

AN ABSTRACT OF THE THESIS OF

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Title: INTELLIGENCE, CREATIVITY AND SEX ROLE PREFER-  
ENCE AMONG PRESCHOOL-AGED CHILDREN

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This study explored the relationship between sex, age, intelligence, creativity and sex-role preference among preschool-aged children. Thirty-nine Caucasian children, 18 boys and 21 girls, ranging in ages from three years-five months to five years-two months acted as subjects for this study. All subjects came from intact families, predominantly of the middle- and upper-socioeconomic classes as determined by Hollingshead's Two Factor Index of Social Position.

The instruments used to collect the data for this study included: Brown's It Scale for Children to assess the subjects' sex-role preferences; Dunn's Peabody Picture Vocabulary Test to estimate the subjects' intelligence; and Ward's Alternative Uses and Pattern Meanings Tests to assess the subjects' creativity.

Four null hypotheses were generated and the analysis of variance approach was used to test these hypotheses. F-values were generated

for tests of the main effects of sex, age, intelligence and creativity and their interaction effects. The .01 level of significance was used as the criterion for statistical significance. Findings obtained are summarized below.

There was a significant difference between the sex-role preference scores of boys and girls ( $F = 11.7457, p < 0.01$ ) with boys having significantly higher own sex-role preference scores than girls. This finding was in support of theoretical positions that point to the cultural determinants of sex-role learning. A study of the mean values associated with the sex interaction effect comparisons, while not statistically significant, revealed tendencies in the data which further substantiated the above finding.

There was no significant difference between the sex-role preference scores of older and younger subjects. However, a study of the mean values associated with the main effect of age and its interactions, although not statistically significant, indicated a tendency for older subjects to have higher own sex-role preference scores than younger subjects. This finding is in support of the social learning theory of sex-role development.

There was no significant difference between the sex-role preference scores of very-high and average-high intelligence subjects. A study of the mean values associated with the main effect of intelligence and its interaction effects, however, provided information which

tended to support the cognitive-developmental theory of sex role learning that there will be a differential relationship between intelligence and sex-role learning among boys and girls. Boys of very-high intelligence tended to have higher own sex-role preference scores than boys of average-high intelligence at both the younger and older age groupings. Such a difference, however, tended to be greater among boys in the older age grouping than in the younger age grouping.

Among girls, findings indicated a tendency for girls of very-high intelligence to have slightly higher though minimally, own sex-role preference scores than girls of average-high intelligence at the younger age grouping while at the older age grouping girls of very-high intelligence had lower own sex-role preference scores than girls of average-high intelligence. Furthermore, while older girls of average-high intelligence tended to have much higher own sex-role preference scores than younger girls of average-high intelligence, the difference in sex-role preference scores of very-high intelligence older and younger girls was minimal.

There was no significant difference between the sex-role preference scores of creative and less creative subjects. A study of the mean values associated with the main effect of creativity and its interaction effects tended to be inconsistent with or contradict findings that would be expected on the basis of previous theory and research. Previous theoretical positions have indicated that creativity would be

positively related to opposite-sex role learning among individuals. In this study, creative and less creative subjects as determined by the Alternate Uses Test showed no apparent differences in their own sex-role preferences. Furthermore, creative and less creative subjects, as determined by the Pattern Meanings Test, revealed creative subjects to have slightly higher own sex-role preference scores than less creative subjects. In addition, both creative boys and girls, as determined by the Alternate Uses Test, had slightly higher, own sex-role preference scores than less creative boys and girls. When the creativity of subjects was determined by the Pattern Meanings Test, however, creative boys tended to have higher own sex-role preference scores than less creative boys, while creative girls had slightly lower own sex-role preference scores than less creative girls. This difference among girls, however, was minimal.

Finally, further analysis of the data regarding socioeconomic class differences among subjects in the present study indicated that subjects in the highest socioeconomic class (Class I) and lower socioeconomic classes (Classes III and IV) tended to have higher own sex-role preference scores than subjects between these classes (Class II).

It should be emphasized that due to the statistical non-significance of many of these findings and the variety of limitations encountered in this study, extreme caution must be exercised in accepting these results.

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by

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# INTELLIGENCE, CREATIVITY, AND SEX-ROLE PREFERENCE AMONG PRESCHOOL-AGED CHILDREN

## I. INTRODUCTION

Sex-role learning among young children is considered by researchers to be an integral part of the growth and development of the human personality (Mischel, 1970). Interest in this area of research has produced a substantial body of literature which presents findings that appear at first glance to be inconsistent and contradictory. However, it has been noted (Biller, 1968; Biller and Borstellman, 1967; Brown, 1956; Lynn, 1959) that many of these apparent inconsistencies and contradictions may be due to the failure by researchers to clearly differentiate between the various aspects of sex-role learning. Four separate, but concurring aspects, of sex-role learning have been identified. They include:

1. Sex-Role Discrimination -- refers to an individual's awareness of the male and female sex and the cultural prescriptions and proscriptptions associated with the male and female sex-roles.
2. Sex-Role Preference -- refers to an individual's relative desire to adhere to or to adopt the behavior associated with one sex or the other, or the perception that such behavior would be more preferred.
3. Sex-Role Adoption -- refers to actual overt behavior of an individual relative to a given sex-role as defined by society.

4. Sex-Role Identification -- refers to the actual incorporation of the role of a given sex and the unconscious responses characteristic of such a role.

Lynn (1959) points out that among most individuals these aspects of sex-role learning are generally thought to be positively related with one another; but among some individuals discrepancies may exist.

The present investigation focused upon only one of these aspects of sex-role learning -- sex-role preference. Brown's (1956) It Scale for Children (ITSC) was used as the measure of sex-role preference. The ITSC is a semi-projective test which consists of 36 three by four inch line drawings of toys, activities, and figures that are culturally associated with either the male or female sex-roles in our society. When the child is given the test, he is asked to choose from among the drawings presented to him those which a line-drawn figure called "IT" would like to be or to have. Brown used the It-figure, which is presumed to be ambiguous with respect to sex, to facilitate the child's expression of his own sex-role preference and to minimize the pressures on the child to conform to sex-role stereotypes.

Researchers (Brown, 1957; Hartup and Zook, 1962; Hetherington, 1965; Kohlberg and Zigler, 1967; Schell and Sibling, 1968; Sugawara, 1971) who have used the ITSC in their investigations have indicated that by the age of three years-six months both boys and girls have developed definite preferences for toys, articles, and activities

that are associated with their own sex-role, with boys indicating a higher preference for items associated with their own sex-role than girls. After three years-six months boys continue to increase in their preferences for items associated with their own sex-role, while girls show more fluctuations in their preferences. Girls continue to increase slightly in their preference for items associated with their own sex-role, peaking at four years in age, after which their preference for items associated with their own sex-role declines until five years-six months. There is then a slight increase at the age of six for items associated with their own sex-role followed by a more dramatic decline. After eight years-six months there is an appreciable increase in girls' preferences for items associated with their own sex-role.

Although several studies (Borstellman, 1961; Fauls and Smith, 1956; Rabban, 1950) using devices similar to the ITSC have substantiated these differential developmental patterns in sex-role preferences among boys and girls, other studies are present which report contradictory results. Several of these studies (Lefkowitz, 1962; Suttonsmith and Rosenberg, 1963; Ward, 1969) have indicated that girls and boys are equal in their preference for items associated with their own sex-roles, with both increasing in their preferences for items associated with their own sex-role with age. These apparent contradictions indicate a need for further research in the area of sex-role preference and its differential developmental patterns among boys and girls. In

addition, these and other studies have pointed to other variables that appear important in understanding the development of children's sex-role preferences. Two of these variables include intelligence and creativity.

Although relatively ignored in research, a limited number of studies are available which suggest that a possible relationship may exist between sex-role preference and intelligence among young children. These studies, however, provide contradictory results. Some studies (Kohlberg and Zigler, 1967; Lefkowitz, 1962; Sugawara, 1971) suggest that a positive relationship does exist between sex-role preference and intelligence, while other studies (Radin, 1972; Sugawara, 1971) report negative, or no relationships.

Kohlberg (1966) and Kohlberg and Zigler (1967) using the cognitive-developmental theory of sex-role learning contend that some of these inconsistencies may be due to the fact that intelligence may influence sex-role preference in different ways at different ages, rather than in an absolute manner. They suggest that the effects of intelligence may only be noticeable when using results from tests such as the ITSC, which detect developmental patterns in sex-role preference. In addition, they indicate that the effects of intelligence may be most noticeable when developmental patterns are uni-directional, such as those obtained by boys with the ITSC, but may be concealed or negative when developmental patterns are multi-directional

or converging such as those obtained by girls and older boys with the ITSC, respectively. Findings from studies done by Biller (1968), Lefkowitz (1962), and Sugawara (1971) tend to support the cognitive-developmental viewpoint. However, results obtained in studies by Kohlberg and Zigler (1967) and Radin (1972) tend to be inconsistent with or contradictory to the cognitive-developmental viewpoint. The inconclusiveness of the findings in this area suggest that more research is needed which explores the possible relationship that may exist between sex-role preference and intelligence among young children.

The variable of creativity has also recently received some attention as being related to sex-role learning. Within the past decade a number of discussions on creativity (Maccoby, 1966; Maslow, 1962; Roe, 1963) have indicated that a significant relationship may exist between sex-role learning and creativity among individuals. Generally, studies (Barron, 1957; Hammer, 1964; Littlejohn, 1967; MacKinnon, 1965) in this area indicate that there is a high positive relationship between creativity in men and their scores on "femininity" scales and creativity in women and their scores on "masculinity" scales. Researchers have interpreted these positive relationships from several different perspectives. One view (Barron, 1957; Hammer, 1964; Maslow, 1962) suggests that there co-exists within each individual a male and female archetype and that the creative individual



has integrated both of these aspects into his personality. A creative male, therefore, would possess some female qualities, while a creative female would possess some male qualities. A second view (Barron, 1957; Littlejohn, 1967; Biller, Singer and Fullerton, 1969) overlooks the biological dimension and simply suggests that the creative individual is one who allows himself to be aware of and to partake in interests, activities and behaviors that are associated with the opposite sex-role. Such an individual is said to expose himself to a much wider range of experiences, and by doing so facilitates his own creativity. Proponents of both of these viewpoints suggest that the creative individual is the individual who is "well-adjusted". There is a third point of view (Rees and Goldman, 1961; Roe, 1963; Torrance, 1963), however, which suggests that creativity requires qualities that are associated with both sex-roles, and that the creative individual must incorporate within himself some of the qualities considered appropriate for the opposite sex. It is assumed that incorporating the quality appropriate for the opposite sex puts adverse pressures on the creative individual, thus predisposing him to difficulties in personality development.

It is interesting to note that there are studies dealing with adolescents and adults which have found a positive relationship between creativity and high scores on opposite sex-role scales which can be used to support all the above points of view. However, in the one study (Biller, Singer, and Fullerton, 1969) dealing with creativity

in young children and their sex-role preferences revealed that no significant relationship existed between sex-role preference and creativity in kindergarten boys. This finding contradicted both findings from previous research and the above theoretical positions.

Considering the positive relationship between creativity and sex-role learning in later years, the opposing theoretical viewpoints explaining this relationship, and the limited research using young children as subjects, it would appear worthwhile to investigate the relationship between sex-role preference and creativity among pre-school-aged children.

#### Purpose of the Study

The primary purpose of this study was to explore the relationship between sex, age, intelligence, creativity and sex-role preference among preschool-aged children.

#### Definition of Terms

1. Sex-role -- refers to that modal system of responses which constitutes the culturally expected behavior of a member of a particular sex.
2. Sex-role preference -- as measured by Brown's It Scale for Children (ITSC); is operationally defined as the child's total preferential response for toys, objects, and figures culturally defined

as typically more characteristic of or belonging to one sex than another (Brown, 1957).

3. Intelligence -- as measured by Dunn's (1965) Peabody Picture Vocabulary Test (PPVT); is operationally defined as an estimate of children's verbal intelligence, assessed through their receptive vocabularies.
4. Creativity -- as measured by Ward's (1968) Alternate Uses (Creativity I) and Pattern Meanings (Creativity II) Tests; refers to divergent thinking abilities among young children.

#### Assumptions

1. Brown's ITSC can be used as a measure of sex-role preference among preschool-aged children (Brown, 1956; Hartup and Zook, 1960; Kohlberg and Zigler, 1967; Schell and Silber, 1968; Sugawara, 1971; Ward, W. D., 1968).
2. The PPVT can be used as an indicator of general intelligence for preschool-aged children (Dunn, 1965; Radin, 1962; Sugawara, 1971; Ward, W. D., 1968).
3. Ward's Alternate Uses (Creativity I) and Pattern Meanings (Creativity II) Tests can be used as a measure of creativity related to divergent thinking abilities among preschool-aged children (Biller, Singer and Fullerton, 1971; Ward, W. C., 1968; Ward, W. C., 1969).

## Hypotheses and Analyses

The following hypotheses were analyzed in this study.

Hypothesis I      There will be no significant difference between the sex-role preference scores of boys and girls.

Hypothesis II      There will be no significant difference between the sex-role preference scores of older and younger subjects.

Hypothesis III      There will be no significant difference between the sex-role preference scores of very-high and average-high intelligence subjects.

Hypothesis IV      There will be no significant difference between the sex-role preference scores of creative and less creative subjects.

The analysis of variance approach was used to test all hypotheses under study, and F-values were generated for tests of the main effects of sex, age, intelligence, creativity and their interaction effects.

## II. REVIEW OF LITERATURE

The review of literature has been organized into four sections, each containing the research investigations and relevant theoretical discussions pertaining to the variables of interest in this study. These four sections focus on: the aspects of sex-role learning; the relationship between sex, age and sex-role preference among young children; the relationship between intelligence and sex-role preference; and the relationship between creativity and sex-role learning.

### Aspects of Sex-Role Learning

Over a decade ago Lynn (1959) identified and defined four separate, but concurring, aspects of sex-role learning -- sex-role discrimination, sex-role preference, sex-role adoption, and sex-role identification. More recently, Biller (1968) and Biller and Borstellman (1967) have elaborated upon Lynn's definitions and have further clarified their meaning by emphasizing: (1) that the various aspects of sex-role learning cannot be used interchangeably; (2) that inconsistent use of the various terms may be a partial explanation for the inconsistent and contradictory results obtained in the area of sex-role learning; and (3) that measurement devices designed to assess development in one area of sex-role learning can generally not be used to adequately measure development in another area of sex-role learning.

The four aspects of sex-role learning are defined below.

### Sex-Role Discrimination

Sex-role discrimination refers to an individual's awareness of the male and female sex and the cultural prescriptions and proscriptions associated with the male and female sex-roles in our society. An individual's awareness is indicated by his ability to discriminate between those items, activities, and behaviors that are associated with the male and female sex-roles.

It has been found that as early as three years of age both boys and girls have learned to discriminate between items, activities, and behaviors associated with their own- and the opposite-sex-roles (Schell and Silber, 1968). Furthermore, girls have been found to be better than boys, and four-year-olds better than three-year-olds in making these discriminations.

The device most frequently used to assess young children's ability to discriminate between items, activities and behaviors associated with the various sex-roles in our society has been the modified IT Scale for Children (ITSC) (Hartup and Zook, 1960; Reed and Asbjornsen, 1968; Schell and Silber, 1968; Sugawara, 1971).

## Sex-Role Preference

Sex-role preference refers to an individual's relative desire to adhere to or to adopt the behavior associated with one sex or the other or the perception that behavior associated with one sex would be more preferred (Lynn, 1959). Sex-role preference involves a cognitive choice and implies that an individual can first discriminate between various sex-roles in his society.

Measures of sex-role preference (Anastosiow, 1965; Brown, 1956; DeLucia, 1963; Fauls and Smith, 1956; Lefkowitz, 1962; Rosenberg and Sutton-Smith, 1959) are designed to assess the child's preferential set toward culturally defined symbols or representations of a given sex-role. Many of these measures of sex-role preference, of which Brown's (1956) It Scale for Children (ITSC) is the most notable, have been developed on the assumption that male and female sex-roles are polar opposites on a continuum (i. e. , the more a girl prefers items associated with the female sex-role the more "feminine" and the less "masculine" she is). More recently, researchers (Rosenberg and Sutton-Smith, 1959; Sutton-Smith and Rosenberg, 1961; and Walker, 1964) have developed measures of sex-role preference which treat the male and female sex-roles as quasi-independent variables, rather than as polar opposites. To date, however, most of the studies that attempt to assess sex-role preference among young children have used Brown's ITSC.

### Sex-Role Adoption

Sex-role adoption refers to the actual overt behavior of an individual relative to a given sex-role as defined by society (Lynn, 1959). Much of an individual's overt behavior takes place in a social interaction situation where his behavior is publically observable, and thus members of society can evaluate how such behavior relates to either the male or female sex-role in our society. It is important to note that whereas sex-role preference implies a cognitive choice on the part of the individual, sex-role adoption seems to be more of a function of general behavior imitation (Biller and Borstellman, 1967).

Findings (Biller and Borstellman, 1967) indicate (1) that components of sex-role adoption may be developed earlier than three years of age; (2) that the third through the fifth year seem to be the most crucial years for sex-role adoption; and (3) that components of sex-role adoption may continue to change and develop even in adulthood.

Sex-role adoption in young children has been assessed through the use of "masculinity and femininity" rating scales which are completed by either the individual, his teacher, an experimenter, or by the individual's peers; or through the evaluation of children's behaviors exhibited in free play or special doll play situations. Specific behaviors that have been evaluated include: the amount and



type of aggression, independence, competitiveness, and physical prowess displayed in boys; and the amount and type of passivity, dependency, and frequency of fine-motor activity displayed by girls.

### Sex-Role Identification

Sex-role identification refers to the actual incorporation into one's personality the role of a given sex and to the unconscious responses characteristic of such a role (Lynn, 1959). Because many investigators have used the term sex-role identification as the generic term for the entire process of sex-role learning, Biller (1968) and Biller and Borstellman (1967) suggest the use of the term sex-role orientation, rather than sex-role identification, to define the fourth aspect of sex-role learning. Furthermore, these researchers elaborated on the definition made by Lynn (1959) by indicating that sex-role orientation, which is primarily an unconscious perception of the "maleness" or the "femaleness" of the self, is but one facet of the way an individual views himself.

Sex-role orientation is assumed to develop in the second or third year of life as part of the early learning process in which the child orients himself toward assuming the requisites of either the male or female sex-roles in society. It appears that the interaction with significant adults, especially with the child's father, mother and/or their surrogates, is important in this early formation of

sex-role orientation.

Generally, indirect or projective devices have been used to assess sex-role orientation in individuals. Through the use of these indirect or projective devices, it is assumed that an individual will minimize the use of his defense mechanisms and adherences to social expectations, and will more freely reveal his sex-role orientation. The above assumption is the rationale behind the use of indirect or projective devices in which children are asked to: draw human figures (Biller, 1968; Biller, Singer, Fullerton, 1969); engage in structured doll play situations; or complete line figure drawings (Frank and Rosen, 1949) to assess their sex-role orientation.

When considering all four aspects of sex-role learning, many researchers tend to indicate that among most individuals there will be some consistency between these various aspects of sex-role learning (i. e. , a boy will generally prefer, adopt and identify with behaviors, items and activities that are associated with his own sex-role). However, it should be noted that discrepancies between these various aspects of sex-role learning may exist. For instance, a girl may have a strong female sex-role orientation, but a moderate female sex-role preference and a weak female sex-role adoption. According to Biller (1968) these discrepancies may occur when learning experiences are inconsistent and/or confusing to an individual, especially during the formative years of his life. For example, a boy may during his

formative years be exposed only to adult-female models who expect him to be dependent and passive, but expected by his peers and society, when he enters school, to be assertive and aggressive.

The present study focused upon only one aspect of sex-role learning -- sex-role preference and its development among preschool-aged children. To obtain a more complete understanding of the development of sex-role preference among preschool-aged children, the variables of age, sex, intelligence and creativity were investigated.

#### Sex, Age, and Sex-Role Preference

Over a decade ago numerous studies (Brown, 1956; Fauls and Smith, 1956; Rabban, 1950) indicated that there existed among young children a definite preference for one or the other sex-role in our society. Although children as young as three years-six months have demonstrated strong sex-role preferences, it is not yet known how early these preferences develop.

Determining a subject's sex-role preference has generally been accomplished in one of two ways. Subjects have either been asked to make selections from among items, activities or subjects associated with the male or female sex-roles for themselves (Fauls and Smith, 1956; Rabban, 1950; Rosenberg and Sutton-Smith, 1959; Walker, 1964) or for a semi-projective figure, presumed ambiguous with respect to sex (Brown, 1956; Hartrup and Zook, 1960; Lansky and McKay, 1963;

Sher and Lansky, 1968). In developing his sex-role preference test for children, Brown (1956) found that when subjects were asked to make selections for themselves, they exhibited a tendency to conform to social pressures and stereotypes, thus did not reveal their own sex-role preferences. In an attempt to minimize the effects of social pressures and stereotypes on children's sex-role preferences, Brown developed the It Scale for Children (ITSC), including in it a semi-projective It-figure, presumed ambiguous with respect to sex. When the child made his selection from among the items presented to him for the IT-figure, Brown assumed that the child would reveal his own sex-role preference. A majority of studies that have focused upon the development of sex-role preference among young children have used Brown's It Scale for Children.

Figure 1 summarizes the findings of studies (Brown, 1956; Brown, 1957; Hall and Keith, 1964; Hartup and Zook, 1960; Schell and Silber, 1968; Sugawara, 1971) that have used the ITSC to determine the sex-role preferences of Caucasian children from the middle- and upper-middle socioeconomic classes. To enable the reader to more easily compare the sex-role preference scores of both boys and girls, the girls' scores from the ITSC have been converted, so that the graph reflects preference scores of both boys and girls for their own sex-role. Therefore, the higher the sex-role preference score, the greater the child's preference for his/her own sex-role.

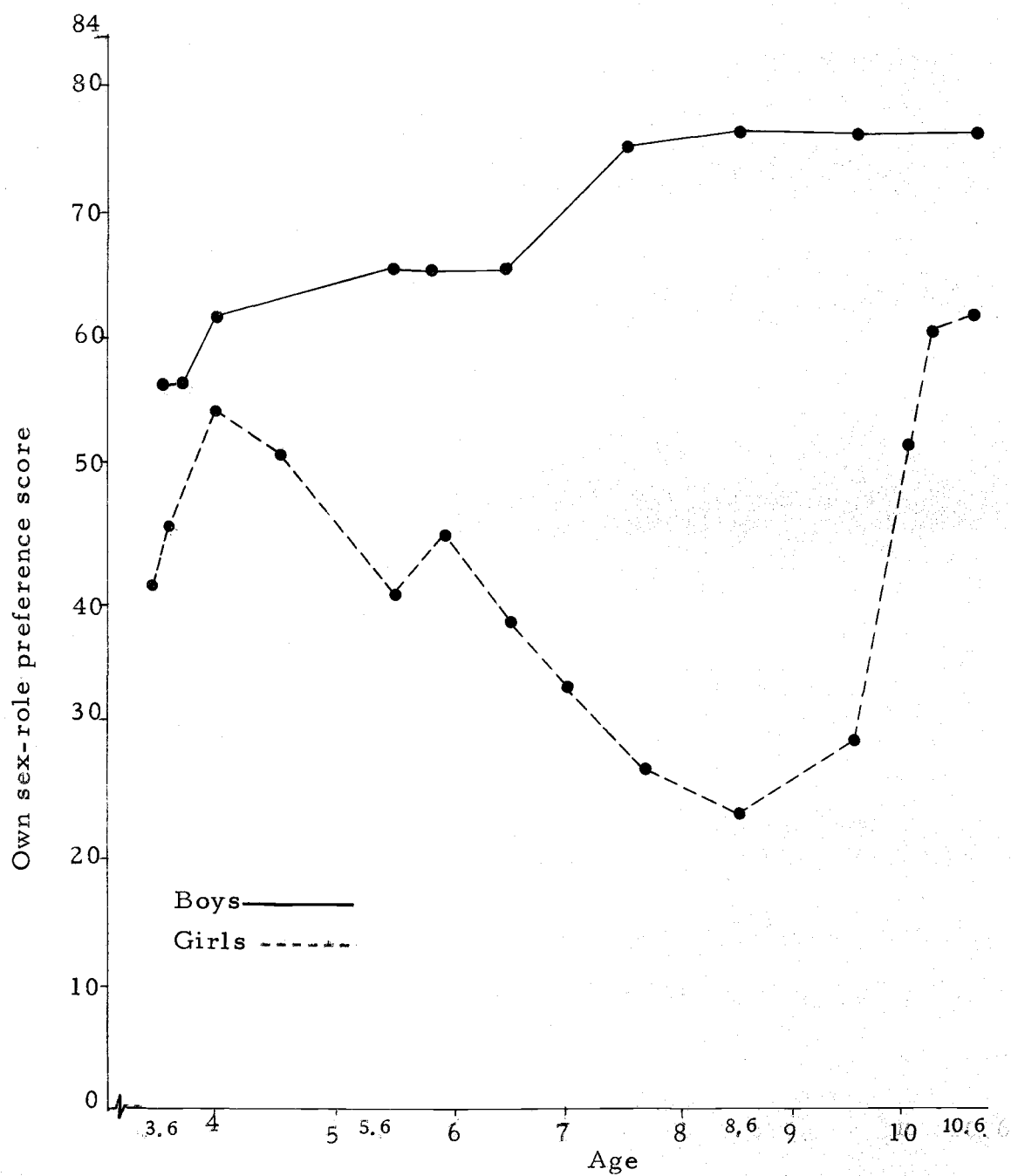


Figure 1. Own sex-role preference scores for boys and girls three years-four months to ten years-six months.

As indicated in Figure 1 by three years-six months both boys and girls have developed a definite preference for items associated with their own sex-role, with boys indicating a higher preference for items associated with their own sex-role than girls. After three years-six months boys continue to increase in their preferences for items associated with their own sex-role, while girls show more fluctuations in their preferences. After three years-six months girls continue to increase slightly in their preference for items associated with their own sex-role, peaking at four years of age, after which their preferences for items associated with their own sex-role declines until five years-six months. There is then a slight increase at the age of six for items associated with their own sex-role followed by a more dramatic decline. After eight years-six months there is an appreciable increase in girls' preferences for items associated with their own sex-role. This increase continues to rise until girls are at least ten years-six months of age.

The differential developmental patterns of sex-role preferences among young children, as shown in Figure 1, have also been supported by other studies that have used (1) the ITSC with middle-class children (Kohlberg and Zigler, 1967) and with children from unidentified social classes (Hetherington, 1965; Borstellman, 1961); (2) the Toy Preference Test with middle-class children (Rabban, 1950); and (3) the Pictures and Toy Preference Tests with children from unidentified

social classes (Borstellman, 1961). In interpreting these results researchers have suggested that boys develop sex-role preferences for their own sex-role earlier than girls, and that girls tend to show lower and less consistent preferences for their own sex-role than boys.

Theorists have hypothesized that either biological or cultural factors have contributed to these differential developmental patterns of sex-role preference among boys and girls. Freud (Brown, 1956) emphasized that the anatomical differences between the sexes was the determining factor. Freud suggested that having a penis encourages boys to prefer the male sex-role, while not having a penis dissatisfies the girls with the female sex-role and makes them envious of the male sex-role.

Hartup and Zook (1960), Lansky and McKay (1963) and Lynn (1959) on the other hand suggest cultural determinants for differences in development. They suggest that our culture's ideology is oriented toward the male and that our society rewards, gives more status, prestige and privileges to the male sex-role than the female sex-role. Following this line of reasoning, they contend that both boys and girls perceive very early in life the advantages accorded to the male sex-role and thus tend to show preference for it. A corollary explanation given by Brown (1956) and Lynn (1959) suggests that girls neither receive adequate reinforcement for adopting the female sex-role nor

definite punishment for adopting the male sex-role, while boys receive definite punishment for adopting the female sex-role and definite reinforcement for adopting the male sex-role. As a result of this differential reinforcement pattern, boys tend to rigidly prefer the male sex-role, while girls tend to prefer characteristics of both the male and female sex-roles.

Another cultural explanation suggested by Hartup and Zook (1960) is that as girls meet more and more women outside the home who do not fit the stereotypic mother-role, their views of the female sex-role broaden and their preferences become less closely associated with the traditional female sex-role in our society.

Still another cultural explanation focuses on socioeconomic class (Hall and Keith, 1964; Lefkowitz, 1962; Rabban, 1950) as the determining factor. This explanation evolves from the belief that male and female sex-roles are more clearly defined for lower socioeconomic classes than for middle and upper-middle socioeconomic classes with the male sex-role continuing to be more clearly defined than the female sex-role, regardless of socioeconomic class. Following this line of reasoning, one would expect middle-class and upper-middle class boys to be more aware of and to prefer their own sex-role more than middle-class and upper-middle class girls.

While findings from studies using Brown's ITSC with middle- and upper-middle class Caucasian children show a differential



developmental pattern for sex-role preferences among boys and girls, findings from other studies using Brown's ITSC, a Modified-ITSC, and other sex-role preference scales with children from diverse and socioeconomic classes do not support the same patterns of development. Lefkowitz (1962) using a non-polar device called the Games and Activities Preference Test with 824 third and fourth grade children from all socioeconomic classes found that girls had about as much preference for their own sex-role as boys had for their own sex-role.

In still another study, using a modified ITSC with 36 kindergarten children belonging to the upper two classes of the Minnesota Scale for Parental Occupations, Lansky and McKay (1963) found that girls had higher preferences for their own sex-role than boys for their own sex-role. They also found that boys' scores tended to be more variable within each age group than girls'.

The inconsistent and contradictory findings obtained in studies investigating the relationship between sex, age and sex-role preferences among young children suggest a need for more research in this area. The present study investigated this relationship among Caucasian preschool-aged children, predominantly from the middle- and upper-socioeconomic classes. Brown's (1956) ITSC was used to assess children's sex-role preferences.

### Intelligence and Sex-Role Preference

Research studies and theoretical discussions have generally emphasized the importance of identification with parents, social pressures from both the family and society, and age-linked biological factors as contributing to sex-role learning among young children. Only a relatively few studies or discussions, however, have considered the importance of intelligence in the sex-role learning process.

The few studies that have considered the relationship between intelligence and sex-role preferences among young children provide findings that appear to be inconsistent and/or contradictory. Studies by Biller (1968), Kohlberg and Zigler (1967), Lefkowitz (1962), and Sugawara (1971) all report positive relationships between intelligence and sex-role preference among young boys, while studies by Kohlberg and Zigler (1967), Lefkowitz (1962), Radin (1972), and Sugawara (1971) report positive, negative and no relationship between intelligence and sex-role preference among boys and/or girls depending upon their ages.

According to Kohlberg (1966) and Kohlberg and Zigler (1967) many of these apparent inconsistencies and contradictions may be explained on the basis of the cognitive-developmental theory of sex-role learning. Proponents of this theoretical position contend that both social and cognitive personality traits develop through regular structural stages and that development in these two domains are closely

interrelated. More specifically, during periods of rapid or radical social development a positive or negative relationship between social and cognitive development may occur, while during periods of relatively little social development no relationship may be evident. Since sex-role preference is one aspect of an individual's social development, and since intelligence is one aspect of an individual's cognitive development, we would expect sex-role preference to be intricately related to intelligence in the above-mentioned ways. In fact, the actual relationship between sex-role preference and intelligence may be concealed, positive, or negative depending upon the child's age, his sex, and his unique developmental pattern of sex-role preference.

Recalling research on sex-role preference among young children, findings reveal that sex-role preference develops quite rapidly and radically during the pre- and early-school years. During this time then the relationship between sex-role preference and intelligence would be very evident, for boys such a relationship would be more significant than for girls. That is, while girls have a concrete model in their mothers to observe in developing their own sex-role preferences, boys do not have as available a parental model in their fathers. Therefore, boys must use the abstract cultural stereotypic model of the male sex-role in developing their own sex-role preferences. Use of such an abstract model then forces boys to use more complex cognitive skills than girls in acquiring their own sex-role

preferences, making the relationship between sex-role preference and intelligence more significant for boys.

The proponents of the cognitive-developmental theory of sex-role learning would further suggest that to determine the direction to which the relationship between intelligence and sex-role learning would occur, one would have to consider besides the child's age, his sex and his developmental pattern of sex-role preference. That is, when the developmental pattern for sex-role preference is uni-directional (i. e. , as with boys' sex-role preferences obtained with the ITSC), the relationship between intelligence and sex-role preference would be most noticeable and probably positive. However, when the developmental pattern for sex-role preference is multi-directional (i. e. , as with girls' sex-role preferences obtained with the ITSC) or converging (i. e. , as with older boys' sex-role preferences obtained with the ITSC), the relationship between intelligence and sex-role preference may be negative or concealed, respectively. Whatever the developmental pattern of sex-role preference may be, however, the cognitive developmental theory of sex-role learning would predict that children of high intelligence would be ahead of children of average intelligence in their developmental pattern.

The study by Kohlberg and Zigler (1967) provides results that support the above theoretical position as it pertains to boys' sex-role preferences obtained with the ITSC. Working with 64 middle class

boys between four and eight years of age and using the Stanford-Binet to assess intelligence, they found that intelligence was positively related to the sex-role preference scores of boys four to six years of age. During this period both bright and average intelligence boys increased in their preference for their own sex-role, with brighter boys having a significantly higher own sex-role preference score than average intelligence boys. At seven years of age, however, the sex-role preference scores of bright and average intelligence boys converged reaching the ceiling on the ITSC, thus concealing the relationship between intelligence and sex-role preference among older boys.

Other studies using Brown's ITSC with young boys provide results consistent with Kohlberg and Zigler's (1967) findings. Sugawara (1971), using four- and five-year-old boys and the Peabody Picture Vocabulary Test (PPVT) to assess their intelligence, found boys of high intelligence had higher own sex-role preference scores than boys of average intelligence. Biller (1968), using kindergarten boys and the same devices, found identical results.

Additional investigations using tests other than the ITSC have also provided results consistent with the above findings. Using the Picture Test to assess children's sex-role preferences and the Stanford-Binet to assess their intelligence, Kohlberg and Zigler (1967) found that four-year-old boys of high intelligence had higher own sex-role preference scores than boys of average intelligence, and that

boys of high intelligence retained this "lead" as both high and average intelligence boys increased in their own sex-role preference with age. Furthermore, Lefkowitz (1962), studying 421 boys using a Game and Activities Preference Test to measure their sex-role preference and the California Test of Mental Maturity Primary Short Form to assess their intelligence, found that boys of high intelligence, seven to ten years of age, had significantly higher own sex-role preference scores than boys of average intelligence at these ages.

However, a study by Radin (1972) which used the modified ITSC with young boys, provided results that were contradictory to what would have been expected on the basis of the cognitive-developmental theory of sex-role learning and previous research with boys. Using both the Stanford-Binet and the PPVT to assess intelligence, Radin found that there was a minimal positive relationship between intelligence and sex-role preference among middle-class boys, but a significant negative relationship between sex-role preference and intelligence among lower-class boys.

As indicated in the previous section of this chapter the developmental pattern of sex-role preference for girls as obtained with the ITSC is markedly different from the developmental pattern for boys. Findings obtained indicate that girls have a multi-directional, rather than a uni-directional, developmental pattern of sex-role preference. This may, according to the cognitive-developmental theory of sex-role

learning, result in differential relationships between intelligence and sex-role preference. On the basis of this theory one would predict: (1) that girls of high intelligence would be more advanced than girls of average intelligence in their developmental pattern of sex-role preference, (2) that between three- and three-and-a-half years of age there would be a positive relationship between intelligence and sex-role preference, (3) that from four to eight years of age there would be a negative relationship between intelligence and sex-role preference, and (4) that from eight to ten years of age the relationship between intelligence and sex-role preference would again be positive. This positive relationship would probably continue to exist until a time when girls' sex-role preference scores reach the ceiling on the ITSC, wherein the sex-role preference scores of girls with high and average intelligence would converge, thus concealing the relationship between intelligence and sex-role preference for older girls.

Results consistent with the above discussion come from studies by Sugawara (1971) and Lefkowitz (1962). Sugawara, using Brown's ITSC to measure sex-role preference and the Peabody Picture Vocabulary Test to assess intelligence, found that girls of average intelligence, three years-seven months to four years-five months of age, had higher own sex-role preference scores than girls of high intelligence of the same ages. This finding provided support for the cognitive-developmental theory of sex-role learning in that girls of high

intelligence, having reached their peak preference for their own sex-role earlier than girls of average intelligence, were decreasing in their preference for their own sex-role. Lefkowitz (1962), studying 403 girls, with a mean age of eight years-nine months, using the Games and Activities Preference List to assess their sex-role preferences and the California Test of Mental Maturity Primary Short Form to assess their intelligence, found that girls of high intelligence had higher own sex-role preference scores than girls of average intelligence.

The study by Kohlberg and Zigler (1967) provides results that are both consistent and contradictory with the above findings for girls. Using the ITSC to assess sex-role preference and the Stanford-Binet to assess intelligence, they found: (1) that at four and five years of age girls of high intelligence had higher, not lower, own sex-role preference scores than girls of average intelligence; (2) that between the ages five and six, both high and average intelligence girls declined sharply in their own sex-role preference scores with girls of average intelligence having still lower own sex-role preference scores than girls of high intelligence. These findings are in direct conflict with the expectations for girls on the basis of the cognitive-developmental theory of sex-role learning. However, in the same study, using the Picture Test to assess sex-role preference, Kohlberg and Zigler found data that supported the expectations of the cognitive-



developmental theory of sex-role learning. This data revealed:

(1) that at the age of four girls of high intelligence had higher own sex-role preference scores than girls of average intelligence; (2) that girls with high intelligence then declined in their own sex-role preference scores from four to six while girls of average intelligence increased in their own sex-role preference scores; and (3) that girls with high intelligence, six to seven years of age, increased in their own sex-role preference scores while girls of average intelligence declined.

Kohlberg and Zigler interpreted these findings as indicating that girls of high intelligence were in fact more advanced in their developmental pattern of sex-role preference than girls of average intelligence.

As indicated above, there is but one theory and only a limited number of studies which focus upon the relationship between intelligence and sex-role preference among young children. In this study, an attempt was made to investigate the relationship between intelligence and sex-role preference among preschool-aged children.

Dunn's (1965) Peabody Picture Vocabulary Test and Brown's (1956) ITSC were used to assess the children's intelligence and sex-role preferences, respectively.

### Creativity and Sex-Role Learning

Another variable that has recently received some attention in studies of sex-role learning is that of creativity. Within the last

decade, a number of discussions (Maccoby, 1966; Maslow, 1962; Ree, 1963) on creativity have indicated that a significant relationship may exist between creativity and sex-role learning among individuals. Furthermore, research studies (Barron, 1957; Hammer, 1964; Littlejohn, 1967; MacKinnon, 1962; MacKinnon, 1965; Rees and Goldman, 1961; Torrance, 1963) provide results which indicated that individuals who are more creative than others in their peer or occupational groups have higher scores on devices that measure behaviors or preferences associated with the opposite-sex role.

Several different interpretations have been proposed to explain this relationship. One explanation (Barron, 1957; Hammer, 1964; and Maslow, 1962) assumes that a biological bisexual disposition exists in both men and women, and that the creative individual is one who has accepted and integrated these two aspects into his/her personality.

Another possible explanation (Barron, 1957; Littlejohn, 1967; Biller, Singer, and Fullerton, 1969) overlooks the biological dimension and suggests that some degree of cross sex-identification is important for individuals to be creative. Persons supporting this explanation suggest that creative persons have permitted themselves to be aware of and to partake in interests, behaviors and preferences that have been tabooed for their own sex-role. Thus, they have been exposed to more and richer experiences which are important in furthering their

creative development. Both of the above views suggest that creative individuals, with their greater propensity for preferences, behaviors and interests associated with the opposite sex-role are also more stable, well-adjusted and happy. In other words, the creativity of an individual reflects his integrated personality (MacKinnon, 1965).

Findings from numerous studies provide empirical support for the above explanations. MacKinnon (1965) found in analyzing the complex psychological development of adult male architects that those who exhibited the "highest level" of creative ability, as rated by reknown architects, had significantly higher scores on femininity scales than did the "less creative" architects. MacKinnon used both the California Psychological Inventory -- Femininity Scale and the Minnesota Multiphasic Personality Inventory -- Feminine Interests Scale to assess the subjects' femininity. Furthermore, MacKinnon found that the "high creative" architects were very at-home with themselves and in complete harmony with all their powers and ideals, which indicated a very integrated personality.

In a study done by Barron (1957), with 100 officers in the United States Air Force, similar results were found. On a wide variety of psychological tests, these officers were consistently above the general population on variables favorable to personal effectiveness and personal stability. Furthermore, the "highly original" officers, as assessed by a composite of eight, free-response performance

tests, were also significantly higher than other officers on the scales of femininity as assessed by the Minnesota Multiphasic Personality Inventory -- Femininity Scale; the Personal Preference Survey -- Feminine Identification Scale; and the Strong Vocational Interest Blank -- Masculinity Scale.

Results from studies done by Hammer (1964) and Littlejohn (1967) with high school students also support either the bisexual or the cross sex-typing explanations. Working with a group of male art-scholarship winners, Hammer found that the "more creative" winners, as identified by art experts for their visual and emotionally authentic paintings, had higher scores than the "imitative" winners on the variable of femininity, as measured by projective test responses on both the Rorschach and the Thematic Apperception Test. Furthermore, he found that the "more creative" winners had significantly higher scores on scales of strength, confidence, ambition and power -- all of which are considered to be masculine virtues by American society.

In her study with 656 ninth graders, Littlejohn (1967) found some inconsistent results using the Revised Art Scale of the Welsh Figure Preference Test to assess creativity, and the Welsh Figure Preference Test -- Female/Male Scale; the Minnesota Multiphasic Personality Inventory-Femininity Scale; the California Psychological Inventory--Femininity Scale and the Nichol's Subtle and Obvious Scales to

assess their femininity. Littlejohn found that on the Welsh Figure Preference Test -- Female/Male Scale, both the high-creative boys and girls scored significantly more feminine than the low-creative boys and girls. However, such results were not obtained on any of the other femininity scales. Instead, on the Nichol's Subtle and Obvious Scales, high-creative girls had lower, more masculine scores than low-creative girls. Only the boys' scores on the Welsh Figure Preference Test -- Female/Male Scale and the girls' scores on the Nichol's Subtle and Obvious Scales lend support to the hypothesis that creative men and women will show cross-sex typing.

There is still a third hypothesis, however, that explains the relationship between creativity and scores on scales that measure behavior and preferences associated with the opposite sex-role. This view (Rees and Goldman, 1961; Roe, 1963; Torrance, 1963) upholds that creativity requires expression of qualities that have been assigned by society to the opposite sex-role. Torrance (1963) suggests that these qualities are sensitivity, which is culturally defined as a feminine virtue, and independence, which is culturally defined as a masculine virtue. A creative woman or man thus would have to adopt qualities assigned to the opposite sex-role. Proponents of this view would further contend that this cross-sex typing puts adverse pressures on the individual (i. e., the creative male might find it difficult to reconcile the female quality of sensitivity within himself, while the

creative female might find it difficult to reconcile the male quality of independence within herself), thus may predispose the creative individual to difficulties in personality development.

Tentative support for this hypothesis comes from the study done by Torrance and Bowers (1959). In their study with first through third graders, they found that both boys and girls sacrificed their creativity in order to maintain behaviors associated with their own sex-role. They found that when the children were asked to think of all the ideas they could for improving toys so that they would be more fun to play with, both boys and girls excelled only in giving ideas for toys socially designated as belonging to their own sex-role (i. e. , boys gave many ideas for improving trucks and girls gave many ideas for improving nurses kits, but not vice versa) with girls becoming even less able to give ideas for improvements as they grew older. Torrance and Bower (1959) interpreted this finding as meaning that at this point in their development it may be more difficult for girls to express male qualities than for boys to express female qualities.

Research findings that seem to directly contradict the above hypothesis come from MacKinnon's study (1957) mentioned earlier. When he subdivided the "most creative" architect group into  $G_1$  and  $G_2$ , he found that the less creative of the creative group,  $G_2$ , suffered from personality conflicts. This finding may suggest that it is the group that is "in-between" the most creative and the least creative that would find

cross-sex typing to be the most difficult to deal with.

There are findings from still other studies that explore the relationship between sex-role learning and creativity that appear to be inconsistent with any of the hypotheses or results given above. These studies report cross-sex typing to be significant only in the less creative members of their creative criterion groups. Torrance (1963) found this to be the case when working with male school counselors. He used the Multiphasic Personality Inventory -- Femininity Scale; the Personal Preference Survey -- Feminine Identification, and the Strong Vocational Interest Blank -- Masculinity Scale to assess femininity and the test of Creative Thinking to assess creativity. Rees and Goldman (1961) found similar results, working with female college students, using a self-report questionnaire to assess creativity and both the Guilford-Zimmerman Temperament Survey and the Minnesota Multiphasic Inventory -- Femininity Scale to measure femininity.

Only one study (Biller, Singer, and Fullerton, 1969) dealing with the relationship between creativity and sex-role learning in young children was found. This study revealed that there was no significant relationship between creativity as assessed by Ward's Alternate Uses and Instances Tests and sex-role preference as assessed by Game Selection and Toy Selection Test for kindergarten boys. These results seem to contradict results from previous studies using older subjects

and to be inconsistent with theoretical points of view.

Considering the positive relationship between creativity and sex-role learning in later years, the opposing theoretical viewpoints explaining this relationship, and the limited research using young children as subjects, it appeared worthwhile to investigate the relationship between sex-role preference and creativity among preschool-aged children. Brown's (1956) ITSC was used to assess the subjects' sex-role preferences, while Ward's (1968) Alternate Uses (Creativity I) and Pattern Meanings (Creativity II) Tests were used to assess the subjects' creativity.



### III. METHODS

#### Subjects

Thirty-nine preschool-aged children acted as subjects for the present study. The children were enrolled in three preschool programs at the Child Development Laboratories administered by the Family Life Department at Oregon State University. The following criteria were used to select the children for the present study:

1. that the children had no physical defects which might affect their performance on the various test measures used in the study,
2. that the children were Caucasian,
3. that the children were residents of the United States,
4. that the children were from families in which both parents were presently in the home,
5. that the children were from families that spoke English in the home,
6. that the children were primarily from families of middle- and upper-socioeconomic classes as determined by Hollingshead's "Two Factor Index of Social Position",
7. that the children were between the ages of three years-five months and five years-two months.

A home information sheet completed by parents when the subjects were enrolled in one of the three preschool programs provided the

information necessary for selecting the final sample.

### Description of the Total Sample

The total sample of 39 children, 18 boys and 21 girls, were divided into various age, intelligence (I. Q.), and creativity groupings for the purpose of this study. Table 1 summarizes the sample with respect to these groupings.

Table 1. Description of the sample by sex, age, intelligence (I. Q.), and creativity groupings.

Characteristic	N	Range	Mean
1. Sex			
Boys	18		
Girls	21		
2. Age			
Older	20	4/2-5/2	4/6
Younger	19	3/5-4/1	3/9
3. I. Q.			
Very-high	19	118-158	127.2
Average-high	20	94-117	109.6
4. Creativity I			
Creative	18	11-23	13.9
Less Creative	21	5-10	7.3
5. Creativity II			
Creative	15	17-34	21.7
Less Creative	24	8-16	12.9

## Age, Intelligence, and Creativity

In reference to the variable of age, the subjects of this sample were divided into two age groupings. These included (1) the older-age grouping, and (2) the younger-age grouping. There were 20 subjects in the older-age grouping and 19 subjects in the younger-age grouping. The age range in the older-age grouping was four years-two months to five years-two months, with a mean age of four years-six months. The age range in the younger-age grouping was three years-five months to four years-one month, with a mean age of three years-nine months.

The subjects of this sample were also divided into two intelligence (I.Q.) groupings. The Peabody Picture Vocabulary Test was used to assess the subjects' intelligence. (A detailed description of this test is made in the "Instruments" section of this chapter.) The two intelligence groupings included (1) those subjects with "very-high I.Q." and (2) those subjects with "average-high I.Q.". The I.Q. range of subjects in the very-high I.Q. grouping was 118 to 158, with a mean I.Q. of 127.2. The I.Q. range of the subjects in the average-high I.Q. grouping was 94 to 117, with a mean I.Q. of 109.6.

In addition to age and intelligence groupings the subjects of this study were also divided into various creativity groupings. In this study two creativity tests were used: Creativity I was an Alternate Uses Test and Creativity II was a Pattern Meanings Test. Both of these

tests were used to measure aspects of creativity related to preschool children's divergent thinking abilities. (The section on "Instruments" in this chapter describes these two tests in detail.)

In reference to the Creativity I test scores, the subjects in this sample were divided into two creativity groupings. These included (1) "creative" subjects, and (2) "less-creative" subjects. The range of Creativity I scores of subjects in the creative group was 11 to 23, with a mean Creativity I score of 13.9. The range of Creativity I scores of subjects in the less creative group was 5 to 10, with a mean Creativity I score of 7.3.

Regarding the subjects' Creativity II test scores the sample was also divided into two creativity groupings. These included (1) "creative" subjects, and (2) "less-creative" subjects. The range of Creativity II scores of subjects in the creative group was 17 to 34, with a mean Creativity II score of 21.7. The range of Creativity II scores of subjects in the less-creative group was 8 to 16, with a mean Creativity II score of 12.9.

For a more detailed description of subjects in this sample according to the variables and their interactions, see Appendices A, B, C, D, E, and F.

### Socioeconomic Status

A number of studies (Brown, 1956b; Doll, Fagot, Himbert, 1971; Hall and Keith, 1964; Lansky and McKay, 1963; Lefkowitz, 1962; Rabbin, 1950; Radin, 1972) focusing upon sex-role learning among young children indicated the possible importance of socioeconomic status as a variable in understanding the development of children's sex-role preferences. Because of this an effort was made to select subjects who came from families of the middle- and upper-socioeconomic classes. Hollingshead's "Two Factor Index of Social Position" was used to assess the socioeconomic status of the subjects' families.

In developing the "Two Factor Index of Social Position" Hollingshead (1957) assumed (1) that there was a class structure in our society, (2) that by analyzing the factors of education which reflected social taste and knowledge, and occupation which reflected power and skill, an individual's or family's socioeconomic position could be determined, and (3) that by statistically scaling the factors of education and occupation a researcher could reliably stratify his sample under study.

The levels of education and occupation were given a score ranging from one to seven and were multiplied by a weighted score of four for education and seven for occupation. Adding the two products

together yielded a total score from 11 to 77. Each total score fell into one of five socioeconomic groups as shown below (Hollingshead, 1957).

<u>Socioeconomic Status</u>	<u>Range of Computed Scores</u>
I (Upper)	11-17
II	18-27
III	24-43
IV	44-60
V (Lower)	61-77

Using Hollingshead's index the families of the subjects in this study were distributed among the following socioeconomic groupings as indicated on Table 2.

Table 2. Distribution of subjects' families by socioeconomic class.

<u>Socioeconomic Class</u>	<u>N</u>
I (Upper)	17
II	18
III	2
IV	2
V (Lower)	0
Total	<u>39</u>

### Instruments

Four instruments were used to collect data for this study. These included: Brown's (1956) It Scale for Children (ITSC) to assess children's sex-role preferences; Dunn's (1965) Peabody Picture Vocabulary Test (PPVT) to assess children's intelligence (I. Q. ); and

Ward's (1968) Alternate Uses (Creativity I) and Pattern Meanings (Creativity II) Tests to assess aspects of creativity as related to children's divergent thinking abilities.

### The It Scale for Children (ITSC)

The It Scale for Children (ITSC) was developed by Brown (1956) to assess children's sex-role preferences. The ITSC consists of 36 three by four inch cards which depict black and white line drawings of toys, activities, and figures generally associated with the male or female sex-roles in our society. The test is made up of three sections with items in each of these sections randomly arranged with male and female items being alternated.

The Toy Picture Section is composed of 16 pictures divided into four groups of four pictures. Each set contains pictures of two items associated with the male sex-role and two items associated with the female sex-role in our society. In this section the child is asked to make two choices of items in each of the four sets for a total of eight choices.

The Eight Paired Pictures Section is composed of eight pairs of pictures; one in each pair is associated with the male sex-role (i. e., shaving kit, trousers and shirt, Indian chief, and model airplane kit) and the other associated with the female sex-role (i. e., facial cosmetics, dress, Indian maiden, and sewing tools). In this section the

child is asked to make a selection of one item from among each pair presented to him for a total of eight choices.

The Four Child-Figures Section is composed of a picture of a girl, a girlish-boy (a boy attired in a dress), a boyish-girl (a girl attired in pants and a shirt), and a boy. The subject makes one choice from among the four child-figures presented to him.

In the test situation the subject is shown a stick figure, called It, which is assumed to be ambiguous with respect to sex. The subject is then asked to make choices for the It-figure as to the toys, activities, and figures that It would like or want to be. When the subject makes these choices for the It-figure, it is assumed that he is revealing his own sex-role preferences. Brown (1956) believed that by using such an indirect, semi-projective technique to assess children's sex-role preferences the pressures of conforming to social expectations would be minimized.

Scoring Procedures. In Brown's (1956) original scoring procedures each choice of an item related to the male sex-role was given a weighted score, with the weight varying with each section of the test. A choice of an item related to the female sex-role was given a score of zero, regardless of the section. In the Toy Pictures Section a choice of an item related to the male sex-role was given one point. In the Eight Paired Pictures Section a choice of an item related to the male sex-role was given a score of eight points. In the Four Child-



Figures Section, however, a choice of a boy figure was given 12 points, a choice of the girlish-boy figure was given eight points, a choice of the boyish-girl figure was given four points, and a choice of the girl figure was given zero points. The total range of scores that could be obtained on the ITSC was 84, an exclusively male sex-role preference, to zero, an exclusively female sex-role preference. The score of 42 represented a relatively intermediate preference between male and female sex-roles.

To make the data more meaningful for the present study, Brown's scoring procedures were modified. In this study, rather than giving a weighted score for the selection of items related to the male sex-role, a weighted score was given to the subject if a choice of an item was associated with his own sex-role (i. e. , if a girl selected items related to the female sex-role and a boy selected items related to the male sex-role). A zero score was given for a choice of an item associated with the subject's opposite sex-role. In the modified scoring procedures, then, a score of 84 represented an exclusively own sex-role preference score, while a score of zero represented an exclusively opposite sex-role preference score.

Reliability. Reliability coefficients obtained for the ITSC using the test-retest method have been relatively high. In all cases the Pearson Product Moment Correlation Method was used to calculate the reliability coefficients. Brown (1956) found reliability coefficients

of 0.71 for boys and 0.84 for girls five to seven years of age, with a one-month interval between pre- and post-testing. Hartup and Zook (1960) reported reliability coefficients of 0.66 for boys and 0.71 for girls three to four years of age with a one-month interval between pre- and post-testing, while Borstellman (1961) reported coefficients of 0.64 for boys and 0.80 for girls three to five years of age.

Borstellman (1961) and Hetherington (1965) further indicated that the sex of the experimenter had no consistent effect on the sex-role preference of Caucasian children. Doll, Fagot and Himbert (1971), however, found that the subjects' race and the sex of the experimenter were related to the sex-role preference scores of lower-class boys.

Validity. Brown (1956) considered the work of Rabban (1950) in selecting the 16 toy items for the Toy Pictures Section in the ITSC. Like Brown, Rabban also considered sex-role preference as a tendency an individual develops to choose culturally defined objects that are associated with either the male or female sex-roles in our society. In attempting to select sex-typed objects for inclusion in his test, Rabban (1950) canvassed toy stores, department stores, trade journals and toy catalogues and compiled a list of 20 toys that were most often recommended for either boys or for girls. He then presented this list of toys to a sample of 178 males and 203 females who indicated which toys they would buy for boys and which they would buy for girls. This

sample of subjects included graduate students in education, whom Rabban considered likely to minimize early sex-stereotypes in their evaluations, and 9, 10, and 11 year old children who represented the peer culture. These subjects selected the final list of 16 toys to be included in Rabban's Toy Preference Test. Only those toys which had a high percentage of agreement concerning their appropriateness for a given sex were included in Rabban's test. From Rabban's (1950) final list of toys Brown (1956) selected 13 toys for the ITSC and substituted three other toy vehicles (tractor, train engine, and earthmover) for the toy vehicles (steamroller, fire truck, and cement-mixer truck) found in Rabban's test.

For the Eight Paired Pictures Section and the Four Child-Figures Section, Brown (1956) included picture items of activities or figures that were typical for boys and girls or typical for adult males (shaving kit) and adult females (facial cosmetics) to which a child was continuously exposed. Brown (1956) assumed that what was socially regarded as or actually associated with male or female behavior in our society was a valid criterion for defining sex-role behavior.

In the preliminary testing in which the child was asked to select items for himself, it became apparent that the child was conforming to social expectations or pressure rather than giving his own preferences. Because of this, Brown (1956) introduced as part of the ITSC an It-figure, presumed ambiguous with respect to sex, for which the

child makes choices, It was assumed that when the child selected for the It-figure from among the pictures of toys, articles and activities presented, he was attributing his own sex to the It-figure, thus revealing his own sex-role preference.

### Peabody Picture Vocabulary Test (PPVT)

The Peabody Picture Vocabulary Test (PPVT) is a measurement device that was designed to estimate a subject's verbal intelligence (I. Q. ) by measuring his receptive vocabulary.

Materials for the PPVT include: (1) a manual which reviews studies using the PPVT and provides instructions for administering and scoring the test; (2) individual score sheets for Form A and Form B of the test which provide the stimulus words, the correct answer and spaces for recording comments about the subject's behavior and his answers; and (3) a spiral-bound booklet of three sample plates and 150 test plates. Each plate contains four pictures illustrating a word found in the Webster's New Collegiate Dictionary. The pictures are arranged so that those found to be of the same level of difficulty are grouped together. The pictures selected represent singular and plural nouns, gerunds, adjectives, and adverbs representing a cross-section of words used in the United States. They are illustrated in bold line drawings of equal size, intensity, and appeal. The illustrations are appropriate to the age group most likely to be viewing the plate in the

test situation (Dunn, 1965).

The PPVT is an untimed test which generally takes from 10 to 15 minutes to administer. The test is recommended for English speaking residents of the United States between the ages of two years-six months and 18 years. In the test situation, the examiner verbally presents a stimulus word and the subject indicates his answer in any manner that will communicate his choice of the four alternatives presented to him on the test plate. The test does not require that the subject give a verbal response.

Scoring Procedures. The subject begins the test with the test plate that is recommended as appropriate to his age group based on estimates of children's mental abilities at each chronological age. When the subject makes eight consecutive correct answers, his basal score is established. When six of eight consecutive answers are made incorrectly, the ceiling score is established. Testing is completed only after the basal and ceiling scores have been established.

By subtracting the number of errors from the number of the last item presented to the subject, the scorer can determine the subject's total raw score. From the total raw score three derived scores can be obtained. These include: (1) the age equivalent scores (M. A.); (2) standard equivalent scores (I. Q.); and (3) percentile equivalent scores (%ile). One-hundred I. Q. points on the PPVT is assigned as the mean raw I. Q. for subjects at each age level. The standard

deviation is established at 15 I.Q. points (Dunn, 1965).

Reliability. Alternate form reliability coefficients for the PPVT were obtained by calculating Pearson-Product Moment Correlation Coefficients of raw scores of the standardization subjects for Form A and Form B at each age level. Not less than three and not more than four days elapsed between administrations. The sample consisted of white children residing in the Nashville, Tennessee, area. The number of subjects used in the study was 4,102, ranging in ages from two years-six months to 18 years. The number of subjects at each age level ranged from 92-350. Reliability coefficients ranged from a low of 0.67 at the six-year-old level to a high of 0.84 at the 17 and 18-year-old levels. Coefficients for the subjects aged three years-six months; four years; four years-six months; and five years were 0.81, 0.77, 0.72, and 0.73, respectively (Dunn, 1965).

Recently Sugawara (1971), using the Pearson Product Moment Correlation method to obtain alternate form reliability coefficients for I.Q. scores of three- and four-year-old subjects, found the reliability coefficients of 0.820 and 0.822, respectively. Time interval between pre- and post-testing for most of the subjects varied from one day to two weeks. For several subjects, however, the time interval between testing varied from five to six months.

Sugawara (1971) also indicated that having a male or female experimenter did not show evidence of consistently affecting the

increase or decrease in the I.Q. scores of three- and four-year-old, middle-class, Caucasian subjects. Furthermore, Dolls, Fagot, and Himbert (1971) also found no evidence that the sex of the experimenter affected the I.Q. scores of lower-class Caucasian and Negroid boys of the ages six, nine, and twelve on the PPVT.

Validity. Content validity for the PPVT was built into the test by selecting all those words in the Webster's New Collegiate Dictionary whose meanings could be illustrated in a picture. These pictures were applied to 360 subjects and when 40-60% of the age level could correctly identify the word, the word was accepted for possible use in the test. Following the initial selection, 200 plates were made -- eight plates for each of the 23 age groups plus 16 plates for below the two years-six months level. The plates were administered to a group of 750 subjects, a linear graph was made of the responses for each plate and the percentages calculated for each decoy on the plate. Those plates and decoys found ineffective were replaced and were retested for their adequacy (Dunn, 1965).

Congruent validity or the extent to which the PPVT test scores compared with scores of other vocabulary and intelligence tests was established by comparing the PPVT with the Wechsler Intelligence Scale for Children (WISC) and the Stanford-Binet. Comparing the PPVT scores with the I.Q. scores on the Full Scale WISC produced correlations varying from 0.43 to 0.83. When comparing the PPVT

I.Q. scores with the WISC Verbal Scale scores, correlation coefficients ranged from 0.47 to 0.86 with a median correlation coefficient of 0.84 (Dunn, 1965). Comparison of the PPVT I.Q. scores with scores on the '37 Stanford Binet produced correlation coefficients that ranged from 0.43 to 0.92 with a median of 0.71. In general the PPVT I.Q. scores were more closely correlated with the Wechsler than with the Stanford Binet I.Q. scores.

### Creativity Tests

Two creativity tests were used in this study. These included Ward's (1968) Alternate Uses Test (Creativity I) and Pattern Meanings Test (Creativity II). Originally, these tests were devised by Wallach and Kogan (1965) for use with elementary school children to study aspects of creativity related to divergent thinking abilities. Ward (1968) adapted these tests for use with preschool-aged children.

The Alternate Uses Test (Creativity I) included the following test items: (1) an example item -- a newspaper; and (2) three problem items -- a knife, a cup, and a coathanger. Each item is presented to the subject one at a time by the experimenter. As the name of the item is spoken the subject is handed the item. While the subject is freely manipulating the item, he is asked to name as many possible uses for the item that he can think of. Though the child is able to see and manipulate the items in this test, it is still considered a verbal



technique for generating associative responses.

The Pattern Meanings Test (Creativity II) includes nine four by six inch cards on which are depicted various abstract drawings, made with a red felt-tip pen. The first of these line drawings is used as an example and the remaining eight are problem items. (These line drawings are found in Appendix G.) They are presented to the subject one at a time, and the subject is asked to look at the line drawings as complete pictures when generating his responses. This test involves visual rather than verbal stimulus material.

The Alternate Uses Test (Creativity I) and the Pattern Meanings Test (Creativity II) are given individually to the subject in a non-evaluative setting. The subject responds orally to verbal directions given by the experimenter. The subject's oral responses are recorded verbatim. Each test involves the presentation of simple problem items for which the subject is asked to generate as many associations as he can. The subject is given as much time as he wishes for each test item. The experimenter does not pressure the subject to answer rapidly. As long as the subject appears motivated, the experimenter encourages him to continue thinking of associations. When the subject appears to have finished a test item, the experimenter asks him, "What else can you think of?" When the child indicates he is done, the experimenter continues on to the next test item.

Scoring Procedures. The subject's responses can be scored in two ways. They can be tabulated to produce a uniqueness score and a fluency or number score. For the present study only the number scores were tabulated. The number score is defined as the total number of responses that a subject gives for a particular item in the test. The subject's total number score for a test, however, consists of the sum of all of the subject's number scores obtained on each item in the test. Answers that the subject repeats or that are considered inappropriate to the problem item are not included in the number scores. Very few answers were eliminated on this basis in the present study.

Reliability. In developing the Alternate Uses (Creativity I) and Pattern Meanings (Creativity II) Tests, Wallach and Kogan (1965), using a sample of 151 fifth grade children, calculated two types of reliability coefficients. Using the Spearman-Brown formula for establishing a measure of internal consistency, the split-half reliability coefficients for number scores of these two tests were both 0.93. Using an item-analysis technique to determine how much each item contributed to the score provided by the sum of all the items, Wallach and Kogan (1965) found that on the Alternate Uses Test (Creativity I) the item-sum correlation for each item was 0.79 or above with a mean of 0.83. For the Pattern Meanings Test (Creativity II) the item-sum correlations for each item was 0.69 or above with a mean correlation

of 0.795.

Biller, Singer, and Fullerton (1969), working with five year old Caucasian boys, found that the split-half reliability, as estimated by the Spearman-Brown formula, was 0.79 for Ward's Alternate Uses Test and another verbal test (Instances). There is no reliability study available at this time for the Pattern Meanings Test with young children.

Validity. Creativity as assessed by Biller, Singer, and Fullerton (1968); Wallach and Kogan (1965); and Ward (1968) with the Alternate Uses (Creativity I) and Pattern Meanings (Creativity II) Tests correspond to aspects of divergent thinking as described in Guilford's (1956) model of the structure of the intellect. Guilford (1956, 1959, and 1971) draws broad distinctions between five classes of intellectual operation which include: (1) cognition, which refers primarily to recognition -- verbal comprehension, classification abilities, sensitivity to conceptual relations and general reasoning; (2) memory, which refers to retention of what is cognized; (3) convergent thinking, which refers to use of information that leads one to the right, cognized best or conventional answer; (4) divergent thinking, which refers to generating ideas in which different directions and sometimes variety is sought; and (5) evaluation, which refers to decisions reached as to the goodness, correctness, suitability or adequacy of what one knows, remembers or produces in productive thinking.

Guilford considers all tasks placed under the divergent thinking classification to reflect creativity, and an occasional procedural task, such as transformation or sensitivity to problems, not placed within this classification to also be connected with creativity.

Creativity as further conceptualized by Biller, Singer, and Fullerton (1968); Wallach and Kogan (1965), and Ward (1968) refers to the production under task constraints of associations which are in some way useful or appropriate and are reflected by two variables: (1) the fluency or the total number of associations which a person is capable of producing, and (2) the relative uniqueness that the associations possess.

Several assumptions are presumed under this conceptualization of creativity: (1) that the indices involving visual and verbal stimuli will be related; (2) that the fluency or number score variable and the uniqueness variable will be related; (3) that there will be significant intercorrelations among all creativity indices; and (4) that creativity so defined would be distinct from intellectual functions denoted by the classical concept of general intelligence.

Wallach and Kogan (1965) who used five creativity tests, three of which were verbal and two of which were visual, with a sample of 151 ten-year-old children, found (1) that fluency of responses and uniqueness of responses were significantly related at the 0.05 level of four of the five tests; (2) that verbal indices of creativity -- Instances,

Similarities, and Alternate Uses Tests, were significantly correlated with visual indices of creativity -- Line Meanings and Pattern Meanings Tests; (3) that correlations among the creativity tests were significant at the 0.05 level or beyond for 43 of the 45 correlations; and (4) that correlations between the achievement and intelligence tests and creativity tests on the whole were quite low with 79 of 100 correlations nonsignificant.

Ward (1968), working with seven and eight year old boys, obtained similar results with an adaptation of Wallach and Kogan's (1965) tests. Ward adapted two verbal indices -- Instances and Alternate Uses -- and one visual indice -- Pattern Meanings -- so that the items presented would be suitable for children of much younger ages. Ward found (1) that fluency and uniqueness responses were significantly related at the 0.001 level for all three indices, (2) that verbal and visual indices were significantly correlated and were assumed to be measuring the same dimension; (3) that each creativity test had nonsignificant correlations with intelligence scores as measured by the Peabody Picture Vocabulary Test; and (4) that involvement as inferred from the measure of time spent in responding yielded an average correlation among the three indices of 0.69 ( $p < 0.001$ ). (It is assumed that one aspect of creativity is a high degree of task involvement with unwillingness to relinquish a problem until all possibilities have been exhausted.)

In a second study using the same creativity indices and intelligence test but with children four to six years of age, Ward (1968) found less consistent results. Ward found that fluency and uniqueness responses for the verbal indices were significantly related to one another at the 0.001 level for both boys and girls, but that the fluency and uniqueness responses for the visual indices were significantly related to the verbal indices at the 0.001 level only for girls. Furthermore, he found that for girls all three creativity indices had non-significant correlations with intelligence scores, but that for boys the two verbal creativity indices were significantly and negatively correlated at the 0.05 level with intelligence, while the visual creativity index was significantly and positively correlated at the 0.05 level with intelligence. These findings lead Ward to conclude that though the dimension of creativity is found in young children four to six years of age and that the verbal indices seemed to adequately measure creativity, the visual test of Pattern Meanings may not be appropriate. However, in further analysis Ward found that involvement as inferred from the measure of time spent in responding, yielded equally high correlations for all three creativity indices as has been obtained in the earlier study with slightly older children. Thus, Ward suggested that Pattern Uses may still be an appropriate index for creativity, but that at this younger age the aspect that it was measuring may be somewhat different than it is in slightly older children.

For the present study both the verbal indice -- Alternate Uses Test (Creativity I) and the visual indice -- Pattern Meanings Test (Creativity II) -- were used as measures of creativity related to divergent thinking abilities in young children.

### Procedures

#### Establishment of Rapport

Three female experimenters collected the data for the present study. Each experimenter held a position as either a graduate assistant or head-teacher in two of the three preschool programs from which the subjects were selected. Each experimenter spent from one to five days establishing rapport with children from the preschool programs with whom she had more limited contact.

The experimenter generally tested first those children with whom she was most familiar. However, children were not tested in any order, but when they were willing to participate. Testing occurred during the preschool programs' scheduled free-play time. The experimenter would approach a child for participation when the child appeared not to be intensely involved in an activity and would say, "I'm back to play a game with the children. Would you like your turn now?" If the child refused to participate when asked, the experimenter would add, "You're not ready for your turn yet; maybe later or tomorrow

you will want to play." The child was then approached again later that day or on the following day. Only subjects who were willing to participate were used in this study.

Parents of all children enrolled in the three preschool programs were informed that research activities were being conducted in the Child Development Laboratories. These parents were encouraged to ask any questions that they might have regarding these activities. Throughout the research activities the parents retained the right to terminate their child's participation. However, no parent withdrew his child from these research activities.

#### Test Rooms

Small rooms adjoining, but separate from, the classroom at both the Park Terrace and Orchard Street Child Development Laboratories, were used to test all children. The rooms contained a low table and two child-sized chairs: one for the child and one for the experimenter. In one of the test rooms wooden screens were used to shield from the child shelves which contained books, toys, and papers. The rooms were well lighted and had windows facing away from the classroom so that activities being conducted there would not distract the subjects. Further precautions taken to avoid distractions included: (1) having the child face the experimenter whose back faced a blank wall; and (2) placing a "Do Not Disturb" sign on the entrance door while testing



was in progress.

### Administration of the ITSC

Only one child and the experimenter were present in the test room during the administration of the ITSC. Brown's (1956) standardized administration procedures were used to test all children.

Collection of data with the ITSC occurred in April of 1971 and took three weeks to complete. The test generally took from five to seven minutes per child.

### Administration of the Creativity Tests

A second session with each child was conducted for the purpose of administering the Alternate Uses (Creativity I) and Pattern Meanings (Creativity II) Tests. The subjects were tested individually by a second experimenter.

During the Alternate Uses Test (Creativity I) the test items that were to be handed to the child were kept in a box by the experimenter's side and presented one at a time. During the Pattern Meanings Test (Creativity II) the child was handed one card that contained an abstract line drawing. When the child had completed his responses for that drawing, it was exchanged for the next card.

Instructions for administering the two creativity tests are described by Wallach and Kogan (1965) and Ward (1968). Collection of

the data with the Alternate Uses (Creativity I) and Pattern Meanings (Creativity II) Tests took place during the first two weeks in May, 1971. The test session took from five to ten minutes per child.

#### Administration of the PPVT

A third testing session was used to administer Form A of the PPVT. The subjects were tested by a third experimenter. Dunn's (1965) standardized instructions for administering the PPVT were used to test all children. Collection of the data with the PPVT occurred during the third week of May, 1971. Testing time per child was approximately ten minutes.

#### IV. ANALYSIS OF DATA

##### Introduction

The purpose of the present study was to explore the relationship between sex, age, intelligence, creativity and sex-role preference among preschool-aged children. Thirty-nine Caucasian children, 18 boys and 21 girls, ranging in ages from three years-five months to five years-two months acted as subjects for this study. All subjects came from intact families, predominantly of the upper- and middle-socioeconomic classes. Subjects were enrolled in one of three preschool programs established by the Family Life Department at Oregon State University. Brown's It Scale for Children was used to obtain the subjects' sex-role preference scores, while the subjects' intelligence was estimated through use of Dunn's Peabody Picture Vocabulary Test. Ward's Alternate Uses (Creativity I) and Pattern Meanings (Creativity II) Tests were used to assess the subjects' creativity.

##### Tests of Hypotheses

Four null hypotheses were generated for this study. The analysis of variance approach was used to test all four hypotheses. Data from the modified scoring procedures of the It Scale for Children (ITSC) were used in these analyses and F-values were generated for tests of the main effects of sex, age, intelligence (I.Q.), Creativity I,

Creativity II and their interaction effects. The components of the analysis of variance are presented in Table 3 in the usual manner, and in addition, mean values associated with the variables and their interactions are summarized in Table 4. A probability level of 0.01 was used as the criterion for statistical significance for testing all hypotheses.

### Main Effects

Hypothesis I. There will be no significant difference between the sex-role preference scores of boys and girls.

The F-value of 11.7457 generated for a test of the main effect of sex was significant at the 0.01 level. Therefore, the null hypothesis associated with this variable was rejected. Inspection of the mean values associated with the main effect of sex indicated that boys had significantly higher own sex-role preference scores than girls. The mean values of sex-role preference scores for boys and girls were 57.83 and 41.62, respectively.

Hypothesis II. There will be no significant difference between the sex-role preference scores of older and younger subjects.

The F-value of 0.614 generated for a test of the main effect of age was not significant. Therefore, the null hypothesis associated with this variable could not be rejected.

Table 3. A summary of the analysis of variance as applied to the sex-role preference scores of subjects with respect to the variables of sex, age, I.Q., Creativity I, Creativity II and their interactions.

Source of Variation	SS	DF	MS	F
<u>Main Effects</u>				
Sex	3060.111	1	3060.111	11.7457*
Age	159.942	1	159.942	0.614
I. Q.	165.850	1	165.850	0.637
Creativity I	3.010	1	3.010	0.012
Creativity II	109.730	1	109.730	0.421
<u>First-Order Interactions</u>				
Sex x Age	0.132	1	0.132	0.001
Sex x I. Q.	278.803	1	278.803	1.070
Sex x Creativity I	20.236	1	20.236	0.078
Sex x Creativity II	638.966	1	638.966	2.452
Age x I. Q.	141.663	1	141.663	0.544
Age x Creativity I	46.041	1	46.041	0.177
Age x Creativity II	9.105	1	9.105	0.035
I. Q. x Creativity I	70.364	1	70.364	0.270
I. Q. x Creativity II	76.649	1	76.649	0.294
Creativity I x Creativity II	10.938	1	10.938	0.042
Residual	5,992.183	23	260.529	
<u>Total</u>	<u>11,416.359</u>	<u>38</u>		

\* F 7.88 with 1, 23 d. f., significant at the 1% level.

Table 4. A summary of the mean values of the sex-role preference scores of subjects grouped by sex, age, I. Q., Creativity I, Creativity II and their interactions.

Grouping	N	Mean	Grouping	N	Mean
<u>Sex</u>			<u>Age x I. Q.</u>		
Boys	18	57.83	Older Very-High	9	56.22
Girls	21	41.62	Older Average-High	11	49.27
			Younger Very-High	10	43.78
			Younger Average-High	9	47.40
<u>Age</u>			<u>Age x Creativity I</u>		
Older	20	49.90	Older Creative I	10	52.90
Younger	19	45.68	Older Less Creative I	10	51.90
			Younger Creative I	8	46.64
			Younger Less Creative I	11	44.38
<u>I. Q.</u>			<u>Age x Creativity II</u>		
Very-High	19	50.00	Older Creative II	10	58.89
Average-High	20	48.26	Older Less Creative II	10	50.10
			Younger Creative II	5	46.42
			Younger Less Creative II	14	43.60
<u>Creativity I</u>			<u>I. Q. x Creativity I</u>		
Creative I	18	49.11	Very-High Creative I	9	47.22
Less Creative I	21	49.14	Very-High Less Creative I	10	55.50
			Average-High Creative I	9	43.36
			Average-High Less Creative I	11	51.00
<u>Creativity II</u>			<u>I. Q. x Creativity II</u>		
Creative II	15	51.67	Very-High Creative II	9	50.22
Less Creative II	24	47.96	Very-High Less Creative II	10	52.80
			Average-High Creative II	14	44.50
			Average-High Less Creative II	6	52.16
<u>Sex x Age</u>			<u>Creativity I x Creativity II</u>		
Older Boys	9	63.44	Creative I, Creative II	10	50.60
Younger Boys	9	52.22	Creative I, Less Creative II	8	47.25
Older Girls	11	43.36	Less Creative I, Creative II	5	48.31
Younger Girls	10	39.80	Less Creative I, Less Creative II	16	51.80
<u>Sex x I. Q.</u>					
Very-High Boys	9	64.22			
Average-High Boys	9	51.44			
Very-High Girls	10	40.20			
Average-High Girls	11	43.00			
<u>Sex x Creativity I</u>					
Creative I, Boys	8	58.00			
Less Creative I, Boys	10	57.70			
Creative I, Girls	10	42.00			
Less Creative I, Girls	11	41.36			
<u>Sex x Creativity II</u>					
Creative II, Boys	5	72.80			
Less Creative II, Boys	13	52.08			
Creative II, Girls	10	40.10			
Less Creative II, Girls	11	43.00			

Hypothesis III. There will be no significant difference between the sex-role preference scores of very-high and average-high intelligence subjects.

The F-value of 0.637 generated for a test of the main effect of intelligence was not significant. Therefore, the null hypothesis associated with this variable could not be rejected.

Hypothesis IV. There will be no significant difference between the sex-role preference scores of creative and less creative subjects.

The F-values of 0.012 and 0.412 for tests of the main effects of Creativity I (Alternate Uses Test) and Creativity II (Pattern Meanings Test) were not significant. Therefore, the null hypothesis associated with these variables could not be rejected.

#### Interaction Effects

F-values generated for test of first-order interaction effects of sex, age, intelligence, Creativity I (Alternate Uses Test) and Creativity II (Pattern Meanings Test) were not significant. Null hypotheses associated with these interaction effects, therefore, could not be rejected.

## V. SUMMARY AND DISCUSSION

### Summary

Sex-role learning among young children is considered by researchers to be an integral part of the growth and development of the human personality. Interest in this area of research has produced a substantial body of theoretical and research literature over the years. Numerous research studies have indicated that sex-role learning has four separate, but concurring, aspects. These include: sex-role discrimination, sex-role preference, sex-role adoption and sex-role identification. Of the studies focused on sex-role preference among young children, a majority have used Brown's It Scale for Children to measure children's sex-role preferences. These and other studies have identified a number of significant variables related to the development of children's sex-role preferences. Some of these variables include age, sex, intelligence and creativity.

The primary purpose of this study was to explore the relationship between the variables of sex, age, intelligence, creativity and sex-role preference among preschool-aged children. Thirty-nine Caucasian children, 18 boys and 21 girls, ranging in ages from three years-five months to five years-two months acted as subjects for this study. All subjects came from intact families, predominantly of the middle- and upper-socioeconomic classes. The subjects were enrolled in one



of three preschool programs established by the Family Life Department at Oregon State University.

Four instruments were used to collect the data for the present study. These included: Brown's It Scale for Children to assess the subjects' sex-role preferences; Dunn's Peabody Picture Vocabulary Test to assess the subjects' intelligence; and Ward's Alternate Uses (Creativity I) and Pattern Meanings (Creativity II) Tests to assess the subjects' creativity as related to their divergent thinking abilities.

Four null hypotheses were generated for this study. The analysis of variance approach was used to analyze all four hypotheses. F-values were generated for tests of the main effects of sex, age, intelligence and creativity, and their interaction effects. A probability level of 0.01 was used as the criterion for statistical significance. The results obtained from a test of each hypothesis are summarized below.

Hypothesis I. There was a significant difference between the sex-role preference scores of boys and girls ( $F = 11.7457$ ,  $p < 0.01$ ). Boys had significantly higher own sex-role preference scores than girls.

Hypothesis II. There was no significant difference between the sex-role preference scores of older and younger subjects ( $F = 0.614$ ).

Hypothesis III. There was no significant difference between the sex-role preference scores of very-high and average-high intelligence subjects ( $F = 0.637$ ).

Hypothesis IV. There was no significant difference between the sex-role preference scores of creative and less creative subjects (Creativity I,  $F = 0.012$ ; Creativity II,  $F = 0.421$ ).

Interaction Effects. With respect to the F-values generated for the first-order interaction effects of the variables of age, sex, intelligence and creativity, none were found to be significant.

### Discussion

A discussion of the results obtained in the present study is presented under the sub-headings of sex, age, intelligence, creativity and further analysis. Interaction effects of each of these variables are included under each sub-heading as they relate to theoretical positions and previous research studies.

#### Sex

Findings of this study related to the main effect of sex indicated that there was a significant difference between the sex-role preference scores of boys and girls. This finding is consistent with results obtained from previous research studies that have used Brown's It Scale for Children (Brown, 1956; Brown, 1957; Hartup and Zook, 1960; Kohlberg and Zigler, 1967; Schell and Silber, 1968; Sugawara, 1971) and other similar test devices (Rabban, 1950; Borstellman, 1961) to assess children's sex-role preferences. This finding indicates that

boys, three to five years of age, have higher own sex-role preference scores than girls. The significance of this finding is further reflected in the mean values of the interaction effects of sex with age, intelligence, Creativity I (Alternate Uses Test) and Creativity II (Pattern Meanings Test). As shown in Table 5, although not statistically significant, boys have consistently higher own sex-role preference scores than girls in all of these interaction comparisons.

On the basis of Freudian theory (Brown, 1956), these results would be interpreted with reference to the anatomical differences between the sexes as the determining factor. Freud suggested that having a penis encourages boys to prefer the male sex-role, while not having a penis dissatisfies the girls with the female sex-role, making them envious of the male sex-role, thus leading them to prefer the role associated with males in our society. More plausible, however, are the theoretical positions which emphasize the cultural determinants of sex-role behavior among young children (Brown, 1956; Hartup and Zook, 1960; Lansky and McKay, 1963; Lynn, 1959). On the basis of these theoretical positions, boys have higher own sex-role preference scores than girls because of (1) the greater prestige, power and status accorded the male sex-role in our society, (2) the greater specificity and clarity of the male sex-role rather than the female sex-role, and (3) the differential reinforcements given to boys and girls for adhering to their own sex-role. Boys are more likely

Table 5. Summary of the mean values of the sex-role preference scores of subjects grouped by sex and its interactions.

<u>Grouping</u>		
<u>Sex</u>		
Boys	18	58.82
Girls	21	41.62
<u>Sex x Age</u>		
Older Boys	9	63.44
Younger Boys	9	52.22
Older Girls	11	43.36
Younger Girls	10	39.80
<u>Sex x I. Q.</u>		
Very-high boys	9	64.22
Average-high boys	9	51.44
Very-high girls	10	40.20
Average-high girls	11	39.80
<u>Sex x Creativity I (Alternate Uses)</u>		
Creative I Boys	8	58.00
Less Creative I Boys	10	57.70
Creative I Girls	10	42.00
Less Creative I Girls	11	41.36
<u>Sex x Creativity II (Pattern Meanings)</u>		
Creative II Boys	5	72.80
Less Creative II Boys	13	52.08
Creative II Girls	10	40.10
Less Creative II Girls	11	43.09

to be punished for behaving like girls, than girls are for behaving like boys. In some instances, girls may even be encouraged for behaving like boys. Girls, then, are given more latitude in their sex-role behavior than boys, and thus come to prefer aspects associated with the male sex-role as well as the female sex-role. In addition, as girls begin to encounter more and more women outside the home who do not fit the stereotypic female role, their views of the female sex-role broadens, and their preferences become less closely associated with the traditional female sex-role in our society.

Another interesting, though not statistically significant, finding that is worth noting after inspecting the mean values associated with the interaction effect of sex x age, found in Table 5, is the result that younger boys tended to have much higher own sex-role preference scores than younger girls. This could be interpreted as supporting the notion that boys develop a preference for their own sex-role earlier than girls (Rosenberg and Sutton-Smith, 1961; Ward, 1968). However, such an interpretation should be made with a great deal of caution. A number of studies using Brown's It Scale for Children to measure children's sex-role preferences (Brown, 1957; Hall and Keith, 1964; Schell and Silber, 1968; Sher and Lansky, 1968) have indicated that the It-figure in Brown's test, presumed ambiguous with respect to sex, may be perceived by young children as more masculine than either feminine or neuter. This masculine bias in

the It-figure may have influenced girls' selection of items in the test, such that their preferences may have occurred as more masculine than feminine. If this is the case, then what the ITSC may in fact be assessing among both boys and girls is their masculine sex-role discrimination rather than their sex-role preference. Until the adequacy of the It-figure can be determined, the notion that boys develop preferences for their own sex-role earlier than girls must be considered as tentative.

Finally, it should be noted that while a majority of previous studies do support the finding of sex difference in sex-role preference among young children as found in this study, two studies are available which provide contradictory results. Lefkowitz (1963) in his study found that girls had as much preference for their own sex-role as boys had for their own sex-role, while Lansky and McKay (1968) found that girls had considerably higher own sex-role preferences than boys. These contradictory findings may be explained on the basis of differences in the age of the sample and the measurement devices employed in these studies. Lefkowitz's (1963) sample consisted of children from the third and fourth grades while Lansky and McKay's (1968) study used kindergarten-aged children. The age of subjects in both studies were considerably older than subjects in the present study. The present study used preschool-aged children as subjects (Age Range: three years-five months to five years-two months). In

addition, Lefkowitz (1963) used a Games and Activities Test, while Lansky and McKay (1968) used an extensively modified-ITSC to assess children's sex-role preferences. In the present study Brown's original ITSC was used to assess children's sex-role preferences.

### Age

Findings in the present study related to the main effect of age indicated that there was no significant difference between the sex-role preference scores of older and younger subjects. However, an inspection of the mean values associated with the main effect of age and its interactions, found in Table 6, while not statistically significant, show a consistent trend for older children to have higher own sex-role preference scores than younger children in each of these comparison groupings.

Among these findings, the mean values associated with the interaction effect of sex x age becomes highly important when evaluating age differences in children's sex-role preferences. Inspection of the mean values indicates that older boys tend to have much higher own sex-role preference scores than younger boys, while older girls have slightly higher own sex-role preference scores than younger girls. The finding for boys is consistent with data from earlier research studies (Brown, 1956; Brown, 1957; Hartup and Zook, 1960; Kohlberg and Zigler, 1967). However, the finding for girls is

Table 6. Summary of the mean values of the sex-role preference scores of subjects grouped by age and its interactions.

<u>Grouping</u>	<u>N</u>	<u>Mean</u>
<u>Age</u>		
Older	20	52.40
Younger	19	45.62
<u>Age x Sex</u>		
Older Boys	9	63.44
Younger Boys	9	52.22
Older Girls	11	43.36
Younger Girls	10	39.80
<u>Age x I. Q.</u>		
Older very-high	9	56.22
Older average-high	11	49.27
Younger very-high	10	43.78
Younger average-high	9	47.40
<u>Age x Creativity I (Alternate Uses)</u>		
Older Creative I	10	52.90
Older Less Creative I	10	51.90
Younger Creative I	8	46.64
Younger Less Creative I	11	44.38
<u>Age x Creativity II (Pattern Meanings)</u>		
Older Creative II	10	58.89
Older Less Creative II	10	50.10
Younger Creative II	5	46.42
Younger Less Creative II	14	43.60



contradictory to previous findings in this area. Previous research studies have found that while boys from three years-six months of age continue to increase in their own sex-role preference with age, girls show more fluctuations. After three years-six months girls continue to increase slightly in the preference for their own sex-role, peaking at about age four, when their preference for their own sex-role declines, reaching a dramatic low at eight years-six months. Girls then begin to make a rapid increase in the preference for their own sex-role until ten years-six months. From the above descriptions of girls' sex-role preferences, one would expect that the older girls in this study, whose ages ranged from four years-two months to five years-two months, to be lower, rather than higher, than younger girls. This finding, however, was not obtained. Instead, as previously mentioned, results indicated that older girls had slightly higher own sex-role preference scores than younger girls.

The standard explanations used to interpret the great fluctuations in girls' sex-role preference scores, therefore, do not seem adequate for interpreting the above finding that older girls, like older boys, continued to increase in their preference for their own sex-role. These explanations would suggest that girls would prefer male as well as female sex-roles (1) because of the greater power, prestige and status accorded the male sex-role rather than female sex-roles in our society; (2) because the male sex-role is more specifically and

clearly defined than the female sex-role; (3) because girls are less consistently reinforced for adhering to the female sex-role and less consistently punished for adhering to the male sex-role; and (4) because girls, as they grow older, become exposed to females who display less traditional female sex-roles. However, a possible explanation for this continued increase in girls' preferences for their own sex-role can be found in social learning theory (Hall and Lindzey, 1970). Proponents of this theory might suggest that older children because of their longer exposure to sex-role stereotypes than younger children would have higher own sex-role preference scores. Caution must be taken, however, in interpreting these results, since the findings on age differences were from interaction effects that reflected non-significant trends.

### Intelligence

The few studies available that have investigated the relationship between intelligence and sex-role preference among children suggest that a complex relationship does exist between these two variables. Several studies have indicated that among boys, three to eight years of age, a positive relationship exists between these variables (Biller, 1968; Kohlberg and Zigler, 1967; Lefkowitz, 1962; Sugawara, 1971). Studies with girls, however, report negative, positive, or no relationship depending upon the age of the girls (Kohlberg and Zigler, 1967;

Lefkowitz, 1962; Sugawara, 1971). These variations in the relationship between intelligence and sex-role preference among young children have been explained on the basis of the cognitive-developmental theory of sex-role learning (Kohlberg, 1966; Kohlberg and Zigler, 1967).

Proponents of this theoretical position contend that both social and cognitive personality traits develop through regular structural stages and that development in these two domains are closely inter-related. More specifically, during periods of rapid or radical social development a positive or negative relationship between social and cognitive development may occur, while during periods of relatively little social development no relationship may be evident. Since sex-role preference is one aspect of an individual's social development, and since intelligence is one aspect of an individual's cognitive development, we would expect sex-role preference to be intricately related to intelligence. In fact, the actual relationship between sex-role preference and intelligence may be concealed, positive, or negative, depending upon the child's age, his sex, and his unique developmental pattern of sex-role preference.

Since, during the pre- and early-school years sex-role preference develops rapidly and radically, we would expect the relationship between sex-role preference and intelligence to be very evident. During this time we would also expect this relationship to be more

significant for boys than for girls, since boys are assumed to use more complex cognitive skills than girls in acquiring their own sex-role preferences.

Findings obtained with respect to the main effect of intelligence on sex-role preference revealed no significant relationship between intelligence and sex-role preference. This finding, however, does not provide enough information for one to interpret it on the basis of the cognitive developmental theory of sex-role learning since the variable of the children's sex was not considered in such an analysis. Inspection of the mean values found on Table 7 associated with the interaction effect of sex and intelligence reveals findings that are supportive, though not significant, of the cognitive-developmental theory of sex-role learning. The mean values reveal that boys with both very-high and average-high intelligence have higher own sex-role preference scores than girls. Moreover, boys with very-high intelligence had much higher own sex-role preference scores than boys of average-high intelligence. An interpretation of this finding on the basis of the cognitive-developmental theory of sex-role learning would be that the difficulties boys encounter in developing their sex-role preference would lead them to use more cognitive skills than girls. That is, while girls have a concrete model in their mothers to observe in developing their preference for their own sex-role, boys do not have as available a parental model in their fathers. Thus, boys must

use the abstract cultural stereotypic model of the male sex-role in developing their own sex-role preferences which forces them to use more complex cognitive skills than girls. In such a case the relationship between sex-role preference and intelligence would be more significant for boys than for girls.

However, caution must be taken in interpreting the above findings since proponents of the cognitive-developmental theory of sex-role learning would also suggest that age and the developmental pattern of sex-role preference are also important in understanding the relationship between intelligence and sex-role preference. They would suggest that the relationship between intelligence and sex-role preference would be most noticeable and probably positive when the developmental pattern for sex-role preference is uni-directional. However, the relationship between intelligence and sex-role preference would be negative or concealed when the developmental pattern of sex-role preference is multi-directional or converging, respectively. Furthermore, whatever the developmental pattern of sex-role preference may be, the proponents of the cognitive-developmental theory of sex-role learning would contend that children of high intelligence would be ahead of children of average intelligence in their developmental pattern.

Findings from studies using the ITSC reveal that the developmental pattern of sex-role preference is uni-directional for boys and

that from three years-six months of age to ten years-six months of age boys' preference for their own sex-role continues to increase. On the basis of the cognitive-developmental theory of sex-role learning, then, we would expect that the relationship between sex-role preference and intelligence for boys to be positive. Moreover, we would expect boys of high intelligence to have higher own sex-role preference scores than boys of average intelligence at each age level. An inspection of the mean values associated with the intelligence x sex x age interaction effects found in Table 7 and graphically presented on Figure 2, while not statistically significant, indicates that boys of very-high intelligence in both older and younger age groupings had higher own sex-role preference scores than boys of average-high intelligence in these same age groupings. Furthermore, these findings indicate that the difference in sex-role preference scores of very-high and average-high intelligence boys was greater in the older age grouping (age range: four years-two months to five years-two months) than in the younger age grouping (age range: three years-five months to four years-one month). Thus these findings provide support for the cognitive-developmental theory of sex-role learning for boys.

Research results from studies using the ITSC have indicated that the developmental pattern of sex-role preference for girls is multi-directional rather than uni-directional. Girls from three years-

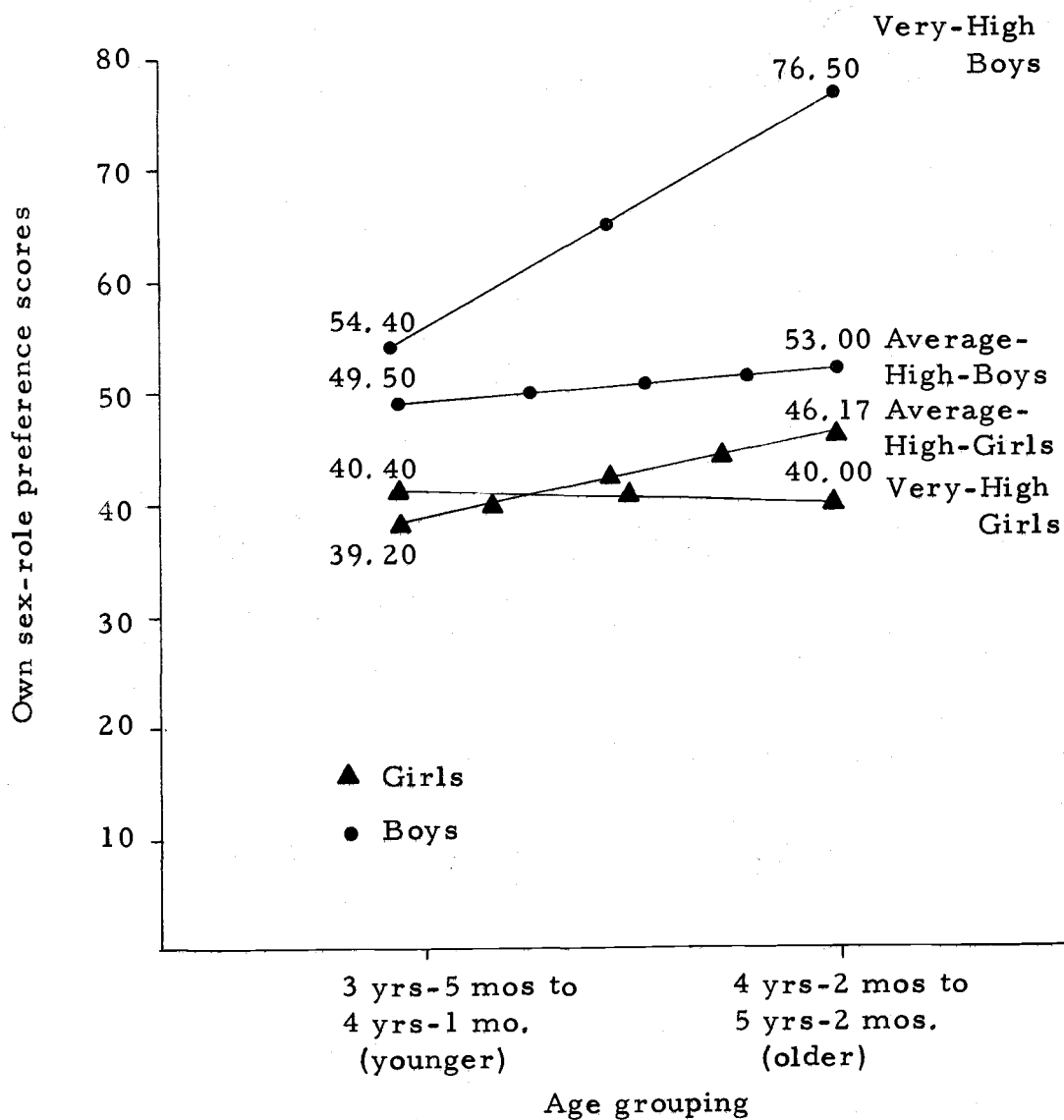


Figure 2. A graphic presentation of the relationship between intelligence, sex, age and sex-role preference among preschool-aged children.

Table 7. Summary of the mean values of the sex role preference scores of subjects grouped by intelligence and its interaction effects with sex and age.

Grouping	N	Mean
<u>I. Q.</u>		
Very-high	19	50.00
Average-high	20	48.26
<u>I. Q. x Sex</u>		
Very-high		
Boys	9	64.22
Girls	10	40.20
Average-high		
Boys	9	51.44
Girls	11	43.00
<u>I. Q. x Sex x Age</u>		
Very-High Boys		
Older	4	76.50
Younger	5	54.40
Average-High Boys		
Older	5	53.00
Younger	4	49.50
Very-High Girls		
Older	5	40.00
Younger	5	40.40
Average-High Girls		
Older	6	46.17
Younger	5	39.20



six months of age generally increase in their preference for their own sex-role until four years of age. After four years of age their preference for their own sex-role declines, reaching a dramatic low at eight years-six months, after which time they increase most rapidly in their preference for their own sex-role until ten years-six months. On the basis of the cognitive-developmental theory of sex-role learning, we would expect that for girls the relationship between intelligence and sex-role preference would be positive during some periods, while during other periods, the relationship would be negative or concealed. In addition, we would expect girls of high intelligence to be ahead of girls of average intelligence in their developmental pattern of sex-role preference. More specifically, in this study we would expect girls of very-high intelligence in the younger age grouping to have higher or slightly higher own sex-role preference scores than girls of average-high intelligence in the same age grouping. We would assume that in this younger age grouping (age range: three years-five months to four years-one month) girls of very-high intelligence would be peaking earlier than girls of average intelligence or already be declining in their own sex-role preference. However, in the older age grouping (age range: four years-two months to five years-two months) used in this study, we would expect girls of very-high intelligence to be declining in their preference for their own sex-role, while girls of average-high intelligence to be increasing or just

peaking in their preference for their own sex-role as girls of very-high intelligence had done at a younger age. Therefore, we would expect that in the older age grouping girls with very-high intelligence would have lower own sex-role preference scores than girls with average-high intelligence. Thus, for this older age grouping there would be a negative relationship between intelligence and sex-role preference while for the younger age grouping there would be a positive relationship.

Inspection of the mean values associated with the intelligence x sex x age interaction effects found in Table 7 and graphically presented in Figure 2, while not statistically significant, indicates that girls of very-high intelligence had slightly higher own sex-role preference scores than girls of average-high intelligence in the younger age grouping as was predicted. Furthermore, in the older age grouping, girls with very-high intelligence had lower own sex-role preference scores than did girls with average-high intelligence which was also predicted. Thus, in the older age grouping, a negative relationship does appear between intelligence and sex-role preference, while in the younger age grouping a positive relationship appears. Furthermore, the sex-role preference scores of older girls of average-high intelligence tend to be much higher than for younger girls of average-high intelligence, while older girls of very-high intelligence have slightly lower own sex-role preference scores than younger girls of

very-high intelligence. Generally, then, these findings provide support for the cognitive-developmental theory of sex-role learning for girls. Caution must be taken, however, in considering the interpretations made since results obtained were on the interaction effects of intelligence x sex x age which were non-significant trends.

### Creativity

A majority of studies (Barron, 1957; Hammer, 1964; Littlejohn, 1967; MacKinnon, 1965; Rees and Goldman, 1961; Torrance, 1963) investigating the relationship between creativity and sex-role learning suggest that a positive relationship exists between creativity and an individual's scores on devices that measure behaviors and preferences associated with the opposite sex-role. Several theoretical views have been proposed to explain this relationship. One view (Barron, 1957; Hammer, 1964; Maslow, 1962) suggests that the creative individual is one who has accepted and integrated his innate bisexual disposition into his personality, thus scores high on scales that measure behaviors and preferences for the opposite sex-role. Another view (Barron, 1957; Biller, Singer, and Fullerton, 1969; Littlejohn, 1967; MacKinnon, 1965) overlooks the bisexual dimension indicating that the creative individual is one who cross-sex types, thus allowing himself to be aware of and to partake in interests, activities and behaviors associated with the opposite sex-role. This cross-sex typing then

facilitates the individual's own creativity. Both of the above mentioned viewpoints would contend that the creative individual is one who is "well adjusted" with an integrated personality. A third view (Rees and Goldman, 1961; Roe, 1963; Torrance, 1963) explaining the positive relationship between creativity and high scores on scales of the opposite sex-role also proposes that the creative individual cross-sex types. However, proponents of this view would suggest that this cross-sex-typing predisposes the creative individual to personality difficulties since the creative individual must reconcile qualities within himself that are considered appropriate for the opposite sex. On the basis of the above viewpoints and previous research, we would predict that creativity among preschool-aged children would be related to low own-sex-role preference scores for both boys and girls.

Inspection of the mean values associated with the main effect of creativity and the interaction effects of creativity x sex, found in Table 8, provides results that are inconsistent and contradictory with the above viewpoints and previous research. Mean values for the main effect of Creativity I (Alternate Uses) showed that creative and less creative subjects had no apparent differences in their sex-role preference scores, while mean values for the main effect of Creativity II (Pattern Meanings Test) showed creative subjects to have higher, although not statistically significant, own sex-role preference scores than less creative subjects. With respect to the findings related to

Table 8. Summary of the mean values of the sex-role preference scores of subjects grouped by Creativity I (Alternate Uses) and Creativity II (Pattern Meanings) and their interactions with sex.

<u>Grouping</u>	<u>N</u>	<u>Mean</u>
<u>Creativity I (Alternate Uses)</u>		
Creative I	18	49.11
Less Creative I	21	49.14
<u>Creativity II (Pattern Meanings)</u>		
Creative II	15	51.67
Less Creative II	24	47.96
<u>Creativity I x Sex</u>		
Creative I Boys	8	58.00
Less Creative I Boys	10	57.70
Creative I Girls	10	42.00
Less Creative I Girls	11	41.36
<u>Creativity II x Sex</u>		
Creative II Boys	5	72.80
Less Creative II Boys	13	52.08
Creative II Girls	10	40.10
Less Creative II Girls	11	43.09

the interaction effects of Creativity I (Alternate Uses Test ) x sex, results reveal that creative boys had slightly higher own sex-role preference scores than less creative boys, and creative girls had slightly higher own sex-role preference scores than less creative girls. These findings contradict our expectations based on previous research and theory. However, the findings related to the interaction effects of Creativity II (Pattern Meanings Test) revealed that although creative boys tended to have higher own sex-role preference scores than less creative boys, creative girls had slightly lower own sex-role preference scores than less creative girls. Therefore, these findings for boys also contradict our expectations while findings for girls are consistent with our expectations. Caution must be taken, however, in considering this interpretation since the difference between the sex-role preference scores of creative and less creative girls was so minimal.

A possible reason why the findings of the present study were so inconsistent with and contradictory to previous research and theoretical viewpoints may be due to the difference in the ages of the samples used in this study compared to previous studies. While in the present study, subjects consisted of preschool-aged children, in previous studies subjects were predominantly adolescents or adults.

The only other study that investigated the relationship between creativity and sex-role learning among young children provides results

similar to those found in the present study. Biller, Singer, and Fullerton (1969), studying kindergarten boys, found that no relationship was evident between creativity as measured by the Alternate Uses and Instances Tests and sex-role preference as measured by the Game Selection and Toy Selection Test. They suggested that the reason why no apparent relationship was obtained may be because previous studies exploring the relationship between creativity and sex-role learning treated sex-role learning as a single dimension, rather than as a multi-dimensional concept. Aware that sex-role learning consisted of four separate but concurring aspects [i. e. , sex-role discrimination; sex-role preference; sex-role adoption and sex-role identification (orientation)], Biller, Singer, and Fullerton proposed that creative individuals would not cross-sex type but would rather have mixed or discrepant sex-role pattern. By having a mixed or discrepant sex-role pattern the individual would be aware of and partake in experiences appropriate to both sexes rather than be limited to experiences appropriate to one or the other sex. Indeed, after analyzing the interaction effect of sex-role preference x sex-role orientation on creativity, they found that boys who had a mixed sex-role pattern (i. e. , low own sex-role preference and high own sex-role orientation or high own sex-role preference and low own sex-role orientation) were more creative than boys who had a consistent sex-role pattern (i. e. , low sex-role orientation and low sex-role preference or high sex-role

orientation and high sex-role preference).

### Further Analysis

Since previous research indicated that socioeconomic class was an important variable in understanding the development of sex-role preference among young children, it was considered vital to analyze, using descriptive statistics, the effect socioeconomic class had on the results of the present study. Hollingshead's Two Factor Index of Social Position was used to determine the socioeconomic class of each subject's family. The placement of subjects' families into Hollingshead's five socioeconomic classes is summarized in Table 2 found in the "Methods" chapter. Subjects in the present study were classified predominantly in Hollingshead's two upper socioeconomic classes (Class I: N = 17; Class II: N = 18). Only a few subjects came from Class III (N = 2) or Class IV (N = 2), with no subjects coming from the lowest socioeconomic class (Class V). To allow for analysis the mean and range of subjects' sex-role preference scores were given separately for Class I, Class II and combined for Classes III and IV. Furthermore, the mean and range of sex-role preference scores of boys and girls in Classes I and II were presented separately. Because of sample size (Boys: N = 1; Girls: N = 3) of Classes III and IV the mean and range for boys and girls were not delineated for these classes. Table 9 summarizes the mean and range of sex-role



preference scores of subjects in this study according to socioeconomic class.

Table 9. Mean and range of sex role preference scores of subjects according to socioeconomic class.

Socioeconomic Class	N	Mean	Range
Class I (Upper)	17	55.88	8-84
Boys	11	62.09	36-84
Girls	6	44.50	8-74
Class II	18	42.50	19-75
Boys	6	53.33	36-75
Girls	12	37.50	19-67
Classes III and IV	4	51.00	44-56
Boys	Analysis of sex difference not possible due to		
Girls	sample size (Boys: N = 1; Girls: N = 3).		

Results revealed the following general tendencies.

Subjects in Class I (Mean: 55.88) and in the combined Classes III and IV (Mean: 51.00) tended to have higher own sex-role preference scores than subjects in Class II (Mean: 42.50), with subjects in Class I having only slightly higher own sex-role preference scores than subjects in the combined Classes III and IV. The above findings suggest that in the present study there were socioeconomic class differences in subjects' sex-role preference scores. These findings that subjects in the highest (Class I) and the lowest (Classes III and IV) socioeconomic classes had higher own sex-role preference scores than subjects in the socioeconomic class between them (Class II), is

consistent with previous research and theoretical explanations. Hall and Keith (1964) and Rabban (1950) suggested that the female and male sex-roles are more clearly defined and consistently reinforced in the lower socioeconomic classes than in the other socioeconomic classes. Thus boys and girls from Classes III and IV would be expected to have higher own sex-role preference scores than children from Class II as was found in this study. Furthermore, Lefkowitz (1962) suggested that although the female and male sex-roles were less clearly defined in the upper socioeconomic class, both parents are more available and salient as models for the child in developing his sex-role preferences than in the middle class since in the middle class both parents are often employed outside the home for long periods of time. On the basis of this hypothesis, we would predict, as was found in this study, that subjects in Class I would have higher own sex-role preference scores than subjects in Class II.

Caution must be taken in accepting the above results, however, since previous studies investigating the relationship between sex-role preference and socioeconomic class used scales other than Hollingshead's Two Factor Index of Social Position to determine membership in socioeconomic class. Furthermore, these studies generally did not report findings individually for each socioeconomic class, but rather combined them.

In addition to differences in socioeconomic scales used, we must also consider the possible influence that the sample size and sex-composition of subjects in each socioeconomic class had on the results. The findings obtained for the combined socioeconomic classes (Classes III and IV), while in the predicted direction because of sample size (N = 4), may be due only to chance. Furthermore, the sex composition of Classes I and II are markedly different, with a larger number of girls in Class II (N = 12) than in Class I (N = 6). The preponderance of girls in Class II may have led to lower sex-role preference scores among subjects in this class since previous research indicates that on the ITSC girls consistently have lower own sex-role preference scores than boys. An investigation of the interaction effects of socioeconomic class x sex would be essential in completing this discussion.

Inspection of the mean values associated with the interaction effects of socioeconomic class x sex indicates that boys (Mean: 62.09) and Girls (Mean: 44.50) in Class I tended to have higher own sex-role preference scores than boys (Mean: 53.33) and girls (Mean: 37.50) in Class II, respectively. This finding would tend to support the explanation given by Lefkowitz (1964) regarding the differential availability or salience of models for children in the upper- and middle-classes. In the upper-classes parents would be more available and salient as models since in the middle-class both parents are often employed outside the home for long periods of time.

Another finding relative to the variable of socioeconomic class indicates that the sex-role preference scores of boys in Class I (Mean: 62.09) and Class II (Mean: 53.33) tended to be higher than sex-role preference scores of girls in either Class I (Mean: 44.50) or Class II (Mean: 37.50). This finding is consistent with previous research (Brown, 1956b; Hall and Keith, 1964; Lefkowitz, 1962; Rabban, 1950). The standard explanation given for this finding is that regardless of socioeconomic class, the male sex-role is more clearly defined in our society than the female sex-role, and boys' observance of the male sex-role is more consistently reinforced than girls' observance of the female sex-role.

The analysis of the main effect of socioeconomic class and its interaction effects indicates that socioeconomic class is indeed an important variable in understanding the development of sex-role preference among young children. Future studies that investigate sex-role preference should take more care in differentiating subjects by socioeconomic class and in reporting the findings for each class individually.

#### Limitations of the Study

Although steps were taken to overcome a number of limitations in this study, several problems were still encountered which may have influenced the results. These problems are discussed under the

sub-headings of Sample, It Scale for Children, Creativity Tests and Control of Variables.

### Sample

Major limitations of this study pertain to sample characteristics and sample size. Although previous research indicated the necessity of controlling for the race and socioeconomic backgrounds of the subjects, this study further restricted the sample to children attending laboratory preschools, whose parents were generally related to the university in some manner (i. e. , as students, staff or faculty). This suggests that the results obtained from this study have limited generalizability to a larger, more varied, population.

Furthermore, although the sample size was large enough for an analysis of the main effects and first-order interaction effects of the variables, second- and third-order interactions were not possible. Because of the limited size of the sample, discussions of results obtained, particularly with respect to findings on intelligence and creativity, should be read with caution.

### It Scale for Children

Numerous limitations have been identified regarding the adequacy of the ITSC as a measure of children's sex-role preferences. Several studies (Brown, 1962; Hartup and Zook, 1960; Reed and Asbjornsen,

1968; Schell and Silber, 1968; Sher and Lansky, 1968; Sugawara, 1971) have suggested that the It-figure, presumed ambiguous with respect to sex, may be perceived by children as more masculine rather than feminine or neuter. If this is the case, then such a limitation greatly influences the sex-role preference scores of boys and girls, making boys' scores more masculine and girls' scores less feminine. Some studies (Hartup and Zook, 1960; Sugawara, 1971) are available, however, which support the assumption that the It-figure may be ambiguous with respect to sex. Because of the current controversy concerning the ambiguity of the It-figure perhaps, as Brown (1962) suggests, the It-figure should be replaced by a face of a child or a baby of undetermined sex to avoid misinterpretations of the It-figure.

Still other difficulties exist with respect to the illustrations of items found in the ITSC. Schell and Silber (1968) noted that illustrations of male test items appear to be more discernable than those of female test items. The illustrations for male test items are both more clearly drawn and attractively presented. Furthermore, male items in the test were taken predominantly from one very familiar toy category -- vehicles -- while female items cover a greater number of categories, which are perhaps less familiar to children.

Furthermore, questions have been raised concerning the theoretical concept that male and female sex-roles occur on opposite ends of the same continuum, as Brown assumed in developing the ITSC.

It appears reasonable to the researcher that preference for one sex-role may not preclude preference for the other sex-role. This idea is in agreement with researchers who have developed scales which measure male or female sex-role preferences as quasi-independent variables (Lefkowitz, 1962, Walker, 1964) and other theorists (Maslow, 1962; Roe, 1963) who support the idea of a bisexual disposition in all individuals.

Finally, although Brown's ITSC may have been adequate as a measure of cultural stereotypes of sex-roles in the 1950's, it is doubtful whether those same sex-role stereotypes have continued unchanged to the present day. Since the 50's there has been an increasing interest in both human and female rights, and this may have modified many of the traditional social role behaviors and expectations. Support for this criticism comes from a study by Kidder (1972) which found that parents (both fathers and mothers) significantly disagreed with Brown's cultural stereotypes of sex-roles on 31 of the 36 items found in the ITSC.

### Creativity Tests

Although a concerted effort was made to eliminate temporal restraints and evaluative procedures in administering the Creativity Tests, the researcher still feels that many of the children in the test situation sought facial and other physical cues for an evaluation of

their responses. Because of this, the researcher feels that more effort should have been made to establish a non-evaluative atmosphere in the test situation. Perhaps it would have been wise for the researcher to have taken the children separately into the test rooms several days ahead of testing and played "games" with them, in which their efforts to respond would have been liberally praised and in which "thinking of different" rather than of "right" answers could have been emphasized. This procedure may have helped the children become aware that divergent answers were as acceptable as convergent answers. Aside from these administration problems, validity and reliability problems continue to exist for the creativity tests. More studies focused upon the use of these tests with preschool-aged children need to be done.

#### Control of Variables

Although the present study attempted to control for the variables of race, socioeconomic background and family structure (intact homes), and analyzed for sex, age, I.Q., and creativity differences in children's sex-role preferences, other variables that have been identified as relating to children's sex-role learning were not controlled. Some of these variables include ordinal position, sibling status, family size, family structure, and parental characteristics such as gender, punitiveness, availability, warmth, power and



femininity or masculinity. Furthermore, subjects in the present study were enrolled in three different preschool programs with three different teachers and a large variety of students working with them in the preschool classroom. The philosophy and program of the child's preschool experience as well as the sex and personalities of teachers were not controlled for. These may have greatly influenced the results obtained in the present study. Finally, while an attempt was made to utilize subjects in this study predominantly from the upper and middle-socioeconomic classes, further analysis of subjects' sex-role preference scores according to still more differentiated socioeconomic classes suggest that this variable be controlled or analyzed for in all future research on sex-role learning among young children.

#### Suggestions for Future Research

As a result of the present study that focused upon the relationship between sex, age, intelligence, creativity and sex-role preference among preschool-aged children, a number of suggestions for future research can be made.

Due to the variety of limitations encountered with respect to the It Scale for Children, the present study indicates a need for the development of a new test device for assessing children's sex-role preferences. Hopefully, this new test device will treat masculine and

feminine sex-roles as independent or quasi-independent variables, as well as include in them test items that are of greater clarity, attractiveness and relevance for understanding today's sex roles.

In reference to the relationship between intelligence and sex-role preference, further research is recommended. In order to more clearly delineate the validity of the cognitive-developmental theory of sex-role learning, more studies, with larger samples of children at various age levels, should be undertaken. Both cross-sectional and longitudinal studies in this area would be worth while.

Regarding the relationship between creativity and sex-role learning, future studies should focus upon the multi-dimensional nature of sex-role learning among young children rather than look at the sex-role learning process as a uni-dimensional process. Findings obtained by Biller, Singer and Fullerton (1969) concerning the relationship between creativity and mixed sex-role patterns suggests that these studies might lead to a clarification and a delineation of a more plausible theory focused upon the relationship between creativity and sex-role learning.

Finally, a most ambitious and complete research project would be one in which all variables that have been identified in research as related to sex-role learning are studied. Such an investigation may provide us with a more thorough understanding of the multi-faceted nature of sex-role learning among young children. We can no longer

be satisfied with studies that control for one or two variables in their studies. Under these circumstances, variables that appear to be significantly related to sex-role learning among individuals may either lose or gain greater significance when looked at in the larger context of a variety of familial, socio-cultural and child variables.

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## APPENDICES

## APPENDIX A

Description of Subjects by Sex, Age, I.Q., Creativity I Scores, Creativity II Scores, Socio-Economic Status, and Sex-Role Preference Scores.

Subject	Sex	(Yr-mo)	I.Q.	Creativity Test I	Creativity Test II	SES	Sex-role Preference
1	M	3-5	130	11	14	1	36
2	M	3-7	96	8	15	2	67
3	M	3-7	125	9	13	1	56
4	F	3-8	122	5	14	1	47
5	F	3-8	114	7	11	2	20
6	F	3-8	124	13	17	2	31
7	F	3-8	108	5	17	2	40
8	F	3-9	116	12	14	1	45
9	M	3-9	119	8	18	1	64
10	F	3-9	111	6	8	4	52
11	M	3-10	94	7	11	1	39
12	M	3-10	117	9	12	3	44
13	F	3-10	123	10	12	2	40
14	M	3-10	106	12	15	2	48
15	F	3-10	123	9	24	2	44
16	F	4-0	116	14	20	2	39
17	F	4-0	120	19	13	2	40
18	M	4-0	122	15	9	1	60
19	M	4-1	122	11	13	1	56
20	M	4-2	110	8	15	2	40
21	F	4-2	117	8	11	2	36
22	M	4-2	119	7	14	1	63
23	F	4-2	117	8	14	1	47
24	F	4-3	109	22	19	1	74
25	M	4-3	116	8	11	2	36
26	M	4-3	101	11	14	2	48
27	F	4-4	113	17	12	2	45
28	F	4-4	118	14	20	4	52
29	F	4-5	104	5	10	3	56
30	F	4-5	129	8	10	1	46
31	M	4-6	129	11	17	2	75
32	M	4-7	99	23	17	1	74
33	M	4-8	111	11	18	1	67
34	M	4-10	129	9	19	1	84
35	F	4-11	158	11	23	2	67
36	F	5-0	123	12	34	1	8
37	F	5-1	116	11	32	2	19
38	M	5-1	127	8	10	1	84
39	F	5-2	154	8	30	2	27

## APPENDIX B

## Description of Subjects by Sex Groupings.

Characteristic	N
Sex	
Boys	18
Girls	21
Total	39
Age	
Older Boys	9
Younger Boys	9
Older Girls	11
Younger Girls	10
I. Q.	
Very-High Boys	9
Average-High Boys	9
Very-High Girls	10
Average-High Girls	11
Creativity I	
Creative I Boys	8
Less Creative I Boys	10
Creative I Girls	10
Less Creative I Girls	11
Creativity II	
Creative II Boys	5
Less Creative II Boys	13
Creative II Girls	10
Less Creative II Girls	11

## APPENDIX C

## Description of Subjects by Age Groupings.

Characteristic	N	Range (yr-mo)	Mean (yr-mo)
Sex			
Boys	18	3/5-5/1	4/2
Girls	21	3/8-5/2	4/2
Age			
Older	20	4/2-5/2	4/6
Younger	19	3/5-4/1	3/9
Total	39	3/5-5/2	4/2
I. Q.			
Very-High	19	3/5-5/2	4/2
Average-High	20	3/7-5/1	4/1
Creativity I			
Creative I	18	3/5-5/1	4/3
Less Creative I	21	3/7-5/2	4/1
Creativity II			
Creative II	15	3/8-5/2	4/5
Less Creative II	24	3/5-5/1	4/0

## APPENDIX D

## Description of subjects by I. Q. Groupings.

Characteristics	N	Range (I. Q. )	Mean (I. Q.)
<b>Sex</b>			
Boys	18	94-130	123.1
Girls	21	104-158	121.5
<b>Age</b>			
Older	20	99-158	119.4
Younger	19	94-130	115.9
<b>I. Q.</b>			
Very-High	19	118-158	127.2
Average-High	20	94-117	109.6
Total	39	94-158	118.0
<b>Creativity I</b>			
Creative I	18	99-158	114.1
Less Creative I	21	94-154	117.8
<b>Creativity II</b>			
Creative II	15	99-158	122.4
Less Creative II	24	94-130	114.6

## APPENDIX E

## Description of Subjects by Scores on Creativity I Groupings.

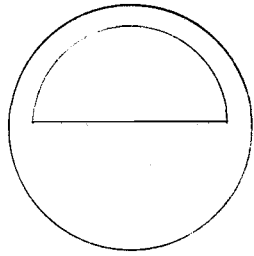
Characteristic	N	Range (Creativity I)	Mean (Creativity I)
<b>Sex</b>			
Boys	18	7-23	10.3
Girls	21	5-22	10.7
<b>Age</b>			
Older	19	5-23	11.0
Younger	20	5-19	10.0
<b>I. Q.</b>			
Very-High	18	5-19	11.2
Average-High	20	5-22	10.6
<b>Creativity I</b>			
Creative I	18	11-23	13.9
Less Creative I	21	5-10	7.3
Total	39	5-23	10.5
<b>Creativity II</b>			
Creative II	15	5-23	12.1
Less Creative II	24	5-19	9.5

## APPENDIX F

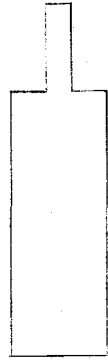
## Description of Subjects by Scores on Creativity II Groupings.

Characteristic	N	Range (Creativity II)	Mean (Creativity II)
Sex			
Boys	18	9-19	14.2
Girls	21	8-34	17.4
Age			
Older	19	10-34	17.5
Younger	20	8-32	14.2
I.Q.			
Very-High	19	9-34	17.1
Average-High	20	8-32	14.8
Creativity I			
Creative I	18	9-34	21.6
Less Creative I	21	8-30	14.3
Creativity II			
Creative II	15	17-34	21.7
Less Creative II	24	8-16	12.9
Total	39	8-34	15.9

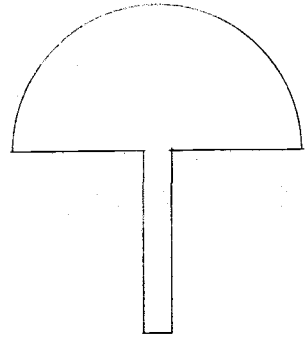
Appendix G  
Items from the Pattern Meanings Test (Creativity II)



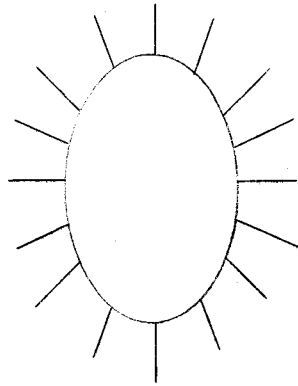
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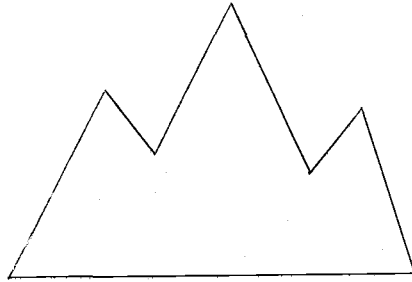
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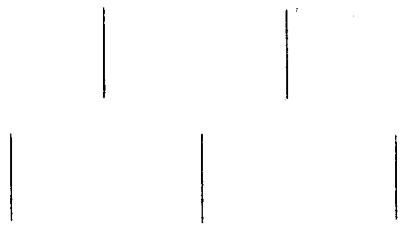
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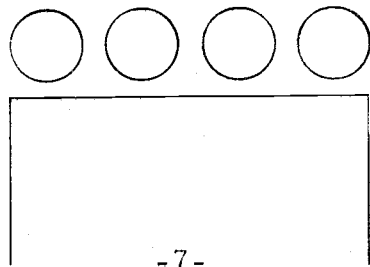
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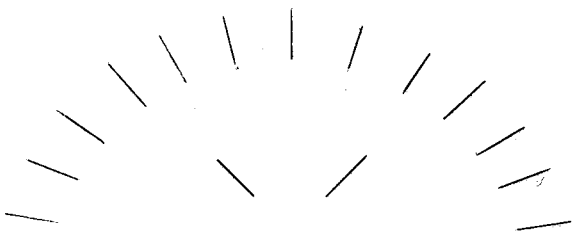
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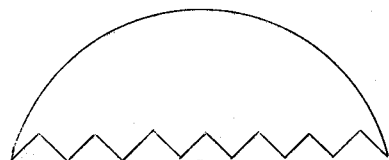
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