THE EFFECTS OF HIGHLY STRUCTURED AND MINIMALLY STRUCTURED PLAYTHINGS ON CHILDREN'S FANTASY PRODUCTIONS

by

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CHAPTER I

INTRODUCTION

General Statement of the Problem

The intent of this study was to investigate the relationship between children's predisposition to "make-believe" fantasy play and the kinds of playthings that stimulate or suppress such behavior.

Many observers have noted that most young children, somewhere between the ages of 2 and 3, discover the delightful world of fantasy and make-believe. Every parent can describe incidents in which a leaf, a stick, a scrap of cloth become imbued with new meaning for the child. Perhaps the stick becomes a baby wrapped in a make-believe blanket, whose dinner is tenderly served on a leaf plate. Piaget (1962) noted the rudiments of such fantasy play in his children at a year to 15 months old. Church's (1966) mothers reported it in two of the "Three Babies" as early as 14 months. Usually such fantasy play is accompanied by laughter and manifestations of delight. In older children it takes the form of story-telling and dramatic role-playing. In still older children it can be observed in the ability to produce varied and fanciful responses to school tasks; to write a composition, to paint a picture, or to compose poetry that has the quality of imagination and originality. Yet not all children have this ability; in fact, after many years of teaching and observing children, this writer has wondered whether it is not gradually decreasing among

children today.

There could be many reasons for such a decrease in fantasy ability. For one thing, there is much less need for children of this generation to exercise fantasy. In the movies, on TV, and in their toys, they are provided with the utmost in pre-fabricated fantasy materials. Corncob dolls and scrapwood guns are things of the past; children today have dolls as well dressed and sophisticated as Vogue models, and war toys so realistic as to be often gruesome. Nothing is left to the imagination; thus it is understandable that imagination and fantasy might decline. Singer (1966, p. 48) has raised the intriguing question of whether such realistic toys might not actually impede fantasy development. At least, it might be expected that children would tire of them more quickly because they have such limited possibilities. Conversely, unstructured toys, being less clearly defined, could give rise to a greater variety of fantasy themes. There has been some research, reviewed below, which indicates that the structure of toys has an effect upon play behavior. (Barker, Dembo and Lewin, 1941; Gilmore, 1964; Phillips, 1945; Riess, 1957.) In other areas of study, the role of stimulus characteristics in influencing behavior has come under observation. Berkowitz and Le Page (1967) found that the sight of guns in their experimental room elicited much stronger aggressive responses from aroused men, than were observed when no guns were present. Lieberman, in a recent study of playfulness, stated,"It might be worth exploring whether some play materials more than others would encourage playfulness in the child ... it might aid in selecting play materials that stimulate creative thinking" (1964, p. 98). It was to study the role of the structural characteristics of

playthings in determining the degree of fantasy in children's play that the present study was designed.

The Issue of Fantasy: Constructive or Compensatory

Fantasy has been defined as "a product of the imagination" (Webster's Collegiate Dictionary, 4th ed.); "the process, the faculty or the result of forming representations of things not actually present" (Oxford Universal Dictionary, 3rd ed.). There is also an element of the fantastic in fantasy; the unreal, the whimsical, the dream-like, which provides an escape from prosaic, everyday reality. This process or faculty of fantasying or day-dreaming has not always been looked upon with approval. It has, at times, been equated with "wool-gathering" or "building castles in the air."

Freud (1962), the most influential theorist of this century, felt that fantasies and daydreams represented unfulfilled wishes; his "wish-fulfillment" explanation of fantasy has permeated the thinking of most other writers on this subject. For the psychoanalytic school, fantasy represents a neurotic defense, a projection of inner emotions or a way of seeking satisfactions not available in the environment. (Amen and Renison, 1954; Griffiths, 1935; Isaacs, 1933; Jersild, Markey and Jersild, 1933; M. Lowenfeld, 1935). Learning theorists, represented by Sears and his associates, have regarded the doll-play fantasies of young children chiefly as an outlet for antecedent frustrations. There are a great many of these studies in the literature, which have been reviewed by Cohn (1962) and by Levin and Wardwell (1962).

In recent years, however, there has been a trend away from the Freudian interpretation towards a view of fantasy as a constructive,

cognitive ability. Piaget (1962), whose work has gradually become known in this country, considered "ludic symbolism", the make-believe fantasies of children, an indispensable step in their cognitive development. The imaginative symbol was the means by which the child moved beyond the concrete and immediately present to the realm of operational thought. Werner (1948) spoke of the oscillation between fantasy and everyday reality that characterizes children's play, and regarded it as a necessary part of the child's development. "... the older the child grows, the more he becomes aware of the fictitious character of his play fantasies. A sign of this development is the fluctuation of his attitude toward the creations of his own fancy." (1948, p. 398). McClelland and his associates (1953), particularly Atkinson (1958), have pointed out the role of fantasy in achievement motivation. Singer (1966) has pioneered in the study of day-dreams, and with his associates has shown through research that day-dreaming is a cognitive skill related to self-control, delay of gratification, and the development of creative thought. Marshall and her associate (1961, 1965) have challenged Sears' theory by reporting that doll-play fantasies in nursery-school children are related to pleasant experiences, and that pleasant and stimulating home relations are directly associated with the use of fantasy in play with peers.

This dichotomy between fantasy as constructive and fantasy as compensatory is found also in the attitudes of educators toward the fantasy play of children. In the 19th century Froebel described the child as a self-active, creative being who should be educated by self-expression. But half a century later Dr. Maria Montessori created a system which frowned upon imaginative play as a "somewhat unfortunate

pathological tendency of early childhood" (Hill, in Garrison, 1926, p. xiv). Her materials were designed to suppress fantasy and imaginative play. Children should not make believe, Montessori declared: "to encourage them along such lines was to encourage defects of character" (Gross & Gross, 1965). The fact that Montessori's theories and materials are enjoying such a revival today may be contributing to a decrease in fantasy play.

On the other hand, the researchers in creativity (Getzels and Jackson, 1962; Guilford, 1956; Torrance, 1962; Taylor, 1964; Wallach and Kogan, 1965) all seem to be searching for ways to increase imaginative, divergent thinking. One psychologist (de Mille, 1967) has recently published a book of games designed to exercise children's imagination, which he regards as "an intellectual ability that can be improved by practice" (1967, p.19). He further states:

> Television and comic book fantasy can hardly be expected to cultivate the imagination, because it is already completely formed, on the screen or on the page. Nothing is left for the child to do but absorb it. The experience of the child is passive. It is not his imagination that is being exercised, but that of some middle-aged writer in Hollywood, New York, or Chicago (1967, p. 78).

Aim of the Present Study

If imagination, the ability to use fantasy freely and creatively, is a fundamental cognitive skill, it should be possible to measure the effects of differences in this skill experimentally. Singer (1961) has demonstrated this with a group of children aged six through nine whom he divided into high fantasy and low fantasy groups on the basis of a structured interview. He found a number of differences in the personality correlates of these children, including greater creativity

in the stories they told, and greater ability to sit quietly, presumably while engrossed in fantasy. The present study attempted to extend Singer's research by investigating the effects of the stimulus situations upon children with high and low predispositions to fantasy. It was predicted that significant differences would appear in the attitudes and performances of the two groups of children and that these differences might be found to be related to the degree of structure in the stimulus situation.

Experiments Using Toys as a Variable

The earliest fantasy play, as observed by Piaget and others, is in relation to objects - the toys and materials the child has at hand. The effect of such materials upon the development of fantasy thus becomes of great interest, and many writers have expressed opinions similar to the following (Kawin, 1934, p. 18):

> The purpose of wisely selected toys and play materials is to stimulate the activity and initiative of the children themselves, rather than to "teach" them ... good play materials are those with which children can do something. Materials that lend themselves to a variety of uses help children to develop greater resourcefulness, greater skill, and richer imagination; they help the child develop himself.

In spite of the many expressions of such opinion in the literature, very few studies have been directed toward the effects of different kinds of toys or materials upon children's play. The well known research of Barker, Dembo, and Lewin (1941) compared the responses of pre-school children to a group of toys, parts of which were missing, before and after they had access to more elaborate and attractive toys. The authors cited the regressive behavior of the

children after they were forced to leave the more attractive toys, as support for the frustration-regression hypothesis.

In a more recent study, Riess (1957) used two kinds of toys to study the amount of active motor behavior shown by children who did and did not give M responses on the Rorschach test, (M refers to a human movement response and is discussed below, p. 11). Her toys were chosen to elicit high and low levels of activity. In the former group were: rubber balls, a yoyo, a pingpong paddle with a rubber ball attached, and a jump rope. In the low activity group were: two books with pictures and text, a puzzle, a kaleidescope, and a coloring book and crayons. Riess observed her subjects, aged 6 and 7, playing with the two groups of toys and noted which toys they chose and how actively they played with them in 10-minute sessions. She found that M children invest more energy in fantasy or thought absorption than in muscle play. Out of 30 children in the M group, half got the lowest possible activity score of 40, while only 6 of the non-M group got scores of 40.

A study by Lesser (cited in Singer, 1966, p. 131) used as subjects two groups of children characterized as being more or less imaginative. When asked to choose which of a number of expensive toys they would like as a reward for task performance, the less imaginative children chose toys associated with vigorous motor play, such as a basketball or a baseball bat. The more imaginative group, however, chose toys requiring little motor activity but greater fantasy output, such as a fort with soldiers, or a science kit. These findings suggest that more imaginative children prefer toys which give them some outlet for their imaginative abilities.

There have been many studies of how dolls are used to express children's feelings of frustration and aggression. A doll house and a doll family of five (father, mother, boy, girl, and baby) are standard equipment in most clinics and play therapy rooms. Yet the only study using these materials as a controlled variable was made by Phillips (1945), a student of Sears. She compared the effect upon preschool children's doll play of materials of high realism (miniature, life-like furniture and bendable dolls appropriately dressed) with materials of low realism (crudely constructed, block-like furniture and sexless stuffed dolls without clothing). Her results showed that her subjects spent significantly more time exploring the high realism materials, but that the low realism materials elicited a significantly greater number of themes in the children's play. "Because of the ambiguity of the pieces there was relatively more leeway with respect to the kinds of themes which the child appeared to feel free to build" (p. 138).

This finding clearly suggests that toys of low realism stimulate more fantasy, at least in preschool children. However, a series of studies by Gilmore (1964) found that children from 5 to 8 "seem to prefer novel (or complex) toys over 'simple' toys" (in Haber (Ed.) 1966, p. 354). Gilmore was attempting to test the Piagetian theory that play is the child's way of assimilating and learning to cope with new materials and experiences. This led him to the hypothesis that children would prefer novel toys (which would give them new experiences of mastery) to simple toys (which presumably they have already mastered). Gilmore also designed his study to test the psychoanalytic theory that play serves to lower anxiety by playing

with and thus controlling the anxiety-producing representations. He hypothesized that anxious children would prefer the novel toys less than non-anxious children. To test these assumptions, he selected as subjects 36 children aged 5 to 8, half of whom were in hospitals awaiting tonsillectomies, and half of whom were in school. He presented them with different sets of toys which included two novel toys and two simple toys. One of the toys in each category was symbolic of the coming operation (a toy stethescope, a plastic medical bag, a thermometer, and a toy ambulance), while one was not (a pinball device, a plastic pig, a pipe cleaner, a pad and pencil). He found that all children preferred the novel toys, but that anxious children preferred the hospital-relevant toys more than non-anxious children. A second study was designed to discriminate between children anxious about a painful auditory experience, and those anxious about a painful visual experience, as compared with a non-anxious control group. Again, Gilmore was able to show the effectiveness of his anxiety manipulations, and again both groups of children preferred the novel toys. A third study to see whether subjects expecting auditory enjoyment played differently from subjects expecting auditory pain, showed a significant avoidance of anxiety-relevant toys by anxious subjects, and did not support psychoanalytic theory. However, since Ss in all three studies responded consistently to the more complex toys, Gilmore concluded that "all children seem to prefer novel toys" (in Haber (Ed.) 1966, p. 354).

Effect of Structure of the Toys

All of the studies cited above, while not in agreement as to objectives or results, showed the differential effect of different

kinds of toys upon children's behavior. Therefore it was decided, in this study, to compare the effects of two degrees of structure upon children's fantasy play. It was hypothesized that minimally structured materials such as blocks, clay, or simple rag dolls, would stimulate children's fantasy more than extremely realistic toys, which left little to the imagination. The effects of such stimulation might be expected to manifest itself in richer, less reality-bound fantasy productions. Furthermore, a greater variety of fantasy themes might be elicited by minimally structured playthings because the child's responses would be less anchored to specific stimulus situations. A bride doll could only suggest stories about a wedding, while a simple rag doll could be a baby, a witch, or a fairy princess. It was also predicted that children would tire less quickly of playing with simple, unstructured materials which could be adapted to many uses, than with highly structured toys which were obviously limited in function.

To test this hypothesis, two sets of playthings were assembled which were matched in function, but differed as much as possible in degree of structure. For example, a box full of "dress-up" materials of all kinds, which a child could combine into many different costumes, was matched with a selection of ready-made costumes for boys and girls, which were complete in every detail. The two sets of playthings were then presented to two groups of children with different levels of predisposition to fantasy, in order to study the experimental effects.

Role of Fantasy Predisposition

In order to clarify the role of fantasy as a cognitive ability rather than merely a neurotic defense, it was necessary to select groups with high and low predispositions to fantasy. It was expected

that children with a high predisposition to fantasy would show more personality correlates related to imaginative or creative skills than children with a low fantasy predisposition, thus testing the above hypothesis. Since no clear-cut test for fantasy predisposition exists, a number of measures were tried out in the pilot study preceding this investigation. Three were selected, each of which taps a different level of fantasy life. The theoretical rationale for the choice of each of these tests will be reviewed briefly.

Early in this century Rorschach (1942) first advanced the theory that the perception of human movement (scored M) is a function of "inner living"; by this he meant such ideational processes as imagination, reverie, fantasy, creative thinking, planning and anticipatory thinking. The literature on this subject is huge and has been reviewed very capably elsewhere (Singer, 1955, 1960; Herman, 1957); suffice it to say that many clinicians and some experimentalists accept the M response as an expression of inner creativity which is inversely related to outward motility. In other words, the person high in M responses might be expected to delay or inhibit motor discharge of impulses in favor of ideational activity. This theory is experimentally supported by the extensive work of Singer and his associates (1955, 1960), Herman (1957), and Riess (1957), who used children as subjects.

The Rorschach test is extremely complex and includes many determinants beside M. Barron (1955), however, has devised a series of inkblots to measure only the M variable and this was selected as the simplest and easiest inkblot test for young children. No color is used in the plates, and they become progressively easier to see as

human figures in some sort of motion. The first 8 plates were omitted as too difficult, and the remaining 20 were presented to each child on the theory that the earlier human movement was perceived, the greater was the child's predisposition to fantasy.

The second screening test was a structured interview devised by Singer (1961). It consisted of four questions which for Singer successfully discriminated between high and low fantasy children. One of them asked whether S had ever had an imaginary friend or playmate. This is a phenomenon which has been studied by a number of investigators (Ames and Learned, 1946; Hurlock and Burstein, 1932; Jersild et al., 1933; Singer and Streiner, 1965). Ames and Learned (1946) found approximately 20% of young children had imaginary companions, but Stone and Church (1957) on the basis of inquiries of college girls, reported that the incidence of imaginary companions might be closer to 50%. Jersild et al. (1933) questioned 400 children from 5 to 12 and found 143 of them were able to describe imaginary characters, who were often shared with other children. It was hypothesized for this study that children who reported having imaginary companions would more likely be children with a high predisposition to fantasy.

The third screening test consisted of asking the child to draw a picture of "whatever you like to think about" and then encouraging him to make up a story about his drawing. This was done to give the child an opportunity for free creative self-expression in order to see how imaginatively he responded, (Hartley, Frank & Goldenson, 1952; V. Lowenfeld, 1954). Alschuler and Hattwick (1947) have pointed out that children often verbalize more freely while painting, and it was

felt that fantasy content would be more freely expressed during this task.

Personality Correlates of High Fantasy Predisposition

From evidence in the literature it was hypothesized that children with a high predisposition to fantasy (HP) would not only play more productively and longer than children of low fantasy predisposition (LP), but would show certain personality characteristics which would distinguish them from low fantasy children. Hartley et al. (1952) and Lieberman (1964) have described the joy and delight manifested in play by children described as spontaneous, original and well adjusted. Therefore it was expected that HP children in this study would be rated as showing greater enjoyment in the play sessions than would LP children.

Singer's (1961) finding t at high fantasy children were able to sit still longer than low fantasy children led to the hypothesis that HP children would show less motility in play than LP children. This expectation was also substantiated by Riess' (1957) study indicating that highly imaginative children showed greater motor restraint during a waiting period than did less imaginative children. The latter findings are a part of the theory regarding the meaning of the early M response discussed above.

Another characteristic that it was hypothesized might be expected of HP children, was flexibility when the structure of the situation and the demands upon subjects were suddenly changed. To test this, a Flexibility Test was devised which involved a sudden interruption of each child's free play; he was then given increasingly structured directions with which he was expected to comply. This

situation was designed to test Singer's (1966) assertion that high fantasy is associated with the ability to control impulses and delay gratification. A child interrupted in the midst of free play would need to have such control in order to comply amiably with the demands made upon him. Furthermore, if fantasy is, as Singer states, a creative, cognitive skill, it might be expected to have some of the characteristics that have been associated with creativity, such as divergent thinking (Guilford, 1956); flexibility, originality, and inventiveness (Torrance, 1962); or productivity and uniqueness (Wallach and Kogan, 1965). It was predicted that it would be possible to rate the responses to the Flexibility Test in terms of divergency or originality of content, as well as conformity to instructions.

Interaction Hypothesis

In addition to predicting the effects of degrees of structure in the toys and levels of fantasy predisposition in the subjects of this study, it appeared theoretically possible that these two factors might interact to produce differential results. Children of low levels of fantasy development, it was theorized, might need the stimulation of highly structured toys. A model train might elicit a more imaginative story from a low fantasy child than would a row of blocks, though the high fantasy child might be able to use the blocks equally well just by imagining that they formed a train. If this should be the case, it was hypothesized that the use of more or less structured toys would differentially affect fantasy production in children with different levels of predisposition to fantasy. This study was therefore designed so that children of high and low predispositions to fantasy would be exposed to both highly structured and minimally structured

playthings. In this way any significant interaction between the two factors of fantasy predisposition and structure of the toys could be observed.

The Role of Sex Differences

A third independent variable included in the design was the factor of sex. Since previous research (reviewed by Kagan in Hoffman and Hoffman (Eds.), 1964, Vol I, pp. 137-167) has pointed up many differences between the play patterns of boys and girls, it was decided that sex differences in fantasy play and in reactions to the two sets of toys should be studied. Rosenberg and Sutton-Smith (1960) tested children in grades 4, 5 and 6 and found that in 1960 girls were more masculine in their game choices than they had been 30 years earlier. As Kagan put it in his review, "It may be that the wall separating male and female recreational activities is cracking, and some of the traditional differences in sex-typed game choices may be undergoing some change" (p. 142). Moreover, Rabban (1950) studied the toy preferences of younger children (aged 3 to 8) and found that the choices of lower-class boys and girls conformed more closely to traditional sex-typed patterns than the choices of middle-class children, suggesting that the differentiation in sex roles is sharper in lower-class families. He also found the difference in sex-typing between the classes was greatest for girls. "Apparently the middle-class girl, unlike the middle-class boy, is much freer to express an interest in toys and activities of the opposite sex" (Kagan, in Hoffman and Hoffman, (Eds.), Vol. I, p. 142). As a similar trend was observed in the pilot study preceding this experiment, it was decided to compare the sex-typed behavior of boys and girls in the two play situations. Since

Kagan and Moss (1962) found a positive correlation for girls between the educational level of the family and involvement in masculine activities, it was expected that a sample chosen from upper middle-class homes in which most parents were college graduates would show a similar pattern of interests.

Effects of Birth Order

Evidence in Singer's 1961 study suggested that high fantasy was more often found in first-born and only children than in later-born siblings. This led to the hypothesis that the first-born and only children in this study would show higher levels of fantasy production than would later-born children. The extensive literature on birth order is reviewed by Clausen (in Hoffman and Hoffman (Eds.), Vol. II, 1966); it was hoped to be able to contribute to the research on this subject.

Characteristics of the Sample

Writers too numerous to list have described the play of the pre-school child; as Hartley et al. (1952) have so sensitively pointed out, it is "the mirror of the child." Studies of fantasy in the early grades, however, have been relatively few (Foster, 1930; Green, 1922; Jersild et al., 1933). It was the intent of this study, therefore, to investigate the fantasy of children in the primary grades.

The findings of Singer and his associates (1966) suggest that cultural background, socio-economic level, intelligence and verbal facility, ability to control impulses and delay gratification - all of these are related to fantasy development. For the present study, therefore, subjects were selected from a relatively homogeneous group of children of above-average intelligence and verbal ability who came

from homes of high socio-economic status. All the children were white and almost all of them were of Anglo-Saxon families. By using such a restricted sample, it was hoped to eliminate cultural and intellectual differences in tendency toward fantasy such as were found by Singer and McCraven (1962) in a comparison of ethnic groups.

Summary of Hypotheses

The aim of this study was to investigate the effect upon children's fantasy play of minimally structured and highly structured playthings. Fantasy play was operationally defined for the purposes of this study as "make-believe" or "as if" behavior.

From a relatively homogeneous sample characterized by social and intellectual attributes found to be associated with fantasy development, two groups were selected, one showing a high predisposition to fantasy (HP) and one showing a low predispostion to fantasy (LP). The groups were exposed in counterbalanced order to two groups of play materials. In one they were presented with minimally structured (MS) play materials such as clay, paints, blocks, and rag dolls. In the alternate situation they were invited to play with a related group of highly structured (HS) toys such as a garage with cars, or dolls with costumes complete in every detail. The responses of the two selected groups, made up of an equal number of boys and girls, to the two play situations, were used to test the hypotheses listed below.

Hypothesis 1. Simple, minimally structured (MS) play materials and toys will elicit a greater 1) richness and 2) variety of fantasy and 3) longer periods of interest from children engaged in free play than will a related selection of highly structured (HS) toys.

Hypothesis 2. Children with a high predisposition to fantasy (HP) will play at a higher level of fantasy with both HS and MS toys than will children of low predisposition to fantasy (LP).

2a. HP children will show evidence of greater enjoyment in both play situations than will LP children.

2b. HP children will show less motility in both play situations than will LP children.

2c. HP children will show greater ability to become absorbed in their fantasy play in both situations than will LP children.

Hypothesis 3. HS and MS toys will have a differential effect upon the fantasy productions of HP and LP children; HP children will produce higher levels of fantasy in response to MS playthings while LP children will respond more productively to HS toys.

3a. The degree of affect shown by the two experimental groups will be differentially related to the two play situations; HP children will show higher affect in response to MS playthings, and LP children in response to HS toys.

3b. The degree of motility shown by the two experimental groups will be differentially related to the two play situations; HP children will show less motility in the MS situation, and LP children in the HS situation.

3c. Post-test preferences for HS and MS toys will be differentially expressed by HP and LP children; HP children will express preference for MS playthings, and LP children will prefer HS toys.

Hypothesis 4. There will be a significant difference in the fantasy play of boys and girls in the HS situation. In the MS situation the difference will be less, although it will be in the direction of sex-linked choices.

Hypothesis 5. First born and only children will respond with higher levels of fantasy production than will later born siblings.

Hypothesis 6. HP children will be able to respond with greater ease, flexibility, and success than LP children to a sudden interruption in the free play situation, involving a structured set of directions with which they will be expected to comply.

CHAPTER II

METHOD

Subjects

The subjects used in this study were chosen from among the 70 children enrolled in the kindergarten, first and second grades at Buckley Country Day School. This is a small private school in Nassau County, New York, most of whose students graduate to private preparatory schools and then to college. These children are fairly homogeneous as regards above-average intelligence, verbal ability and socio-economic status.

The kindergarten, first, and second grade children were selected for this study because they were verbal enough to describe their fantasies, yet naive enough to react freely in the play situation. Also, as discussed earlier, a survey of the literature showed a dearth of studies using subjects of this age level. Screening tests were administered to all 70 children in these three grades, in order to select groups with high and low predispositions to fantasy. The screening consisted of the following procedures.

1. Barron's (1955) inkblots were presented to each S beginning with Card 9. (A pilot study had shown that the first eight cards were too difficult for young children.) The number of the first card on which a child saw human movement became his M threshold score. These scores were then ranked so that the S who saw M on Card 9

received a rank of 1, while the one who never did see M received the lowest rank.

2. A structured interview developed by Singer (1961) was conducted with each child. It consisted of four questions:

a) What do you like best to play? What is your favorite game?

b) What do you like best to do when you're all alone?

c) Do you ever see pictures in your head when you're awake?

d) Have you ever had a make-believe friend or playmate?

Answers were scored positively if they tended to indicate a preference for solitary or fantasy activity. A child whose favorite game was football and who watched TV when alone received negative scores, while one who preferred playing Batman or reading when alone received positive scores. The scores ranged from 0 to 4, depending on the number of questions scored positively. Questions were also asked about how much each child watched TV and whether he was read to at home. These were not scored but were used to investigate any possible correlation between these factors, and levels of predisposition to fantasy.

3. Each S was presented with drawing paper and a choice of crayons and asked to draw a picture of "something you like to think about." When the drawing was finished, he was asked to tell a story about it. The drawings were judged, not as art work, but as an expression of fantasy. They were rated on a 5-point scale as follows:

1 - A drawing of something from the child's immediate experience - his house, his dog, his Christmas tree. Drawing named, but no story given.

2 - A drawing of something from fiction, fantasy or TV, with which the child would have had only indirect experience: a shark, an Indian tent.

3 - A drawing of something concrete from daily experience, and an ordinary, real-life story about it: "Me and my family swimming at Jones Beach."

4 - A drawing of something from fiction or fantasy experience, with story elaboration: "A house where two ghosts live and here's their mailboxes."

5 - Any elaboration of the story in the future or past: "This is a magic tree, a king's tree. All sorts of men tried and tried to let it bloom, but no. So once a man came - he was magic - and he said, 'Tree, bloom!' The king was so happy he said, 'You can marry my princess.'"

The scores on all three tests were ordered into continuous measures by the methods described above. All boys and all girls were then ranked on the basis of their scores on each of the screening tests. Kendall's W coefficient of concordance was chosen as being the most appropriate statistic to compute the correlation between the three tests because it can be used with more than two measures, and because it does not involve forced dichotomies (Downie and Heath, 1959). The sum of the ranked scores for each child, therefore, was used to compute Kendall's W. After a correction for ties was applied (Siegel, 1956, pp. 233-234) the coefficient of concordance among the measures for boys was significant (x^2=54.87, dr=31, p<.01). That for girls fell below the level of statistical significance (x^2=39.99, df=31,

$p < .20$). The value of W was .59 for boys, and .43 for girls. The HP group was then selected from among Ss ranking in the top half of each list, while the LP group was selected from the bottom half.

Since there were more boys than girls in the available sample, the numbers from each grade were not precisely the same, but both experimental groups included 16 boys and 16 girls, with equal representation from each grade. Table 1 shows the numbers of each sex from each grade, with their ages and vocabulary scores.

In order to equate the groups for intelligence, the vocabulary test from the Stanford-Binet Intelligence Scale was administered to each child. Since scores on this test correlate very highly with IQs on the complete scale, it is frequently used by psychologists as a quick screening measure. The vocabulary test does not appear on the Binet until year VI (Terman and Merrill, 1960) but it was used even for the kindergarteners in this sample, in the expectation that, being of above average intelligence, they would be able to perform successfully. Since the norm for 6-year-olds is 6 words correctly defined, and 8 words for 8-year-olds, norms of 5 and 7 words were extrapolated for the kindergarten and second grade. (No vocabulary test is given at ages 5 and 7.) As expected, only one child had a score of less than 5 words, and she was only 4 years 11 months old at the time of testing. Table 1 shows that the mean vocabulary scores for each group are considerably above the norms of 5, 6 and 7 words for the three age levels involved. A *t* test for the difference between the means of the HP and LP groups showed no significant difference ($t=1.449$, $df=31$, $p > .10$), so the groups were considered adequately equated for age, sex, and intelligence as measured by the Binet vocabulary score.

Table 1

Subjects, Ages, and Vocabulary Scores by Grade[a]

		N		Mean Age	SD	Mean Vocab. Score	SD
		HP	LP	Years - Mos.	Months	No. of Words Defined	
Kindergarten	Boys	7	7	5 - 7	4.6	8.3	1.4
	Girls	6	6				
First Grade	Boys	5	5	6 - 7	4.1	9.6	1.5
	Girls	6	6				
Second Grade	Boys	4	4	7 - 5	4.4	11.0	2.4
	Girls	4	4				
	Total	32	32				

[a]As of January 1, 1967.

Materials

The choice of playthings for this study was based on a careful survey of the literature on age-appropriate toys (Garrison, 1926; Hartley and Goldenson, 1957; Hils, 1961; Kawin, 1934; Matterson, 1967), the suggestions of Dr. Joseph Church of Brooklyn College, and the results of a pilot study using a large variety of play materials. Care was taken to provide toys and materials suitable both for boys and for girls; for example, in the "dress-up" materials there were guns, holsters, men's hats, and fabrics such as leopard-spotted material that might suggest a "Tarzan" costume, as well as the usual ladies' hats, pocketbooks, high heels, and jewelry. In the MS situation the child was supplied with a variety of materials and left to build his own constructions, while in the HS situation he was presented with a service station or a doll house already constructed and fully equipped.

CATEGORIES OF PLAYTHINGS

Minimally Structured	Highly Structured
Paints	
5 jars of Playnts (non-spillable watercolors)	5 jars of Playnts with 3 plastic plaques: a rabbit, a bird, and a clown feeding a dog.
12x18 sheets of white drawing paper.	
Clay	
Soft, pliable Playdoh in 4 colors.	Playdoh with plastic molds and cookie cutters in animal shapes.

Construction

Large kindergarten blocks in 6 shapes. Smaller colored blocks with holes for dowels that fit into them.

Large cardboard carton with partitions inside to form 4 sections.

8 hardwood door knobs in 3 sizes.

Fisher-Price doll family of 5.

Cardboards, cotton, pipe cleaners, tongue depressors, scotch tape.

Service station with 11 cars, parking ramp, lift, oil racks, tools, servicemen, policemen and traffic light.

Fully furnished 6-room metal doll house.

Family of 5 bendable rubber dolls realistically dressed in proportion to doll house.

Dolls

2 rag dolls 12 inches tall, with yarn hair and simple gingham costumes representing male and female.

2 6-inch stuffed stocking dolls representing a boy and a sleeping baby.

Brunette Barbie doll in satin wedding dress with filmy underwear, lace garter, long veil, gloves and bouquet.

Ken doll in dark suit, white shirt and tie.

Blonde Barbie doll in cocktail dress. Case of assorted clothes and accessories for male and female dolls.

G.I. Joe doll in Army fatigues with dog tag, helmet, and full pack.

G.I. Diver doll with helmet and knife.

Costumes

Box of dress-up clothes including lengths of satin, velvet, and other materials.

Flowered hats, veils, high-heeled shoes, pocket books and "junk" jewelry.

Japanese colored paper umbrella.

Top hat and tails, guns and holster, golfing and yachting hats, leather belt.

False moustache and beard, big plastic ears, eyeglasses with big plastic nose, black eye mask.

Bride costume with veil and bouquet of white plastic roses and lilies.

Nurse costume with cape and nurse kit.

Silvered astronaut costume with space helmet.

Army costume with hand grenade, knife, and pistol.

Play Session Procedure

Play sessions took place on the first four days of the week whenever possible. Each child was taken individually from his classroom by the examiner (E) for each of the four 15-minute sessions in the playroom. These consisted of two sessions with each of the two sets of playthings in counterbalanced order. The playroom was a small, secluded room on the third floor of the school building. It had sloping walls and a small dormer which had been closed off from floor to ceiling by a movable partition to match the walls. In this partition a 2 foot by 3 foot one-way vision screen had been installed. A concealed observer (O) who had no knowledge of the hypotheses or of Ss' fantasy predispositions, sat behind the partition recording the child's behavior and remarks during each play session. A Wollensak 3M tape-

recorder (Model No. T1500) was set up in front of the screen to give the impression that the screen was part of the equipment. Toys not in use were stored in a large closet.

As E brought each child into the playroom, she would point out the different toys displayed around the room, so that S would notice all possibilities. (Toys were displayed in a constant pre-arranged order by O while E was bringing the child from the classroom.) E would then say, "You may play with anything you choose, but I'd like you to make up a story or put on a play for me."

E would then seat herself across the small room from the toys, flick on the tape-recorder and stopwatch, and begin taking notes. In accordance with Gellert's (1955) and Yarrow's (in Mussen (Ed.), 1960) careful observations of the sources of error in this kind of research, she appeared attentive and interested, but introjected herself into the child's play as little as possible. Some children preferred to talk to her, in which case she gently directed them to the toys. Some were very interested in the tape-recorder, in which case she promised a playback if S would tell her a story. Some children moved around the room handling or looking at one toy after another without playing for more than a few seconds with any one of them (described as exploratory behavior). Most children explored for 30 seconds to 1 minute and then said something like, "Oh, I want to play with the doll house!" and settled down to play with one object. Sometimes they played for the entire session with their first choice (paints and clay were particularly absorbing); more often they would announce, "Now, I'm going to play with ..." or simply leave one toy and move to another. After the first session they often came in announcing what they were going to do, and went straight to the objects of their choice. Almost

all the children seemed to enjoy the play sessions and many responded voluntarily to the mere presence of a warm, permissive, interested observer who was well known to them by the time the experimental sessions began.

If a child did not respond voluntarily, E would ask periodically, "What's happening? What's going on?" or "Can you tell me a story about it?" Every effort was made to do this as infrequently as possible, but no standardized timing could be worked out, as each child's pattern of activity was so different. Some children ran all over the room, hurling grenades or shooting guns. Some took paints or clay to the small desk provided, and sat down where they could be observed by both observers with no difficulty. Some got down on the floor to play house or build blocks, and talked to themselves so softly that E had to slide the microphone across the floor and sit close behind them in order to catch their words. A few children were self-conscious about being watched, and asked what E was writing, and whether these records would be shown to their mothers or the headmaster. Most seemed to forget about E, or accept her as the audience for their play after the first session; in fact they appeared to enjoy her undivided attention.

Flexibility Test Procedure

At the end of the second session with each set of toys (in other words, after 30 minutes of free play with either HS or MS playthings) the Flexibility Test was presented. E would interrupt whatever S was doing by giving him a bendable rubber cowboy, 6 inches high, with big feet, a wide belt, and scarf, and a removable red cowboy hat. The instructions were:

"Now, I want you to stop what you are playing and do something different. See this funny cowboy? I want you to tell me the most exciting story you can make up about this cowboy."

E would then hand the cowboy to the child and start her stopwatch to record latency of response and length of time spent in telling a story. The reactions were highly individual. Some children could not adjust to the sudden demand, while others took it in their stride. Four HP children calmly integrated the cowboy into whatever they had been playing before; they put him into the dollhouse or had him ride a horse cut out of clay.

After the completion of the story, or after 1 minute of waiting and encouragement, E would say:

"Now, I want you to tell me a story about this cowboy when he captured a flying horse. Make up the most exciting story you can."

Again the reactions ranged from complete rejection ("I can't." "There isn't such a thing as a flying horse, so how can I?") to fanciful stories lasting as long as 4 minutes. (Time was recorded in units of 30 seconds.) Not only was the timing and content of the story recorded, but the affect shown by the child was rated as accepting or rejecting by the observers. Since the Flexibility Test was presented twice, and since, due to counterbalancing, this occurred two days in succession in half the cases, the second presentation often brought forth remarks such as, "Again?" or "I did that yesterday!" which E ignored by continuing for 1 minute to urge the child to respond. If the child began to repeat the same story he had told before, E would say, "See if you can make up a different story this time."

On the fifth day of the week, or the day after his last play session, each child was asked which of the playthings he had liked the most, and which he had liked the least. He was then presented with a big, gaily decorated straw basket filled with prizes, and invited to make a choice. The prizes consisted of 2 oz. cans of Playdoh (unstructured material), or brightly colored plastic racing cars and doll carriages containing a baby doll (highly structured, sex-typed toys.)

Observers and Establishment of Rating Reliability

Two observers, who also acted as judges, took part in this study; both of them are college graduates who have had advanced professional training.[1] Their schedules were arranged in such a way that both observers saw not only the younger children who came to the playroom in the mornings, but also the older children whose sessions were in the afternoons. In this way both participants were exposed to all age levels and had a chance to observe nearly every child who took part in this experiment.

Data

The main source of data for this study was the children's verbalizations during play, as recorded simultaneously by E and O and the tape-recorder. The latter was employed after each session in

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[1] The observers were Mrs. Patricia Lee (O_1), a speech therapist with a master's degree, and Mrs. Euphemia Bruenner (O_2), who has had graduate training and experience in teaching art to children. Each is the mother of three children. The writer's daughter (O_3), a senior psychology major who has had considerable experience in observing children at the nursery school connected with Wellesley College, filled in during vacations and emergencies, and assisted with the statistical treatment of the data.

which parts had been missed because the observers could not keep up with the child, or there was doubt about the meaning. For the most part there was good agreement between the records; very rarely did the human observers disagree. The running records of the two observers were then pooled and typed up as a single protocol, consisting of four play sessions. These protocols were read and scored by E and the O who had been present at most of the play sessions. Half of them were also read "blind" by the alternate O in order to establish reliability between the judges.

Dependent Variable 1 - Richness of Fantasy

The data on these protocols were scored in a number of ways. To measure the criterion of richness of fantasy, three instruments were used:

1. The Transcendence Index as used by Weisskopf (1950) to measure the number of imaginary items present in each fantasy production (See Appendix A). This instrument was developed for use with TAT pictures.

2. A 5-point Fantasy Rating Scale to assess the distance from daily reality of the children's productions.

3. A 3-point Organization Rating Scale to assess the degree of organization and plot development in the children's stories, as distinguished from the content of the above.

A description of each of these measures follows:

Transcendence Index: This consisted of a count of the number of imaginary items supplied by the child, as opposed to what was already supplied in a given stimulus situation. Using the HS doll house as an example, no credit was given for identification of the family members, since this was obvious in the appearance of the dolls themselves.

If, however, a child volunteered that the father "was going to work in New York City," he was given credit for two imaginary items; 1) going to work, 2) in New York City. Anything said by the dolls or any feelings or activities ascribed to them were scored and summed. In the MS situation, the observers made every effort to count each detail supplied by the child, whether mentioned by him or not. If he molded a dinosaur out of clay he was given credit for a spiked back, short arms, and a big tail as each of these appeared, whether he specifically mentioned them or not. On the other hand, if he cut a horse out of clay with the HS molds, and said it was a horse, he received no credit. If he said it was a horse walking in the forest, he received 2 points. Any further mention of the forest would receive no further credit, as each item was scored only once.

Every effort was made by the judges not to confuse verbal productivity with imagination. No credit was given for synonyms: "royal king" received 1 credit, as did phrases such as "having breakfast" which expressed only one idea. Sometimes a whole sequence of items would be repeated, in which case 1 point was scored for the whole repetitive sequence. For example, the last two sentences in the following story received only one point altogether.

"Once upon a time, a boy made a snowman. It was real cold but it got warmer again. The snowman melted, and all that was left was sticks, a hat and a broom. It snowed again and they made another one. Again all that was left was sticks, hat and broom."

Not all the items that received credit were verbal. Many expressive noises were noted and scored if the observers agreed as to their meaning. Police siren noises contributed to a story of cars crashing,

as did the wedding march hummed while playing with the bride doll. One little girl got dressed up in high heels and minced across the room in unmistakeable imitation of a woman in a tight skirt. The motions of space-walking by boys in the astronaut costume were extremely expressive.

Fantasy Rating Scale: This was constructed by the three judges to assess the child's ability to deal with the fantastic aspect of fantasy - fairies, witches, life on another planet - as opposed to the reality of the child's everyday experience. The various steps in the rating scale are described below. Additional examples are listed in Appendix B.

0 - Anything likely to be part of the child's daily experience: e.g., Christmas trees, Indian head-dress. Events with a high probability of having been experienced directly such as getting gas, going to the circus.

1 - That which exists in reality, but most likely has been experienced only indirectly through conversation, books, or TV: e.g., knowledge of the solar system, stories of dinosaurs, castles, outer space.

2 - That which exists largely in the emotions: silly aggressive fantasies of the TV cartoon type; emotional fantasies; fantasies verging on the bizarre; e.g., mother puts the baby in the toilet, hangs him on the clothes' line to dry.

3 - Fantasy that gives a new twist to familiar realities: e.g., an umbrella is used as an air conditioner; a "junk jewelry" chain becomes a pair of handcuffs.

4 - Addition of fantasy details to a reality stimulus: e.g., a snowman is magically able to talk and grants three wishes.

The story centers around the real stimulus but adds fantasy details.

5 - Addition of fantasy events to a reality stimulus: e.g., the diver doll becomes a "fantastic hero" who has adventures moving away in time and space from the immediate situation. The fantasied events take precedence over the original stimulus.

Organization Rating Scale: This was a 3-point rating scale designed to assess the degree of organization and plot development in the stories told by the subjects.

0 - Series of events, often unrelated, strung together by "and then". Commonplace, stereotyped or rambling plots.

1 - Series of at least 3 events in logical time sequence.

2 - Sequence of cause and effect; something happened and as a result something else occurred.

3 - Integrated plot with beginning, development and conclusion.

Examples of levels of organization are given in Appendix C.

Dependent Variable 2 - Variety

The second criterion, that of variety in the themes suggested by the two types of play materials, was measured in the following way. For each of six categories of toys[2] in each play situation all the

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[2] For greater ease in scoring, the category of construction materials or constructed toys was divided into two. In the MS situation, the responses concerning blocks and those concerning the pipe cleaners, tongue depressors and cotton balls were grouped separately. Likewise in the HS situation, stories told about the doll house and those about the cars and service station were grouped separately.

stories told by the children who played with that toy were grouped together and scored as follows:

0 - For any idea or theme which occurred more than twice (because each child had two opportunities to use the same theme); e.g., eight children built houses out of blocks, so none received a score.

1 - For repetitive items having some unique, imaginative feature: e.g., "George Washington's house" built with blocks.

2 - For a response unique in this sample but not improbable: e.g., a tower built with blocks.

3 - For an unusual and imaginative response: e.g., a castle with a moat and drawbridge, built from blocks.

Working independently, two judges (E and O_3) then scored all the responses given to each category of toys according to the above Variety Rating Scale. The total number of responses was 385. The Pearson product-moment coefficient of correlation between the two sets of judgments was .93. The mean of the scores assigned by the two judges to each response became the score for that particular response. Then each child's responses were assembled from the lists of responses to toys with which he had played, and he received an additive score for variety of responses in each of the two play situations. The scores ranged from 0 for children who had no original ideas to as high as 8 in one session.

Dependent Variable 3 - Time Spent in Play

A third criterion was a measure of the length of time S remained interested in one toy. This was recorded by stop watch to .5 of a

minute. No finer measure could be used because it was not always possible to tell whether a child had actually settled down to play with a specific toy, or was just exploring. Exploratory behavior has been defined as looking at or touching a number of toys in rapid succession. If a child became interested in one toy and played with it for a minute or more, it was not recorded as exploratory behavior, but was counted as a unit of play. A count of the number of minutes spent in exploratory time (after the initial minute which most children spent in exploring) also became part of the data. Thus the records of a child who looked around for one minute, and then settled down to play with the clay and then moved to the blocks, presented quite a different picture from one who moved slowly around the room, hands stuffed in his pockets, and just looked at the toys for ten minutes before he timidly asked if he might play with the clay. Yet another child might rush into the playroom, look around for 15 seconds, grab the guns and shoot for 1.5 minutes, drop them and explore for another minute or two, build a block tower for three minutes, look out the window and then announce that he had played with everything and wanted to go. All these individual differences were included in the data of this study.

Three more dependent variables were assessed by ratings of each child's affect, motility, and concentration in each play situation. In line with Guilford's (1936) discussion of the construction of rating scales, it was decided that 5-point scales would be neither too coarse nor too finely differentiated for this data. Rating scales were based on studies of non-verbal cues reviewed by Yarrow (in Mussen (Ed.), 1960) and on personal observations. Both observers participated with E in the construction of the rating scales.

Dependent Variable 4 - Affect Rating Scale

The child's affect, or emotional reaction to the two sets of toys was judged by his expression, by his reacting to the toys as opposed to the tape-recorder or to E, by his remarks showing pleasure or boredom, and by his tangential (unrelated to the toys) behavior, such as looking out the window or asking to go to the bathroom (although E took pains to eliminate this source of error before each play session).

The descriptions for each step in the 5-point scale follow:

1 - Not at all interested in the toys; much tangential behavior and conversation with E; critical remarks about the toys.

2 - Only mildly interested in the toys; much exploratory looking around and/or desultory manipulation.

3 - Interested, absorbed, talking freely about the toys; or lost in quiet enjoyment, speaking only when spoken to by E.

4 - Deeply interested; smiling, expressing pleasure. Spontaneously describing or acting out fantasies.

5 - Laughing, singing, thoroughly enjoying self in play. Reluctant to leave the playroom.

Dependent Variable 5 - Motility Rating Scale

The motility rating scale was designed to assess such factors as activity level, speed and vigor of movement, postural and gentural freedom, speed and tempo of speech. As Hartley et al. have pointed out," ... for the child, his body is an organ of expression as well as of perception, and ... his attitudes about himself and the world about him are expressed in the way he uses his body more fully than in his verbalizations" (1952, p. 7). Ratings were based on a 5-point

scale which follows:

1.- Dreamy, apathetic, "lost on cloud 9".

2 - Slow, deliberate, preoccupied, or rigidly controlled.

3 - Average activity, with periods of quiet concentration.

4 - Above average activity, with quick, vigorous or nervous movements.

5 - Hyperactive; banging, yelling, jumping, throwing toys around the playroom.

Dependent Variable 6 - Concentration Rating Scale

This scale was developed as the result of a suggestion by Dr. Ruth Hartley (personal communication) when the experiment was about half finished. Children who had already been seen were rated post hoc by agreement between the two observers present; thereafter all judgments were made independently during each play session. The scale was designed to assess how quickly the child settled down to play, how deeply absorbed he became, how long he played with one toy, and how much exploratory or tangential behavior he showed. The steps in the rating scale follow:

1 - Much exploring, many questions to E. Responds to faint noises (e.g., buzz of electric clock) or cries of children on the playground. Brief or little interest in the toys.

2 - Plays superficially with the toys, while looking around the room or talking to E. Changes toys often.

3 - Responds with average interest to the toys, changing activities only once or twice in a session. Little tangential conversation or behavior.

4 - Absorbed in the toys; no exploratory or tangential behavior. No response to noises outside the room.

5 - Deeply absorbed in play; may not even respond to E's questions. Stays with one activity the entire period.

Other data gathered in this study included each child's post-test toy preference and choice of a prize, as well as a count of choices of sex-typed toys. These comprised dependent variables 7, 8, and 9. An analysis was also made of fantasy themes which might be considered sex-linked, or identified with the sex of the child. These included domestic themes for girls, and stories of war and violence, of cars racing and crashing, for boys. These data were used as measures of dependent variable 10. The description of dependent variable 11 will follow that of 12 because it was based on evidence gathered after the experiment was completed.

Dependent Variable 12 - Flexibility Rating Scale

A final instrument was an additional 5-point rating scale devised to measure the flexibility with which each child responded to the Flexibility Test given after two sessions with either MS or HS toys. Associated with this was a rating (dependent variable 13) of each child's willingness to accept or reject the test instructions. The steps in the Flexibility Scale are described below:

0 - Rejection. The child was unable or unwilling to follow the instructions; e.g., "I don't know any story." "I'm sick of this cowboy already."

1 - Description. "He's laughing." "He's losing his hat." The child described and manipulated the cowboy without really telling a story about him. Repetition of the stimulus already given: "He

captured a flying horse." Repetition of a story told previously.

2 - Bizarre, violent, rambling, or irrelevant stories. Minimal stories; e.g., "He rode into the sky and was shooting people." Repetition of stories previously told with additions or elaborations.

3 - An adequate story following the directions given; e.g., cowboys and Indians fighting, cattle rustling, or standard TV "good guy vs. bad guy" plots.

4 - A story following directions but incorporating original ideas; e.g., the flying horse flew to Alaska or Hawaii.

5 - Truly original, unique, and well developed stories covering a span of time and/or space.

Dependent Variable 11 - Global Fantasy Scores

After the experiment was completed, the scores on four measures which best discriminated HP from LP subjects (transcendence, fantasy, variety, and flexibility) were transformed to standard scores and averaged to give each S a global fantasy score. This score was used to compare each child's performance in the experimental situation with previously secured teacher's 5-point ratings of his imaginativeness as shown in the classroom. In addition, a doctoral candidate in psychology who had no knowledge of the children or of the experiment read through all the protocols and rated each one for the degree of creativity and imagination shown in the child's responses. This rating was done on a grade level basis, using a 5-point scale, and the resulting scores were also correlated with the global fantasy scores described above.

Design

The experimental design used for the statistical analysis of this data was a 2x2x2 factorial analysis of variance with repeated measures as one factor (Edwards, 1960, p. 233ff.). The justification for applying parametric statistics to ordinal data such as the fantasy ratings used in this study comes from a recently published investigation by Baker, Hardyck, and Petrinovitch. In it the authors state: "The present findings indicate that strong statistics such as the *t* test are more than adequate to cope with weak measurements, and with some minor reservations, probabilities estimated from a distribution are little affected by the kind of measurement scale used." (1966, p. 308).

The three factors or independent variables used in the analyses of variance were:

A: Predisposition to fantasy — a_1: High; a_2: Low

B: Sex — b_1: Boys; b_2: Girls

C: Degree of structure of toys — a_1: High; a_2: Low

Of the dependent variables listed below, the first six provided evidence for Hypotheses 1 through 3.

1. Richness of fantasy as measured by:
   a) Transcendence Index
   b) Fantasy Rating Scale
   c) Organization Rating Scale
2. Variety of themes as classified in general categories.
3. Length of time spent in play.

4. Affect as rated by the Affect Rating Scale.

5. Motility as rated by the Motility Rating Scale.

6. Concentration as rated by the Concentration Rating Scale.

7. Expressed preference for HS or MS toys (Hyp. 3 only).

8. Choice of HS or MS prize (Hyp. 3 only).

9. Choice of sex-typed toy (Hyp. 4 only).

10. Number of sex-linked themes (Hyp. 4 only).

11. Global fantasy scores (Hyp. 5 only).

12. Flexibility as rated on the basis of the cowboy stories given in response to the Flexibility Test (Hyp. 6 only).

13. Affect rating of child's acceptance or rejection of the directions for the Flexibility Test (Hyp. 6 only).

The design of the experiment is illustrated in Figure 1. There were repeated measures on each S across levels of C. Analyses of variance and chi squares were performed on all data except those collected as evidence for hypotheses 5 and 6. Here the criterion measures were dichotomous, and chi square analyses were performed. The required level of significance was set at p=.05.

A: Fantasy predisposition

a_1: High

a_2: Low

B: Sex

b_1: Male

b_2: Female

C: Structure of toys

c_1: High

c_2: Minimal

		C	
		c_1	c_2
a_1	b_1	G_{11}	G_{11}
	b_2	G_{12}	G_{12}
a_2	b_1	G_{21}	G_{21}
	b_2	G_{22}	G_{22}

Fig. 1. 2x2x2 factorial design with repeated measures on one factor.

CHAPTER III

RESULTS

Evaluation of Rater Reliabilities

The reliability of the findings of this study are almost entirely dependent upon high inter-observer agreement. Therefore, the three judges who participated spent considerable time in practice, scoring the protocols from the pilot study and from subjects not used in this experiment. The scores given for transcendence were the most subject to variability, since they ranged from 4 to 328, while the other measures consisted of 3- or 5-point rating scales. Accordingly, this measure was used as a critical test of reliability. Each of the girls' protocols was scored by three judges; the experimenter, the observer present at that particular play session, and the alternate observer who scored it "blind". The scores were then ranked and Kendall's coefficient of concordance W was computed and found to be .97, a value significant at well above the .01 level. Each observer's rankings were then correlated separately with those of the experimenter; the resulting correlation coefficients are listed in Table 2 (p. 46). Thereafter E and O_2 scored the boys' protocols with equally high reliability, indicating that though the minutiae of scoring might differ, the rankings obtained between carefully trained observers were substantially the same.

Table 2

Reliability Coefficients for Rating Scales

Instrument	Judges	Correlation Coefficient	Value	p
Transcendence Index	E, O_1, O_2	Kendall W[a]	.97	<.01
Transcendence Index	E, O_1,	Spearmen rho[a]	.94	<.01
Transcendence Index	E, O_2	Spearmen rho	.99	<.01
Variety Ratings	E, O_3	Pearson r	.93	<.01
Flexibility Ratings	E, O_3	Pearson r	.97	<.01
Creativity Ratings	Psychologist, global scores	Pearson r	.59	<.01
Imagination Ratings	Teachers, global scores	Pearson r	.35	<.01

[a]N=32, girls only

The ratings of the graduate psychology student who read the protocols "blind" were also correlated with the subjects' global fantasy scores. The positive correlation reported in Table 2 supports the reliability of independent ratings of the same data by a trained person unconnected with the experiment in any way. Also listed here are teacher ratings, made before the experiment began, of each child's degree of imaginativeness, as shown in the class room. The correlation with the global fantasy scores is positive, although lower, as would be expected where the setting and criteria are different. It might be argued that these last two correlations are evidences of validity rather than reliability; they are listed here for the sake of convenience and will be referred to again in the discussion of validity.

Presentation of the Data

The results of this experiment will be presented in the following way. The main effects of Factor C (degree of structure in the play situations) and Factor A (levels of predisposition to fantasy) will be presented as they were measured by the following criteria:

1. Richness of fantasy, as determined by
    a) Transcendence Index
    b) Fantasy Rating Scale
    c) Organization Rating Scale
2. Variety of themes, as determined by a count of the frequency of each theme's occurrence
3. Time spent in exploration
4. Affect, as measured by the Affect Rating Scale
5. Motility, as measured by the Motility Rating Scale
6. Concentration, as measured by the Concentration Rating Scale.

It must be noted here that the dependent variable of time spent in play (Criterion 3, on p. 42) proved to have little significance as a dependent variable. Since all Ss had the same amount of time (four 15-minute play sessions) the question arose as to how that time was spent. All but four HP and five LP children spent at least 15 minutes with one kind of toy at some point during the four sessions, so that a study of the longest period spent in play revealed little. An analysis was made of the number of units of play (periods of time spent with one toy) appearing in the HS and MS sessions. This proved to be inappropriate in that the play of most children consisted of 2 or 3 units, regardless of the play situation. Instead, exploratory behavior was used as a measure, and chi squares were performed to analyse the relationship between the independent variables and the presence or absence of exploratory behavior.

Following the presentation of the main effects of C (Hypothesis 1) and A (Hypothesis 2), the effects of interaction between these two factors (Hypothesis 3) will be discussed. The evidence from the six dependent variables listed above will be considered, and additional data will be presented, consisting of:

7) Post-test preferences for HS or MS toys

8) Choice of HS or MS prize.

Next, the effects of the factor of sex (B) will be presented, (Hypothesis 4), as measured by Criteria 1-6 above, and also by:

9) Choice of sex-typed toy

10) Number of sex-linked themes.

Hypothesis 5, concerning the relationship between first-born and only children and high fantasy, will be considered next, using as evidence:

11) Global fantasy scores based on four criteria of fantasy performance.

Last, the evidence designed to assess responses to the Flexibility Test (Hypothesis 6) will be presented. These were:

12) Flexibility ratings of the cowboy stories

13) Acceptance or rejection of the test instructions.

The results presented below will be discussed at two levels of significance. First, all results reaching the required level of statistical significance, previously set at p=.05, will be presented. Then results not quite reaching significance ($.10 \geq p \geq .05$) will be discussed in the hope that further research and refinement of the experimental method, or selection of a more representative sample, may produce results which are significant in the course of future research.

Hypothesis 1 - Effects of Structure of Playthings

The first hypothesis was designed to test the main effect of the degree of structure of the toys. It stated that simple, minimally structured play materials would elicit greater richness and variety of fantasy, and longer periods of interest from children engaged in free play than would a related selection of highly structured toys. This was tested by comparing the responses of all Ss to the MS and HS play situations.

The factor of degree of structure in the play situations (C) showed a significant main effect on only two of the measures performed. There was a significant difference ($F=48.85$, $df=60,1$, $p<.001$) in the variety of themes produced, with a far greater variety of themes being elicited by the MS materials than by the HS toys. The relevant data are presented in Table 3, together with the means and standard

Table 3

Means, Standard Deviations, and Analysis of Variety Ratings

		MS Situation		HS Situation	
	N	Mean	SD	Mean	SD
LP Group	32	4.58	2.56	1.53	1.82
HP Group	32	8.04	3.24	4.50	3.92

Summary of Analysis of Variance

Source of Variance	df	MS		F	P
Total	127				
Between Ss	63				
A (Fantasy predisposition)	1	331.53		29.01	$<.001$
B (Sex)	1	42.78		3.74	$<.01$
A X B	1	4.13			
Error (a)	60	11.43			
Within Ss	64				
C (Structure of play)	1	347.82		48.85	$<.001$
A X C	1	1.99			
B X C	1	.12	(1/F)[a]	59.52	$<.001$
A X B X C	1	6.57			
Error (b)	60	7.12			

[a]Where the interaction mean square is less than the error mean square, the ratio is reversed, and the error mean square becomes the numerator, resulting in a 1/F ratio.

deviations for MS and HS situations. The hypothesis thus stands partially confirmed, in that all Ss were shown to have produced a greater variety of themes in response to the unstructured materials than to the highly structured toys. The significant 1/P ratio for the B X C interaction further confirms the effect of the playthings, since it means that the interaction that occurred was even less than might be expected of random samples. The B X C means are shown in Table 4; here the differences between the means for c_1 and c_2 at each level of B are shown to be much greater than the differences between b_1 and b_2 at each level of C. The latter were so small as to be less than would be expected of random samples, whereas the former differed significantly, as indicated by the main effect of C shown in Table 3. The groups in this study were carefully selected for homogeneity and the statistical results bear out this fact very clearly.

Additional significant data, while not previously hypothesized, were found in the analysis of motility ratings. There was a significant C effect ($F=20.84$, $df=60, 1$, $p<.001$) in the motility ratings given in the two play situations. The data presented in Table 5 show that all Ss displayed greater motility in the HS situation than they did in the MS situation. This was probably due to the action elicited by the cars, the most popular toys in the HS situation. The interaction B X C in Table 5 will be included in the discussion of the effects of sex; the heightened motility evoked by the HS toys is graphed in Figure 5 (p. 75).

At the level of near-significance, it must be noted that the main effect of the playthings was close to reaching significance ($F=3.56$, $df=60, 1$, $p<.10$) in the analysis of fantasy ratings. So was the A X C

Table 4

Means for B X C Interactions with Significant 1/F Ratios

Variety B X C

	c_1	c_2
b_1	6.92	3.56
b_2	5.70	2.46

Fantasy B X C

	c_1	c_2
b_1	2.68	1.97
b_2	2.25	1.69

Table 5

Means, Standard Deviations, and Analysis of Motility Ratings

		MS Situation		HS Situation	
	N	Mean	SD	Mean	SD
Boys	32	5.94	1.24	6.52	1.58
Girls	32	5.53	.84	5.72	.84

Summary of Analysis of Variance

Source of Variance	df	MS	F	p
Total	127			
Between Ss	63			
A (Fantasy predisposition)	1	3.61	1.42	
B (Sex)	1	11.58	4.53	$< .05$
A X B	1	10.25	4.01	$< .05$
Error (a)	60	2.55		
Within Ss	64			
C (Structure of play)	1	4.70	20.84	$< .001$
A X C	1	.23	1.02	
B X C	1	1.22	5.39	$< .05$
A X B X C	1	.25	1.16	
Error (b)	60	.22		

interaction effect ($F=3.44$, $df=60,1$, $p<.10$) which will be discussed under Hypothesis 3. The evidence presented in Table 6 suggests that with a different sample or a different selection of toys, these effects might have reached statistical significance. Again the B X C interaction points up the constriction of the sample groups. The fact that the 1/F ratio was significant means that there was less than random variance within the groups. In other words, there was less difference between boys and girls than might be expected of random groups. What difference there was between the means for levels of C was in the expected direction, which supports the almost-significant effects of C and indicates that both boys and girls showed somewhat higher fantasy in their play with MS materials as compared to HS toys. The significant 1/F ratio for the A X B X C interaction also reinforces the significance of Main Effect A, uncontaminated by interaction with B or C. The groups differed significantly only in respect to levels of A, and not in respect to levels of B or C as has already been demonstrated by the B X C interaction. No other significant effects ascribable to the structure of the playthings appeared in any of the statistical analyses. A chi square was performed to see whether more exploratory behavior appeared in either of the two play situations, but the results proved non-significant ($x^2=2.36$, $df=1$, $p<.20$). The possible reasons why the playthings had such limited effects will be discussed in the following chapter.

A qualitative impression of the children's play with the two groups of toys was that there was more manipulative play with the HS toys than with the MS play materials. Manipulative play, for the purposes of this study, was defined as that in which a child played

Table 6

Means, Standard Deviations, and Analysis of Fantasy Ratings

		MS Situation		HS Situation	
	N	Mean	SD	Mean	SD
LP Group	32	.84	1.14	.82	1.05
HP Group	32	4.44	3.54	2.85	2.46

Summary of Analysis of Variance

Source of Variance	df	MS		F	p
Total	127				
Between Ss	63				
A (Fantasy predisposition)	1	223.21		28.36	<.001
B (Sex)	1	4.12			
A X B	1	5.71			
Error (a)	60	7.87			
Within Ss	64				
C (Structure of play)	1	13.24		3.56	<.10
A X C	1	12.83		3.44	<.10
B X C	1	0.31	(1/F)	12.00	<.001
A X B X C	1	.83	(1/F)	4.48	<.05
Error (b)	60	3.72			

consistently with one category of toys for one minute or more, without telling a story or describing his play in any way. It included dressing and undressing the dolls, shooting the guns, or simply handling the clay without making anything. There was a good deal of this play with the cars and service station, which also accounted for much of the motility observed in the HS situation.

The relative popularity of the different categories of toys is shown in Table 7. In the HS situation the cars were most often chosen, closely followed by the clay molds and then by the plaques for painting. In the MS situation, paints led the field while clay was second in popularity. This indicates that paints and clay, the most plastic materials, were high in popularity both in structured and unstructured form, which undoubtedly contributed to the lack of differentiation between the two play situations.

Hypothesis 2 - Effects of Predisposition to Fantasy

The second hypothesis was concerned with the main effects of the two levels of fantasy. It stated that HP children would play at a higher level of fantasy with both MS and HS toys than would LP children. This hypothesis was tested by the pre-selection of HP and LP groups. It received strong and clear support from all three measures used to assess the richness of fantasy. The analysis of fantasy ratings (Table 6, p. 55) showed a significant main effect ($F=28.36$, $df=60, 1$, $p<.001$) for Factor A (predisposition to fantasy) indicating that HP children were able to tell fantasy stories less anchored to everyday reality than were LP children. This was further reinforced by the significant 1/F ratio for the A X B X C interaction, which has already been discussed above. Not only was the interaction not significant,

Table 7

Number of Choices of Each Category of Playthings

MS Situation	No. of Choices
Blocks	25
Wooden and rag dolls	20
Paints	49
Clay	36
Dress-up materials	34
Pipe cleaners, cotton balls, deflectors	30
HS Situation	
Costumes	21
Paints and plaques	33
Doll house	21
Clay and molds	44
Dolls	23
Service station and cars	49

it was even less than would be expected of random samples.

The effect of A was also significant in the analysis of transcendence indices (Table 8; $F=24.59$, $df=60, 1$, $p<.001$), suggesting that HP children can include more imaginary details in the stories they tell than can LP children. Here again the A X C interaction and the A X B X C interaction both showed significant 1/F ratios, indicating that the interaction of A with other factors was significantly less than would be expected of random groups.

In the analysis of organization ratings, the effect of A was again significant (Table 9; $F=13.85$, $df=60, 1$, $p<.001$) indicating that HP children were able to organize their stories better than LP children. No other main effects were significant on any of the three measures; the evidence points strongly to fantasy predisposition as being the most important factor in determining richness of fantasy.

On the second criterion, the variety of themes, the analysis of variance (Table 3, p. 50) again showed that Factor A had a significant main effect ($F=29.01$, $df=60, 1$, $p<.001$). As the means demonstrate, HP Ss had significantly higher scores for variety than did LP Ss. The next three criteria showed no significant effects of Factor A; however, on the sixth criterion, that of concentration, the results presented in Table 10 show significant differences in the performance of the fantasy groups ($F=6.23$, $df=60, 1$, $p<.05$). HP children were judged to show high concentration significantly more often than LP children, who more often showed low concentration. This confirmed Hypothesis 2c, which postulated that HP

Table 8

Means, Standard Deviations, and Analysis of Transcendence Indices

	N	Mean	SD
LP Group	32	26.23	25.07
HP Group	32	63.14	40.22

Summary of Analysis of Variance

Source of Variance	df	MS	F	p
Total	127			
Between Ss	63			
A (Fantasy predisposition)	1	43567.83	24.59	$< .001$
B (Sex)	1	312.52 (1/F)	5.67	$< .05$
A X B	1	1785.98	1.01	
Error (a)	60	1771.47		
Within Ss	64			
C (Structure of Play)	1	83.69		
A X C	1	30.51 (1/F)	24.15	$< .001$
B X C	1	357.47		
A X B X C	1	153.80 (1/F)	4.78	$< .05$
Error (b)	60	735.28		

Table 9

Means, Standard Deviations and Analysis of Organization Ratings

	N	Mean	SD
LP Group	32	.80	1.52
HP Group	32	2.24	1.80

Summary of Analysis of Variance

Source of Variance	df	MS	F	p
Total	127			
Between Ss	63			
A (Fantasy predisposition)	1	67.57	13.85	<.001
B (Sex)	1	4.13		
A X B	1	1.76		
Error (a)	60	4.88		
Within Ss	64			
C (Structure of Play)	1	1.75	1.22	
A X C	1	1.76	1.22	
B X C	1	1.77	1.22	
A X B X C	1	.94		
Error (b)	60	1.43		

Table 10

Means, Standard Deviations, and Analysis of Concentration Ratings

	N	Mean	SD
LP Group	32	6.08	2.25
HP Group	32	7.27	2.14

Summary of Analysis of Variance

Source of Variance	df	MS	F	p
Total	127			
Between Ss	63			
A (Fantasy predisposition)	1	46.92	6.23	$<.05$
B (Sex)	1	5.91		
A X B	1	.44 (1/F)	17.12	$<.001$
Error (a)	60	7.53		
Within Ss	64			
C (Structure of play)	1	.16 (1/F)	4.31	$<.05$
A X C	1	.02 (1/F)	34.60	$<.001$
B X C	1	.02 (1/F)	34.60	$<.001$
A X B X C	1	.02 (1/F)	34.60	$<.001$
Error (b)	60	.69		

children would become more deeply absorbed in their play than would LP children.

The analysis of concentration is of interest also because of the number of significant 1/F ratios presented. Once again, the interactions were much smaller than would be expected with a random sampling of groups. The predicted effects of Factor C (degree of structure) were also contradicted by these results. It is possible that the raters showed a central bias; ratings of "average" or scores of 3 were frequently given due to a lack of differentiation between the children in concentration. In addition, about half of the records were rated "post hoc", which could have contributed to less accurate judgments. It is also possible that the two play situations were so much alike in encouraging each child to concentrate on his play that less than random differences were observed. The lack of differentiation between the two sets of toys has already been noted.

At the level of near-significance, there were two A X C interactions; one in the analysis of fantasy ratings (Table 6, p. 55) and one in the analysis of affect ratings (Table 11, p. 63). Both are discussed under Hypothesis 3, and need only be mentioned here.

The A factor, showed no significant main effect on the analysis of affect ratings. Hypothesis 2a, which stated that HP children would receive higher affect ratings than LP children was not confirmed by the data. This disconfirmation was further supported by the significant 1/F ratio for the A X B interaction. The means for boys in both HP and LP groups were higher than the means for girls;

Table 12

Means, Standard Deviations, and Analysis of Affect Ratings

	N	Mean	SD
Boys	32	6.04	1.25
Girls	32	5.14	1.99

Summary of Analysis of Variance

Source of Variance	df	MS	F	p
Total	127			
Between Ss	63			
A (Fantasy predisposition)	1	9.46	1.48	
B (Sex)	1	26.10	4.08	$< .05$
A X B	1	.60 (1/F)	10.67	$< .01$
Error (a)	60	6.40		
Within Ss	64			
C (Structure of play)	1	.66	1.06	
A X C	1	2.48	3.97	$< .10$
B X C	1	1.80	2.89	
A X B X C	1	.14 (1/F)	4.54	$< .05$
Error (b)	60	.62		

interaction between the two factors was less than would have been expected of random samples.

Hypothesis 2b, which stated that HP children would show less motility than LP children was also disconfirmed. Table 5 (p. 53) shows no significant main effect for Factor A on the analysis of motility ratings, although there is a significant A X B interaction which will be discussed under Hypothesis 4.

In summary, the factor of predisposition to fantasy had a main effect on five out of eight criterion measures used to assess fantasy play. The importance of A emerged all the more clearly, because of the very small interactions obtained throughout the statistical analyses of the data.

Qualitatively, the differences between HP and LP children were often very noticeable; the observers, who had no knowledge of which group the Ss belonged to, soon became experts at guessing correctly on the basis of one or two play sessions. HP children generally appeared pleased and interested in the playthings, and seemed to be able to fulfill the requirements of the situation with more self-confidence and command of the situation. They did not notice the noise on the playground outside or in the classroom downstairs, whereas some of the wriggly LP children responded to minimal distractions such as the buzz of the electric clock or the holes in the dollhouse wall where the roof had come unlatched. HP children tended to tell much longer stories, and to do so voluntarily, with less questioning by E. LP children tended to ask more tangential questions and engage in interaction with E rather than with the toys. ("Where do you live? Do you have any children? Why don't you teach here any more? Did Santa bring you

all these toys? Who was here before me? I don't think you should have picked her - she just will play dolls. Hey, I like you, only I can't say your name!")

Another interesting tendency seen more often in HP children was to integrate more than one category of toy in their play. 6 HP children, as compared with 2 LP children were able to do this. One little girl dressed up as Mary Poppins and used the rag dolls as the two children whom she took flying through the air. Several of the boys used the cars from the service station for the adventures of the G.I. Joe dolls.

Characteristics such as those mentioned above suggest that the ability to use fantasy freely is indeed a cognitive skill related to concentration, fluency, spontaneity, and the ability to organize and integrate diverse stimuli.

Hypothesis 3 - Effects of Interaction

The third hypothesis was designed to test the effect of interaction between the two degrees of structure and the two levels of predisposition to fantasy. It was postulated that HP children would show more fantasy when playing with MS playthings, whereas LP children would show more fantasy in response to HS toys. This was not borne out by any of the dependent variables 1-6 listed above. There were no statistically significant effects for the A X C interaction; in fact, the significant 1/P ratios already discussed reinforce this lack of interaction.

At the level of near-significance there were two A X C interactions which will be discussed. One appeared on the analysis of fantasy ratings (Table 6, p. 55; $F=3.44$, $df=60, 1$, $p<.10$). The means are

graphed in Figure 2; the differences between HP and LP groups are highly significant for both MS ($t=4.81$, $df=30$, $p<.001$) and HS situations ($t=3.98$, $df=30$, $p<.001$), thus supporting Hypothesis 2. The difference between the means for HP Ss is also significant ($A=.19$, $df=15$, $p<.02$)[3] showing that these children produced higher levels of fantasy in response to MS playthings than to HS toys. This finding lends partial support to the interaction hypothesis, although there was no significant difference ($A=15.5$, $df=15$, $p>.20$) between the means for the LP group.

The analysis of affect ratings (Table 12, p. 63) also included an A X C interaction which could be called significant if decimal points were rounded ($F=3.97$, $df=60, 1$, $p<.10$). As shown in Figure 3 (p. 69) LP children were rated as expressing greater enjoyment when playing with HS toys than with MS playthings. The difference between their means for the two play situations is significant ($A=.26$, $df=15$, $p<.05$). This provides partial support for Hypothesis 3a which stated that the degree of affect shown by the two experimental groups would be differentially related to the two play situations. The results for the HP group, while in the expected direction, were not significant ($A=.20$, $df=15$, $p<.20$). The means for the two fantasy groups differed at the level of near-significance ($t=1.78$, $df=30$, $p<.10$) in respect to MS playthings, but not in respect to HS toys ($t=.54$, $df=30$, $p<.20$).

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[3] Sandler's (1955) test of the significance of the difference between means of correlated measures was used to compare the means for each S by pairs.

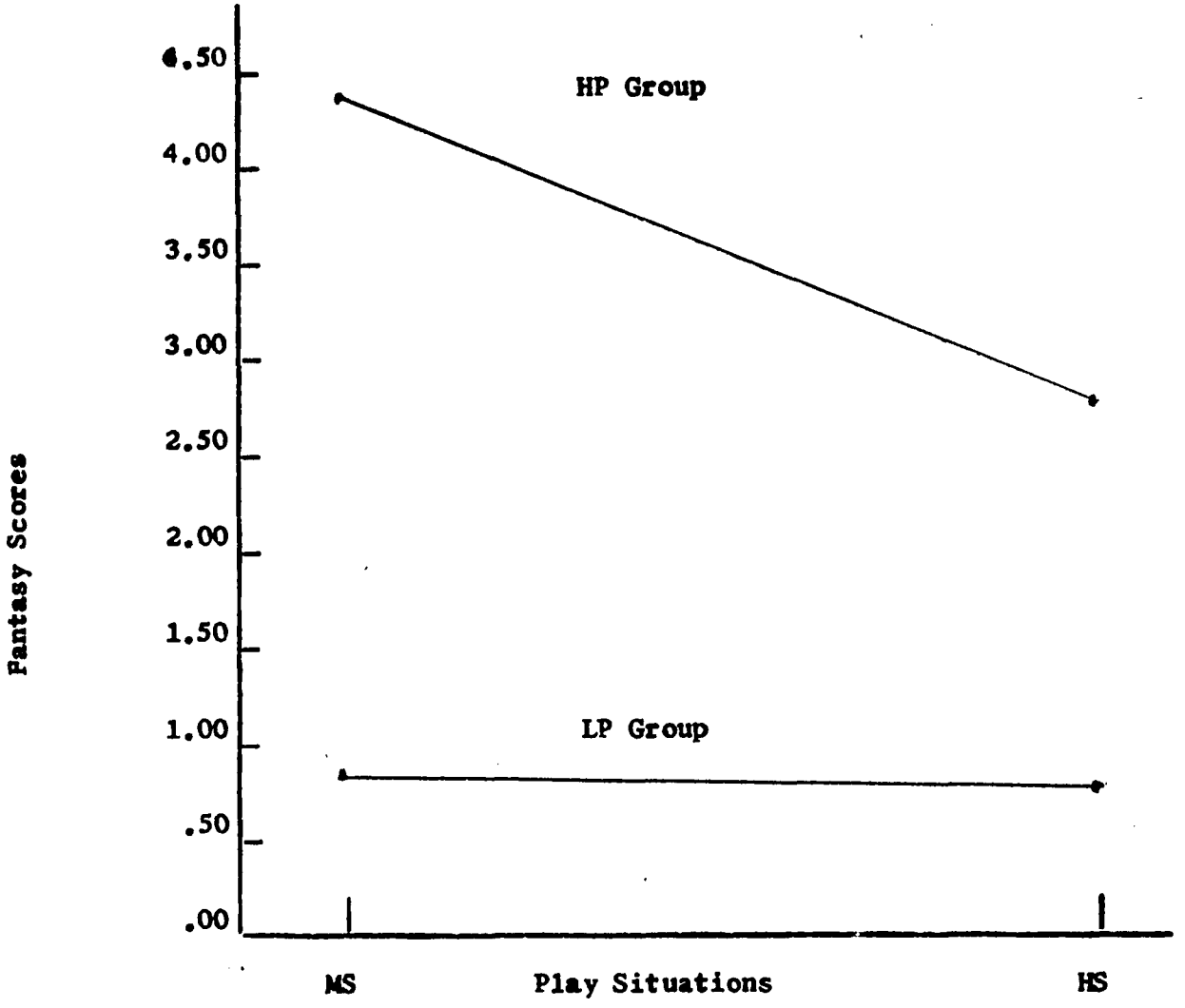

Fig. 2. Fantasy means for HP and LP groups across levels of structured play.

Table 12

Post-test Preferences for MS or HS Playthings

	LP Group[a]	HP Group	x^2	p
MS Playthings	5	19	10.72	$< .01$
HS Playthings	26	13		

[a]One child could give no preference

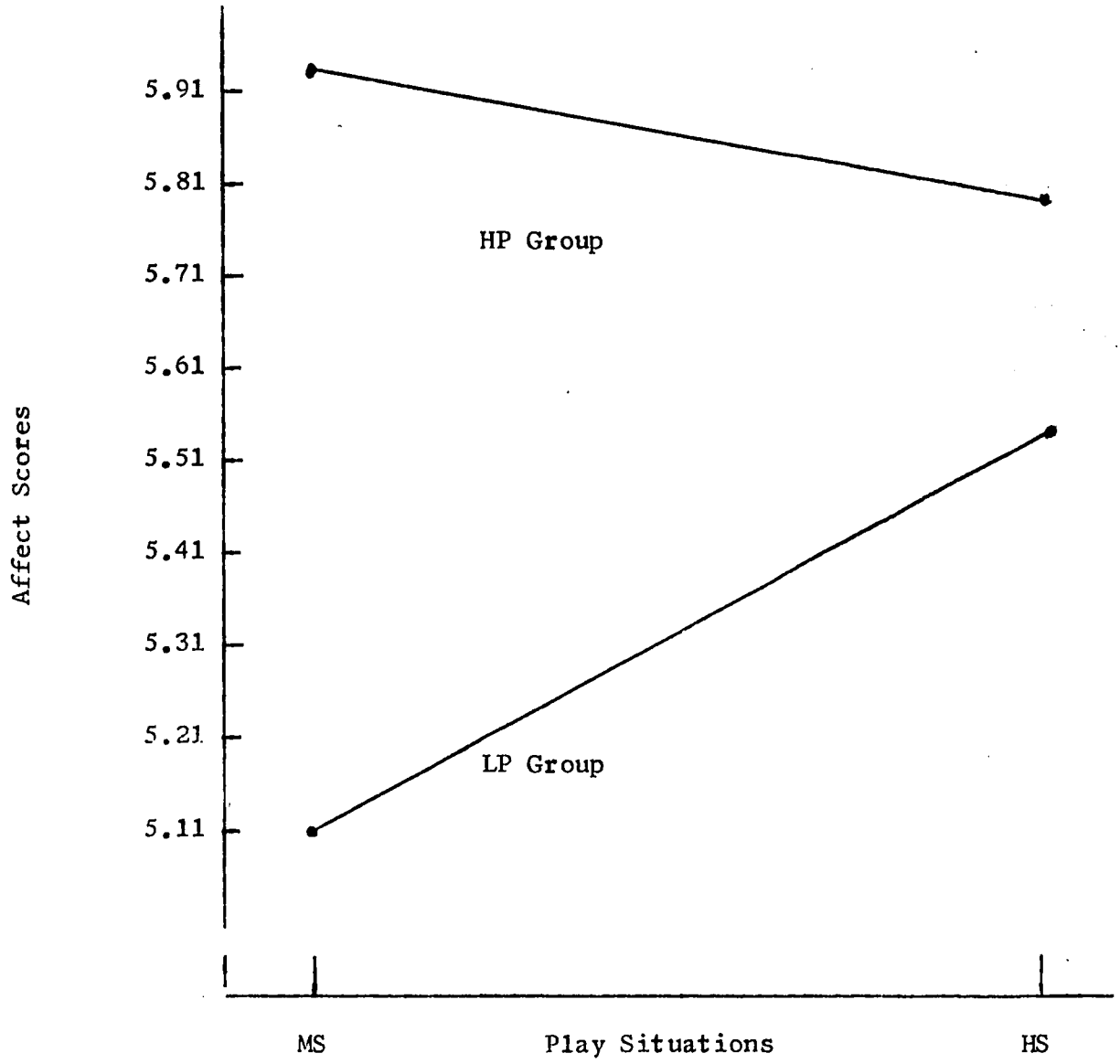

Fig. 3. Affect means for HP and LP groups across levels of structured play.

Hypothesis 3b postulated a reverse relationship in regard to motility ratings. It was predicted that HP children would show less motility in the MS situation than in the HS, while LP children would show less motility in the HS situation. No support for this was found in the data (Table 5, p. 53).

A third sub-hypothesis (3c) was designed to test differential preferences for HS or MS playthings after the experiment was completed. Evidence (Criterion 7) was supplied by asking the children which toys they had most enjoyed playing with. The results were significant (x^2= 10.72, df=1, $p<.01$) in the expected directions. HP children preferred MS play materials and LP children preferred HS toys (Table 12, p. 68). Some children reported preferences for toys from both play situations (e.g., "I liked the blocks and the space suit.") in which case only the first preference was tallied. An attempt was made to check these results against post-test statements of non-preferred toys, but here the results were inconclusive (x^2=.14, df=1, $p<.80$) as the children tended not to remember toys they did not enjoy. Further evidence (Criterion 8) supplied by the children's choices of HS or MS prizes was also inconclusive. Perhaps for these children of affluence the small plastic HS prizes had less appeal, although it was interesting to note that two of the girls chose racing cars. At any rate, 42 of the 64 children chose the little cans of Playdoh as prizes. a chi square analysis showed no significant results (Table 13; x^2=.62, df=1, $p<.50$) although more HP children chose Playdoh than did LP subjects. Some of the children even asked for the little cans to take home to younger siblings. Some commented that they would have to play with the Playdoh at school, as their mothers would not permit it in their homes. ("It's too messy." "My maid gets mad at me.")

Table 13

Post-test Preferences for Prizes

	LP Group	HP Group	x^2	p
MS Prize	19	23	.62	<.50
HS Prize	13	9		

In summary, the prediction of interaction between Factors A and C in this experiment was largely disconfirmed, with only differences in affect and in post-test preferences for the playthings supporting the hypothesis under consideration. This disconfirmation was underlined by the significant 1/F ratios already discussed, which suggest that the experimental groups were more constricted than would be expected of random samples.

Hypothesis 4 - Effects of Sex

The fourth hypothesis was designed to test the effect of sex (Factor B), the third independent variable. It postulated differences in the fantasy play of boys and girls, particularly in the HS situation, in which many of the toys were sex-typed. The data presented in the preceding summary tables showed only two significant main effects of sex. One was found in the analysis of affect ratings (Table 12, p. 68; $F=4.08$, $df=60, 1$, $p<.05$) and suggested that boys, regardless of fantasy predisposition or play structure, showed greater overt enjoyment in fantasy play than did girls. This finding was further confirmed by two significant 1/F ratios for interactions involving the factor of sex.

A second significant main effect of sex was presented in the analysis of motility ratings (Table 5, p. 58; $F=4.53$, $df=60, 1$, $p<.05$). A comparison of the means listed in Table 5 shows that boys received higher scores than did girls for motility under all conditions. Two significant interactions appeared in the same analysis. One was the A X B interaction ($F=4.01$, $df=60, 1$, $p<.05$) graphed in Figure 4. LP boys, regardless of the play situation, showed greater motility than

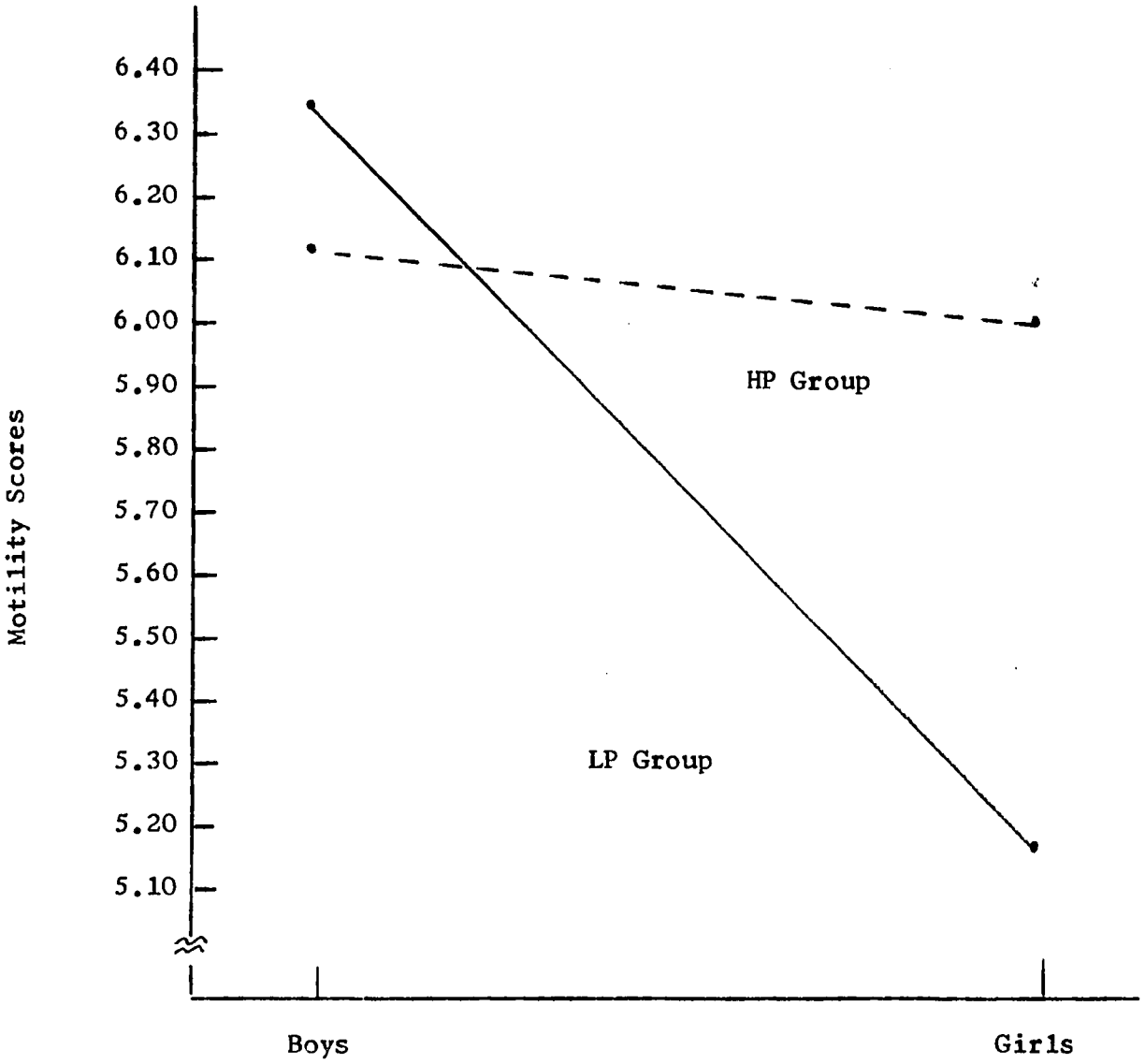

Fig. 4. Motility means for HP and LP groups by sex.

girls. This did not hold true for the HP children; here there was little difference in the scores, regardless of conditions. This result suggests that the relationship between sex and motility is dependent on the level of fantasy involved.

The B X C interaction was also significant in this analysis ($F=5.39$, $df=60, 1$, $p<.05$). These results are graphed in Figure 5 and indicate that boys, regardless of other conditions, played at a higher level of motility than did girls, but that motility ratings for both boys and girls increased in the HS situation.

At the level of near-significance, the factor of sex (B) showed a main effect closely approaching significance in the analysis of variety ratings (Table 3, p. 50; $F=3.74$, $df=60, 1$, $p<.10$). An examination of the means shows that boys produced a somewhat greater variety of themes, regardless of other conditions, than girls. In view of the generally acknowledged verbal superiority of girls, this is interesting and may point toward greater flexibility of thought for boys than for girls on a fantasy level.

Another provocative result appeared on one of the chi squares performed with the data on exploratory behavior. Though there was no significant difference between HP and LP groups, or between the two play situations, the difference between boys and girls in the number of Ss who spent time in exploration (beyond the initial minute) closely approached significance ($x^2=3.57$, $df=1$, $p<.10$). This would suggest that boys might tend to be more exploratory than girls, a conclusion which might be related to their greater motility.

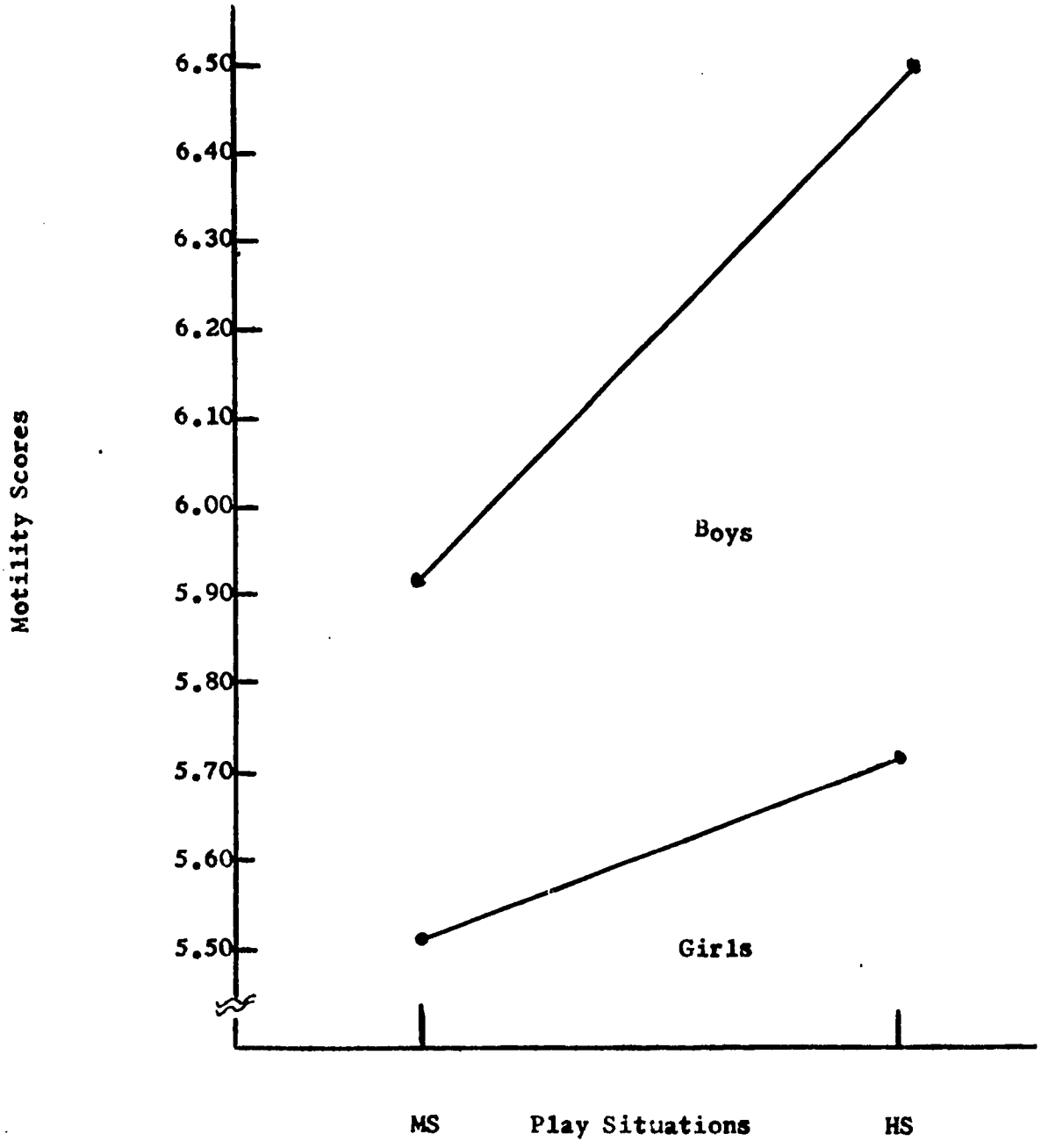

Fig. 5. Motility means for boys and girls at two levels of play.

A comparison of the sex-linked fantasy play of boys and girls brought out some interesting results. There was not as much difference as hypothesized between HS and MS situations. The number of sex-linked themes in the two situations (Criterion 10) were approximately the same (MS, 68; HS, 66). In both cases the children told roughly twice as many stories that were not sex-linked as those that were. Nor was there any significant difference between boys and girls in the number of sex-linked themes that were produced in either play situation (x^2=.66, df=1, p<.50). There was, however, a significant difference (x^2=5.38, df=1, p<.05) between boys and girls in their willingness to play with toys of the opposite sex. In the MS situation this occurred rarely, probably because of the nature of the toys. Three boys played with the FP dolls, and one girl dressed up as a magician. But in the HS situation there were 17 girls who played with masculine toys; these were usually the cars in the filling station, which were popular with boys and girls alike. On the other hand only 7 boys played with the doll house, one of whom looked sheepishly at E and remarked, "I'm just fixing this up for the next girl who comes." Table 14 (p. 77) shows the relative frequency of opposite-sex play. In addition there were many more deprecatory comments from boys than from girls. The latter tended to make inquiries such as, "Is that a G.I. Joe doll?" or positive comments such as 'Boys must have a lot of fun with these!" Boys, on the other hand, made scornful remarks such as "All girl things - nothing I like!" or "I wouldn't play with the doll house - I'm not that kind of girl!"

Table 14

Preference for Sex-typed Toys in the HS Situation

	No. of Boys	No. of Girls
Toys of the Same Sex	25	15
Toys of the Opposite Sex –	7	17

$x^2 = 5.38$, df=1, $p < .05$

In summary, the effects of sex (Factor B) in this experiment were significant on only two of the first six criteria; affect and motility. The ratings of motility showed the strongest relationship to sex, with a main effect and two significant interactions attributable to Factor B. From the results it appeared that the boys in this experiment showed significantly higher affect and motility than girls; the latter was greater in LP boys than in HP boys, indicating that boys with a low predisposition to fantasy tend to be more overtly active than boys who have a high predisposition to fantasy. This finding confirms Singer's (1961) results.

At the level of near-significance, it was noted that boys appeared to be more exploratory than girls, and to produce a greater variety of different themes in their responses. A significantly larger number of girls, on the other hand, played with boys' toys than did boys with girls' toys. The same tendency was observed during the pilot study, and may represent a commentary upon the changing role of the female in America today.

Hypothesis 5 - Effects of Birth Order

The fifth hypothesis was designed to test the relationship between birth order and fantasy. There were 14 first-born and 3 only children in the sample, as opposed to 46 later-born children. One child was not included because he was adopted. On the basis of global fantasy scores computed after the experiment, the children were divided into high and low fantasy groups which reflected their actual performance. A chi square analysis revealed no significant relationship between birth order and global fantasy scores in this sample (Fisher's exact probability test, $p=.12$).

An attempt was made to see whether fantasy levels were consistent within families, since there were eight pairs of siblings in the sample, including a pair of twins. Within six of the eight pairs, the fantasy levels were consistent; both children were either high in fantasy or low in fantasy as measured by their actual performance. In two family pairs, the members' scores were split between high and low fantasy levels. A chi square was performed based on expected probabilities, but the number of pairs involved was too small to show significant results (Fisher's exact probability test, p=.25).

Hypothesis 6 - Effects of Flexibility Test

The final hypothesis concerned the ability of children to submit to a sudden interruption in free play and respond to increasingly structured directions. It was predicted that HP children would be able to respond more quickly, more willingly, and more productively than LP children to the experimentally imposed Flexibility Test. A number of measures were made and studied with no significant results. There was no clear pattern in the latency of response, regardless of HP and LP groups, or the order in which the Flexibility Test followed MS or HS play. Neither did the length of time spent in making up stories seem to vary significantly in any direction. The scores for transcendence and fantasy following each type of play situation were compared to the level of performance immediately preceding the Flexibility Test, but again no consistent pattern of response was observable. Two measures, however, showed significant results. One was a measure of affect, rated as showing acceptance or rejection (Criterion 13). Those children who obeyed the instructions without complaining received "acceptance"ratings. Those who refused, whined, or said that

they did not know how to follow the instructions were rated as rejecting them. Chi square analysis revealed no relationship between the two play situations and the frequency of rejection (x^2=.51, df=1, p<.50). It showed, however, a significant difference between LP and HP children (Table 15) in this respect. Each child had two chances to respond to the test instructions; HP children responded positively much more often than they responded negatively. LP children, on the other hand, responded negatively significantly more often than HP children (x^2=17.02, df=3, p<.001). This finding indicates that HP children could accept interruption and change more willingly than LP children, regardless of the level of play being interrupted.

A final measure was that of the flexibility with which the children responded to the Flexibility Test (Criterion 12). The stories they told in response to the instructions were rated by two judges on the scale previously described, and an analysis of variance was performed on these ratings. As shown in Table 16, there was a significant difference in the flexibility of response between HP and LP groups. The means show that HP children received higher ratings than LP children, regardless of sex or structure of play. In fact the latter was shown to have less effect than would have been expected of random groups, as shown by the highly significant 1/F ratio. As predicted, the HP children showed greater ease and flexibility in coping with increasing demands upon their ability to produce fantasy; they also responded less negatively to the interruption of their play.

Summary of Statistical Results

A comprehensive review of the data reveals that the degree of predisposition to fantasy was the most important factor in the experiment. This Factor A had a main effect on six out of the eight analyses

Table 15

Responses to Flexibility Test Instructions[a]

	++	+-	-+	--
HP	20	9	0	3
LP	5	12	1	14

$x^2 = 17.02$, df=3, $p < .001$.

[a]Each S was presented with this test twice. Acceptance (+) or rejection (-) for first and second presentations are indicated by the order of the signs above each column; i.e., +- indicates acceptance of the first presentation, followed by rejection of the second.

Table 16

Means, Standard Deviations and Analysis of Flexibility Ratings

	N	Mean	SD
LP Group	32	3.40	2.60
HP Group	32	5.78	2.05

Summary of Analysis of Variance

Source of Variance	df	MS	F	p
Total	127			
Between Ss	63			
A (Fantasy predisposition)	1	181.69	23.17	< .001
B (Sex)	1	7.76		
A X B	1	10.40	1.33	
Error (a)	60	7.84		
Within Ss	64			
C (Structure of play)	1	1.65		
A X C	1	.00	(1/F) 1666.67	< .001
B X C	1	4.31	2.32	
A X B X C	1	2.68	1.44	
Error (b)	60	1.86		

of variance performed. On the transcendence index, the scores of the HP group were roughly twice those of the LP group. The same held true for the ratings of fantasy, organization, variety and flexibility; and all of these differences were significant at the .001 level. There was less disparity in the concentration scores, which differed at the .05 level. Figure 6 presents a profile of the means for HP and LP groups on the six measures in which significant differences appeared; five pairs of these differed at $p<.001$ level, while all differed at $p<.05$.

The main effects of Factor A emerged all the more clearly because of the very small interactions obtained throughout the statistical analysis of the data. In fact, it contributed to only one significant interaction (Motility A X B, p. 73) and to two interactions which closely approached significance (Fantasy A X C, p. 67; Affect A X C, p. 63). The hypothesized interaction between levels of fantasy and levels of structure in the playthings received confirmation only from the two near-significant interactions just mentioned, and from the post-test toy preferences expressed by the Ss.

It is interesting to note that the effects of Factor B (sex) were significant on only those measures on which Factor A was non-significant. These were the affect and motility ratings, on both of which boys received higher scores than girls (pp. 63 and 53 respectively). Chi square analyses of the number of children showing exploratory behavior closely approached significance for the differences between boys and girls, but not between fantasy groups (p. 74). Thus, on the measures on which fantasy levels had a strong effect, sex had very little, and vice versa. This interesting relationship will be discussed later.

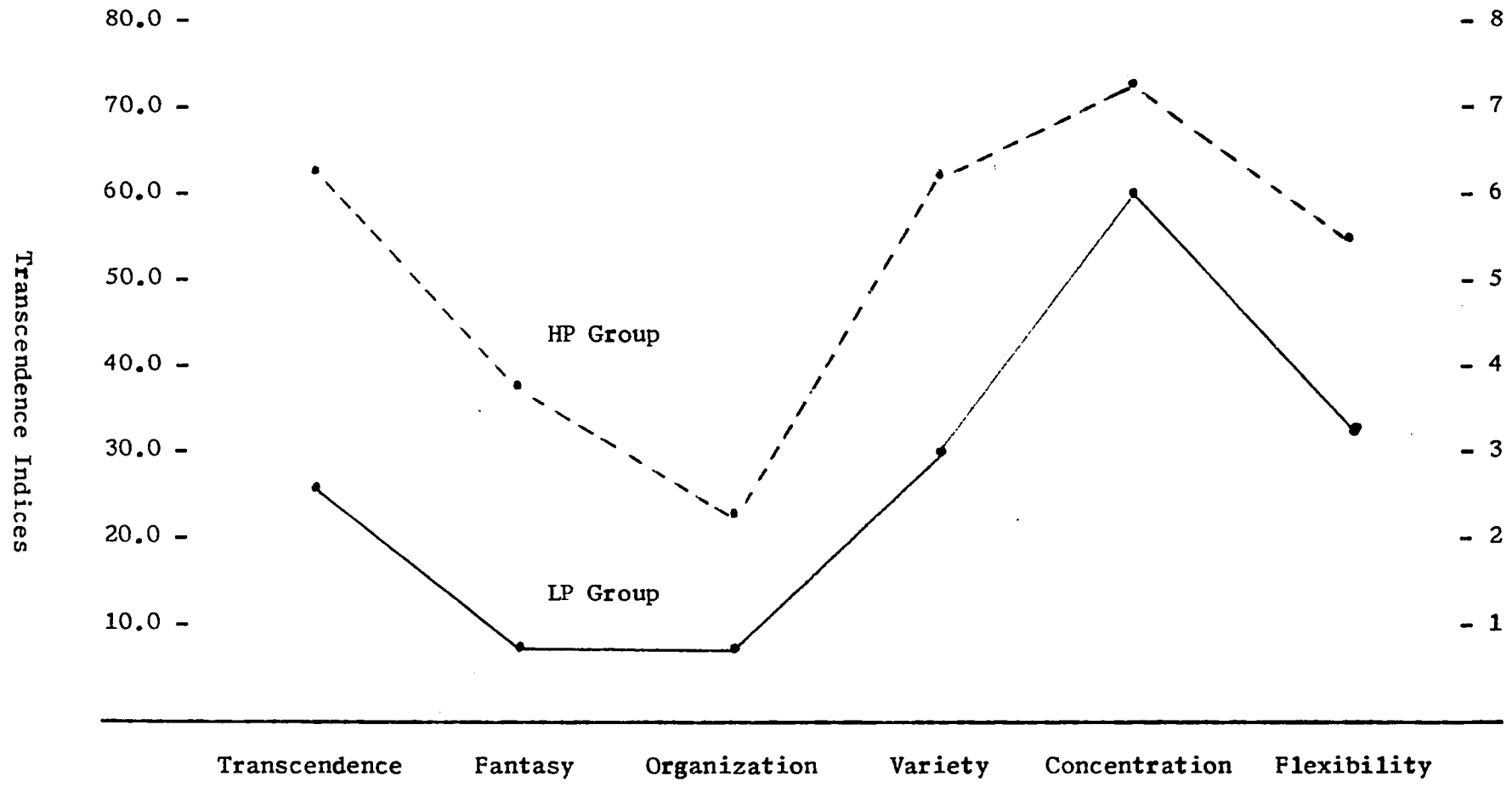

Fig. 6. Comparison of mean scores of HP and LP groups on six criterion measures. Scores to the right of transcendence refer to rating scale scores.

The factor of levels of structure (C) showed significant main effects on only two of the eight analyses of variance; those of variety (p. 50) and motility (p. 53), with a near-significant effect on the analysis of fantasy ratings (p. 55). On other criteria it showed little effect, indicating that the kinds of toys played with in this experiment made far less difference than the kinds of children who played with them. The implications of this will be discussed in the following chapter.

A summary of statistical tests of the hypotheses advanced in this study is found in Table 17.

Content of Fantasy Productions

This study has been concerned chiefly with the effects of the structure of toys on children's fantasy productions. The content of the fantasy and the language in which it was expressed can be reviewed only briefly here; a study of these aspects of the data is in preparation. However, the egocentric quality of children's language which has been discussed by Piaget (1955), Werner (1948), and Church (1966), is clearly apparent in many of these records. One child described the "blumpy, plobby" feet on the rubber cowboy. Another spoke of a flying horse that was "mocha troll" (remote controlled). A second-grader, describing the adventures of a "fantastic hero" in the depths of a volcano full of acid and molten lava, remarked that his hero didn't get hurt because "he had everything-proof clothes on."

The content of the children's fantasy is listed by categories in Table 18. Stories of family life - of the day-to-day reality of a child's routine - were by far the most common, and ranked high among

Table 17

SUMMARY OF TESTS OF HYPOTHESES[a]

	HYPOTHESIS	CRITERION MEASURES		TESTS AND RESULTS	CONCLUSIONS
1.1	MS toys will elicit greater richness of fantasy	1.1 Transcendence 1.2 Fantasy 1.3 Organization	ANOVAR MAIN C	1.1 C: no sig. diff. AC: 1/F=24.15, P .001 1.2 C: F=3.56, P .10+ AC: F=3.44, P .10 BC: 1/F=12.00, P .001 1.3 C: no sig. diff.	1 (wk) /3
1.2	MS toys will elicit greater variety of fantasy	2. Variety	ANOVAR MAIN C	C: F=48.85, P .001 BC: 1/F=59.52, P .001	+
1.3	MS toys will elicit longer periods of interest	3. Time at Play	UNUSABLE	x^2 (Exploratory Beh)=2.36NS	? -
2.1	HP children will show greater enjoyment	4. Affect	ANOVAR MAIN A	A: no sig. diff. AC: F=3.97, P .10	-
2.2	HP children will show less motility	5. Motility	ANOVAR MAIN A	A: no sig. diff.	-
2.3	HP children will show greater ability to become absorbed in play	6. Concentration	ANOVAR MAIN A	A: F=6.23, P .05	+
2.4	HP children will play at a higher fantasy level	1.1 Transcendence 1.2 Fantasy 1.3 Organization 2. Variety	ANOVAR MAIN A	1.1 A: F=24.59, P .001 1.2 A: F=28.36, P .001 1.3 A: F=13.85, P .001 2 A: F=29.01, P .001	+
3.1	HP children will produce higher levels of fantasy with MS toys	1.1 Transcendence 1.2 Fantasy 1.3 Organization 2 Variety	ANOVAR A X C	1.1 AC: 1/F=24.15, P .001 1.2 AC: F=3.44, P .10 1.3 AC: no sig. diff. 2 AC: no sig. diff.	1 (wk) /4

HYPOTHESIS	CRITERIA		TESTS AND RESULTS	CONCLUSIONS
3.2 HP children will show higher affect in response to MS toys	4. Affect	ANOVAR A X C	AC: F=3.97, p .10	+ (wk)
3.3 HP children will show less motility in the MS situation	5. Motility	ANOVAR A X C	AC: no sig. diff.	-
3.4 HP children will express post-test preferences for MS toys	7. Post-test toy preference	x^2, DF=1	x^2=16.49, p .001	
	8. Choice of prize		$x^2$8=.62, not sig.	+, -
4. There will be a greater sex difference in the fantasy play of children in the HS situation.	1.1 Transcendence	ANOVAR B X C MAIN B	CRITERION 1.1 not sig.	BC 1/7 B 2+1 (wk) / 7
	1.2 Fantasy		1.2 1/F=12.00, p .001	
	1.3 Organization		1.3 not sig.	
	2. Variety		2 1/F=59.92, p .001	
	4. Affect		4 not sig.	
	5. Motility		5 F=5.39, p .05	
	6. Concentration		6 1/F=34.60, p .001	
			Main B 1/F=5.67, p .05	
			not sig.	
			not sig.	
			F=3.74, p .10	
			F=4.08, p .05	
			F=4.53, p .05	
			not sig.	
5. First-born and only children will respond with higher levels of fantasy production	11 Global score	14 first-born 3 only children	x^2=.77 not sig.	-
6. HP children will respond to sudden interruption with greater ease, flexibility and success	12 Flexibility	ANOVAR MAIN A	A: F=23.17, p .001 x^2=17.02 no sig. interactions df=3, p .001	+

[a]The author is indebted to Dr. Emma Spaney for this summary table.

Table 18

Content of Children's Fantasy Productions

	Girls	Boys
Stories from TV and books	6	5
Family life and domestic situations	32	12
Female activities (shopping, dancing, going to church)	4	0
Animal stories	5	4
Illness or operations	2	1
Traffic accidents and arrest	4	5
Snow and snowmen	5	6
Christmas (trees, decorations, stories of gifts)	7	1
Dinosaurs	2	5
Kings, queens or princesses	3	1
Food	3	0
Marriage and honeymoon	6	0
Flowers and trees	3	1
Ghosts	2	1
Pirates		2
Gangsters, bank robbers		3
Monsters (giants, robots)		10
Spacemen, planets and flying in space		11
Tidal wave		1
War	1	2
Shooting and fighting bad guys		15
Shooting animals		2
Sharks		4
Houses or buildings	1	11
Boats and planes		3

boys as well as girls. There were many stories of animals, and of Christmas and snow; the latter may have been seasonal, since the experiment began soon after Christmas and many of the children were convinced that Santa Claus had given E all the toys. There was no mention of the witches and bogeymen mentioned in other studies of children's fantasies (Griffiths, 1935; Isaacs, 1933; Markey, 1935) but the monsters and robots of the space age were present, and even a few ghosts. The boys' most common fantasies were about fighting. ("He frows a hand grenade and it resplodes.") There were the usual battles between "bad guys," variously called Mexicans (at the Alamo), Japs, Germans, and "the Betnam" (Vietnam). Stories of kings and princesses were few; modern TV heroes such as James Bond, the Invisible Man and Quick Draw Dan McGraw seem to have taken precedence. Some of the frequencies are obviously related to the stimulus characteristics of the play situations; the numerous stories of traffic accidents and weddings were inspired by the cars and the bride costumes, while the diver doll seemed to suggest stories of sharks. Here and there were stories which seemed to arise out of the inner problems of the child; the descriptions of paintings were clinically very revealing. One boy who was rejected by parents and peers alike told this story:

"Wal, this little house is very lonely. He doesn't have any friends. All the other houses say haha, and laugh at him. He doesn't think that's nice. Especially it isn't. So he goes and takes a walk to another place. Then he walked back, and then he went swimming, and that's it."

There were perhaps a dozen stories like the above, where the child's fantasy served as an outlet for his inner anxieties. However, out of 385 responses to the playthings most of the children's responses showed, in greater or lesser degree, the ability to deal freely and flexibly with the events of their daily experience.

CHAPTER IV

DISCUSSION

Question of Validity

"The gates which guard the entrance to the inner life of childhood are high and strongly barred" (Meek, in Jersild et al., 1933, p. v). The question can justifiably be raised as to whether this study really tapped the springs of childhood fantasy. Fantasy is basically a private affair; the more developed it becomes, the more it disappears from view. Since there is no external criterion of fantasy against which the results of this study can be validated, the concept of "construct validity" must be utilized (Cronbach and Meehl, 1955) to decide whether the verbal productions which supplied the raw data for this study actually represent fantasy. The evidence is presented in Table 19 which is adapted from Davis (1964, p. 25). It points up the empirical validity of the correlation between screening test scores and actual performance on measures of fantasy, as well as between the judges who constructed and used the rating scales. Evidence of judgmental validity was found in the positive correlation (see Table 2, p. 46) between the global fantasy scores on actual performance, and the teachers' ratings of each child's degree of imaginativeness, made before the experiment began. This represented agreement between judges with different criteria, using different evidence. An outside psychologist, rating the protocols in yet another way, reached a much higher correlation with the global fantasy scores. Face validity was supplied by the agreement

Table 19

Evidences for Validity from the Data

Congruent Validity	Constructor Validity	Face Validity	Inferential Validity
Correlation between predictive selection made with screening tests, and results of the experiment (i.e., HP children received high fantasy scores and vice versa)	Agreement among judges who constructed the rating scales, in naming and in scoring evidences of fantasy in the data	Agreement among specialists in child development (dissertation committee) that the data gathered represented Ss' fantasy productions	Correlation of results with: 1) A prior teachers' ratings of each child's imaginativeness 2) Outside psychologists' "blind" ratings of each protocol for creativity

among specialists that the data gathered in this experiment were representative of children's fantasy productions. If a play session such as this, or even a part of the procedure, such as a measure of variety of responses followed by a Flexibility Test, could be standardized and validated against subsequent fantasy productions of these same subjects, it might be possible in the future to provide predictor validity for a Fantasy Test. Plans are already being set up to follow the Ss of the present experiment on a long-range basis, in order to study not only their fantasy development but their cognitive flexibility as well.

Structure of the Toys

Careful consideration of the results of this study has led to the conclusion that the effect of the toys was "too little and too late."

By "too little," it is meant that there probably was not enough difference between the two sets of toys. The attempt to match the playthings was undertaken so carefully that, except for the construction vs. constructed materials (blocks, etc. vs. dollhouse and service station) the two sets actually were much alike. The interesting point is that paints and clay, whether in structured or unstructured form, were very popular in both situations, underlining the child's need for plastic materials to express his fantasy. Novelty, which in Gilmore's (1964) study, was a factor in the attractiveness of one set of toys, was not a variable here. All of the toys and materials were familiar to these children of affluence, who sometimes stated that they had "better ones" at home. The dollhouse, for example, was of the type found in any department store, which, to quote Matterson (1967, p. 69) leaves "little scope for the imagination and none at all for the elbows." Part of the attractiveness to children of the toys whose over-realism prompted this study, is due to novelty; children see the latest thing on TV and

set up a clamor for it. More research is needed to study the effect of novelty vs. complexity of structure. For present purposes, however, there was so little difference in the responses to the two sets of toys that one must look for sources of constancy rather than sources of variance between the groups. The 1/F ratios reported for B X C interactions (pp. 51-56) point up the fact these groups were carefully selected for homogeneity of cultural and economic factors. Added to these were other constant factors: Ss were taken to the same room every day at the same time by the same E who asked the same questions, and presented them with playthings very similar to those in their homes or in the kindergarten at school. Possibly the amount of experimental control imposed contributed to the lack of differentiation in the results.

But it is now felt that the effect of structure in the toys was also "too late." The results of this experiment show clearly that by the age of 5, children have a well-developed predisposition to fantasy which affects their functioning, regardless of sex or circumstances. This will be discussed further below; however, the implication is clear that this type of study should be repeated with pre-school subjects in order to see at what age level the structure of toys has an effect on the development of fantasy. Such a study will be undertaken as soon as a suitable sample can be located.

Predisposition to Fantasy

A bright, attractive, five-year-old girl comes into a playroom full of toys, looks around, points to the bride doll, and says, "I want to play with this." She takes off its shoes, unpins its veil, smoothes its hair, looks at its feet. When asked if she can make up a story, she replies, "No." With further encouragement, she manages, "They might get married."

Another little girl with shining eyes goes to the bride doll and says, "I like her ... Oops, she's lost her shoe!" When asked to tell a story, she begins,

"Once upon a time there was a little bride. She was coming to marry with her groom. So she was married with her husband, both on that day. So then all of a sudden, bang, bang, bang, in came an Army man. The groom said, 'What are you doing here?' 'We have to attack,' So they ran back home and were cancelled for that day. Woops ... the shoes again!"

What made the difference in the way these two children, equally bright and equally privileged, responded to the same situation? One manipulated the doll for two minutes and told a minimal story. The other played with the doll for five minutes and told a story moving away in time and space, which had a plot, and integrated other toys (Ken and G.I. Joe dolls) into the story. One was constricted and stereotyped; the other was original, creative, flexible, and well-integrated. What made the difference?

That was the question which most pointed up the limitations of this experiment. There was simply no way of controlling for the effects of past experience. Every attempt was made to do so by using highly selected, carefully matched samples, but the differences in fantasy predisposition were obvious. One can only conclude that children are born with different degrees of fantasy ability, or that it is developed in response to their early environment. Piaget's studies, and all the research being done in early learning would certainly point to the latter. Since "little can be done to study the effect of inherited factors" (Wright, in Mussen (Ed.), 1960, p. 147) the implications for research between ages 2 and 5 are obvious.

An attempt was made to examine some of the factors that might have contributed to the fantasy development of the children in this sample. Their records were checked for nursery school attendance, and a chi square was performed, the results of which proved non-significant (x^2=1.00, df=1, p<.30). An analysis was made of the children's answers to the interview question about how much television they watched, but the results were inconclusive (x^2=2.88, df=1, p<.10) and the children's answers vague ("I watch drillions of programs." "All 99 channels."). Even less accurate were the answers to questions concerning the frequency of being read to by adults (x^2=.25, df=1, p<.50) which included such comments as "Every once a day," and "My father has no time ... he has to pay taxes." Questionnaires to the parents were considered, but such a well-educated group would certainly have given the "right" answers, regardless of the facts. Obviously, more research is needed into the environmental and cultural factors that contribute to fantasy development in early childhood.

Effects of Interaction

The lack of significant interactions in this study can be ascribed largely to the predominant influence of fantasy predisposition, and the constriction both within sex groups and play situations. Where both kinds of playthings were so closely matched, and the groups of children were so closely matched except for their predisposition to fantasy, it is understandable in retrospect that little interaction occurred. However, this point up and supports the main effects of the independent variables.

Effects of Sex

In their fantasy play, the boys and girls in this study appeared to be more alike than they were different. There was a difference in

their motor behavior and emotional response to the toys, with girls taking the quieter, more conforming role, as might be expected. Recent research, however, indicates that such differences may be due more to physiological differences between the sexes than to differences in child rearing (Broverman, Klaiber, Kobayashi, and Vogel, 1968). There was also a difference in their choices of toys, but not as much as had been expected from the results of earlier studies. The trend that Kagan foresaw in 1964 (see p.15) for the increased freedom of the middle class girl to share in boys' activities seems to be increasing, judging by the results of this study. This statement is based not only on play with the cars, which might be regarded as approaching common ground, but also with the male costumes and weapons, and the G.I. Joe dolls.

Another interesting effect of sex was that it appeared only on the measures on which fantasy level had no strong effect. This suggests that the influence of predisposition to fantasy was so strong that the other differences which might have been expected to appear were neutralized and only had strength enough to manifest themselves on measures not closely related to fantasy development. All the evidence thus far points to the importance of fantasy development in predisposing children to behave in certain ways, regardless of sex or stimulus characteristics.

Possible Sources of Error

One of the limitations of this study may have been the fact that age was not used as a variable, due to the limited number of Ss available. The number of 1/F ratios suggests otherwise; if age were a contributing source of error, the variance within groups might be expected to be greater. Nevertheless, this exploratory study having been completed, future research should take into account the variable of age.

Another possible source of error considered was the contamination of fantasy production with verbal production. To test for this, the Wald-Wolfowitz runs test was used to analyse the relationship between raw Binet vocabulary scores and the global fantasy scores secured after the experiment. The results supported the null hypothesis ($\tilde{z}$=2.19, $p<.05$) and the groups may be considered adequately equated as regards verbal productivity. A repetition of the same test using fantasy scores and grade levels also supported the null hypothesis ($\tilde{z}$=2.50, $p<.05$). The pertinent information is presented in Table 20.

A third limitation may have been the fact that no count was made of the degree of agreement between the running records of the two observers. Very few actual differences were observed; more often the observers' records simply supplemented each other. Nevertheless, the fact that no formal statistical comparison of independent observations was made limits their validity to some extent, and may also limit their support of the hypotheses.

Fantasy as a Creative, Cognitive Skill

A review of the literature on creativity suggests many parallels with fantasy. Both seem to call for spontaneity, originality, free flow of ideas, verbal fluency, and flexibility in adapting to new situations. There is a close similarity between the dependent variables of this study and factors identified in research such as Lieberman's (1964) factor analytic study of playfulness and divergent thinking. Amount of imaginative detail, flexibility, and affect in this study, and the factors of fluency, flexibility, and joyful spontaneity in Lieberman's study seem closely related. Lieberman (1966) is now engaged in a broad research program to identify playfulness as a unitary

Table 20

Ranked Global Fantasy Scores and Binet Vocabulary Scores

High Fantasy			Low Fantasy		
Global Fantasy Rank	Binet Score	Grade Level	Global Fantasy Rank	Binet Score	Grade Level
1	11	2	33	10	1
2	12	2	34	8	1
3	8	K	35	11	1
4	11	1	36	8	1
5	7	K	37	10	1
6	17	2	38	10	2
7	9	K	39	11	2
9	12	2	40	10	1
9	14	2	41	11	2
9	11	2	42	10	1
11	9	2	43	10	K
12	8	2	44.5	9	K
13	12	2	44.5	9	K
14	8	K	46	9	1
15	7	2	47	11	1
16	11	1	48	7	K
17	9	K	49	7	K
18.5	8	K	50	6	K
18.5	7	1	51	6	1
20	9	1	52	8	K
21	9	K	53	10	K
22	10	1	54.5	11	1
23	10	2	54.5	8	K
24	10	K	56.5	9	K
25	10	1	56.5	7	K
26.5	10	K	58	12	2
26.5	12	1	59	10	2
28.5	10	1	60	8	1
28.5	10	K	61.5	11	1
30	8	1	61.5	4	K
31	10	K	63	9	1
32	8	K	64	8	K

dimension which can be used to predict cognitive style and divergency of thinking. It might be that the inclusion of a Fantasy Test such as has been suggested above would contribute to the predictor validity of such measures.

Turning to the Wallach and Kogan (1965) study as a recent and careful approach to creative thinking in children, many parallels can again be drawn between their research and ours. Their experimental procedure was based on individual, untimed interviews similar to our free play situation, on the theory that creativity, like fantasy, emerges best in a playful, permissive atmosphere. Their definition of creativity is "the ability to generate, or produce, within some criterion of relevance, many cognitive associates, and many that are unique" (1965, p. 24). One criterion of richness of fantasy in our study was a count of the number of fantasy details produced in free play; another was a rating of variety, based on uniqueness of fantasy productions. Thus there appears to be much commonality between the way in which fantasy and creativity are produced, and the cognitive factors which contribute to that production.

Another similarity between fantasy and creativity appears to be the heightened sensitivity to negative as well as positive feelings. Wallach and Kogan speak of anxiety and defensiveness as antecedents of creativity and add that creativity "may well involve a tolerance for and understanding of pain" (1965, p. 301). In the same vein Singer (1968, p. 26) describes the "heightened self-awareness" of the daydreamer "which may bring to consciousness many things that less internally sensitive persons can avoid ... The daydreamer thus pays a price for his highly developed inner capacity."

Thus creativity and fantasy are seen to have many common elements, both cognitive and affective. Further longitudinal research is needed to show whether children who have these abilities can do better in the tasks ahead of them, such as adjusting to new situations and responding creatively and flexibly to the demands of life, whether in college, camp, military, marital, or vocational situations.

Implications for Early Childhood Education

If the structure of toys has any bearing on the development of children's fantasy, it is probably most important during the pre-school years. Recent research is opening up tremendous new possibilities for teaching very young children. In a recent review of these findings called "How to Raise a Brighter Child" Beck gives lists of toys "to trigger the imagination ... the more simple and less structure, the more creatively they can be used" (1967, p. 95). Matterson, an English nursery school authority, has published a book on how to make or build sturdy, simple toys that will help children develop and grow up "with the imagination to dream dreams and the courage to go out into the world and make them come true" (1967, p. 171). It should be added here that the children's strong preferences for the plastic materials (paints and clay) noted in this research, deserve consideration. Most schools have ample materials and equipment to satisfy this need, but many homes do not. It is the responsibility of parents to recognize the necessity for such creative play, and to cultivate opportunities for its expression.

Another way in which parents can effectively help their children develop fantasy is by acting as models for them. Parents can play "Let's pretend" games and make up stories for their children in a way

that encourages them to use their imaginative resources without confusing fantasy and reality. Some of the world's most delightful fantasies, such as "Winnie the Pooh", were written by parents for their children. A mother of two high fantasy subjects in this study described to the writer how her family always looked for leprachaun on a bend in the path through the woods near their summer home. De Mille, in "Put Your Mother on the Ceiling" (1967) stresses the importance of parents' playing imaginative games with their children. "People can learn to be intuitive and expressive, flexible and perceptive, and they can do it without giving up reason, communication, purpose, or emotional control ... It helps to start learning this as a child" (p. 26).

Another source of fantasy models for children could well be developed through TV programs such as the recently announced Children's Television Workshop. The research begun by Bandura, Ross, and Ross (1961) could be extended to bring before children adults who could act as models for them in role-playing or story-telling, or in games of dress-up and make-believe. Surely the avid interest shown by children in TV cartoons could be diverted into more creative channels, both literally and figuratively. If toy manufacturers could be persuaded to sponsor such efforts instead of exploiting their childing audiences, a new era in children's creative development might begin.

CHAPTER V

SUMMARY AND CONCLUSIONS

The purpose of this study was to investigate the effect of the degree of structure of children's toys upon their fantasy. It was hypothesized that simple, unstructured play materials would give more freedom for richness and variety of fantasy than would highly structured, realistic toys. It was also predicted that children with a high predisposition to fantasy would show more imagination in fantasy play than would children with low predisposition to fantasy. An interaction between these two factors was also postulated. Additional hypotheses predicted differences due to sex and birth order, as well.

The Ss were 64 kindergarten, first and second grade children at the Buckley Country Day School on Long Island. On the basis of screening tests they were divided into HP and LP groups (high and low predisposition to fantasy) matched for intelligence, age, and sex. The Ss in each group, which consisted of 16 boys and 16 girls, were individually given four 15-minute play sessions. They were invited to play with two sets of toys, each presented twice in counterbalanced order. One set consisted of minimally structured materials (MS) such as paints, clay, rag dolls, and "dress-up" materials. The other consisted of a related selection of playthings in highly structured (HS) form. The clay had to be used with molds, the dolls were highly realistic Barbie and G.I. Joe dolls, and ready-made costumes complete in every detail were substituted for the "dress-up" materials. All Ss were asked to make up a

story or put on a show describing their play.

The data, consisting of the children's fantasy productions, were rated using a number of instruments, and eight analyses of variance were performed. On six of the eight measures, the factor of fantasy predisposition was found to have a significant effect. These were measures rating:

1. The number of imaginary details
2. The distance from daily reality of the fantasies
3. The degree of organization
4. The variety of the themes produced
5. The degree of concentration shown by each S
6. The flexibility with which S could adjust to structured instructions presented suddenly during free play.

The factor of sex had a main effect only on the two measures not affected significantly by fantasy predisposition. These were measures of motility and emotional response to the toys. In addition, more girls played with boys' toys than boys with girls' toys. The structure of the toys proved to have an effect only on the variety of themes given and on the degree of motility shown by Ss. The interaction hypothesis received no significant support except that after the play sessions HP children said they had preferred playing with MS toys, while LP children expressed a preference for HS toys. There was no significant difference between HP and LP children in terms of birth order.

Conclusions must be drawn with caution because of the highly selective sample used in this study. However, the results seem to indicate that:

1. Children by the age of five play in much the same way with structured and unstructured playthings. If the degree of structure has

any effect, it must be during the preschool years.

2. Predisposition to fantasy is an important factor which affects many aspects of a child's cognitive functioning. It appears to be clearly established by the age of five, and bears no relation to intelligence, at least at the above-average level.

3. Girls, at least of the upper middle class, play more freely with boys' toys than boys do with girls' toys, but there appears to be no significant difference between the sexes as regards the amount of fantasy production.

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APPENDIX A

WEISSKOPF'S TRANSCENDENCE CATEGORIES[a]

1) Intraception - refers to the ascribing of emotions, desires, thoughts and fantasies to the figures in the picture.
2) Temporal transcendence - refers to the inclusion of events which occur prior to or after the event shown in the picture.
3) Spatial transcendence - refers to the inclusion of persons, objects, events, which are outside the field of vision represented by the picture.
4) Relationship - refers to the characterization of the figures as related to other figures in the same picture (kinship, friend or suitor).
5) Content of speech - refers to verbal statements made by pictorial figures.
6) Evaluation - refers to the characterization of pictures or objects by a subjective value statement.
7) Atmosphere - refers to the characterization of the whole picture in terms of the emotional response which it elicits in the observor.
8) Imperative - refers to comments to the effect that a pictorial figure "should", "must", "is supposed to" act, feel, or think in a certain manner.
9) Symbolism - refers to the conscious or explicitly verbalized ascribing of symbolic meaning to the picture.
10) Emphasis - refers to the singling out or stressing of part of the picture.

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[a]Taken from Weisskopf, 1950, p. 382 ff.

APPENDIX B

EXAMPLES OF LEVELS OF FANTASY

0. That which is directly experienced; part of the child's daily reality

> I guess I'll paint a winter picture ... The snow's beginning to melt ... I have to put a little sun behind a cloud ... It just started snowing. The little boy is rushing into the house, the dog is pulling him. The lights are on in the house, waiting for him. The boy gets in the house, the dog gets fed, and the sun comes out.

1. That which exists in reality, but is experienced only indirectly, through books, TV, or conversation.

> (Puts on astronaut suit) Hey, this fits me! ... (Lies on the floor, counting off 10, 9, 8, ...etc.) Blast off! ...I'm in space. Pssh (Motions of taking pictures, space walking) Kapow! ... When I blasted off, I burned up.

> I'm making a dinosaur. One, two, three legs. One more and I'm finished. (Adds spikes along back) A few years ago when he walked, he'd shake the whole earth.

2. That which exists largely in the emotions; silly, aggressive, bizarre, or emotional fantasies.

> (Playing with clay) Well, there's this snowman. He has three heads. These are his boots. When he jumps up, he steps on somebody's foot and then he blows up and he has to pull himself together again. When someone drops a rock on him he resplodes. All the pieces go on top of a house. He has to draw a ladder and get down. A squirrel's going through him right now, tearing him in half. (Pokes plastic knife through snowman)

> (Adopted child) Once upon a time there was a little horse. He didn't have any father or mother. He found a mother and a father. The mother had the father with her. The father was looking for a baby horse. The mother showed him to the father. He liked it so they keeped it, and that's the end.

This was a real fat snake (of clay) and he couldn't eat any more because he ate too much food in the night and he fell into a car and he broke ... Now I'm making a white pancake. The pancake had syrup on it. It was really alive and the pancake was alive. The syrup spaattered in a person's face when someone threw the pancake ... Someone was gonna eat the pancake but it's too sour. They ate it and they fell dead.

3. Fantasy that gives a new twist to familiar reality.

(Playing with Japanese paper umbrella, flapping it open and shut) This thing could be a parachute ... or a rocket ship. I'm taking off to outer space in it. (Walking around, talking softly to himself while flapping umbrella) I'm on Mars; I'm walking around. They got this rocket thing, I see a fire monster; I spray my gun at him and he dies (shooting with toy gun). I get back in my rocket ship, go back to earth, never go up there again. It's too dangerous up there!

(Playing with gold chain, part of "dress-up" materials) This is a different kind of jewelry. (Twists chain around wrists) Handcuffs.

4. Addition of fantasy details to reality stimulus; essentially further description.

(Playing with the blocks) This is gonna be a church. No, a bank. People didn't go to this bank and it had no money. It needed money to help poor children be as lucky as grown-ups. Cause grown-ups have more money in their pockets. Children were going to this bank with grown-ups' money. This bank was lonely and he was too tired to get any more reasons why they couldn't come to this bank. (Bank collapses in the midst of the story. End of period; time for lunch.)

5. Addition of fantasy events to reality stimulus; essentially plot development rather than description.

(Painting bird on plastic plaque) Once upon a time there was a fine, black, nice, shiny bird. All the birds were nasty to him because he was so beautiful; they were jealous. The little black bird hated everyone. His mother wasn't jealous; she was very proud. She, too, was a fine, nice, shining bird. One night it was all dark. The little black bird had to do all the messages because he was as black as the sky and no one saw him. He was very proud of himself. And he - when he had to do a message - he found some baby birds. They had nothing to eat. He went home and got some dinner and held it in his beak and flew to the same nest. They were so glad, they liked that little bird.

APPENDIX C

EXAMPLES OF LEVELS OF ORGANIZATION

0. Stringing together of events, often unrelated.

> I'm painting a boy. There's his eyes and nose. It's a live scarecrow. He's littering - throwing cans away around here. Know what this is? Sky, white and blue. He only has cans to throw so that's all I'm making. What color is hay? This is hay I'm doing. He's in a haystack - here's all the hay going up to him. This is a little litter basket. He doesn't know what they are, so he litters.

1. Series of at least three events in logical sequence.

> I'm almost an artist at painting planes. Well, this plane's gonna attack the Germans in Betnam (Vietnam) and kill 'em. Then y'see, it shot Betnam's airplane. Then y'see, all the other - both got shot. The Betnam boss got shot. Then y'see, the Betnam boss - they were trying to fix him. They didn't know he was dead, but he was dead.

2. Sequence of cause and effect.

> You see, very long ago, in the woods was a little bear named Timmy, and his father and mother loved him so much. One day he was bad, and his father and mother spanked him. He ran away and never came back. His father went looking for him and said, "Timmy, we will be good to you if you don't do any bad things," and Timmy didn't do any bad things. Now I'll make something else."

3. Integrated plot with beginning, development and conclusion.

> There was a snowman made by two children, Jack and Joan. They were about to wreck him when he said, "Stop! Don't wreck me! I'm very good. Just make a home for me; I'll give you whatever you want!" They made him a home in the garage. Then they said, "We want a bicycle." They got a bicycle. Now they said, "Now let's see - what do we want? We want lots and lots of friends." But there was no friends and no bicycle. Then Mother was waking them up. "What?" they said. "You just had a nightmare." "No snowman? No bicycle? All not true?" "No, not true. Just a dream, that's all."

AUTOBIOGRAPHY

I was born in 1916 and grew up in southern Japan, the eldest daughter of Methodist missionaries. My great-grandfather baptized the first Christian convert after Admiral Perry opened Japan to Western influence in 1854. I attended the Canadian Academy in Kobe, Japan until I was fourteen. Then I came to the United States and was graduated from the Northfield School in Massachusetts. I won a scholarship to Wellesley College, where I received a B.A. degree in psychology in 1938. In 1940 I was married to Charles Alexander Pulaski, a Yale graduate who is the New York sales representative for a number of textile firms. We have two children; Charles A. Pulaski Jr. who graduated from Yale Law School in 1967, and Elizabeth Pulaski Mertens, who received her degree in psychology from Wellesley College in the same year.

I have had a varied career including merchandising (Macy's), fashion copywriting (Glamour Magazine), publicity, real estate, and ten years of teaching. After raising my family, I matriculated at Queens College and was awarded a master's degree in education in 1958. Four years later I enrolled in the newly-instituted school psychology program at Queens, completing it in 1964. I was given a fellowship at the Queens College Education Clinic, and lectured in child development there while completing the courses for the Ph.D. program in psychology under the City University of New York. I am now a school psychologist with the Herricks Public Schools in Nassau County, Long Island. I have published an elementary text on English grammar and am working on an introduction to the psychology of Jean Piaget for parents and teachers. My research on children's fantasy was done at Buckley Country Day School on Long Island where I taught first and fourth grades for several years.

I live with my husband in Port Washington, Long Island, where I sing in the church choir, and enjoy gardening and sailing on Long Island Sound.