open-minded, adaptable, unorthodox, low in authoritarianism, able to entertain multiple viewpoints, and able to grant a certain amount of autonomy to their children. Heilburn (1971) found that son's perceptions of high maternal control and low nurturance were associated with low creative potential while Dewing and Taft (1973) found that mother's egalitarian child rearing attitudes were positively related to children's creative potential. Perceived authoritarianism of fathers and the control and

enforcement of both parents also seems to be inversely related to creative potential (Datta & Parloff, 1967). In an integrative review of the research concerning family influences on the development of creativity in children, Miller & Gerard (1979) determined that parental vigilance, authoritarianism-control, dominance, and restrictiveness are indeed atypical of the parent-child relationship experienced by creative children.

External influences from the larger environment and the relationship between settings within the environment can be as relevant to development as the individual's immediate surroundings (Bronfenbrenner, 1979). Even though play experiences which elicit divergent thinking may be offered in a school setting, children familiar with a restrictive and highly structured home environment, characteristic of authoritative parenting, may feel less comfortable with unstructured learning and play materials and select structured materials with a limited number of uses that direct play. Since the role expectations of an authoritarian home environment and an open school setting would be contradictory, children from an authoritarian home might experience a more difficult transition from home to school than children from a democratic background where decision-making is common.

Although several studies have focused on either the relationship of environmental structure or parental child-rearing attitudes to the expression of creativity in children, no known study has looked at these variables in combination. This study investigated the relationship of parental child rearing attitudes as well as children's

creativity to the degree of structure of play activities selected by preschoolers.

Method

Subjects

The sample consisted of 34 children (16 boys and 18 girls) ranging in age from 45 to 71 months with a median age of 59 months. The subjects were enrolled in two all day programs offered at a university laboratory school.

Only 22 of the 34 parents returned the Parental Attitude Research Instrument (PARI) questionnaire and thus analyses utilizing the PARI are based on only 22 subjects.

Instruments

Creativity Measures. The Multidimensional Stimulus Frequency Measure (MSFM), adapted by Moran, Milgram, Sawyers, and Fu (1983) from materials by Wallach and Kogan (1965), Ward (1968), and Starkweather (1971), was used to assess two components of ideational fluency, originality, and flexibility. This instrument was selected because it was designed specifically for young children. The MSFM has been reported to be relatively stable (r = .54) from ages 4 to 7 (Moore & Sawyers, 1987) to have acceptable internal reliability and construct validity (Godwin & Moran, 1988) and to be related to measures of fantasy and imaginative play (Moran, Sawyers, Fu, & Milgram, 1984).

All three subtests of the MSFM (instances, pattern meanings, and alternate uses), composed of two items per subtest, were used. The instances task required the children to name things that are

round and things that are red. The patterns task allowed the children to handle two three-dimensional styrofoam stimuli. The children were then asked to name all the uses for a box and paper in order to complete the uses task. Appendix B provides a full description of the directions for each subtest.

The aspect of creativity appearing most susceptible to context variables related to external constraints is flexibility (Liou & Moran, 1982; Kogan, 1983; Moran, Sawyers, & Moore, in press; Groves, Sawyers & Moran, 1987). Therefore, the MSFM was scored for flexibility from protocols for the Picture Completion Subtest of the Torrance Test of Creative Thinking, Figural Form A (Torrance, 1974). The flexibility score is obtained by counting the number of different categories into which the children's responses fall. Appendix C provides the list of categories to which most of the responses will belong. As per the instructions, new categories were created for responses which could not be classified into any of the categories listed. The MSFM was also scored for originality. All responses were coded as either original (given by 5% or less of the normative group) or popular (given by more than 5% of the normative group). Repeat responses, those given more than once by the same child to the same stimulus, were not scored. For data analysis, the total flexibility, originality, and popular scores were summed across all three subtests.

Parental Attitude Research Instrument. A fifty question version of Emmerich's (1969) revision of the Parental Attitude Research Instrument (PARI) was selected for the study. The original instrument was developed by Schaefer & Bell (1958) to assess the relationship between parental attitudes and the personality adjustment of children.

Emmerich's (1969) revision is based on a study of mothers, by Zuckerman (1959), and fathers, by Nichols (1962), to develop two different forms, one for each parent. The forms are very similar with respect to scale, contents, and factorial structure. The Emmerich revision includes three scales consisting of items worded to reflect Authoritarian Control, Hostility-Rejection, and Democratic attitudes of child rearing. The final set of items contains a mixture of items developed by Schaefer & Bell (1958), Zuckerman (1959), and Emmerich (1969).

For this study the Emmerich scale was combined into a single questionnaire that either parent could complete. The first 41 items, which applied to either parent, were clustered together in Section I while those parent specific items were listed in a separate section for either mothers or fathers only. The items for each of the three different scales were retained. A full copy of the questionnaire appears in Appendix D along with information for scoring the instrument.

Classroom Structure. The Classroom Structure Rating Sheet allowed observers to record structure scores for the 13 interest centers (art easel, art table, large blocks, small blocks, community living, manipulative tables 1 through 4, large motor, water table, library, and science center) provided in each of the two classrooms, as well as the subject numbers of the children participating in each activity during 12 observations. Raters were instructed to assign a score of 1 to 4 for each center, depending on the degree of structure of that activity. A score of 1 identified a highly unstructured activity; 2 indicated a moderately unstructured activity; 3 signified moderate structure; and 4 indicated high structure. All raters participated in a practice session before the actual observations occurred in order

to ensure similar perceptions of the degree of structure. Two raters participated in the actual observations so that one could rate the structure of activities and the other record the children's activity selections. Periodically each rater recorded both the structure rating and the children's selections to measure interrater reliability. In 14 separate sessions, interrater agreement was calculated. Absolute agreement on scores was obtained on 85% of the observations. The correlation of structure scores for the two raters ranged from .65 to 1.0 with an average correlation of .92 over the 14 sessions.

An activity structure score was also calculated for each subject by adding the ratings of all the activities chosen by the child and dividing by the number of activities selected. The Classroom Structure Rating Sheet appears in Appendix E along with directions for recording observations using the instrument and a description of the centers.

Procedure

The MSFM was administered to the 34 subjects individually during a single session, in a private room relatively free of external stimuli. During the session, all three subtests of the MSFM were given by a trained examiner. No time limits for responding were used.

The PARI was sent home with each child with the request that the inventory be completed according to the directions printed on the form and returned to the designated box located in the child's room. Only 22 of the forms were returned completed. The returned forms had been completed by both fathers and mothers.

Classroom observations for recording the children's activity selections took place for 8 days. Every 5 minutes for one hour each

day, researchers rated the structure of classroom activities and identified the activities chosen by the children. Although 96 observations were possible for each subject, many children were not in the designated area of observation (e.g., in a bathroom, at the snack table, in their lockers), therefore, their activity selection could not be recorded. To ensure confidentiality and to facilitate record keeping, the children's subject numbers appeared on their name tags during the eight days of observation. These numbers were recorded on the Classroom Structure Rating Sheets instead of the children's names. A "T" was also recorded in some activity centers to denote the presence of a teacher in that area during the observation.

A research team consisting of two researchers observed in one classroom during the morning indoor self-selected activity period (8:30 to 9:30) while another team observed in the second classroom during the afternoon indoor self-selected time (2:30 to 3:30). The first team always observed during the morning session and the second team always observed during the afternoon period. After the two days of observing in one classroom, the two research teams would switch and observe the other classroom for two days so that four morning and four afternoon observations were gathered for each classroom.

Results

Correlational Analyses revealed a significant relationship between originality and teacher presence, $r = .41$, $p < .05$, with a trend evidenced in the relationship between originality and structure, $r = .29$, $p < .10$. When structure scores were partialled out, the relationship between originality and teacher presence remained

significant, $r = .30$, $p < .04$. However, the significant correlation between structure and originality disappeared when teacher presence was partialled out, $r = .10$.

Multiple regression and Pearson correlations failed to show a significant relationship between any of the three PARI scales (Authoritarian Control, Hostility-Rejection, and Democratic attitudes), for either mothers or fathers, and total originality, total flexibility, or total structure scores of the children's activity selections.

Further statistical analysis utilized a median split of total originality scores to yield high and low creativity groups, as well as to analyze the effects of age level (younger vs older classroom). A 2 X 2 Analysis of Variance (level of creativity by age level) showed that the children with higher originality scores tended to select art activities more often than children low in creative potential, $F(1,30) = 4.01$, $p < .06$, regardless of the children's age level. The finding does not appear to be related to teacher presence since teachers were present in the art areas during only 18% of the observation time. Table 1 shows the mean time spent in interest centers of children of high and low creative potential. An additional finding related to creative potential showed that younger children high in creative potential spent more time in large motor activities than older children high in creative potential, $F(1,30) = .05$, $p < .02$. Age differences were also noted on participation in community living, $F(1,30) = 4.96$, $p < .05$, manipulatives, $F(1,30) = 19.55$, $p < .001$, and the science center, $F(1,30) = 15.13$, $p < .001$.

INSERT TABLE 1 ABOUT HERE

DISCUSSION

Children high in creative potential tended to select activities higher in structure and teacher presence than did children with lower creative potential. Normally, highly creative children are characterized as non-conformists, preferring activities unlimited in possibilities for use. That potentially creative children preferred more structured activities is surprising.

Partial correlations, however, revealed that teacher presence was the key to the relationship rather than activity structure; potentially creative children spent more time in activities high in teacher presence, which are those consequently high in structure. It has not been possible to determine from the research data whether the more creative children seek an adult presence or whether the teacher gravitates to activities with creative children. Potentially creative children may seek an adult as a resource person to answer questions about the environment which their exploration cannot satisfy. On the other hand, adults may move to the vicinity of the creative child's explorations, where chaos is developing, to restructure an activity where the limits of safety are reached for the children, equipment, or both. Such an explanation defines the relationship between teacher presence and activity structure and maintains the typical characterization of the creative child.

Contrary to the findings of previous studies which used the PARI (Dewing & Taft, 1973; Maw & Maw, 1966; Nichols, 1964), no relationship was found linking parental child-rearing attitudes and children's

creative potential. Nor did a relationship appear to exist between parental child-rearing attitudes and the structure of children's activity selections. Several explanations have been offered to describe the conflicting reports surrounding the influence of parental child-rearing attitudes.

Many of the previous studies citing a relationship between parental guidance techniques and children's creativity involved older children as subjects. When similar studies were performed utilizing preschool children, significant relationships between creative potential and parental variables were not indicated (Fu, Moran, Sawyers, & Milgram, 1983; Ryan, 1984). Parental child-rearing attitudes that are related to children's original thinking may then not become evident until later childhood years (Ryan, 1984). A second possibility is that parental guidance behaviors rather than attitudes may be the determining factor in the relationship (Fu, Moran, Sawyers, & Milgram, 1983). As yet, the influence of parental personality and creativity in children has not been fully investigated.

Creative individuals are also assumed to prefer art activities. The creative children in this study did indeed tend to select art activities significantly more often than low creative children, despite a relatively low teacher presence. This was true for both older and younger children. Art activities also typically exhibited relatively low structure scores. The children's selection of the art activities also matches the typical characterization of creative children preferring activities with a variety of uses free of outside direction.

The younger potentially creative children spent more time in large motor activities than older creative children. Again, teacher presence

was relatively low, but structure scores were moderate. One explanation for this finding is that older children may have already explored all the possibilities of the large motor equipment. Perhaps the center no longer provides them an outlet for creative expression. Younger children still find the equipment new and filled with opportunities for exploration, especially as it involves the expression of the whole body. However, since the older and younger children were separated into two classrooms, it is difficult to determine if this is a true developmental trend or a function of the environment fostered by the teacher.

Children seem to sieze upon the degree of freedom allowed in the immediate environment and adapt to the restrictions placed therein regardless of previous experience with a more or less restrictive atmosphere. The activity selections of potentially creative children are related to high teacher presence, but the initiator of the relationship is as yet unknown and deserves study. But the highly creative youngster still seems to prefer activities where exploration and expression is unlimited. Educators and parents interested in fostering creativity need to carefully consider their goals when directing activities to determine whether their influence will extend or inhibit the creative expression of young children.

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TABLE 1

PERCENT OF TIME SPENT IN ACTIVITY CENTERS
FOR CHILDREN WITH HIGH AND LOW
CREATIVE POTENTIAL

	Creative Potential			
	Low		High	
Activity Center	Younger	Older	Younger	Older
Art	.10	.05	.15	.14
Blocks	.30	.21	.22	.21
Community Living	.13	.07	.17	.07
Manipulative Tables	.14	.28	.15	.28
Large Motor	.10	.15	.15	.08
Water Table	.04	.05	.03	.03
Library	.14	.07	.10	.08
Science Center	.01	.11	.02	.08
Other	.02	.02	.03	.02

APPENDIX A

REVIEW OF LITERATURE

The following review of the literature will begin with a brief discussion of one of the most current theoretical models of creativity and its application to the definition and assessment of creativity in young children. Next, the effects of play and structure as well as parental child-rearing attitudes on children's creative expression will be reviewed.

Models of Creativity

Although the importance of identifying and enhancing original thinking is being recognized by the federal government, educators and researchers alike, until recently little work had been conducted in assessing the original thinking of young children. The difficulties of defining creativity and formulating appropriate models and techniques for measuring original thinking in young children made research in early childhood especially problematic. Current research is now developing the models and methods necessary to explore the field.

Within the framework of studying creativity as original problem-solving, some researchers and theorists, such as Torrance (1973), have specified a creative process which involves the definition of the problem, the generation of ideas and solutions, the evaluation of those solutions, and the execution or conversion of ideas into products. Recognizing the limited hypothesis testing and evaluation capacity of preschool children, Moran, Sawyers, Fu, and Milgram (in press) suggest that the same criterion cannot be applied to both young children and adults. Instead, the focus of creativity research in the younger age

groups should focus on the generation of ideas, the process leading to evaluation. Instead of serving as a predictor, ideational fluency will thus operate as a criterion measure for the potential for creative behavior in young children. Creativity can then be defined as "an interpersonal and intrapersonal process by means of which original, high quality, and genuinely significant products are developed," (Sawyers, Moran, & Tegano, 1987) with the focus for young children being on the generation of original ideas; for older children the component of quality (based on self-evaluation) is added, and for adults the criterion of significance (based on cultural evaluation) is relevant.

In an effort to accurately assess the ideational fluency of young children, Moran, Milgram, Sawyers, & Fu (1983) developed the Multi-dimensional Stimulus Frequency Measure (MSFM) based on the works of Wallach & Kogan (1965), Ward (1968), and Starkweather (1971). The Wallach & Kogan model, based on the work of Guilford (1956) and Mednick (1962), proposed that (a) creativity could be measured distinct from intelligence, (b) ideational fluency would be the best single measure of divergent thinking, (c) the quantity of ideational output would be related to its quality, (d) popular responses would occur early in a responses sequence and original responses later, and (e) creativity should be assessed in a non-evaluative atmosphere. The MSFM accommodates these ideas by tapping ideational fluency through eliciting a stream of responses in an untimed, non-evaluative atmosphere. It also takes into account the special needs of young children by providing three-dimensional materials that allow for visual and tactile stimulation.

The assessment of creative functioning has revealed a variety of personality and environmental factors which can influence the creative

process. Cohen and Oden (1974) suggest that internal rather than external control of the individual is necessary for creative functioning and proposed a conceptual framework linking behavioral characteristics of creative individuals with internal locus of control. Findings, however, have been inconsistent. Sawyers and Moran (1984) found original responses on a battery of ideational fluency tasks to correlate with internal locus of control. Groves, Sawyers, and Moran (1987) identified no significant correlation.

Related to the idea of locus of control is the effect of external reward on creative problem solving. Reward has been found to lower originality, fluency, and flexibility scores of preschool children (Groves, Sawyers, and Moran, 1987), as well as hinder college students' performance on the Picture Completion subtest of the Torrance Tests of Creative Thinking (Moran, Liou, 1982). While rewards did increase the quantity of responses of a group of fifth graders, they did not extend the quality of the children's responses (Ward, Kogan, & Pankove, 1972). Based on the results of a study with fifth grade children (Kogan & Morgan, 1969), Kogan (1983) has suggested that testlike conditions indicate to individuals the necessity of a strategy of category exhaustion when responding thereby decreasing the degree of flexibility achieved. Findings from the Kogan and Morgan study did indicate that external rewards increase the total number of responses given but lowers the total number of categories used in answering.

Creative potential and environmental richness have also been shown to interact significantly to influence ideational production. Creative subjects seem to give more responses in a rich rather than poor environmental setting, while less creative subjects show no

overall effect for environmental cues (Ward, 1968). Scanning the environment for task relevant information is one of the strategies employed by creative children in their search for problem solutions.

The degree of playfulness promoted in the environment, where children are free to manipulate materials, has also been linked to high levels of ideational fluency in children. Types of adult interaction, including parental influences, have been shown to affect the creative potential of children as well. Since this study seeks to identify the relationship of play structure and parental influences to creativity, the known effects of these factors separately will be discussed in the following sections. The model of creativity on which this study is centered is based on ideational fluency as influenced by a variety of subject and environmental characteristics. The full effect of the various factors and their interrelationships are as yet unknown.

Effects of Play and Structure

The opportunity to manipulate materials is essential for a child's development in many areas, including creative thinking. Generally, play involves a relaxation of efforts to adapt to reality (Piaget, 1962), based on a process rather than product orientation. The self-initiated behavior allows children to develop the solution to a problem before it is encountered in reality, reducing the risks of frustration and failure, (Sylva, Bruner, & Genova, 1976). Play offers the luxury of free attention, the freedom to notice seemingly irrelevant detail (Sylva, et al., (1976). Children are able to form relationships and associations among objects, actions, and ideas which are typically unrelated to less

freely structured activities (Dansky & Silverman, 1973). Since the ability to make remote and unusual associations for objects (Wallach, 1970) is central to creative thinking, playful activity should have the potential to facilitate creative thought processes.

Play experiences can influence children's approaches to problem solving. Sylva, Bruner, and Genova (1978) originally studied the relationship between play and the solving of mechanical problems. The authors found that both play and observe treatments led children to approach problem solving in an orderly (simple to complex) manner. But the children who played prior to task administration were eager to approach the problem, continuous in their efforts, and flexible in their hypotheses. Children from the observe treatment exhibited a characteristically all or nothing approach. If the first attempt to complete the task was unsuccessful further efforts to solve the problem were aborted. The play treatment seemed to produce more goal-directed behavior in the children. Failure did not lead to frustration. Instead, the children used the information from the failure, combined it with previous experience, and developed new more complex hypotheses.

Sutton-Smith (1967) also studied the playfulness of kindergarten children. These children were asked to give alternate uses for four toys with which they had become familiar during their school year. Both the boys and girls in the sample gave more uses for the two toys which they preferred. Unfortunately, since Sutton-Smith confounded playful experiences with total exposure to the toys, it could not be concluded that playfulness of the experience resulted in the obtained differences.

Other studies have looked at the relationship of playful activity and creativity more directly. Lieberman (1965) found kindergarten

teachers' ratings of children's playfulness in general to be significantly correlated with ideational fluency, spontaneous flexibility, and originality. However, intelligence loaded more heavily on Lieberman's playfulness scales and her measures of divergent thinking than the latter scales correlated with each other. Therefore, it could not be determined whether playfulness and divergent thinking were distinctly related to one another or whether the variance common to both derived from there being two separate manifestations of intelligence.

Dansky & Silverman (1973) suggested the information registered during play would facilitate associative fluency in preschool children. In their study, the stimulus materials for a play and imitation group included a pile of 10 paper towels, a screwdriver, a wooden board with five screws set in it, a pile of 30 paper clips, 15 blank cards, and a tray containing six wet plastic cups. The play group was presented with the materials and told they could do whatever they liked with them. Imitation subjects were asked to watch the experimenter perform four tasks (turning screws with a screwdriver, fastening cards with paper clips, wiping wet cups with a paper towel, putting sticks in empty matchboxes), and then to repeat the actions exactly as they had been performed. Subjects in a control group were given four sketches and a box of crayons which they could color as they wished.

Subjects in the play group were indeed found to give more non-standard uses for each of the four sets of objects than subjects who used the objects in an imitative manner or subjects with no prior exposure to the materials. Play subjects also made more use of environmental cues than imitation or control samples. Dansky and and Silverman concluded that the young child's ability to produce

alternate uses for objects is facilitated by a brief period of play with those objects.

A follow-up study in 1975 was designed to determine if playful activity would have a general facilitating effect on associative responding by increasing the number of alternate uses that children would be able to give for objects not involved in the play experience. Again the subjects in the play condition produced significantly more standard and non-standard uses than did either imitative or intellectual task subjects.

Li (1978) extended the Dansky and Silverman studies by including a second play treatment condition; one that elicited make-believe play from the children. Li suggested that it was the make believe aspect of play that was associated with divergent thinking. The material and directions for the free play, imitation, and control conditions were similar to the previous studies. Subjects in the make-believe play condition were told, at the beginning of treatment, a story. Then they were presented with the stimulus materials and told to imagine the objects could be anything they wished and to do whatever they liked with all the materials.

An alternate-uses test was employed as a measure of associative fluency. The four experimental objects for the test were a paper towel, a matchbox, a paper clip, plus a screwdriver which was not used in any of the treatment conditions. For the paper clip, subjects in the make-believe play condition produced significantly more non-standard responses than subjects in the control condition, while free play subjects produced significantly more non-standard responses than both the control subjects and the imitation subjects. For screwdriver,

make-believe play subjects produced significantly more non-standard responses than either the free play or the control subjects. Again, a playful attitude facilitated associative fluency.

Related studies questioned the effects of the structure of play objects on pretend play, fantasy predisposition and divergent thinking. Pulaski (1970) investigated the effects of minimally structured and highly structured toys and play materials upon the fantasy play of kindergarten and first graders pre-selected as showing high and low predispositions to fantasy. Play materials classified as minimally structured included paint, clay, a rag doll, "dress-up clothes", and construction materials. High structure materials consisted of plaques to be painted, molds for clay, fully-outfitted Barbie, Ken, and GI Joe dolls, ready-made costumes, and completely constructed buildings. The subjects were allowed to utilize both kinds of materials in separate play sessions. The instructions allowed the children to play with anything they chose but to make up a story or put on a play for the observer. Records of the children's verbalizations, sound effects, and imitative role playing were scored. Richness of fantasy measures were provided by Weisskoff's Transcendence Index, a 5-point Fantasy Rating Scale, and a 3-point organization rating scale. Variety of themes were scored by counting all themes and assigning higher scores to unusual ones. Flexibility of responses to the flexibility tests included ratings of story content. Finally, a three point rating scale was devised to describe the behavioral correlates of fantasy play, affect, motility, and concentration.

The degree of structure of the playthings did not significantly affect the richness of the subjects' fantasy productions, but the less

structured toys did elicit a greater variety of fantasy themes. In addition, high fantasy children scored significantly higher on 6 of 8 measures listed, regardless of the structure of toys. Pulaski suggested that 5-year-old subjects have well-established predispositions to fantasy which affect their functioning regardless of circumstances. The author felt a repeat of the study at the preschool level would be effective.

Olszewski and Fuson (1982) investigated the influence of toy structure on the amount and kind of fantasy play utterances produced by 3-, 4-, and 5-year-olds while playing alone. Toy structure was manipulated by using dolls that were either realistic or schematic and by varying the presence versus absence of supporting props to accompany the dolls. All fantasy play speech was identified and coded into one of three categories: role-taking speech, narrating fantasy statements, and imitation of object sounds.

Three-year-olds had more verbal fantasy play when concrete objects were supplied with the dolls than when they were not. The authors suggested three-year-olds need the support of props to engage in extended verbalized pretend doll play. Three-and four-year olds largely enacted family routines in their fantasy play. The four-year-olds evidenced those themes whether the supporting props were present or absent. The props seem to suggest themes for the 3-year-olds to act out; these object props or pivots provide stimuli that facilitate the retrieval of fantasy scenarios from the child's memory.

Both Pulaski and Olszewski and Fuson speculated that the play objects they chose to represent the two categories may have been too similar to provide an adequate test of effects. McLoyd (1983) also

studied the effects of high versus low structure objects on various types and components of pretend play. McLoyd's high structure objects included a tea set, a miniature toy sink and refrigerator, ironing board, dolls, trucks, tool kit, puppets, medical kit, telephone, and "dress-up" clothes, (Pulaski had designated "dress-up" clothes as minimally structured). The low structure play objects included pipe cleaners, boxes, hard pieces of plastic, metal cans, cylindrical pieces of cardboard, construction paper, styrofoam cups, paper bags, blocks, large squares of cloth, and styrofoam cartons. Triads of 3½-year-olds and 5-year-olds were allowed to play freely with each type of structured materials in separate play sessions.

McLoyd found that high structure objects significantly increased non-interactive pretend play in 3½-year-old triads, but not in 5-year olds triads. High structure objects also elicited significantly more associative play and overall pretend play. While high structure objects were associated with more pretend themes, substitution was more frequent with low-structure objects. The ability to generate substitutions for a play object would seen to parallel the production of alternate uses for objects in a creativity task.

Pepler and Ross (1981) too provided children with two types of play experiences: three-and four-year-olds were allowed to play with either convergent (those that tend to direct play to a single solution) or divergent materials (those that promote a variety of play activities). Following the play experience, the children were presented with both convergent and divergent problem-solving tasks. Children who had divergent play experiences were more imaginative in their responses to divergent problems, giving more unique responses to divergent-thinking

tasks, than children who had convergent play or nonplay experiences, indicating greater flexibility in problem solving by the divergent play group. Play experience with divergent materials appears to transfer much more generally, even to convergent tasks. The divergent play group appears to be more flexible in abandoning ineffective strategies as they sought problem solutions, similar to the children in the Sylva, Bruner, and Genova study.

Pulaski noted that the presence of an adult had an inhibitory effect for some children. Carpenter and Huston-Stein (1980) define activity structure as the extent to which rules or guidelines prescribing appropriate performance are imposed by forces external to the child. Such guidelines take two forms: the child may observe adult models or receive direct feedback and instructions from adults. The definition implies that the amount or type of structure is not inherent in a particular activity but is determined in part by the behavior of adults in the child's environment.

The Carpenter and Huston-Stein study exposed two primary hypothesis. The first suggested boys would select low structure activities in free play and girls high structure activities since girls seem to choose activities where teachers are present more often than boys. The second hypothesis stipulated that unstructured activities cultivate a set of skills labeled "the ability to create structure." Children generate their own rules, standards, or criteria concerning appropriate behavior when explicit rules or guidelines are not provided. The creation of structure may require children to use materials in novel ways and to demonstrate independence, assertiveness, or initiative. Structured activities may encourage children to follow

patterns established by others and may foster compliance, passivity, or dependence. Structured activities teach children to fit into structures created by others rather than establish their own patterns. Based on daily observations, Carpenter and Huston-Stein (1980) found that girls did spend more time than boys in preschool activities that were highly structured by teacher feedback or availability of adult models. Both boys and girls manifested more compliance and less novel behavior in high-structure activities than in low structure ones. Comparisons across classrooms also indicated that children in classes with high rates of teacher feedback were more compliant, showed less novel behavior, and spent more time in organized activities than those in low-structure classrooms.

The effects of structure of both materials and instructions were investigated by Moran, Sawyers, & Moore (in press). The materials used included portions of the Lego Universal Building Set 110. The structured materials, labeled the lego truck set, consisted of six blocks of various colors and two blocks with wheels attached. It was assumed that the presentation of legos which included wheels might lead the children to build a vehicle or moving object. The unstructured materials, labeled the airplane set, did not contain pieces with wheels and consequently were assumed not to imply the type of object to be built. This set of materials did contain 7 blocks of various colors. When structured instructions were given, the children were shown how to build either an airplane or a truck and then asked to build the same object. Afterwards, the children were asked what else the blocks could be used for. The unstructured instructions involved asking for alternate uses for the lego blocks.

The children given unstructured materials evidenced greater flexibility of response than those given structured materials. Structured materials also decreased fluency and originality but not to the same extent as flexibility. The data also indicated that structure in materials is more influential in altering creativity scores than structure in instructions. However, given structured instructions, flexibility decreased when children shifted from unstructured to structured materials and increased when the shift was reverse. The structure of instructions may lead to perceived differences in demand for conformity and performance. Structured instructions may elicit testlike rather than gamelike conditions resulting in the child adopting a strategy of category exhaustion which results in a narrow breadth of categorization.

Play provides children the opportunity to familarize themselves with the characteristics and properties of materials allowing them to make more remote associations for the objects. The structure of both play materials and adult guidelines influences the type of behavior elicited. The more freely structured the activity, the greater is the child's self-initiated exploratory opportunities which should lead to a heightened potential for making original combinations leading to creative production.

Effects of Parental Child-Rearing Attitudes

Parents determine the degree of freedom allowed in the home and often the structure of play activities. Bishop and Chance (1971) found that children of mothers who enhanced the playfulness of the home play environment showed evidence of greater creative potential. In addition

to assessing the effects of the home play environment, Bishop and Chance studied the characteristics of mothers who offered a more playful setting. The authors suggested that parents most likely to enhance the playfulness of a child's play environment would possess the characteristics of openmindedness, adaptability, unorthodoxy, low authoritarianism, the ability to entertain multiple viewpoints and the ability to grant a certain amount of autonomy. Such characteristics were demonstrated to occur in a person near the abstract pole on a concreteness-abstractness continuum of conceptual development. Near the opposite pole would be a person whose cognitive functioning is characterized by concreteness, and simplicity, high absolutism and closedness of beliefs, high authoritarianism, high conventionality, and high rigidity and thus relatively low adaptability. The results of the investigation showed that more abstract mothers had less restrictive and more playful-engendering attitudes toward their children's play and also reported more playful actual home conditions, characterized by freedom, spontaneity, exploratory actions, and a lack of restrictiveness, control or functional oughtness.

Numerous other studies have documented similar results. Domino (1969) found mothers of creative high school males to exhibit greater self-assurance, initiative, insight, tolerance, and interpersonal competence; the mothers also preferred chance, unstructured demands, and independence. Datta and Parloff (1967) reported that authoritarianism of fathers and the control and enforcement of both parents, as perceived by their sons, was inversely related to creativity. Other studies have shown parental control in general, as perceived by students, to be inversely related to originality (Haplin,

1973) as well as authoritarianism to be inversely related to preschoolers' creativity (Bayard-De-Volo & Frebert, 1977).

The Parental Attitude Research Instrument (PARI) is frequently used to examine the relationship of creativity and parental child-rearing attitudes. In one such study, Heilburn (1971) instructed college males to complete the PARI as their mothers would. Maternal nurturance was estimated from ratings on the Parent-Child Interaction Rating Scale. The Adjective Check List measured creativity. Heilburn found that the son's perception of high maternal control and low nurturance were associated with low creativity. However, the results of the Heilburn study may be influenced by a bias effect since the subjects were the only persons from whom information was obtained.

Dewing and Taft (1973) used the PARI as well as five other instruments to measure the creativity of twelve-year-olds; peer ratings, teacher ratings, an inventory of leisure interests, the Creative Motivation Preference Inventory, and an imaginative composition task. The mothers of the girls with high creative potential were shown to be egalitarian in their attitudes as measured by the PARI and less rejecting of outside influences. For boys this relationship held only for egalitarian attitudes. Egalitarian Mothers also had daughters who scored higher in creative performance. Mothers of creative children liked their children's friends to have constructive interests and to be inner-directed, while mothers of non-creative children were more concerned with socially desirable, conforming qualities. The same result was reported by Getzels and Jackson (1962) for their sample of gifted adolescents.

The major maternal attitude Nichols (1964) found to be related to creativity among high school students was authoritarianism-control. Most of the inventory measures of originality from Barron's Inventory of Personal Philosophy were negatively related to the mother's authoritarian attitudes as measured by the PARI. For male subjects, authoritarian attitudes of the mother were negatively related to the child's self-ratings of originality and expressiveness. However, the child of the authoritarian mother tended to make better grades in high school than the child of the non-authoritarian mother and the student tended to be rated more favorably by teachers.

Other studies which used the PARI found quite different results. In a study conducted by Ornstein (1961), mothers of 45 second grade children responded to the PARI, the Block Scale, Edwards' Social Desirability Scale and a personal data sheet. A measure of children's creativity was obtained from the Creativity Rating Scale, which provided opportunity for free expression through non-verbal media. Ornstein found significant positive relationships between both restrictiveness and hostility-rejection on the PARI and total creativity.

When examining the relationship between preschoolers' creativity and parental child-rearing attitudes, Fu, Moran, Sawyers, & Milgram (1980) found none of the PARI variables predictive of preschoolers' creativity. The authors suggested that parental child-rearing attitudes have little impact on children's creativity across the years of childhood or that parental behavior is the determining factor in the relationship.

Siegelman (1971) hypothesized that personality traits indicative of creativity would be found more often in persons who recall their

parents as being rejecting, causal, and non-protective rather than loving, demanding, and protecting. A shortened version of the Parent-Child Relations Questionnaire (PCR) was devised to measure adult retrospect reports of early parental behavior. The Sixteen Personality Factor Questionnaire (16PF) described personality factors that distinguish creative scientists, artists, teachers, administrators, researchers, and writers. The PCF and 16PF were administered in group form to entire college classes during regular class periods.

Rejecting parents were indeed more often reported by sons and daughters with creative potential, while loving parents were more usually described by students with less creative potential. According to Siegelman, rejecting parents inadvertently encourage a rebellious attitude in their children that facilitates independent thinking and action. More loving parents foster acceptance of parental orientations in their children and thus conformity to the general customs of their society. The relationship between the causal-demand parental component and pupil creativity potential was not supported by the findings although creative females did recall non-protecting parents. Again, the parental child-rearing attitudes were measured through retrospective reviews by the children, leaving the results open to influence by a bias effect. In addition, the Sixteen Personality Factor Questionnaire is not a direct measure of creativity, but rather identified personality characteristics that look like those of creative persons. This method of obtaining information on parenting variables is also a factor when interpreting the results of the Siegelman study.

Other studies find little or no relationship between parental child-rearing attitudes and children's creative potential. Using the

Torgoff-Dreyer questionnaire to measure parental attitudes and the Minnesota Tests of Creative Thinking to assess creativity, Dreyer and Wells (1966) found no significant differences between the fathers or mothers of High Creative, Middle Creative, and Low Creative Children on the overall index of control. Mothers of high creative children did allow decision making and freedom of social exploration at an earlier age for both sexes than other groups.

Silverburg (1970) found no support for her hypothesis which predicted a positive relationship between the extent fourth graders perceived their mothers and fathers as accepting and permissive and the creativity of these children. Ryan (1984) also found no relationship between the Parent as a Teacher (PAAT) measure of child-rearing attitudes and preschoolers' original thinking. Age was the only variable that contributed to the original scores, most likely due to the verbal nature of original thinking tasks. It was also felt that the PAAT was not sensitive enough to tap the subtle differences in child-rearing attitudes which have an effect on children's original thinking.

In an integrative review of the literature, Miller and Gerard (1985) state that parental vigilance, authoritarianism-control, dominance, and restrictiveness are found to be consistently atypical of the parent-child relationship experiences of creative children. However, the finding is supported more often for older children and adults than for younger ones. Studies conducted with children in preschool and lower elementary exhibit inconsistency in the overall findings, with generally no relationship determined linking parental child-rearing attitudes and creativity. Studies using upper elementary,

high school, and college students tend to identify a positive relationship between characteristically democratic child-rearing attitudes and creative potential in children. However, indirect measures of creativity are often used with older children and young adults, while more direct measures of creativity are utilized with younger children. Table 2 identifies the kinds of creativity measures used with different age groups in various studies and the general findings associated with each study. While it indeed appears that parental guidance techniques do not influence creative production during the years of childhood, the early influences may become more evident in later adult years. The focus of evaluation is also shifted from childhood to adulthood from emphasis on shear production of original ideas to production of socially relevant and significant materials. Further research is still required to fully explain the effect of parental child-rearing techniques on children's creative potential.

Insert Table 2 About Here

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TABLE 2

EFFECTS OF STUDIES UTILIZING VARIOUS TYPES OF PARENTING AND CREATIVITY MEASURES

	Age of Subjects				Parenting Attitudes Retrospective		Creative Potential				Effect		
	P'Sch.	Elem.	H.S.	Col.	Yes	No	Self Rating	Other Rating	Indirect Measure	Score	Positive	Negative	None
Bishop & Chance	X					X				X	X		
Dreyer & Wells	X					X				X			X
Bayard & DeVolo	X					X				X		X	
Ryan	X					X				X			X
Fu, Moran, Sawyers & Milgram	X					X				X			X
Ornstein		X						X				X	
Silverburg		X			X					X			X
Dewing & Taft			X			X				X	X		
Domino			X			X				X	X		
Nichols			X			X			X		X		
Heilburn				X	X				X		X		
Siegelman				X	X				X				X

APPENDIX B

MSFM INSTRUCTIONS AND RECORD SHEETS

CREATIVITY RESEARCH GROUP

General Instruction for the Examiner

Please bear in mind the following general guidelines:

1) The establishment of the proper atmosphere for testing and rapport between examiners and subjects is a critical factor in this study. Examiner behavior can significantly affect the research results. Examiners must behave in a friendly manner, create a pleasant atmosphere, and refrain from any behavior which creates the impression of school-type testing and evaluation. The very words and actions of the examiner are critical.

2) Examiners are requested to arrive early and to make a special effort by means of informal talk to establish rapport. It is imperative not to express anger or impatience at any time. It is important to maintain a pleasant tone in your speech at all times.

3) Since testing procedures are untimed, each subject will finish at a different time. Allow children enough time to do this task. Do not overschedule.

4a) The examiner must bear in mind the importance of establishing trust, a pleasant atmosphere, and the desire to participate. The warm-up game is designed to help achieve these goals. The examiner should maintain as natural a manner as possible while at the same time stimulating the child's interest in the games, and encouraging him to think and to make the maximum effort to give as many responses as possible.

4b) The examiner should exchange names with the subject, record the name, and continue to call the subject by his first name during the testing session. The child was asked his first name so that the examiner can use it in establishing a more relaxed and friendly atmosphere.

4c) The examiner says:

> Today we are going to play some games. They are a new kind of game which you have probably not played before. We will play several different games. These are thinking and imagination games. You don't have to hurry. We can play as long as you want.

General Instructions (Cont'd)

4d) Refer to specific task instructions for detailed instructions on tasks and answer sheets. Examiner records child's answers verbatim on the form provided. If you do not have enough room use the other side of the answer sheet.

4e) At the end of the test session the examiner should say to the subject: "THAT WAS THE LAST GAME FOR TODAY. THANK YOU FOR YOUR COOPERATION. YOU WERE A BIG HELP. YOU DID VERY WELL."

5) The examiner is to answer the subjects' questions in the following manner:

   (a) Procedural questions are to be answered by repeating the instructions or explaining in synonymous terms.

   (b) Questions designed to elicit help from the examiner are answered by saying "WHATEVER YOU THINK" or "DO WHAT YOU THINK IS BEST."

   (c) Children may ask "IS THAT RIGHT?" Respond by saying: "THERE ARE NO RIGHT OR WRONG ANSWERS, WHATEVER YOU THINK IS FINE."

6) It is important to remember that we are guests within the school and have been allowed the privilege of testing the children. We need to remain courteous at all times. Confidentiality of data must be respected. Also, children may refuse to be tested or decide to quit in the middle of a test session. If this occurs use "gentle cohersion" to try to persuade the child to stay but if the child will not, discontinue testing for that day and try later in the week.

7) Be sure to record any irregularities in testing, such as discontinuance, which might occur before, during or after testing, on the form provided for general comments.

8) In Session I we will be using the following tasks:

   1. Instances
   2. Patterns
   3. Uses

Instances Task Instructions

"Now we're going to play a game called 'all the things you can think of'. I might say, 'Tell me things that hurt' and I would like you to tell me as many things as you can think of that hurt. Let's try it. Please tell me all the things you can think of that hurt." (Let the child try to generate responses.) Then reply with, "Yes, that's fine. Some other things that hurt are falling down, getting slapped, fire, getting bruised, a knife, and probably there are a lot of other things too." (The examiner should vary answers so as to give all of those which the child did not give.) Then proceed by saying, "You see that there are all kinds of different answers in this game. Do you know how to play?" (If the child indicates understanding of the game proceed with test items. If the child does not understand, repeat procedure from the beginning. If child is still not understanding, terminate test sessions.) The examiner should then say, "Now remember, I will name something and you are supposed to name as many things as you can. Take as long as you want. OK, let's try another," (No help should be given to the child when test items are being used).

(1) Name all the things you can think of that are ROUND.

(2) Name all the things you can think of that are RED.

When child stops responding ask "What else can you think of" or "Tell me some more things you can think of" until the child indicates he or she has no more responses.

PATTERNS (3 Dimensional)

This task deals with the three dimensional designs. The administration of the test should go as follows:

"In this game I'm going to show you some blocks. After looking at each one I want you to tell me all of the things you think each block could be. Here is an example - you can turn it any way you'd like to (Give the example block to the child). "What could this be?" (Let the child respond.) "Yes, those are fine. Some other things I was thinking of were a bridge, a bed, a building block, a chair, and there are probably a lot of other things too." The experimenter should vary answers so as to give different ones than the child. If the child indicates an understanding of the game, proceed with the tasks.

Uses Task Instructions

"Now today we have a game called 'what can you use it for?' The first thing we're going to play with will be a pencil- (experimenter hands pencil to child.) I want you to tell me all the things you can think of that you can DO with a pencil, or PLAY with it, or MAKE with it. What can you use a pencil for?" (Let the child try to generate some responses.) Then reply with "Yes, that's fine. Some other things you could use a pencil for are as a flagpole, to dig in the dirt, or you could use a pencil as a mast in a toy boat. Probably there are a lot of other things too." (The examiner should vary answers so as to give all of those which the child did not give.) Then proceed by saying, "You see that there are different answers in this game. Do you know how to play?" If the child indicates understanding of the game proceed with test items. If the child does not understand, repeat procedure from beginning. If child still does not understand, terminate. The examiner should then say: "Now remember I will name something and you are supposed to tell as many uses for it as you can think of. Take as long as you want. Let's try this one." NO help should be given to the child on the test items.

1) What can you use a BOX for?

2) What can you use PAPER for?

Problems may arise when children ask additional questions. For example, if the child asks, "What size box" the experimenter should reply with a very neutral answer such as "Whatever size you think of." All clarifications of the test questions should be non-committal type.

When the child stops responding ask "What else can you think of?" or "Tell me some more things you can think of" until the child indicates he or she has no more responses.

C R E A T I V I T Y R E S E A R C H

Examiner Report Form (1)

Subject #_____ Date_____

Gender M F Experimenter_____

Race_____

The Examiner says:

TODAY WE ARE GOING TO PLAY SOME GAMES. THEY ARE A NEW KIND OF GAME WHICH YOU HAVE PROBABLY NOT PLAYED BEFORE. WE WILL PLAY SEVERAL DIFFERENT GAMES. THESE ARE THINKING AND IMAGINATION GAMES. YOU DON'T HAVE TO HURRY. WE CAN PLAY AS LONG AS YOU WANT.

PROCEED TO TASK 1.

General Comments:

INSTANCES

Creativity Research

Answer Form

Subject #_____ Time of Task_____

Name all the things you can think of that are ROUND:

Child's Response:

INSTANCES

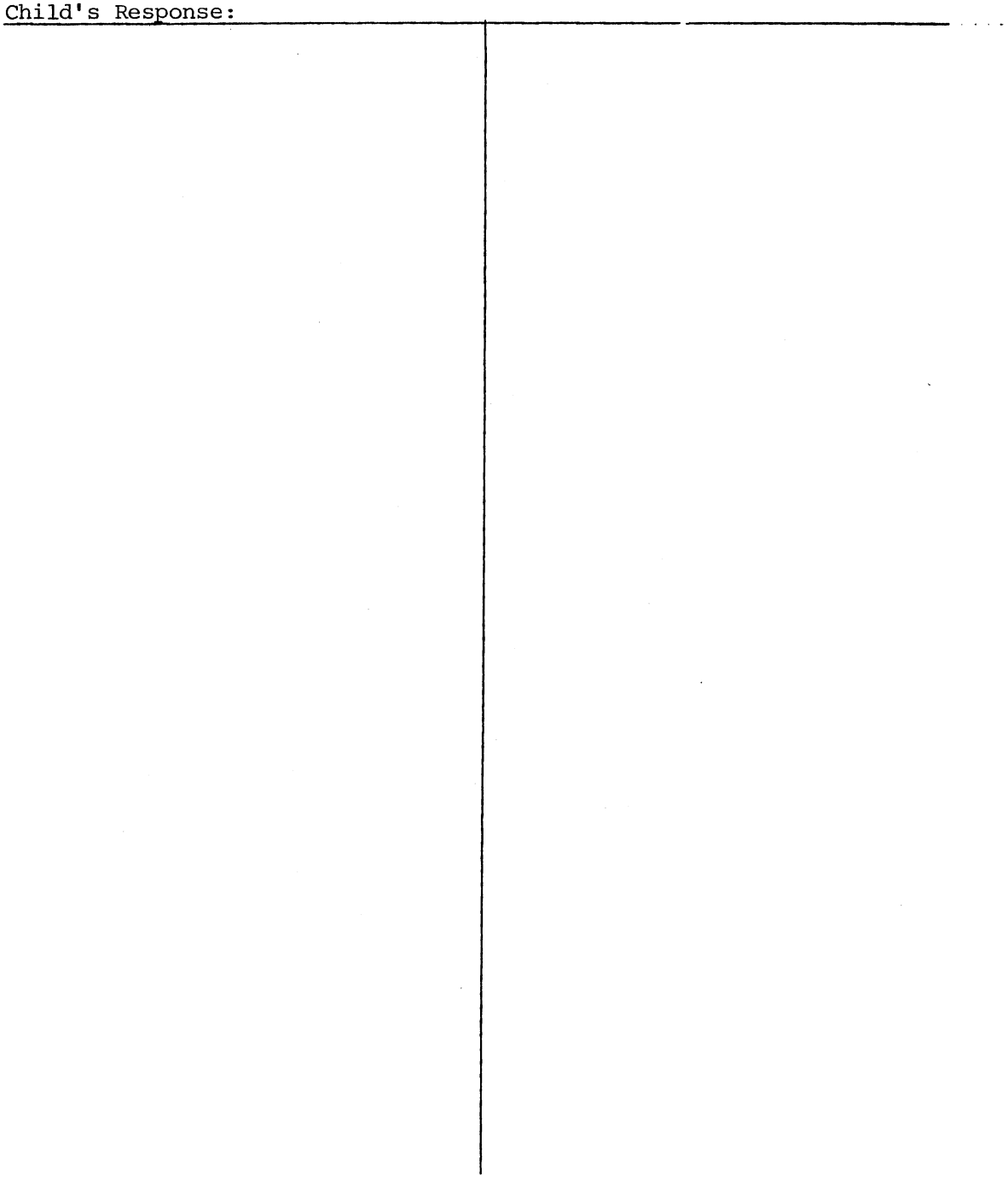
Creativity Research

Answer Form

Subject #_____ Time of Task_____

Name all the things you can think of that are RED:

Child's Response:



PATTERNS

Creativity Research

Answer Form

Subject # _____ Time of Task_____

Name all the Things you think this could be:

Child's Response:

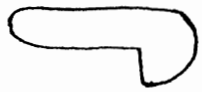
PATTERNS

Creativity Research

Answer Form

Subject #_____ Time of Task_____

Name all the things you think this could be:



Child's Response:

USES

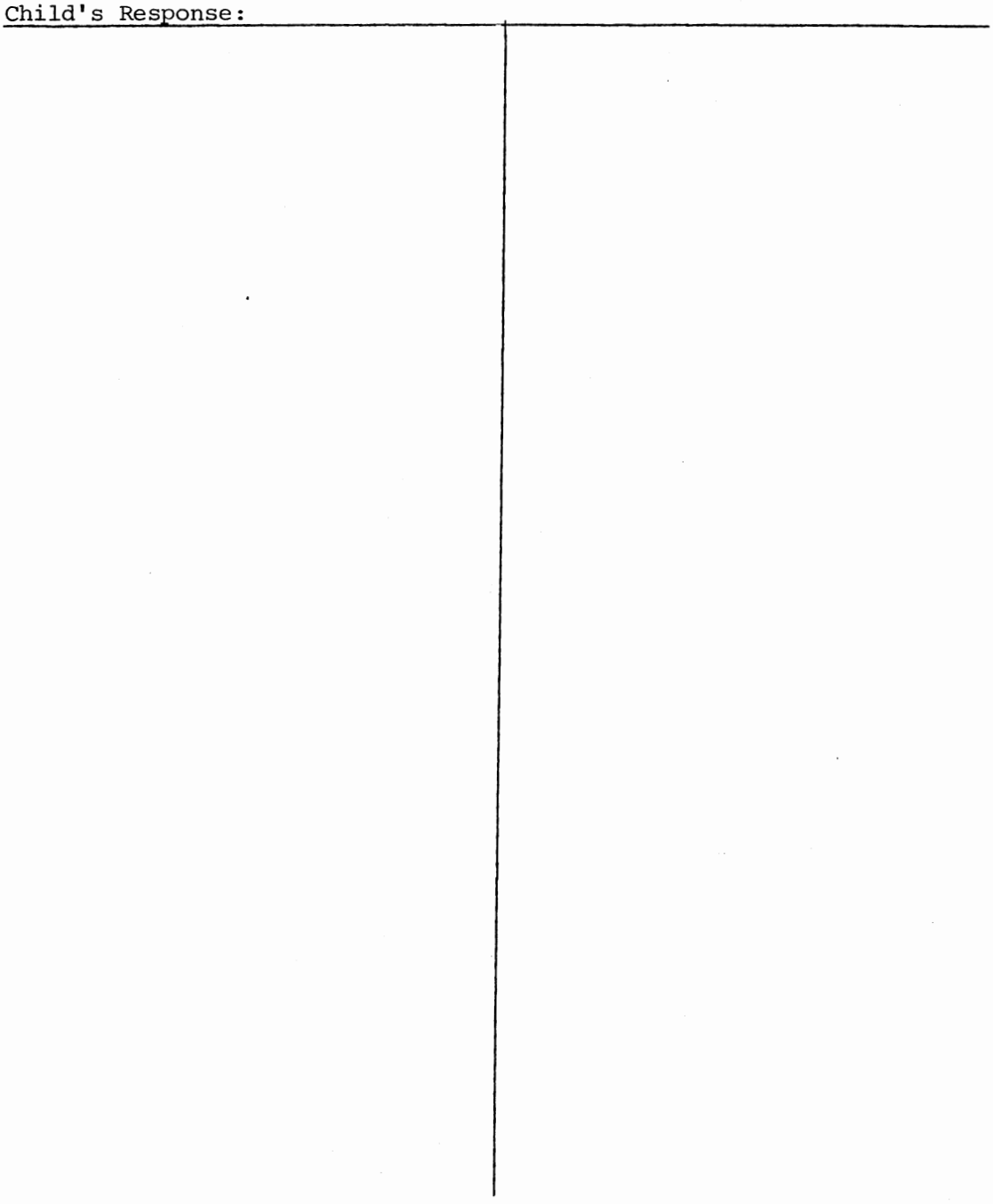
Creativity Research

Answer Form

Subject # _____ Time of Task_____

What can you use a BOX for?

Child's Response:



USES

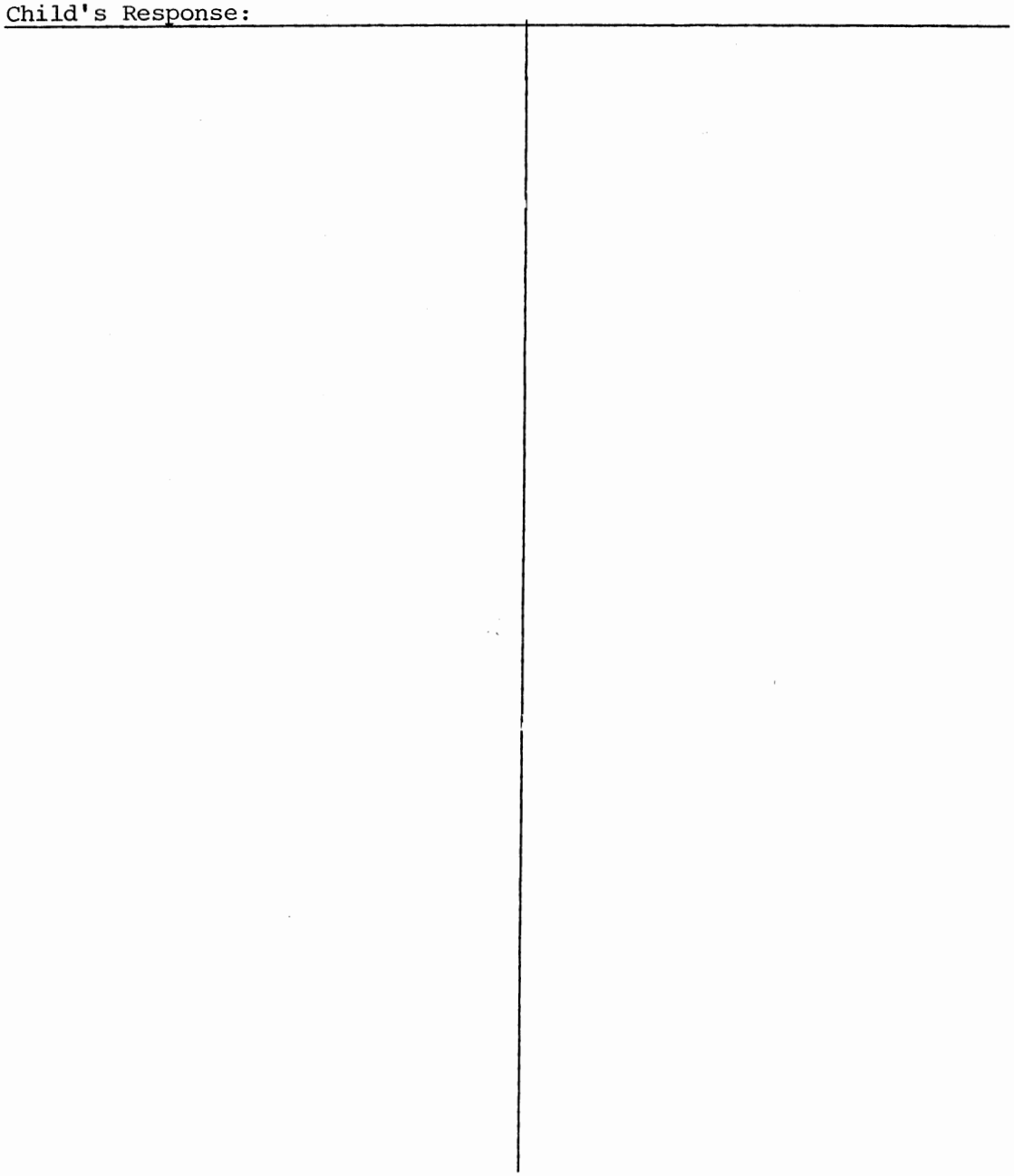
Creativity Research

Answer Form

Subject # _____ Time of Task_____

What can you use PAPER for?

Child's Response:



APPENDIX C

TORRANCE PICTURE COMPLETION CATEGORIES

PICTURE COMPLETION CATEGORIES

Flexibility

The flexibility score is obtained by counting the number of different categories into which the responses fall. Below is a list of categories that will best fit approximately 99 percent of the responses given. New categories should be created for responses which cannot be classified into any of the categories listed here. This may be indicated on the scoring worksheet by "X1" for the first new category created, "X2" for the second new category, etc.

1. ACCESSORIES: bracelet, crown, glasses, hat, monocle, necklace, purse, etc.
2. AIRCRAFT: airplane, bombers, jets, rockets, space ships, etc.
3. ANGELS: other heavenly forms including angel wings.
4. ANIMAL: including animal faces and heads: ape, bear, bull, camel, cat, crocodile, dog (including specific breeds, such as French Poodle, Collie, etc.), deer, elephant, frog, goat, horse, lion, mouse, pig, snail, etc.
5. ANIMAL TRACKS
6. BALLS: baseball, basketball, beach ball, football, mudball, snow ball, etc.
7. BALLOON: singly or in bunch
8. BIRD, FOWL: chicken, crane, duck, flamingo, hen, peacock, penguin, sea gull, swan, turkey, woodpecker, etc.
9. BOAT: canoe, houseboat, sailboat, ship, etc.
10. BODY PARTS: bone, ear, eye, feet, hands, heart, lips, mouth, nose, tongue, etc.
11. BOOK: singly or in case, magazines, newspapers, etc.

12. BOX: including packages, gifts, presents, etc.

13. BUILDING: apartment house, bee house, animal house, church, hotel, house, oriental house, pagoda, temple, etc.

14. BUILDING MATERIAL: brick, lumber, pipe, stone, etc.

15. BUILDING, PARTS OF: door, floor, walls, roof, window, etc.

16. CAMPFIRE

17. CANE: candy cane, walking cane, etc.

18. CAR: automobile, racer, tractor, truck, etc.

19. CLOTHING: bathing suite, blouse, coat, dress, hat, pants, shirt, shorts, skirt, etc.

20. CLOTHES LINE: washday and similar uses of clothes lines.

21. CLOUD: any type of cloud or cloud formation, sky, etc.

22. CONTAINER: barrel, box, can, hat box, jug, tank, etc.

23. CROSS: Christian Cross, Red Cross, etc.

24. DESIGN OR DECORATION: any type of abstract design which cannot be identified as an object, mess, modern art, ribbon bow, etc.

25. EGG: including Easter egg, fried eggs, egg characters such as Humpty Dumpty, etc.

26. ENTERTAINMENT: circus, dancer, ringmaster, singer, etc.

27. FISH AND SEA ANIMALS: gold fish, guppies, whale, etc.

28. FLOWER: cactus, daisy, tulip, etc.

29. FOOD: bread (loaf), cake, candy, donut, hot dog, hamburger, ice cream, lollipop, marshmallow, nuts, sucker, toast, etc.

30. FOOTWEAR: boots, slippers, shoes, etc.

31. FRUIT: apple, banana, bowl of fruit, cherries, grapes, lemon, orange, pear, etc.

32. FURNITURE: bed, chair, desk, table, TV, etc.

33. GEOGRAPHY: beach, cliff, lake, mountain, ocean, river, volcano, waves, etc.

34. GEOMETRIC FORMS OR DESIGNS: circle, cone, cube, diamond, square, rectangle, triangle, etc.

35. HEAVENLY BODY: Big Dipper, constellation, eclipse, moon, star, sun, etc.

36. HOUSEHOLD ITEMS: bowl, broom, brush, coffee pot, clock, coat rack, dipper, hanger, tea cup, toothbrush, silverware, etc.

37. HUMAN BEING, HUMAN FORM: including human faces, person, specific person such as Mitch Miller, Zsa Zsa Gabor, etc., cowboy, etc.

38. INSECT; ants, bee, beetle, bug, butterfly, caterpillar, firefly, flea, fly, praying mantis, tarantula, worm, etc.

39. KITE

40. LADDER

41. LETTERS: of alphabet, singly or on blocks.

42. LIGHT: candle, flood light, lamp, lantern, electric light, magic lamp, etc.

43. MACHINE: coke machine, robot, reducing machine, etc.

44. MUSIC: band instruments, bells, cymbal, drum, harp, music stand, musical notes, piano, treble clef, violin, stem of violin, whistle, etc.

45. NUMERALS: single or on blocks.

46. OFFICE AND SCHOOL SUPPLIES: envelope, paper, paperweight, paper clips, notebook, etc.

47. PLANT: grass, shubbery, etc.

48. RECREATION: fishing pole, tennis, Ferris Wheel, slide, swing, surfboard, roller coaster, swimming pool, ski jump, etc.

49. ROAD AND ROAD SYSTEM: bridge, highway, road, road map, turnpike, etc.

50. ROOM AND PART OF ROOM: floor, corner of room, wall, etc.

51. SHELTER (not house): farm shed, fox hole, tent, tepee, etc.

52. SNOWMAN

53. SOUND: radar waves, radio sound waves, tuning fork, etc.

54. SPACE: spaceman, launching pad, rocket man, etc.

55. SPORTS: baseball diamond, goal post, race, racetrack, etc.

56. STICKMAN (See HUMAN FORM: do not use a new category)

57. SUN AND OTHER PLANETS (See HEAVENLY BODIES, not a new category)

58. SUPERNATURAL BEINGS: Aladdin, devil, ghost, Dracula, Fairy, Hercules, Monster, outerspace creature, witch, etc.

59. SURFACE TRANSPORTATION: (See CAR: not a new category)

60. SYMBOL: badge, flag, question mark, Zorro's mark, etc.

61. TIMER: sand clock, hour glass, sundial, etc.

62. TOOL: axe, claw hammer, hammer, rake, etc.

63. TOY: jack-in-box, puppet, rocking horse, yo-yo, etc.

64. TREE: all kinds of trees, Christmas tree, holly tree, etc.

65. UMBRELLA

66. WEATHER: lightning, rain, rainbow, rain drops, snowstorm, tornado, etc.

67. WEAPON: bow and arrow, cannon, gun, rifle, slingshot, etc.

68. WHEELS: inner tube, tire, cart wheel, wheel, etc.

APPENDIX D

INVENTORY OF ATTITUDES OF FAMILY LIFE AND CHILDREN

QUESTIONNAIRE AND SCORING INSTRUCTIONS

SCORING OF THE PARI

In order to score the PARI, strong endorsement of an item should be given a +2, mild endorsement a +1, mild disagreement a -1, and strong disagreement a -2. For items which agreement signifies absence of the attribute in question, the signs will be reversed to yield a single score for each characteristic. Authoritarian control items numbers 1, 7, 11, 15, 18, 24, 28, 33, 36, 38, 41, 42, and 48, hostility rejection items numbers 3, 20, 31, 39, 45, 46, 47, and 50, and democratic items numbers 5, 9, 13, 22, 26, 30, and 40 were stated so that agreement indicated the presence of that characteristic. The remaining items for authoritarian control (2, 6, 10, 16, 23, 27, 34, 44, and 49), hostility-rejection (8, 12, 21, 25, and 43), and democratic attitudes (4, 14, 17, 20, 32, 35, and 37) were stated so that agreement indicated the absence of the characteristic.

Inventory of Attitudes on Family Life and Children

Read each of the statements below and rate them as follows:

A	a	d	D
strongly agree	mildly agree	mildly disagree	strongly disagree

Indicate your opinion by drawing a circle around the "A" if you strongly agree, around the "a" if you mildly agree, around the "d" if you mildly disagree, and around the "D" if you strongly disagree.

There are no right or wrong answers, so answer according to your own opinion. It is very important to the study that all questions be answered. Many of the statements will seem alike but all are necessary to show slight differences of opinion. Either parent may complete the inventory. For questions 42 through 50, complete only the section that applies to you.

SECTION I

1.	A good parent should shelter his child from life's little difficulties.	A a d D
2.	Children should be taught about sex as soon as possible.	A a d D
3.	Parents who think they can get along in marriage without arguments just don't know the facts.	A a d D
4.	Parents should not have to earn the respect of their children by the way they act.	A a d D
5.	A child has a right to his own point of view and ought to be allowed to express it.	A a d D
6.	If a parent is wrong he should admit it to his child.	A a d D
7.	A child should be taught to avoid fighting no matter what happens.	A a d D

8.	Most parents could spend all day with the children and remain calm and even-tempered.	A	a	d	D
9.	Parents who are interested in hearing about their children's parties, dates, and fun help them grow up right.	A	a	d	D
10.	A child should learn he has to be disappointed some times.	A	a	d	D
11.	It is very important that young boys and girls not be allowed to see each other completely undressed.	A	a	d	D
12.	If a couple really loves each other there are very few arguments in their married life.	A	a	d	D
13.	Parents should adjust to the children some rather than always expecting the children to adjust to the parents.	A	a	d	D
14.	Children should not be allowed to disagree with their parents, even if they feel their own ideas are better.	A	a	d	D
15.	It's best for a child if he never gets started wondering whether his parent's views are right.	A	a	d	D
16.	A child should be taught to fight his own battles.	A	a	d	D
17.	Children would be happier and better behaved if parents would show less interest in their affairs.	A	a	d	D
18.	A child should be protected from jobs which might be too tiring or hard for him.	A	a	d	D
19.	Sex play is a normal thing in children.	A	a	d	D
20.	Children should learn to compromise and adjust to the demands of their parents.	A	a	d	D
21.	Most parents don't mind spending most of their spare time at home.	A	a	d	D
22.	A child's ideas should be seriously considered in making family decisions.	A	a	d	D

23.	A child should be encouraged to look for answers to his questions from other people even if the answers contradict his parents.	A	a	d	D
24.	Children should not be encouraged to box or wrestle because it often leads to trouble or injury.	A	a	d	D
25.	Raising children is an easy job.	A	a	d	D
26	If parents would have fun with their children the children would be more apt to take their advice.	A	a	d	D
27.	Children have to face difficult situations on their own.	A	a	d	D
28.	Sex is one of the greatest problems to be contended with in children.	A	a	d	D
29.	Almost any problem can be settled by quietly talking it over.	A	a	d	D
30.	There is no reason parents should have their own way all the time, any more than that children should have their own way all the time.	A	a	d	D
31.	One of the bad things about raising children is that you aren't free enough of the time to do just as you like.	A	a	d	D
32.	Children should be discouraged from telling their parents about it when they feel family rules are unreasonable.	A	a	d	D
33.	The child should not question the thinking of his parents.	A	a	d	D
34.	It's quite natural for children to hit one another.	A	a	d	D
35.	Laughing at children's jokes and telling children jokes usually fail to make things go more smoothly.	A	a	d	D
36.	Children should be kept away from all hard jobs which might be discouraging.	A	a	d	D

37.	It is rarely possible to treat a child as an equal.	A	a	d	D
38.	A good parent will find enough social life within the family.	A	a	d	D
39.	Parents should keep control of their temper even when children are demanding.	A	a	d	D
40.	When you do things together, children feel close to you and can talk easier.	A	a	d	D
41.	Most parents prefer a quiet child to a "scrappy" one.	A	a	d	D

SECTION II

Fathers Only*

42.	A man can't do a father's job and have an active social life too.	A	a	d	D
43.	Most fathers are content to be with children in their spare time.	A	a	d	D
44.	A good father still has time for activities outside the job and home.	A	a	d	D
45.	Settling down to family life is hard for a man because it means giving up so many other things.	A	a	d	D
46.	It's no wonder men reach the boiling point when they come home and run immediately into family problems	A	a	d	D
47.	Sometimes it's necessary for a husband to tell off his wife in order to get his rights.	A	a	d	D
48.	Too many men forget that a father's place is with his family.	A	a	d	D
49.	A father can be a family man and still have plenty of time left to visit with neighbors and friends.	A	a	d	D
50.	There are times when a father feels he can't stand his family a moment longer.	A	a	d	D

*Mothers go to Section III

SECTION III

Mothers Only

42.	The women who want lots of parties seldom make good mothers.	A	a	d	D
43.	Most mothers are content to be with children all the time.	A	a	d	D
44.	A good mother should develop interests outside the home.	A	a	d	D
45.	One of the worst things about taking care of a home is a woman feels that she can't get out.	A	a	d	D
46.	Children will get on any woman's nerves if she has to be with them all day.	A	a	d	D
47.	Sometimes it's necessary for a wife to tell off her husband in order to get her rights.	A	a	d	D
48.	Too many women forget that a mother's place is in the home.	A	a	d	D
49.	A mother can keep a nice home and still have plenty of time left over to visit with neighbors and friends.	A	a	d	D
50.	Mothers very often feel that they can't stand their children a moment longer.	A	a	d	D

APPENDIX E

CLASSROOM STRUCTURE RATING SHEET

CLASSROOM STRUCTURE RATING SHEET

Directions

Locate the 13 areas of the laboratory classroom indicated on the Classroom Structure Rating Sheet. Every 5 minutes for a one-hour period, identify the activities selected by the children by recording their number in the space provided by the appropriate activity at which they are playing. Twelve observations should be recorded.

The activity available in each area should also be rated on its degree of structure. Since the children may use the materials in a more or less structured manner than perhaps originally intended by the teacher, activities will also be rated every 5 minutes for one hour. Rate the activities available in each area as follows:

1 - highly unstructured

Ex. playdough only
easel painting

2 - moderately unstructured

Ex. playdough with rolling pins
gadget painting

3 - moderately structured

Ex. playdough with cookie cutters
painting over stencils

4 - highly structured

Ex. playdough with model to reproduce
painting by numbers

Ratings should be recorded in the boxes beside the appropriate activity under the corresponding observation column.

Definition of Terms

Activity Center - a specified area within a preschool environment, often designated by furniture arrangement or carpet, designed to allow free exploration of materials related to the children's developmental level and to unit content.

Art easel and art tables - a center which provides graphic and or plastic art materials to encourage creative expression and to develop fine motor skills and eye-hand coordination.

Large blocks - large wooden hollow blocks used to foster creativity, dramatic play, and motor control, as well as an understanding of space and balance.

Small blocks - small wooden unit blocks which allow for the development of mathematics and space concepts, creativity, visual discrimination, and motor control.

Community Living - a center equipped with tables, chairs, kitchen equipment, doll beds, and other household items, to which various props may be added to encourage dramatic play.

Manipulative tables - tables on which small building items, beads, pegs, lacing activities, folder games, puzzles, and manufactured games are placed to promote fine motor skills and concepts related to unit content.

Large Motor Center - an area equipped with apparatus to encourage development of gross motor coordination.

Water table - a table that will hold water or other media such as sand, rice, beans, etc., which allow for the development of motor skills, perceptual problem-solving of simple scientific principles, outlets for emotional release.

Library - a comfortable area equipped with pillows, books, and pictures to allow for individual quiet time and enjoyment of books.

Science Center - an area equipped with various materials designed to encourage exploration and observation as an introduction to basic science discovery.

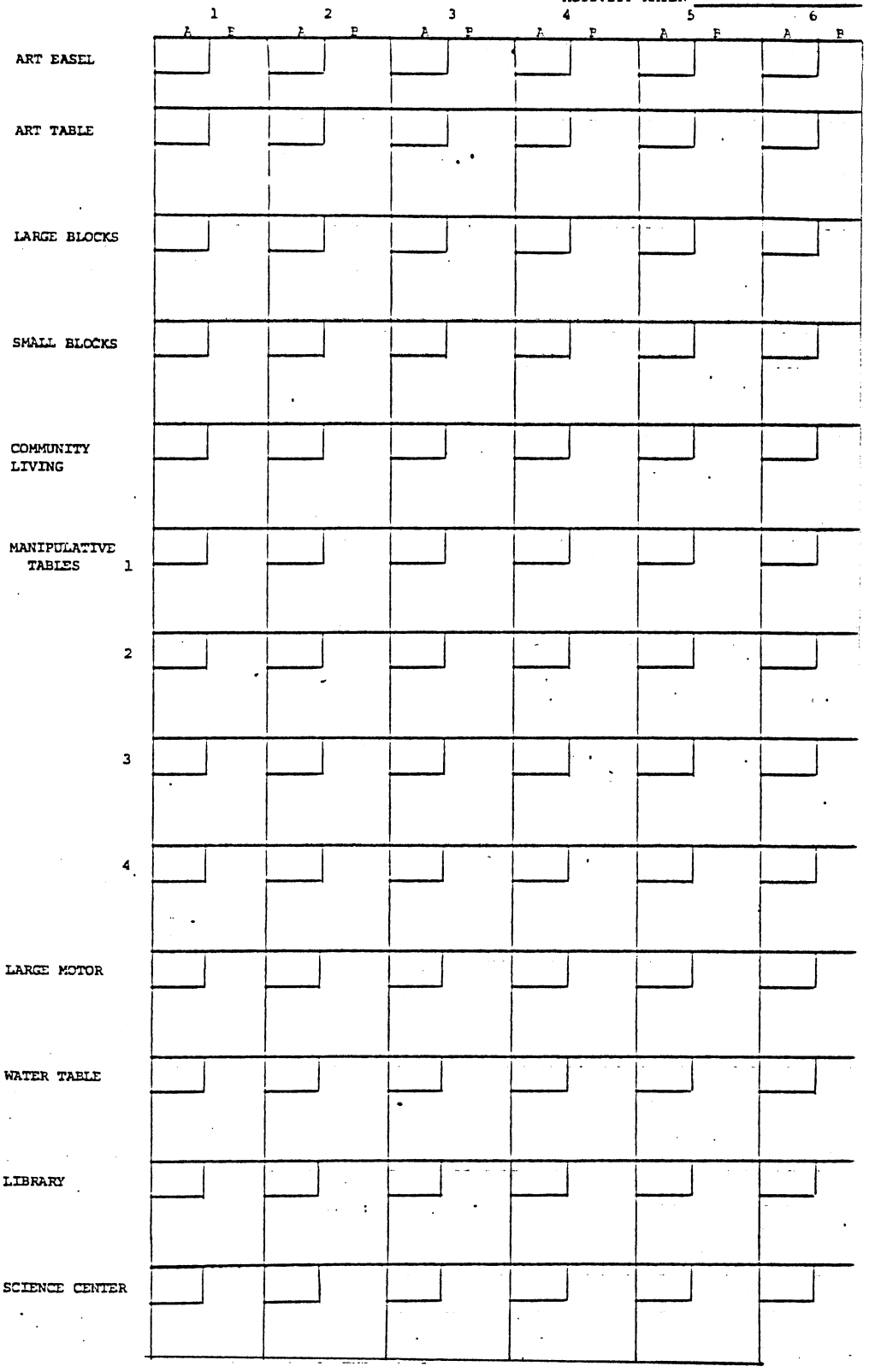
LAB _____ CLASSROOM STRUCTURE RATING SHEET Date _____ Time _____

A= space for activity rating
B= space for list of children

OBSERVATIONS

ACTIVITY RECORDER _____

ACTIVITY RATER _____



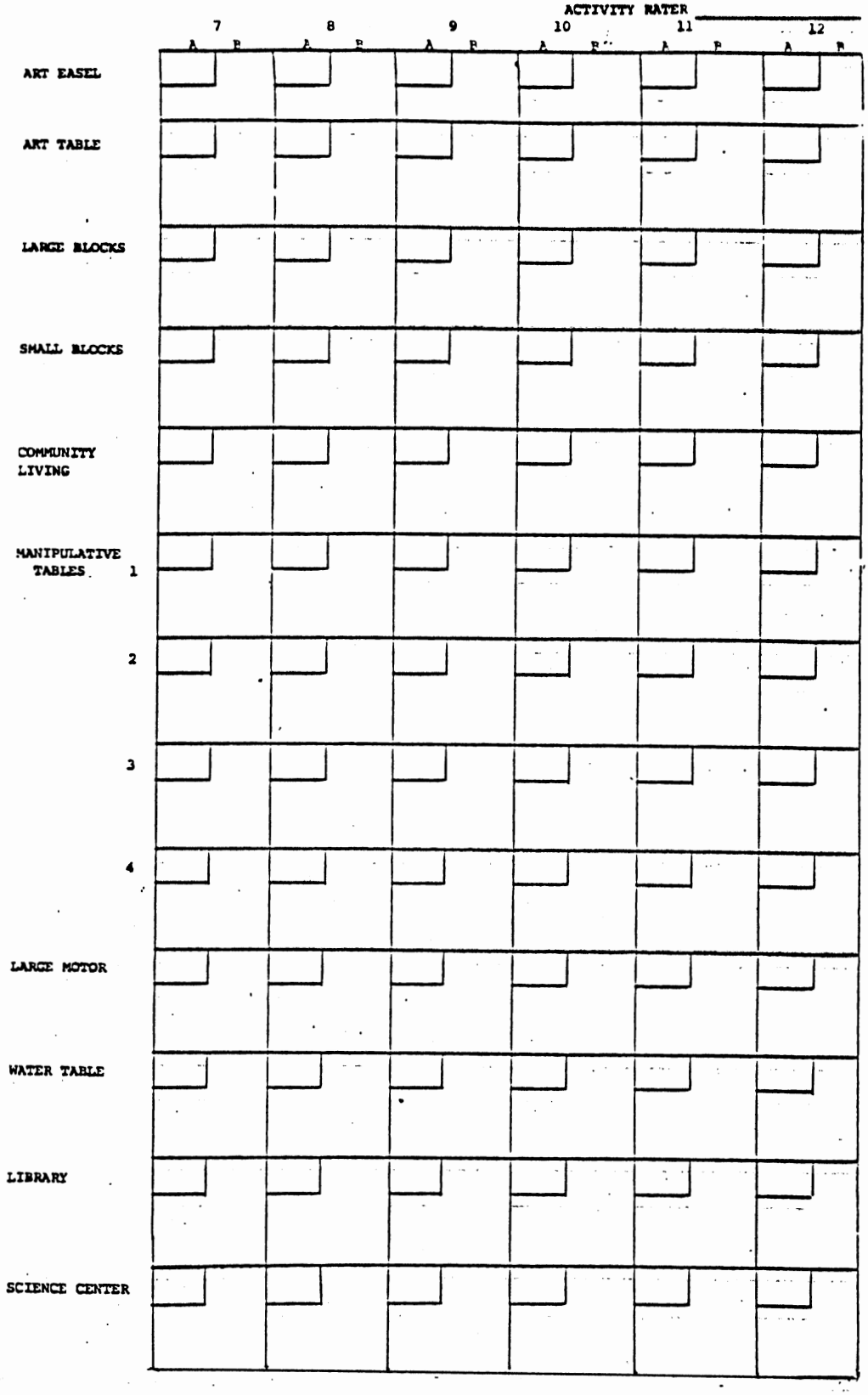
LAB _____ CLASSROOM STRUCTURE RATING SHEET Date _____ Time _____

A= space for activity rating
B= space for list of children

OBSERVATIONS

ACTIVITY RECORDER _____

ACTIVITY RATER _____



APPENDIX F

LIST OF VARIABLE LABELS

AND VALUE LABELS

Variable Labels

Variable Number	Variable Name	Abbreviations
V1	Identification Number	ID Number
V2	Subject Gender	Sex
V3	Age in Months	Age Mon
V4	Subjects Classroom	Class
V5	Average Art Participation	Ave Art Partici
V6	Average Block Participation	Ave Block Partici
V7	Average Community Living Participation	Ave Comm Living Partici
V8	Average Manipulative Table Participation	Ave Manip Table Partici
V9	Average Large Motor Participation	Ave Large Motor Partici
V10	Average Water Table Participation	Ave Water Table Partici
V11	Average Library Participation	Ave Library Partici
V12	Average Science Center Participation	Ave Science Cent Partici
V13	Average Other Activity Participation	Ave Other Act Partici
V14	Identification Number	ID Number
V15	Average Structure Score	Ave Structure Score
V16	Average Participation in Teacher Present Activities	Ave Teacher Present Partici
V17	Average Participation in Teacher Absent Activities	Ave Teacher Absent Partici

V18	Presence of Authoritarian Control in Father	Presence Authori Contl Father
V19	Presence of Hostility-Rejection in Father	Presence Host Reject Father
V20	Presence of Democratic Attitudes in Father	Presence Demo Attit Father
V21	Presence of Authoritarian Contol in Mother	Presence Authori Contl Mother
V22	Presence of Hostility-Rejection in Mother	Presence Host Reject Mother
V23	Presence of Democratic Attitudes in Mother	Presence Demo Attit Father
V24	Identification Number	ID Number
V25	Number of Original Responses For Round	No Origi Resp Round
V26	Number of Popular Responses For Round	No Pop Resp Round
V27	Flexibility Score for Round	Flex Round
V28	Number of Original Responses For Red	No Origi Resp Red
V29	Number of Popular Responses For Red	No Pop Resp Red
V30	Flexibility Scores for Red	Flex Red
V31	Number of Original Responses for the Instances Tasks	No Origi Resp Instances
V32	Number of Popular Responses for the Instances Tasks	No Pop Resp Instances
V33	Flexibility Scores for the Instances Tasks	Flex Instances
V34	Number of Original Responses for Half	No Origi Resp Half
V35	Number of Popular Responses for Half	No Pop Resp Half

V36	Flexibility Scores for Half	Flex Half
V37	Identification Number	ID Number
V38	Number of Original Responses for Hammer	No Origi Resp Hammer
V39	Number of Popular Responses for Hammer	No Pop Resp Hammer
V40	Flexibility Scores for Hammer	Flex Hammer
V41	Number of Original Responses for the Patterns Tasks	No Origi Resp Patterns
V42	Number of Popular Responses for the Patterns Tasks	No Pop Resp Patterns
V43	Flexibility Scores for the Patterns Tasks	Flex Patterns
V44	Number of Original Responses for Box	No Origi Resp Box
V45	Number of Popular Responses for Box	No Pop Resp Box
V46	Flexibility Scores for Box	Flex Box
V47	Number of Original Responses for Paper	No Origi Resp Paper
V48	Number of Popular Responses for Paper	No Pop Resp Paper
V49	Flexibility Scores for Paper	Flex Paper
V50	Identification Number	ID Number
V51	Number of Original Responses for the Uses Tasks	No Origi Resp Uses
V52	Number of Popular Responses for the Uses Tasks	No Pop Resp Uses
V53	Flexibility Scores for the Uses Tasks	Flex Uses
V54	Subjects Total Flexibility Score	Totflex

V55	Subjects Total Number of Original Responses	Totorig
V56	Subjects Total Number of Popular Responses	Totpop

Value Labels

Variable Number	Value Code	Abbreviations
V2	1 = Male	
	2 = Female	
V4	3 = Laboratory Classroom 3	Lab 3
	4 = Laboratory Classroom 4	Lab 4
V15	1 = Highly Unstructured	High Un
	2 = Moderately Unstructured	Mod Un
	3 = Moderately Structured	Mod Struc
	4 = Highly Structured	High Struc
Create	1 = low	
	2 - high	

APPENDIX G

RAW DATA

Raw Data

v1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13
1	1	59	4	.14	.28	.15	.11	.14	.02	.19	.00	.11
2	1	56	4	.01	.43	.03	.06	.12	.12	.12	.00	.07
3	1	59	4	.04	.56	.01	.11	.06	.00	.12	.01	.07
4	1	47	4	.06	.42	.03	.08	.14	.00	.24	.02	.02
5	1	57	4	.15	.35	.13	.14	.07	.07	.03	.00	.04
6	1	45	4	.19	.19	.13	.12	.20	.03	.12	.01	.00
7	1	59	4	.09	.34	.04	.23	.06	.01	.22	.00	.00
8	2	48	4	.00	.47	.04	.12	.25	.06	.06	.00	.00
9	2	46	4	.11	.24	.28	.17	.11	.03	.09	.00	.00
10	2	49	4	.08	.24	.31	.09	.15	.04	.06	.00	.00
11	2	53	4	.08	.12	.40	.15	.01	.00	.17	.02	.00
12	2	46	4	.19	.07	.06	.24	.22	.04	.13	.02	.06
13	2	48	4	.07	.23	.09	.05	.12	.08	.32	.00	.00
14	2	53	4	.09	.16	.38	.14	.00	.01	.21	.02	.00
15	2	50	4	.40	.06	.07	.25	.14	.00	.05	.00	.00
16	2	52	4	.16	.17	.21	.19	.12	.04	.05	.01	.00
17	1	58	4	.19	.32	.07	.20	.07	.04	.01	.09	.00
18	1	70	3	.03	.14	.09	.14	.10	.11	.17	.11	.10
19	1	68	3	.05	.56	.02	.13	.05	.07	.05	.02	.04
20	1	73	3	.03	.56	.06	.25	.00	.01	.06	.00	.03
21	1	69	3	.03	.36	.16	.23	.04	.05	.10	.01	.00
22	1	65	3	.08	.29	.16	.29	.12	.02	.04	.00	.00
23	1	70	3	.00	.47	.05	.25	.22	.00	.01	.00	.00
24	1	62	3	.00	.54	.03	.13	.22	.03	.04	.03	.00
25	1	68	3	.00	.16	.07	.25	.14	.18	.05	.15	.01
26	2	63	3	.17	.08	.00	.31	.15	.03	.00	.25	.00
27	2	71	3	.13	.12	.06	.30	.10	.03	.13	.06	.07
28	2	71	3	.41	.02	.08	.27	.08	.02	.06	.07	.02
29	2	70	3	.13	.07	.05	.34	.17	.04	.01	.18	.00
30	2	59	3	.08	.02	.13	.43	.09	.02	.03	.19	.00
31	2	65	3	.10	.07	.04	.47	.18	.00	.04	.10	.00
32	2	61	3	.25	.04	.00	.21	.07	.11	.21	.11	.00
33	2	59	3	.12	.03	.10	.43	.05	.01	.15	.20	.00
34	2	63	3	.10	.05	.08	.43	.10	.00	.18	.08	.00

V14	V15	V16	V17	V18	V19	V20	V21	V22	V23
1	1.87	.4	.6	-20	-5	17	-20	-4	17
2	1.87	.3	.7	-21	3	15	-20	7	15
3	1.84	.3	.7	-23	-3	11	-24	2	11
4	2.14	.5	.5						
5	1.65	.4	.6						
6	2.17	.6	.4	-12	-6	19	-11	-3	19
7	1.96	.4	.6	-25	2	20	-24	6	20
8	1.78	.3	.7	3	1	5	3	3	5
9	1.76	.4	.6						
10	2.19	.3	.7						
11	2.02	.4	.6	-13	-4	18	-15	-2	18
12	2.04	.5	.5	0	-4	19	-8	-2	19
13	1.96	.4	.6	-25	0	19	-26	7	19
14	2.28	.4	.6	-21	6	20	-23	8	20
15	1.82	.5	.5	-11	11	14	-13	3	4
16	2.06	.3	.8	-36	-10	21	-37	-3	21
17	1.86	.4	.6						
18	2.86	.4	.6						
19	2.04	.3	.7						
20	2.12	.3	.7						
21	2.61	.4	.6	0	0	0	-26	-1	22
22	2.46	.2	.8	-13	-9	14	-15	2	14
23	1.80	.1	.9						
24	2.00	.1	.8	-19	8	19	-19	9	19
25	2.72	.2	.8	-26	-4	15	-25	5	15
26	2.82	.5	.5	-19	6	15	-19	12	15
27	2.99	.5	.5	-18	-2	17	-22	-2	17
28	3.16	.6	.4	-18	-2	17	-22	-2	17
29	2.93	.4	.5	-14	8	6	-12	8	6
30	3.42	.5	.5						
31	2.99	.5	.5						
32	3.18	.6	.4						
33	3.26	.6	.4	-17	1	16	-16	5	16
34	3.38	.6	.4						

V24	V25	V26	V27	V28	V29	V30	V31	V32	V33	V34	V35	V36
1	9	6	12	11	5	14	20	11	18	11	6	13
2	12	7	14	1	9	6	13	16	17	6	6	11
3	1	4	5	8	5	11	9	9	14	5	4	9
4	2	7	8	2	2	3	4	9	10	3	2	5
5	4	6	6	6	6	10	10	12	15	3	4	6
6	6	7	8	10	5	9	16	12	16	31	3	21
7	2	9	8	3	4	6	5	13	10	7	4	6
8	8	6	8	3	3	5	11	9	10	3	2	5
9	15	9	12	8	6	9	23	15	18	4	2	4
10	19	7	9	6	9	7	25	16	10	9	6	13
11	1	5	6	9	2	7	10	7	9	7	8	8
12	19	13	17	13	1	11	32	14	21	5	1	5
13	9	9	11	14	8	14	23	17	18	0	4	3
14	2	6	7	7	6	8	9	12	13	2	3	5
15	2	3	5	2	5	5	4	8	9	17	2	13
16	6	6	9	6	4	6	12	10	15	2	2	4
17	13	8	14	7	7	11	20	15	21	10	7	11
18	3	1	3	10	4	9	13	5	11	2	2	4
19	1	3	4	7	9	12	8	12	15	5	4	9
20	8	4	8	8	4	9	16	8	13	13	5	13
21	6	5	9	2	5	5	8	10	12	6	2	7
22	14	10	11	13	3	10	27	13	16	9	4	11
23	6	6	8	6	1	5	12	7	11	7	6	8
24	3	7	8	2	2	3	5	9	11	2	3	5
25	1	3	4	4	4	6	5	7	9	7	1	5
26	14	10	12	16	9	9	30	19	15	25	3	13
27	21	11	16	32	23	5	53	34	29	15	7	14
28	4	3	7	21	19	13	25	22	14	11	6	10
29	10	3	10	7	7	11	17	10	19	4	6	6
30	4	6	8	6	5	7	10	11	13	3	2	5
31	3	9	9	11	3	9	14	12	13	12	4	15
32	8	4	6	39	18	14	30	17	18	13	5	32
33	6	6	10	11	7	12	17	13	17	12	4	13
34	1	3	4	3	6	4	4	9	4	3	1	3

V37	V38	V39	V40	V41	V42	V43	V44	V45	V46	V47	V48	V49
1	7	7	9	18	13	18	3	4	4	5	1	4
2	5	5	8	11	11	17	2	1	2	1	3	4
3	6	3	6	11	7	12	3	3	3	0	3	2
4	3	2	5	6	4	10	0	1	1	1	3	2
5	1	6	5	4	10	10	3	1	3	2	4	3
6	21	7	18	52	10	24	3	2	4	5	7	8
7	3	0	3	10	4	7	2	2	3	2	2	3
8	6	3	7	9	5	10	1	8	3	1	3	3
9	6	2	6	10	4	6	3	2	4	3	2	4
10	10	7	12	19	13	18	0	5	1	6	8	8
11	9	4	9	16	12	14	0	7	2	2	4	4
12	5	4	7	10	3	10	1	10	3	3	2	2
13	2	3	5	2	7	6	0	7	2	1	8	4
14	4	7	7	6	10	12	5	4	7	4	6	7
15	11	1	9	28	3	16	0	5	1	0	2	2
16	3	3	5	5	5	8	1	3	2	3	3	2
17	10	10	12	20	17	20	6	5	6	5	6	6
18	1	3	3	3	5	6	0	2	2	0	2	2
19	15	6	13	20	10	16	3	7	7	5	3	5
20	7	3	9	20	8	17	8	3	9	4	4	7
21	3	3	6	9	5	11	17	6	11	3	25	12
22	4	4	4	13	8	12	4	5	5	1	14	8
23	4	6	9	11	12	13	3	2	5	2	6	5
24	3	1	4	5	4	9	0	2	1	0	3	3
25	4	2	5	11	3	10	2	4	3	6	7	8
26	40	1	20	65	4	24	3	8	5	1	1	1
27	5	6	8	20	13	17	6	4	2	4	3	2
28	7	4	6	18	10	10	6	7	9	0	5	3
29	5	8	10	9	14	13	4	3	5	3	3	3
30	3	6	7	6	8	10	1	5	3	6	3	8
31	13	5	13	25	9	24	13	1	10	11	8	9
32	12	5	10	25	20	15	5	4	7	1	2	3
33	5	3	6	17	7	18	4	7	5	2	2	3
34	6	7	11	9	8	12	4	6	4	6	3	6

V50	V51	V52	V53
1	8	5	8
2	2	10	5
3	3	6	4
4	1	4	3
5	5	5	5
6	8	9	10
7	4	4	6
8	2	11	6
9	6	4	7
10	6	13	8
11	2	11	6
12	4	12	4
13	1	15	4
14	9	10	11
15	0	7	3
16	4	6	4
17	11	11	11
18	0	4	3
19	8	10	11
20	12	7	13
21	20	31	16
22	5	19	12
23	5	8	12
24	0	5	4
25	8	11	11
26	4	9	5
27	10	7	4
28	6	12	11
29	7	6	8
30	7	8	9
31	24	9	13
32	6	6	9
33	6	9	7
34	10	9	9

APPENDIX H

MEANS

MEANS

	Mean	SD
Age	59.47	8.34
Percent Participation in		
Art	.11	.10
Block	.24	.18
Community Living	.11	.10
Manipulative Table	.21	.11
Large Motor	.11	.06
Water Table	.04	.04
Library	.10	.08
Science	.05	.07
Other	.02	.03
Structure Score	2.35	.55
Teacher Presence	.40	.13
PARI Scores		
Father		
Authoritarian Control	16.57	9.31
Hostility-Rejection	.14	5.67
Democratic Attitude	15.10	5.46
Mother		
Authoritarian Control	18.76	8.18
Hostility-Rejection	2.76	4.76
Democratic Attitude	15.67	5.15
MSFM Scores		
Originality		
Instances	15.88	10.50
Patterns	15.38	12.95
Uses	6.29	5.14
Total	37.56	20.55
Popular		
Instances	12.44	5.36
Patterns	8.41	4.22
Uses	9.21	5.13
Total	30.56	9.44
Flexibility		
Instances	14.24	4.62
Patterns	13.38	5.07
Uses	7.71	3.41
Total	35.32	8.76

APPENDIX I

REGRESSION ANALYSIS

UTILIZING PARI

**** MULTIPLE REGRESSION ****

LISTWISE DELETION OF MISSING DATA

EQUATION NUMBER 1 DEPENDENT VARIABLE.. V64

BEGINNING BLOCK NUMBER 1. METHOD: STEPWISE

VARIABLE(S) ENTERED ON STEP NUMBER 1.. V22 PRESENCE HOST REJECT MOTHER

MULTIPLE R	.21059	ANALYSIS OF VARIANCE			
R SQUARE	.04435		DF	SUM OF SQUARES	MEAN SQUARE
ADJUSTED R SQUARE	-.00595	REGRESSION	1	59.30158	59.30158
STANDARD ERROR	8.20121	RESIDUAL	19	1277.83652	67.25982

F = .88168 SIGNIF F = .3595

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V22	-.361490	.384983	-.210586	-.939	.3595
(CONSTANT)	36.188877	2.081688		17.384	.0000

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V21	.115309	.117834	.999668	.504	.6205
V23	.055043	.054828	.948221	.233	.8184

END BLOCK NUMBER 1 PIN = .500 LIMITS REACHED.

**** MULTIPLE REGRESSION ****

LISTWISE DELETION OF MISSING DATA

EQUATION NUMBER 1 DEPENDENT VARIABLE.. V15 AVE STRUCTURE SCORE

BEGINNING BLOCK NUMBER 1. METHOD: STEPWISE

VARIABLE(S) ENTERED ON STEP NUMBER 1.. V55

MULTIPLE R	.47589	ANALYSIS OF VARIANCE			
R SQUARE	.22647		DF	SUM OF SQUARES	MEAN SQUARE
ADJUSTED R SQUARE	.18576	REGRESSION	1	1.06941	1.06941
STANDARD ERROR	.43846	RESIDUAL	18	3.65271	.18225

F = 5.86265 SIGNIF F = .0292

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V55	.010218	.004332	.475886	2.359	.0292
(CONSTANT)	1.921613	.192376		9.989	.0000

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V21	-.183685	-.206910	.881509	-.897	.3814
V22	.160588	.180459	.976802	.778	.4464
V23	.035012	.039707	.994890	.169	.8680

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VARIABLE(S) ENTERED ON STEP NUMBER 2.. V21 PRESENCE AUTHORI CONTL MOTHER

MULTIPLE R	.50949	ANALYSIS OF VARIANCE			
R SQUARE	.25958		DF	SUM OF SQUARES	MEAN SQUARE
ADJUSTED R SQUARE	.17732	REGRESSION	2	1.22579	.61289
STANDARD ERROR	.44073	RESIDUAL	18	3.49634	.19424

F = 3.15533 SIGNIF F = .0669

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V55	.010754	.004395	.500864	2.447	.0249
V21	-.010913	.012163	-.183685	-.897	.3814
(CONSTANT)	1.696204	.317022		5.350	.0000

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V22	.168173	.193010	.957543	.811	.4285
V23	-.115108	-.106988	.631050	-.444	.6629

**** MULTIPLE REGRESSION ****

EQUATION NUMBER 1 DEPENDENT VARIABLE.. V15 AVE STRUCTURE SCORE

VARIABLE(S) ENTERED ON STEP NUMBER 3.. V22 PRESENCE HOST REJECT MOTHER

MULTIPLE R	.53588	ANALYSIS OF VARIANCE			
R SQUARE	.28717		DF	SUM OF SQUARES	MEAN SQUARE
ADJUSTED R SQUARE	.16137	REGRESSION	3	1.35604	.45201
STANDARD ERROR	.44488	RESIDUAL	17	3.36609	.19801

F = 2.28283 SIGNIF F = .1158

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V55	.011323	.004493	.527385	2.520	.0220
V21	-.011309	.012280	-.190354	-.920	.3703
V22	.017155	.021152	.168173	.811	.4285
(CONSTANT)	1.619453	.333775		4.852	.0001

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V23	-.068395	-.062820	.601362	-.252	.8044

END BLOCK NUMBER 1 PIN = .500 LIMITS REACHED.

**** MULTIPLE REGRESSION ****

LISTWISE DELETION OF MISSING DATA

EQUATION NUMBER 1 DEPENDENT VARIABLE.. TOTFLEX

BEGINNING BLOCK NUMBER 1. METHOD: STEPWISE

VARIABLE(S) ENTERED ON STEP NUMBER 1.. V18 PRESENCE AUTHORI CONTL FATHER

MULTIPLE R	.16506	ANALYSIS OF VARIANCE			
R SQUARE	.02725		DF	SUM OF SQUARES	MEAN SQUARE
ADJUSTED R SQUARE	-.02395	REGRESSION	1	36.43353	36.43353
STANDARD ERROR	8.27426	RESIDUAL	19	1300.80457	68.46340
		F = .53216	SIGNIF F = .4746		

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V18	.144988	.198752	.165062	.729	.4746
(CONSTANT)	37.593142	3.756064		10.009	.0000

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V19	-.187270	-.188091	.981306	-.813	.4271
V20	.024757	.020387	.659624	.087	.9320

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VARIABLE(S) ENTERED ON STEP NUMBER 2.. V19 PRESENCE HOST REJECT FATHER

MULTIPLE R	.24831	ANALYSIS OF VARIANCE			
R SQUARE	.06166		DF	SUM OF SQUARES	MEAN SQUARE
ADJUSTED R SQUARE	-.04260	REGRESSION	2	82.45386	41.22693
STANDARD ERROR	8.34927	RESIDUAL	18	1254.78424	69.71024
		F = .59140	SIGNIF F = .5640		

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V18	.167479	.202455	.190666	.827	.4189
V19	-.270154	.332495	-.187270	-.813	.4271
(CONSTANT)	37.927250	3.812354		9.949	.0000

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V20	-.011859	-.009899	.642861	-.041	.9679

**** MULTIPLE REGRESSION ****

LISTWISE DELETION OF MISSING DATA

EQUATION NUMBER 1 DEPENDENT VARIABLE.. V15 AVE STRUCTURE SCORE

BEGINNING BLOCK NUMBER 1. METHOD: STEPWISE

VARIABLE(S) ENTERED ON STEP NUMBER 1.. TOTORIG

MULTIPLE R	.47589	ANALYSIS OF VARIANCE			
R SQUARE	.22647		DF	SUM OF SQUARES	MEAN SQUARE
ADJUSTED R SQUARE	.18576	REGRESSION	1	1.06941	1.06941
STANDARD ERROR	.43846	RESIDUAL	19	3.65271	.19225
		F = 5.56265	SIGNIF F = .0292		

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
TOTORIG	.010218	.004332	.475886	2.359	.0292
(CONSTANT)	1.921613	.192376		9.989	.0000

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V18	-.096765	-.108638	.974994	-.464	.6485
V19	.084193	.095078	.986469	.405	.6901
V20	-.177168	-.201140	.997016	-.871	.3951

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VARIABLE(S) ENTERED ON STEP NUMBER 2.. V20 PRESENCE DEMO ATTIT FATHER

MULTIPLE R	.50770	ANALYSIS OF VARIANCE			
R SQUARE	.25776		DF	SUM OF SQUARES	MEAN SQUARE
ADJUSTED R SQUARE	.17529	REGRESSION	2	1.21719	.60859
STANDARD ERROR	.44127	RESIDUAL	18	3.50494	.19472
		F = 3.12550	SIGNIF F = .0684		

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
TOTORIG	.010426	.004367	.485565	2.388	.0281
V20	-.015773	.018105	-.177168	-.871	.3951
(CONSTANT)	2.151698	.327473		6.571	.0000

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V18	-.319593	-.292896	.623415	-1.263	.2236
V19	.050043	.056486	.945677	.233	.8183

* * * * MULTIPLE REGRESSION * * * *

EQUATION NUMBER 1 DEPENDENT VARIABLE.. V19 AVE STRUCTURE SCORE

VARIABLE(S) ENTERED ON STEP NUMBER 3.. V18 PRESENCE AUTHORI CONTL FATHER

		ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE
MULTIPLE R	.56696				
R SQUARE	.32144				
ADJUSTED R SQUARE	.20169	REGRESSION	3	1.51787	.50596
STANDARD ERROR	.43419	RESIDUAL	17	3.20429	.18849

F = 2.68433 SIGNIF F = .0784

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
TOTORIG	.011733	.004419	.546470	2.656	.0167
V20	-.032668	.022276	-.366951	-1.466	.1608
V18	-.016882	.013208	-.318583	-1.263	.2236
(CONSTANT)	3.078918	.327163		6.357	.0000

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V18	.062125	.073263	.623083	.394	.7727

END BLOCK NUMBER 1 PIN = .500 LIMITS REACHED.

* * * * MULTIPLE REGRESSION * * * *

LISTWISE DELETION OF MISSING DATA

EQUATION NUMBER 1 DEPENDENT VARIABLE.. TOTORIG

BEGINNING BLOCK NUMBER 1. METHOD: STEPWISE

VARIABLE(S) ENTERED ON STEP NUMBER 1.. V18 PRESENCE AUTHORI CONTL FATHER

		ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE
MULTIPLE R	.15813				
R SQUARE	.02501				
ADJUSTED R SQUARE	-.02631	REGRESSION	1	256.14545	256.14545
STANDARD ERROR	22.92676	RESIDUAL	18	9887.09269	526.63626

F = .48731 SIGNIF F = .4936

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V18	.384438	.550713	.158134	.698	.4936
(CONSTANT)	44.884484	10.407803		4.314	.0004

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V18	-.140570	-.141025	.881306	-.604	.5531
V20	.222680	.183158	.659624	.780	.4396

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VARIABLE(S) ENTERED ON STEP NUMBER 2.. V20 PRESENCE DEMO ATTIT FATHER

		ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE
MULTIPLE R	.24024				
R SQUARE	.05771				
ADJUSTED R SQUARE	-.04698	REGRESSION	2	591.18477	295.59238
STANDARD ERROR	23.15654	RESIDUAL	18	9652.05333	536.22518

F = .55125 SIGNIF F = .5857

VARIABLES IN THE EQUATION

VARIABLE	B	SE B	BETA	T	SIG T
V18	.700274	.684870	.288049	1.022	.3201
V20	.823306	1.168077	.222680	.780	.4396
(CONSTANT)	36.190818	15.223047		2.377	.0287

VARIABLES NOT IN THE EQUATION

VARIABLE	BETA IN	PARTIAL	MIN TOLER	T	SIG T
V18	-.114373	-.115234	.642861	-.478	.6366

APPENDIX J

CORRELATIONS AND PARTIAL CORRELATIONS

FOR STRUCTURE AND TEACHER PRESENCE

- - - - - - - - - - - - - - PEARSON CORRELATION COEFFICIENTS - - - - - - - - - - - - - -

	V2	V15	V16	TOTORIG
V3	1.0000	.4632	-.2009	.1498
	(34)	(34)	(34)	(34)
	P= .	P= .006	P= .254	P= .398
V15	.4632	1.0000	.5403	.2976
	(34)	(34)	(34)	(34)
	P= .006	P= .	P= .001	P= .087
V16	-.2009	.5403	1.0000	.4054
	(34)	(34)	(34)	(34)
	P= .254	P= .001	P= .	P= .017
TOTORIG	.1498	.2976	.4054	1.0000
	(34)	(34)	(34)	(34)
	P= .398	P= .087	P= .017	P= .

(COEFFICIENT / (CASES) / 2-TAILED SIG) " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

- - - - - - - - - - - - - - PARTIAL CORRELATION COEFFICIENTS - - - - - - - - - - - - - -

CONTROLLING FOR.. V15

	V16	TOTORIG
V16	1.0000	.3044
	(0)	(31)
	P= .	P= .042
TOTORIG	.3044	1.0000
	(31)	(0)
	P= .042	P= .

(COEFFICIENT / (D.F.) / SIGNIFICANCE) (" . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED)

- - - - - - - - - - - - - - PARTIAL CORRELATION COEFFICIENTS - - - - - - - - - - - - - -

CONTROLLING FOR.. V16

	V15	TOTORIG
V15	1.0000	.1021
	(0)	(31)
	P= .	P= .286
TOTORIG	.1021	1.0000
	(31)	(0)
	P= .286	P= .

(COEFFICIENT / (D.F.) / SIGNIFICANCE) (" . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED)

APPENDIX K

T-TESTS FOR ACTIVITY CENTERS

BY GENDER AND CLASSROOM

T - T E S T

GROUP 1 - V2 EQ 1.
GROUP 2 - V2 EQ 2.

VARIABLE		NUMBER OF CASES	MEAN	STANDARD DEVIATION	STANDARD ERROR	F VALUE	2-TAIL PROB.	POOLED VARIANCE ESTIMATE T VALUE	DEGREES OF FREEDOM	2-TAIL PROB.	SEPARATE VARIANCE ESTIMATE T VALUE	DEGREES OF FREEDOM	2-TAIL PROB.
V5	AVE ART PARTICI												
	GROUP 1	16	0.0681	0.066	0.016	2.68	0.061	-2.58	32	0.015	-2.65	28.56	0.013
	GROUP 2	18	0.1483	0.108	0.025								
V6	AVE BLOCK PARTICI												
	GROUP 1	16	0.3731	0.142	0.035	1.56	0.378	5.65	32	0.000	5.58	28.75	0.000
	GROUP 2	18	0.1256	0.114	0.027								
V7	AVE COMM LIVING PARTICI												
	GROUP 1	16	0.0769	0.053	0.013	5.79	0.001	-1.62	32	0.115	-1.69	23.25	0.104
	GROUP 2	18	0.1322	0.127	0.030								
V8	AVE MANIP TABLE PARTICI												
	GROUP 1	16	0.1700	0.071	0.018	2.91	0.044	-2.30	32	0.028	-2.37	27.96	0.025
	GROUP 2	18	0.2500	0.122	0.029								
V9	AVE LARGE MOTOR PARTICI												
	GROUP 1	16	0.1094	0.065	0.016	1.00	0.986	-0.35	32	0.729	-0.35	31.82	0.729
	GROUP 2	18	0.1172	0.065	0.015								
V10	AVE WATER TABLE PARTICI												
	GROUP 1	16	0.0475	0.051	0.013	3.03	0.031	1.16	32	0.255	1.12	23.32	0.273
	GROUP 2	18	0.0311	0.029	0.007								
V11	AVE LIBRARY PARTICI												
	GROUP 1	16	0.0981	0.074	0.019	1.31	0.603	-0.37	32	0.714	-0.37	31.99	0.712
	GROUP 2	18	0.1083	0.085	0.020								
V12	AVE SCIENCE CENT PARTI												
	GROUP 1	16	0.0281	0.046	0.012	3.14	0.031	-1.92	32	0.063	-1.99	27.39	0.057
	GROUP 2	18	0.0728	0.082	0.019								
V13	AVE OTHER ACT PARTICI												
	GROUP 1	16	0.0306	0.038	0.009	3.18	0.024	2.15	32	0.039	2.08	22.96	0.049
	GROUP 2	18	0.0083	0.021	0.005								

T - T E S T

GROUP 1 - V4 EQ 3.
GROUP 2 - V4 EQ 4.

VARIABLE	NUMBER OF CASES	MEAN	STANDARD DEVIATION	STANDARD ERROR	F VALUE	2-TAIL PROB.	POOLED VARIANCE ESTIMATE T VALUE	POOLED VARIANCE ESTIMATE DEGREES OF FREEDOM	POOLED VARIANCE ESTIMATE 2-TAIL PROB.	SEPARATE VARIANCE ESTIMATE T VALUE	SEPARATE VARIANCE ESTIMATE DEGREES OF FREEDOM	SEPARATE VARIANCE ESTIMATE 2-TAIL PROB.
V5 AVE ART PARTICI												
GROUP 1	17	0.1006	0.104	0.025	1.24	0.672	-0.89	32	0.380	-0.89	31.64	0.380
GROUP 2	17	0.1206	0.094	0.023								
V6 AVE BLOCK PARTICI												
GROUP 1	17	0.2106	0.206	0.050	2.10	0.149	-1.04	32	0.308	-1.04	28.42	0.309
GROUP 2	17	0.2735	0.142	0.035								
V7 AVE COMM LIVING PARTICI												
GROUP 1	17	0.0694	0.048	0.012	6.87	0.000	-2.23	32	0.033	-2.23	20.80	*0.037
GROUP 2	17	0.1429	0.127	0.031								
V8 AVE MANIP TABLE PARTICI												
GROUP 1	17	0.2806	0.101	0.025	2.73	0.052	4.75	32	0.000	4.75	26.33	0.000
GROUP 2	17	0.1441	0.061	0.015								
V9 AVE LARGE MOTOR PARTICI												
GROUP 1	17	0.1106	0.063	0.015	1.18	0.744	-0.26	32	0.795	-0.26	31.78	0.795
GROUP 2	17	0.1165	0.068	0.016								
V10 AVE WATER TABLE PARTICI												
GROUP 1	17	0.0429	0.049	0.012	2.18	0.130	0.57	32	0.570	0.57	28.14	0.570
GROUP 2	17	0.0347	0.033	0.008								
V11 AVE LIBRARY PARTICI												
GROUP 1	17	0.0782	0.066	0.016	1.70	0.301	-1.94	32	0.062	-1.84	30.00	0.062
GROUP 2	17	0.1288	0.085	0.021								
V12 AVE SCIENCE CENT PARTI												
GROUP 1	17	0.0818	0.079	0.019	13.19	0.000	4.01	32	0.000	4.01	18.41	0.001
GROUP 2	17	0.0118	0.022	0.005								
V13 AVE OTHER ACT PARTICI												
GROUP 1	17	0.0159	0.029	0.007	1.43	0.484	-0.53	32	0.597	-0.53	31.03	0.597
GROUP 2	17	0.0218	0.035	0.008								

APPENDIX L

ANOVA'S FOR CREATIVITY LEVEL AND AGE, CREATIVITY LEVEL AND GENDER, AND GENDER AND CLASSROOM

* * * CELL MEANS * * *

V16 AVE TEACHER PRESENT PARTICI
BY V4 CLASS
CREATE

TOTAL POPULATION

0.40
(34)

V4

3	4
0.40 (17)	0.40 (17)

CREATE

1	2
0.37 (18)	0.44 (16)

V4 \ CREATE	1	2
3	0.35 (7)	0.44 (10)
4	0.38 (11)	0.44 (6)

* * * ANALYSIS OF VARIANCE * * *

V16 AVE TEACHER PRESENT PARTICI
BY V4 CLASS
CREATE

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	0.045	2	0.022	1.309	0.285
V4	0.002	1	0.002	0.145	0.706
CREATE	0.045	1	0.045	2.618	0.116
2-WAY INTERACTIONS	0.002	1	0.002	0.096	0.759
V4 CREATE	0.002	1	0.002	0.096	0.759
EXPLAINED	0.047	3	0.016	0.905	0.450
RESIDUAL	0.515	30	0.017		
TOTAL	0.561	33	0.017		

34 CASES WERE PROCESSED.
0 CASES (0.0 PCT) WERE MISSING.

* * * CELL MEANS * * *

V5 AVE ART PARTICI
BY V4 CLASS
CREATE

TOTAL POPULATION

0.11
(34)

V4

3	4
0.10 (17)	0.12 (17)

CREATE

1	2
0.08 (18)	0.14 (16)

V4 \ CREATE	1	2
3	0.05 (7)	0.14 (10)
4	0.10 (11)	0.15 (6)

* * * ANALYSIS OF VARIANCE * * *

V5 AVE ART PARTICI
BY V4 CLASS
CREATE

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	0.040	2	0.020	2.189	0.130
V4	0.010	1	0.010	1.135	0.295
CREATE	0.037	1	0.037	4.006	0.054
2-WAY INTERACTIONS	0.004	1	0.004	0.405	0.530
V4 CREATE	0.004	1	0.004	0.405	0.530
EXPLAINED	0.044	3	0.015	1.594	0.211
RESIDUAL	0.274	30	0.009		
TOTAL	0.317	33	0.010		

34 CASES WERE PROCESSED.
0 CASES (0.0 PCT) WERE MISSING.

CELL MEANS * * *

V6 AVE BLOCK PARTICI
BY V4 CLASS
CREATE

TOTAL POPULATION

0.24
(34)

V4

3	4
0.21 (17)	0.27 (17)

CREATE

1	2
0.26 (18)	0.22 (16)

V4 \ CREATE	1	2
3	0.21 (7)	0.21 (10)
4	0.30 (11)	0.22 (6)

* * * ANALYSIS OF VARIANCE * * *

V6 AVE BLOCK PARTICI
BY V4 CLASS
CREATE

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	0.043	2	0.022	0.661	0.524
V4	0.024	1	0.024	0.736	0.398
CREATE	0.010	1	0.010	0.293	0.592
2-WAY INTERACTIONS	0.014	1	0.014	0.425	0.519
V4 CREATE	0.014	1	0.014	0.425	0.519
EXPLAINED	0.057	3	0.019	0.582	0.631
RESIDUAL	0.982	30	0.033		
TOTAL	1.039	33	0.031		

34 CASES WERE PROCESSED.
0 CASES (0.0 PCT) WERE MISSING.

* * * CELL MEANS * * *

V7 AVE COMM LIVING PARTICI
BY V4 CLASS
CREATE

TOTAL POPULATION

0.11
(34)

V4

3	4
0.07 (17)	0.14 (17)

CREATE

1	2
0.11 (18)	0.10 (16)

CREATE	1	2
V4		
3	0.07 (7)	0.07 (10)
4	0.13 (11)	0.17 (6)

* * * ANALYSIS OF VARIANCE * * *

V7 AVE COMM LIVING PARTICI
BY V4 CLASS
CREATE

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	0.048	2	0.024	2.480	0.101
V4	0.048	1	0.048	4.956	0.034
CREATE	0.002	1	0.002	0.212	0.648
2-WAY INTERACTIONS	0.003	1	0.003	0.332	0.569
V4 CREATE	0.003	1	0.003	0.332	0.569
EXPLAINED	0.051	3	0.017	1.764	0.175
RESIDUAL	0.290	30	0.010		
TOTAL	0.342	33	0.010		

34 CASES WERE PROCESSED.
0 CASES (0.0 PCT) WERE MISSING.

* * * CELL MEANS * * *

V8 AVE MANIP TABLE PARTICI
BY V4 CLASS
CREATE

TOTAL POPULATION

0.21
(34)

V4

3	4
0.28 (17)	0.14 (17)

CREATE

1	2
0.19 (18)	0.23 (16)

CREATE	1	2
V4		
3	0.28 (7)	0.28 (10)
4	0.14 (11)	0.15 (6)

* * * ANALYSIS OF VARIANCE * * *

V8 AVE MANIP TABLE PARTICI
BY V4 CLASS
CREATE

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	0.159	2	0.079	10.649	0.000
V4	0.146	1	0.146	19.549	0.000
CREATE	0.000	1	0.000	0.059	0.809
2-WAY INTERACTIONS	0.001	1	0.001	0.089	0.767
V4 CREATE	0.001	1	0.001	0.089	0.767
EXPLAINED	0.159	3	0.053	7.129	0.001
RESIDUAL	0.224	30	0.007		
TOTAL	0.383	33	0.012		

34 CASES WERE PROCESSED.
0 CASES (0.0 PCT) WERE MISSING.

* * * CELL MEANS * * *

V9 AVE LARGE MOTOR PARTICI
BY V4 CLASS
CREATE

TOTAL POPULATION

0.41
(34)

V4

3	4
0.11 (17)	0.12 (17)

CREATE

1	2
0.12 (18)	0.11 (16)

CREATE	1	2
V4		
3	0.15 (7)	0.08 (10)
4	0.10 (11)	0.15 (6)

* * * ANALYSIS OF VARIANCE * * *

V9 AVE LARGE MOTOR PARTICI
BY V4 CLASS
CREATE

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	0.001	2	0.000	0.135	0.874
V4	0.000	1	0.000	0.030	0.864
CREATE	0.001	1	0.001	0.190	0.666
2-WAY INTERACTIONS	0.026	1	0.026	7.053	0.013
V4 CREATE	0.026	1	0.026	7.053	0.013
EXPLAINED	0.027	3	0.009	2.441	0.084
RESIDUAL	0.110	30	0.004		
TOTAL	0.137	33	0.004		

34 CASES WERE PROCESSED.
0 CASES (0.0 PCT) WERE MISSING.

* * * CELL MEANS * * *

V10 AVE WATER TABLE PARTICI
BY V4 CLASS
CREATE

TOTAL POPULATION

0.04
(34)

V4

3	4
0.04 (17)	0.03 (17)

CREATE

1	2
0.04 (18)	0.03 (16)

V4	CREATE 1	2
3	0.05 (7)	0.03 (10)
4	0.04 (11)	0.03 (6)

* * * ANALYSIS OF VARIANCE * * *

V10 AVE WATER TABLE PARTICI
BY V4 CLASS
CREATE

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	0.002	2	0.001	0.424	0.659
V4	0.001	1	0.001	0.517	0.478
CREATE	0.001	1	0.001	0.529	0.473
2-WAY INTERACTIONS	0.001	1	0.001	0.325	0.573
V4 CREATE	0.001	1	0.001	0.325	0.573
EXPLAINED	0.002	3	0.001	0.391	0.761
RESIDUAL	0.054	30	0.002		
TOTAL	0.057	33	0.002		

34 CASES WERE PROCESSED.
0 CASES (0.0 PCT) WERE MISSING.

* * * CELL MEANS * * *

V11 AVE LIBRARY PARTICI
BY V4 CLASS
CREATE

TOTAL POPULATION

0.10
(34)

V4

3	4
0.06 (17)	0.13 (17)

CREATE

1	2
0.12 (18)	0.09 (16)

V4	CREATE 1	2
3	0.07 (7)	0.06 (10)
4	0.14 (11)	0.10 (6)

* * * ANALYSIS OF VARIANCE * * *

V11 AVE LIBRARY PARTICI
BY V4 CLASS
CREATE

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	0.023	2	0.012	1.983	0.155
V4	0.018	1	0.018	3.029	0.092
CREATE	0.002	1	0.002	0.291	0.600
2-WAY INTERACTIONS	0.007	1	0.007	1.160	0.290
V4 CREATE	0.007	1	0.007	1.160	0.290
EXPLAINED	0.030	3	0.010	1.709	0.186
RESIDUAL	0.177	30	0.006		
TOTAL	0.207	33	0.006		

34 CASES WERE PROCESSED.
0 CASES (0.0 PCT) WERE MISSING.

* * * CELL MEANS * * *

V12 AVE SCIENCE CENT PARTI
BY V4 CLASS
CREATE

TOTAL POPULATION

0.05
(34)

V4

3	4
0.09 (17)	0.01 (17)

CREATE

1	2
0.06 (18)	0.05 (16)

V4	CREATE 1	2
3	0.11 (7)	0.08 (10)
4	0.01 (11)	0.02 (6)

* * * ANALYSIS OF VARIANCE * * *

V12 AVE SCIENCE CENT PARTI
BY V4 CLASS
CREATE

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	0.055	2	0.027	7.772	0.002
V4	0.053	1	0.053	15.125	0.001
CREATE	0.000	1	0.000	0.083	0.776
2-WAY INTERACTIONS	0.003	1	0.003	0.784	0.383
V4 CREATE	0.003	1	0.003	0.784	0.383
EXPLAINED	0.057	3	0.019	5.433	0.004
RESIDUAL	0.106	30	0.004		
TOTAL	0.163	33	0.005		

34 CASES WERE PROCESSED.
0 CASES (0.0 PCT) WERE MISSING.

* * * CELL MEANS * * *

V13 AVE OTHER ACT PARTICI
BY V4 CLASS
CREATE

TOTAL POPULATION

0.02
(34)

V4

3	4
0.02 (17)	0.02 (17)

CREATE

1	2
0.02 (18)	0.02 (16)

CREATE

V4	1	2
3	0.02 (7)	0.02 (10)
4	0.02 (11)	0.03 (6)

* * * ANALYSIS OF VARIANCE * * *

V13 AVE OTHER ACT PARTICI
BY V4 CLASS
CREATE

SOURCE OF VARIATION	SUM OF SQUARES	DF	MEAN SQUARE	F	SIGNIF OF F
MAIN EFFECTS	0.001	2	0.000	0.230	0.796
V4	0.000	1	0.000	0.369	0.548
CREATE	0.000	1	0.000	0.189	0.667
2-WAY INTERACTIONS	0.000	1	0.000	0.179	0.676
V4 CREATE	0.000	1	0.000	0.179	0.676
EXPLAINED	0.001	3	0.000	0.213	0.887
RESIDUAL	0.033	30	0.001		
TOTAL	0.033	33	0.001		

34 CASES WERE PROCESSED.
0 CASES (0.0 PCT) WERE MISSING.

APPENDIX M

CONSENT LETTERS

March 2, 1987

Dear Parent:

As part of an ongoing research project on the correlates of creative potential in children sponsored by the Department of Family Relations and Child Development, we were interested in administering measures of creativity to children attending the OSU Child Development Laboratories. We would like to have your cooperation in permitting your child to participate in the project. This letter provides information concerning the children's involvement in the study.

Each child will be seen individually by one of the Child Development graduate assistants for one 20 minute session in order to administer the creativity measures. The measures require responding to several standardized questions in a "pressure-free" setting. Our experience has been that most children enjoy participating in this research since the activities administered are similar to those found in the child's home or classroom.

To ensure confidentiality, your child's name will not appear on the creativity answer forms. We respect the right of the parent and the child to withdraw from the research at any time. However, we do not forsee any physical, emotional, or social risks to you or the child as a result of participation.

Please sign the enclosed form and return it to the box in your child's room to allow your child to participate. If you have any questions, feel free to contact Dr. Jim Moran, the project director, at 624-5057, or Beverly Gafford, researcher, at 377-3601. Thank you for your cooperation.

Sincerely,

Jim Moran

Beverly Gafford

I would like to give permission for my child _____ to participate in the creativity research (Project # 100). I acknowledge that we have received information discussing the research and are still free to contact the researchers or to withdraw from the research at any time.

Name:_____

Signature:_____

I am interested in receiving an abstract of the completed research.

yes_____

No _____

April 6, 1987

Dear Parents:

We appreciate your willingness to allow your child to participate in the creativity research conducted by the Department of Family Relations and Child Development. In order to extend the results of this study we are asking your help.

Enclosed please find an Inventory of Attitudes on Family Life and Children. The information provided by this inventory will allow us to correlate the effects of parent's child rearing attitudes and children's creative potential. We are asking that you take 15 minutes to respond to the inventory. When indicating your opinion, please circle the appropriate response as described in the directions. Again, neither your nor your child's name will appear on the inventory to ensure confidentiality.

After completing the inventory, please return the form to the box located in your child's room. If you have any questions, feel free to contact Dr. Jim Moran, project director, at 624-5057, or Beverly Gafford, researcher, at 377-3601. Thank you for your cooperation.

Sincerely,

Jim Moran

Beverly Gafford

APPENDIX N

PRESS RELEASE

Oklahoma State University Master's student finds that creative preschool children spend more time in art and more time with teachers than less creative children. These choices are not affected by the amount of strictness, hostility, or open-mindedness in the parent-child relationship.

During observations of actual preschool classrooms, researcher, Beverly Gafford, and assistants observed creative children to spend more time in games and activities where teachers were present. Teachers appeared more often in activities having only one use such as books, puzzles, or board games. Creative children seemed to prefer these more limited activities as well.

Further study showed creative preschoolers actually played near teachers regardless of the number of ways play materials could be used. It is not known whether creative children actually move near teachers to play or if teachers move near the creative children. Creative preschoolers were also shown to prefer art activities, even without teachers nearby. Younger creative children enjoyed large motor activities (climbing, jumping, crawling activities, etc.) more so than other preschoolers.

Strict, hostile, or open-minded home backgrounds did not affect the preschoolers' creative responding or their choice of play materials at school. Parental influences may have more of an impact on creativity during later childhood and adolescence rather than during early childhood.

VITA 2

Candidate for the Degree of

Master of Science

Thesis: THE RELATIONSHIP OF PARENTAL CHILD REARING ATTITUDES AND PRESCHOOLERS' CREATIVE POTENTIAL TO THE SELECTION OF STRUCTURED AND UNSTRUCTURED PLAY ACTIVITIES

Major Field: Home Economics - Family Relations and Child Development

Biographical:

Personal Data: Born in Jackson, Tennessee, May 16, 1964, the daughter of Joe and Edna Gafford; married June 11, 1988, to Charles L. Rake.

Education: Graduated from Broken Arrow High School, Broken Arrow, Oklahoma, May 1982; received Bachelor of Science Degree in Elementary Education from Oklahoma State University in 1985; completed requirements for the Master of Science Degree at Oklahoma State University in December 1988.

Professional Experience: Lead Teacher, Oklahoma State University Child Development Laboratories, August, 1986 to July, 1987; teacher with Owasso Public Schools, grades first and transitional first, August, 1987 to present.

Professional Affiliations: Alpha Lambda Delta; Phi Kappa Phi, Omicron Nu, Oklahoma Education Association.