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A Study of Cognitive and Affective Aspects of Sex-Typed Processing in Children

Judi Gulko

A Thesis

in

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ABSTRACT

A Study of Cognitive and Affective Aspects of Sex-Typed Processing in Children

Judi Gulko

To examine distinct cognitive and affective aspects in sex-typed processing, the Gender Salience Test, a test of how gender is used in classification and preference decisions, was administered to children aged 5 to 11. A new version of this test consisting of line drawings of children was compared to the original version consisting of photographs of adults. The two versions were found to be comparable. Classification by gender decreased with age, suggesting a cognitive-developmental process, while use of gender for preference decisions did not, suggesting that it is useful as a measure of individual differences. Use of gender in classification was not related to use of gender in preference choices or to some frequently used measures of sex role preference. It was related to measures of sex role knowledge, primarily for girls, providing further support for a cognitive-developmental interpretation of this variable. Use of gender in preference choices was related to measures of sex role preference, and not to measures of knowledge or flexibility, providing support for an affective component to processing information about gender. These results support the hypothesis that cognitive and affective components in sex-typing are somewhat distinct. The need for a cognitive theory which accounts for affective aspects early in development is discussed.

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Finally, I would like to thank Frank, as we finish begin a phase.

TABLE OF CONTENTS

TABLES

PAGE

APPENDIXES

PAGE

"What's a man now - What's a man mean
Is he rough or is he rugged
Is he cultural and clean...
Time to get scared
Time to change plan
Don't know how to treat a lady
Don't know how to be a man."

- Joe Jackson

Introduction

There has been recent debate in the psychological literature about the relationship between cognition and affect. Zajonc (1980, 1984) argues that preferences do not require the prior cognitive operations of discrimination and categorization. Lazarus (1982, 1984) argues the more traditional view that preferences follow cognitive appraisals.

In developmental psychology, cognition and cognitive development are often conceptualized from the theoretical perspective of Jean Piaget. Kohlberg (1966) extended Piaget's cognitive-developmental approach to the realm of sex-typing. He argued that developmental changes in children's sex-typed concepts parallel more general developmental changes in cognitive processes.

Affect usually refers to emotions such as affection and anxiety, which have been shown to be of significance in development, in processes such as attachment (Hetherington & Parke, 1979). Researchers have not yet modified cognitive theories of early sex-typed development to provide a role for affect. There is no consensus, then, on how affect interacts with cognition in the sex-typing process. Empirical evidence indicates, however, the operation of both cognitive and affective processes early in sex-typed development. The developmental patterns of sex role knowledge and sex role preferences, examined in a framework of cognitive vs. affective processing, illustrate some differences between these two phenomena.

Cognitive Aspects of Sex Typing

Since Kohlberg (1966) first proposed a cognitive-developmental theory of sex-typing, there has been a great deal of research on this issue.

Acquisition of sex role knowledge. Empirical evidence has clearly shown a cognitive component to sex-typing, for example in the development of sex role knowledge. Children learn about sex roles; they learn that many social dimensions are dichotomized according to gender. The content of this learning is sex role knowledge. Children steadily acquire knowledge about sex roles throughout the preschool period.

It has been reasoned, in line with cognitive theory (Fagot, 1985; Kohlberg, 1966), that before sex role knowledge can be acquired systematically, for example, before one can understand that an occupational role might be assigned to people based on sex, one must first be able to reliably identify the two sexes. Researchers have investigated the development of "gender identity" and of "gender labelling." The former term was used first by Kohlberg to refer to the ability to correctly identify the gender of one's self. Others have used the latter term to describe the ability to correctly identify the gender of other individuals.

The ability to identify both one's own gender and the gender of others has been detected in children as young as 2 years of age (Thompson, 1975; Weinraub et al, 1984). It is not clear which occurs first; Thompson found that gender labelling of others occured first, while Weinraub et al found that the two phenomena were coincident.

Reliable identification of both has been seen in children aged 2.5 to 3 years (Fagot, 1985; Kuhn, Nash & Brucken, 1978; Slaby & Frey, 1975; Thompson, 1975; Weinraub et al, 1984).

Sex role knowledge has been detected in children as young as 3 years of age (Edelbrock & Sugawara, 1978; Kuhn et al, 1978; Weinraub et al, 1984) at a time when gender identity is reliably established. This order of development of gender identity and sex-role knowledge is consistent with cognitive-developmental theory. However, no one seems to have studied sex role knowledge in children younger than 3 years of age.

Sex role knowledge steadily and monotonically increases as children get older (Albert & Porter, 1983; Best et al, 1977; Blakemore, Larue & Olejnik, 1979; Carter, Levy & Cappabianca, 1985; Carter & Patterson, 1982; Coker, 1984; Edelbrock & Sugawara, 1978; Leahy & Shirk, 1984; Perry, White & Perry, 1984; Reis & Wright, 1982; Urberg, 1982; Weinraub et al, 1984; Williams, Bennett & Best, 1975). Much learning seems to take place between the ages of 3 and 4 (Blakemore et al, 1979; Perry et al, 1984; Reis & Wright, 1982). By the end of the pre-school period, children have acquired a great deal of knowledge in the content areas most frequently studied. These are: items (such as toys), play activities (such as baseball), occupations (such as doctor), and personality traits (such as "adventurous").

Although there is a great deal of evidence that the acquisition of sex role knowledge reflects a universal cognitive process, there are sub-patterns in the sex role learning process which seem to reflect the influence of socialization. Children, especially boys,

appear to learn the sex roles for their own sex earlier, and to know them better, than the roles applicable to the opposite sex (Best et al, 1977; Edelbrock & Sugawara, 1978; Nadelman, 1974). It has also been shown that children of both sexes are aware of masculine stereotypes earlier than feminine ones (Best et al, 1977). Both these patterns could be accounted for by greater societal emphasis on the socialization of boys than girls according to sex roles (Maccoby & Jacklin, 1974). It also appears that children learn sex roles applicable to adults before those applicable to children (Weinraub, 1984). Possibly, the more obvious gender cues of adults (e.g. size, facial hair, breasts) facilitate earlier generalization of physical characteristics to societal roles.

Researchers have speculated whether sex role knowledge concerning one content area begins to be acquired before knowledge about another (Best et al, 1977; Wehren & de Lisi, 1983). Learning that "adventurous" is a masculine stereotype and that "weak" is a feminine one, seems more abstract than learning that "mechanic" is a masculine stereotype and "teacher" a feminine one (Best et al, 1977). There has been little research on this question. Coker (1984) showed, via a Guttman scalogram, that in children aged 3 to 6, sex role knowledge of toys was acquired before knowledge of traits. Blakemore et al (1979) found that 6-year-olds knew virtually all the sex stereotypes assigned to the toys in their task; Edelbrock and Sugawara (1978) found that older preschoolers knew the vast majority of the sex stereotypes assigned to activities. Preschool children knew only some of the stereotypes assigned to selected traits, however (e.g. Best et al,

1977; Leahy & Shirk, 1984; Williams et al, 1975). It is possible, then, that the roles regarding psychological traits are learned later than toys and activities.

Gender identity. Developmental accumulation of sex role knowledge after the establishment of gender identity reflects a cognitive process. Kohlberg (1966) discussed the development of sex role knowledge in the context of a cognitive-developmental theory of sex-typing.

> As Piaget and his followers have documented in depth and detail, the child's basic cognitive organization of the physical world undergoes radical transformation with age development. So, too, do the child's conceptions of his social world. (1966, page 83)

Kohlberg conceptualized a process whereby children, having learned to reliably identify their own sex, learn that they will be that sex when they are adults. Kohlberg termed this understanding "gender stability". They then learn that they cannot change to the other sex even if perceptual changes occur; for example, they cannot change even if they put on the clothes of the opposite sex. Kohlberg termed this understanding "gender consistency".

Kohlberg theorized that the levels of understanding of gender identity parallel levels of understanding of physical dimensions, as conceptualized by Piaget. In other words, Kohlberg envisioned a sequence of gender identity understanding, completed between the ages of 5 and 7, which is tantamount to conservation of gender.

Researchers have observed these sequential phases of gender identity understanding (Coker, 1984; Emmerich, Goldman, Kirsch & Sharabany, 1977; Emmerich & Shepard, 1984; Fagot, 1985; Kuhn et al,

1978; Marcus & Overton, 1978; Martin & Halverson, 1983c; Slaby & Frey, 1975) although there is some disagreement about the age at which it is mastered (Emmerich et al, 1977; Kuhn et al, 1978; Martin & Halverson, 1983c). Some have also observed a relationship between gender identity and cognitive level (Emmerich et al, 1977; Marcus & Overton, 1978), providing support for the concept of gender identity as a cognitive process.

Kohlberg (1966) theorized that gender identity is the central organizer of sex role knowledge, providing a cognitive vehicle, or schema, to organize incoming information along the dimension of gender. Once children can reliably identify the two genders, they begin to learn to associate sex with social roles. They observe that certain activities seem to be consistently performed by one gender more than the other. Since they do not understand anatomy as the essential defining characteristic of sex (e.g. McConaghy, 1979), reasoning in a preoperational fashion, they assume that performance of activities seen to be regularly associated with one gender are necessarily crucial to being that sex. Because they think that gender can be changed by, for example, dressing like the opposite sex, children perform sex-consistent activities to maintain their identity. They build a network of associations about the sexes by dichotomizing social roles on the dimension of gender.

Indirect support for this theory was provided by the research cited above showing that gender identity does seem to develop before sex role knowledge. In addition, a relationship has been found between these two variables (Kuhn et al, 1978; O'Keefe & Hyde, 1983;

Zucker & Yoannidis, 1983), although Carter et al (1985) failed to replicate this finding.

Sex role flexibility. Cognitive-developmental theory would predict that once gender identity is firmly established, flexibility in sex-typing (i.e., assigning sex-stereotyped stimuli to both sexes) can occur. This hypothesis is consistent with the development of flexibility regarding physical dimensions, where the concrete-operational child is able to perceive physical stimuli as belonging simultaneously to more than one category. Similarly, once children have a firm gender identity, they can then become flexible in assigning roles to the two sexes, understanding that it is not necessary for a person to perform certain activities to be a certain gender. In other words, at that point, the child can understand that although there is a societal sex role associated with a particular area (e.g. occupation), it is possible for both sexes to perform that activity.

The cognitive-developmental position on sex role flexibility has been supported by empirical evidence. Children do not begin to be flexible until about age 5 or older (e.g. Carter et al, 1985; Leahy & Shirk, 1984; Serbin & Sprafkin, in press; Urberg, 1982). Boys have been found to be less flexible than girls in assigning sex roles (Garrett, Ein & Tremaine, 1977; Maccoby & Jacklin, 1974; Nadelman, 1974; Urberg, 1982), a finding which again suggests the operation of societal factors.

Processing information by the dimension of gender. Once learned, gender remains a salient way for children to process information.

There is a great deal of evidence supporting the use of the dimension of gender in processing information (Bem, 1981, 1985; Blakemore et al, 1979; Bradbard & Endsley, 1983; Bradbard, Endsley, Halverson & Martin, 1983; Britain & Coker, 1982; Carter et al, 1985; Cordua, McGraw & Drabman, 1978, 1979; Drabman et al, 1981; Gentry, 1977; Kail & Levine, 1976; Koblinsky & Cruse, 1981; Koblinsky, Cruse & Sugawara, 1978; Kropp & Halverson, 1983; Liben & Signorella, 1980; Markus, Crane, Bernstein & Siladi, 1982; Martin & Halverson, 1983b; Rosenthal & Paltiel, 1982; Signorella & Liben, 1984, 1985; Thompson, 1975). For example, Signorella and Liben (1985) observed that providing children with gender labels facilitated their memory for gender-related pictures. Koblinsky et al (1978) observed that children tended to remember information which was consistent with sex role stereotypes better than inconsistent information. Cordua et al (1979) observed that children distorted information (e.g. a male nurse was remembered as a doctor) to make it consistent with sex roles. These studies provide evidence for cognitively-based processing of sex-typed information.

Affective Aspects of Sex-Typing

There is a well defined theoretical position, as well as a great deal of empirical evidence in support of the hypothesis of cognitive processes in sex-typing. There is, however, no theory of sex-typing which provides a role for an affective component which occurs in parallel with early cognitively-based sex-typed development. Therefore, certain phenomena which can be considered to be influenced

by affect are discussed separately below, along with the empirical support for them.

Acquisition of sex role preferences. Children not only learn about sex roles, they develop sex role preferences. They learn to prefer one occupation over another on the basis of what is considered appropriate for their sex. In other words, they develop preferences based on the dimension of gender.

Kohlberg (1966) clearly outlined a sequence of events in the sex-typing process which included sex role preferences. He theorized that children developed sex role preferences only after development of gender identity and sex role knowledge. He theorized that children had to understand about the properties of sex and understand sex roles to know what to prefer. Empirical evidence has not supported Kohlberg's view of sex role preferences. It has been shown that gender identity is not a prerequisite for sex role preference development (Carter et al, 1985; Coker, 1984; Fagot, 1985; Smetana & Letourneau, 1984; Weinraub et al, 1984). Further, sex role preferences do not begin between the ages of 5 to 7; they have been detected before 2 years of age (Fein, Johnson; Kosson, Stork & Wasserman, 1975).

Sex role preferences have been measured in almost all the same content areas as sex role knowledge (i.e. toys, activities, occupations), but not in the area of psychological traits (e.g. "gentle"). In addition, investigators have examined the sex-typed peer preferences of children.

Several researchers have observed same-sex peer preferences in

the free play of 2-year-olds (Fagot, in press; Smetana & Letourneau, 1984). Another group of researchers (LaFreniere, Strayer & Gauthier, 1984; Strayer & Pilon, 1985) found these preferences only in 2-year old girls. No same-sex peer preferences were found by Thompson (1975) in 2-year-olds, but his research used a picture task, rather than naturalistic observation. Sex-typed toy preferences were found in 2-year-olds by Weinraub et al (1984) and by Smetana and Letourneau (1984) but not by Perry et al (1984). Blakemore et al (1979) found sex-typed toy preferences in 2-year-old boys, but not in 2-year-old girls.

Many researchers have found sex role preferences in children of both sexes aged 3 and older (Brown, 1956; Delucia, 1963; Edelbrock & Sugawara, 1978; Eisenberg, Murray & Hite, 1982; Eisenberg, Tryon & Cameron, 1984; Emmerich & Shepard, 1984; Hartup & Zook, 1960; Marantz & Mansfield, 1977; Marcus & Overton, 1978; Nadelman, 1974; Perry et al, 1984; Schell & Silber, 1968; Zucker, Wilson & Stern, 1985; Zuckerman & Sayre, 1982). Blakemore et al (1979), however, found sex role preferences in 3-year-old girls only after they had been asked to label the sex stereotype of an item.

Perry et al (1984) found 3 years to be the age when boys but not girls acquired sex-typed toy preferences to a great degree. Similarly, Strayer and his colleagues found, in a sample of children aged 1 to 6, that same-sex peer preferences emerged in boys at age 3, and thereafter increased monotonically with age. They found that girls' preferences emerged at 2 years of age, but thereafter remained fairly stable.

Several researchers have found that boys' sex-typed preferences, once developed, are stronger than girls' (Brown, 1956; Delucia, 1963; Edelbrock & Sugawara, 1978; Marcus & Overton, 1978; Nadelman, 1974; Perry et al, 1984). Like the phenomenon of earlier awareness of masculine sex roles in both sexes, this phenomenon has been explained by greater societal pressure on boys to conform to sex roles.

Researchers have also found that the sex-typed occupational preferences of girls, after the preschool period, tend to become increasingly masculine with age (Kail & Levine, 1976; Marantz & Mansfield, 1977). Huston (1985) argued that this might occur because as they get older, girls begin to realize that masculine occupations are considered more prestigious than feminine ones.

Sex role preferences appear to have different patterns of development in the different content areas; this contrasts with the fairly uniform findings regarding acquisition of sex role knowledge. Both boys and girls seem to have strong toy and activity preferences by age 3 or 4, although the strength of their preferences before this age is not clear. Boys have strong same-sex peer preferences from age 3, while the reports about the same-sex peer preferences of girls are inconsistent. In the third or fourth year of life, children of both sexes have sex-typed occupation preferences, however, as girls get older, they begin to have more masculine-typed occupational preferences. Therefore, the acquisition of sex role preferences is less universal and consistent than acquisition of sex role knowledge. There appears to be less consistency in terms of the relative strength

of sex-typing in the different domains, such as toy preferences, same-sex peer preferences, and occupation preferences. This less consistent process is apparent across age and also within individuals (e.g. Smetana & Letourneau, 1984). There is more variation between individuals in this process than in acquisition of sex role knowledge.

Affective processing of information. As further evidence of an affective process in sex-typing, it has been shown that the valence (i.e. positivity or negativity) of an attribute (e.g. gentle vs. mean) is important in the assignment of sex roles. Younger children tend to assign positive traits to their own sex, and negative traits to the opposite sex (Albert & Porter, 1983; Kuhn et al, 1978; Urberg, 1982; Zalk & Katz, 1978). This tendency seems to peak at 5 years of age (Urberg, 1982); after this age, children are more likely to assign things according to the societal sex roles.

It is difficult to conceive that an affective component of sex-typing might be completely separate from a cognitive component, particularly once children are old enough to have developed many cognitions about gender. In fact, several researchers have seen a correlation between gender identity and sex role preferences (Emmerich & Shepard, 1984; Fagot, 1985; Smetana & Letourneau, 1984; Weinraub et al, 1984).

Studies have been described which support the tenet that the dimension of gender is cognitively evoked in processing afferent information. There are also a few studies which examined an affective component to this process. Some of these have also revealed the operation of individual differences in sex-typing. Kail and Levine

(1976) found that girls with stronger sex-typed preferences showed evidence of encoding words according to a masculine-feminine dimension, whereas less sex-typed girls did not. All the boys in their sample encoded words according to the dimension of gender, and they all had strong sex-typed preferences. Kropp and Halverson (1983) found, with cross-lag panel analysis, that the sex-typed preferences of preschoolers at one point predicted their recall of story content at a later point in time. Liben and Signorella (1980) found that rigidly stereotyped children recalled significantly more sex-typed than non-sex-typed pictures when the actor in the picture was male. No recall difference between these two sorts of pictures was found with less stereotyped children. Signorella and Liben (1984) found similar results.

It should be clear from the empirical evidence that children do not use the gender dimension in an exclusively cognitive manner in the sex-typing process. There is an additional affective component which occurs in gender processing.

Kohlberg's (1966) conceptualization of preferences was not supported by empirical evidence. That is, his proposal that sex role preferences do not occur until a firm gender identity is established between 5 and 7 years of age has not been supported. Kohlberg also did not address the issue of individual differences in sex-typing. His focus was on a universal cognitive-developmental process (see also Kohlberg & Zigler, 1967).

Individual Differences in Sex-Typing.

In a more recent cognitive theory of sex-typing, Bem (1981)

accounted for individual differences in sex-typing. For Bem, individual differences are conceived as a way to link cognitive explanations of sex-typing with social learning explanations. She suggested that individuals vary in the extent to which they use the dimension of gender in making sex-typed decisions. Bem found that the word clusterings (e.g. of animals, verbs and clothing which had been previously categorized as masculine, feminine or neutral) of sex-typed individuals (as defined by the Bem Sex Role Inventory [BSRI], 1974) were based on gender significantly more than the word clusterings of non-sex-typed individuals. She also found evidence, that "like me/not like me" decisions about sex-congruent and sex-incongruent attributes were made faster by sex-typed individuals than by non-sex-typed individuals. Bem (1981, 1985) suggested that individual differences in sex-typing may result from differences in socialization histories. It has been shown that there are more individual differences in development of sex role preferences than in development of sex role knowledge, a finding which may indicate a greater role for socialization in sex role preferences.

Studies have been examined which suggest the existence of an affective process distinct from a cognitive process in sex-typed development. These distinct processes are indicated by the differences between the developmental acquisition of sex role knowledge and sex role preference. For the latter, there are more individual differences, and a less consistent developmental course, particularly for girls. It seems that affective processing must have some cognitive basis, though, because a great deal of information

processing seems to be cognitive.

Evidence about an affective process in sex-typing needs to be examined further within a cognitively-based theoretical framework. Therefore, cognitive and affective aspects of sex-typing were recently examined in an exploratory study (Serbin & Sprafkin, in press).

Cognitively-Based Sex-Typing with an Affective Component

The extent to which there is an affective component, part of but separable from a cognitive component in sex-typing was examined by Serbin and Sprafkin (1983; in press). They also explored the extent to which individual differences in sex-typing occur in this affective component rather than in the more universal cognitive component.

Serbin and Sprafkin (in press) were concerned with developing a test which measured both the cognitive and affective components in sex-typing. They wished to examine the extent to which it is possible to measure the separation of cognitive and affective processes, as well as chart the developmental course of each.

They developed a task which involved classification of stimuli in order to examine a cognitive process in sex-typing. They reasoned that a resultant network of associations which occurs in sex role knowledge might originate in the sorting of stimuli into salient categories. They hypothesized that since small children are just beginning to learn about gender categories, sex would be very salient for them. By sorting stimuli into gender categories, they learn about gender. As gender is mastered, its salience as a basis for

classification would diminish. At this point, children would increasingly turn to intellectually more complex dimensions for classification. It was argued that this process is similar to the one that occurs with classification of physical dimensions. For example, children sort stimuli by color earlier than they sort by form. When color is mastered, that is, when children have learned to categorize correctly and consistently by color, they turn to the more complex dimension of form (Suchman & Trabasso, 1966).

To examine an affective component in sex-typing, Serbin and Sprafkin developed a task which examined preference choices of stimuli similar to those used in the classification task. They presumed that sex preferences are cognitive to the extent that gender is selected over another dimension. Selection for preference, however, involves an affective component. In examining an affective component, it was not clear to them what the origins might be, nor was it clear what the developmental course might be.

Serbin and Sprafkin (1983) developed the Gender Salience Test. This test has two similar sections. On each section, children can choose to employ one of two dimensions: activity and gender. These dimensions are pitted against one another. In the first part of the test children are shown a stimulus and are asked to classify it with other stimuli. It is possible for them to classify by gender, or by activity. Matching a male holding tools with a male holding a baseball bat is considered a gender match. Matching a male holding tools with a female who is hammering is considered an activity match. In the second section of the test children are asked about their play

preferences. Here, they can express their preferences for the people depicted according to gender, or on the basis of an attractive prop, activity or facial expression.

In summary, this test examines the salience of gender in classification and preference choices. The sections are similar; both require choice between two available dimensions for decision. One, however, appears to require primarily cognitive processing, and the other to involve an affective component, as expressed in "preference." Serbin and Sprafkin found that both sections of the Gender Salience Test showed a low negative correlation with I.Q. This finding indicated that brighter children tended to make fewer gender responses on both sections. It also suggests that there is a cognitive element to both tasks.

Older children used gender in classification of stimuli less than did younger children. Knowledge of the dimension did not disappear; Guttman scale analysis revealed that use of gender in classification declined after sex role knowledge was acquired. Children retained knowledge about gender after they switched to matching by activity; just as a child who switches from matching by color to matching by form retains knowledge about color. This seemed to indicate cognitive mastery of the gender dimension.

Guttman scale analysis also revealed that children only became more flexible in assigning sex role stereotypes once the use of the gender dimension for classification had declined. These data support a cognitive theory of sex-typed processing.

Serbin and Sprafkin did not find a clearcut developmental trend

in preference for gender when other dimensions were available. They found that boys used the dimension of gender for preference choices increasingly with age (from 31% of choices at age 3 to 74% of choices at age 7). Girls, however, chose preferences by gender approximately 50% of the time, across all the age groups.

The preference section generated response variance in all age and sex groups, whereas there was diminished use of the gender dimension on the matching section as children got older, until it was almost unused in the oldest age group.

Consistent with the hypothesis that there is a cognitive aspect, which is distinct from an affective aspect, classification by gender yielded age differences in patterns of responding, did not correlate with preference by gender, and did not correlate with measures of sex role preference. Preference by gender yielded individual rather than age differences in patterns of responding and did correlate significantly with other measures of sex role preference. The evidence regarding preference by gender also provided construct validity for an affective component. In addition, it provided some support for the idea that sex role preferences combine this affective component with a cognitive one, as preferences are expressed by choosing between two dimensions, which is a cognitive operation.

Purpose of the Present Study

The present study examined whether further support for separate cognitive and affective processes in sex-typing can be found, and whether individual differences in responding occur primarily in the affective process. The work of Serbin and Sprafkin (in press) was

replicated and extended in the following ways:

1. A new form of the Gender Salience Test was developed, which employs line drawings of children. In devising a new version, the goal was to overcome certain limitations of the photographs. Of particular concern was the lack of control over differences in attractiveness to children of the different people depicted in the photographs. Also of concern were the variations in quality between photographs. Attempts were also made to extend past results by using a measure which depicts children instead of adults. This new form of the test was compared empirically to the original Gender Salience Test. Further details about the differences between the two versions are described in the Methods Section of this thesis.

2. The Sex Stereotype Measure (SSM), Williams et al, 1975) was included. This measures knowledge and flexibility regarding sex-typed personality traits.

3. In examining the relationship between Gender Salience and standard tests of sex role knowledge, flexibility and preference, analyses were used which are more sensitive than the ones used by Serbin and Sprafkin (in press) in explaining the variance associated with Gender Salience. The two versions (photographs and drawings) of the Gender Salience Test were examined and compared with respect to these analyses.

4. Serbin and Sprafkin used a sample with children ranging in age from 3 to 7. In this study, a sample of children ranging in age from 5 to 12 was used. Thus, it was possible to observe gender-based classification and affiliation in an older sample of children.

There were two major goals in this thesis. The first goal was to compare the two versions of the Gender Salience Test: the original photographs and the new drawings.

The second goal was to test the hypothesis that the two scores of the Gender Salience Test measure distinct phenomena involved in sex-typing: "matching by sex" reflects the role of cognition per se, while "preference by sex" assesses the influence of affect.

First goal. The Photographs Gender Salience Test scores were compared with those of the Drawings Gender Salience Test. Three predictions were made:

1. Corresponding sections of the test versions (e.g. drawings matching by sex and photographs matching by sex) would behave similarly on analyses of internal consistency.

2. Corresponding sections of the test versions would correlate significantly.

3. It has been reported, in the literature, that children have strong same-sex peer preferences. Therefore, it was predicted that the preference by sex score, measured by the drawings depicting children, would be higher than the preference by sex score, measured by the photographs depicting adults.

Second goal. It was hypothesized that the matching by sex score and the preference by sex score reflect different phenomena in sex-typing. The matching by sex score is primarily mediated by cognition, whereas the preference by sex score includes an affective aspect: an aspect which is proposed to result in individual differences in sex-typing. The specific predictions relevant to this hypothesis are the

following:

1. Matching by sex would be relatively unrelated to preference by sex.

2. The matching by sex score would decrease with age.

3. The preference by sex score would not change with age. Possibly, the preference by sex scores of boys would be higher than those of girls.

4. Scores on measures of sex role knowledge and flexibility (regarding activities, occupations and traits) would be related to the matching by sex scores. Scores on measures of sex role preference would not be related to matching by sex.

5. Similarly, scores on measures of sex role preference (regarding peers, activities and occupations) would be related to the preference by sex scores. Scores on measures of sex role knowledge and flexibility would not be related to preference by sex.

6. The sex role preference variables would be related to preference by sex more strongly than the knowledge variables relate to matching by sex, as more individual variability would occur on this score.

Method

Subjects

One hundred and thirty children from two schools of the Protestant School Board of Greater Montreal were tested. Only children of parents who gave written consent for their children to be used in the project were tested. Seventy-eight children were from one elementary school, and 52 children were from a second. The backgrounds of the children were fairly diversified culturally, (e.g. including Israeli, Arabic, and Italian children) and largely middle-class in socioeconomic status.

Children from grades Kindergarten to 6 inclusive participated. They ranged in age from 5 years, 0 months to 12 years, 11 months. For the purposes of many analyses, they were divided into four age groups. Children in the first group ranged in age from 5 years, 0 months to 6 years, 11 months, in the second group from 7,0 to 8,11, in the third group from 9,0 to 10,11, and in the fourth group from 11,0 to 12,11.

For the final sample, it was necessary to eliminate 15 of the 130 children, 3 due to incomplete data, 2 due to spoiled data (as a result of tester error) and 10 due to excessive random responding on the matching or diagnostic tasks (see Table B-1 in Appendix B for the breakdown by age and sex of these eliminated children).

Thus, 115 children constituted the final sample. Of these, 73 were from the first school, and 42 were from the second school (see Table 1 for a breakdown of subjects by age, sex and school).

Table 1

Breakdown of Subjects: Cell Sizes

Group	First School	Second School
Males	37	20
Age Group		
1	5	6
2	11	8
3	12	4
4	9	2
Females	36	22
Age Group		
1	6	5
2	13	8
3	6	7
4	11	2

	Both Schools	
Age Group	Males	Females
All	57	58
1	11	11
2	19	21
3	16	13
4	11	13

Procedure

In early Autumn of 1983, schools were approached about participating in this study. Letters were sent out to parents, with consent forms enclosed, at two schools where permission was gained.

The two versions of the Gender Salience Test (original photographs and new drawings) were administered to subjects. Subjects were also administered three additional tasks collectively termed "the sex-typing measures," which are: a peer sociometric task, the Sex Role Learning Inventory ([SERLI] Edelbrock & Sugawara, 1978) and the Sex Stereotype Measure ([SSM] Williams, Bennett & Best, 1975).

The order in which the five tasks were presented varied somewhat by school. Data were collected for this thesis as part of a larger project examining the development and salience of social stereotyping. Thus, the order of the tasks was planned to vary tasks relevant to gender, language and body weight stereotypes, to separate tasks that might influence each other, and to keep sessions a reasonable length. Data from the whole project were collected in five sessions, which varied in length from 20 to 40 minutes. The sessions were approximately three weeks apart. Children were taken from class at the convenience of the teachers, and tested individually in an unused room in the school. All data were collected between early November, 1983 and late April 1984.

The Drawings Gender Salience Test was created in Autumn 1983, after testing for the larger project had already begun. It was piloted in the first school as soon as it was ready. These children had already all received the photographs version, thus they received

the drawings version second. In the second school, order was randomized so that its effects on these two versions could be examined.

In the first school, children were tested in the following order: SERLI, photographs version of Gender Salience, Sex Stereotype Measure, drawings version of Gender Salience, the peer sociometric. At the second school, children received the measures in this order: Either one of the Gender Salience versions, Sex Stereotype Measure, SERLI, the other Gender Salience version, the peer sociometric.

Measures

Measuring the salience of gender in matching and preference: The Gender Salience Test. These tests measure the extent to which the dimension of gender is salient to children in their classification and preference choices. Measuring the salience of gender is accomplished by offering the subject an alternative dimension in addition to gender by which it is possible to classify or express a preference and by observing which dimension is used. As mentioned in the introduction, two versions, photographs of adults and line drawings of children were used. The two versions of the test have almost identical format and structure.

The first part of each version, the matching section, is a measure of the extent to which children use the dimension of gender in the classification of new visual stimuli as opposed to using another dimension which is also available (that of activity, posture, or facial expression). In other words, the extent to which gender is

salient as a classificatory dimension is measured.

To illustrate: the subject is shown a picture of a man manipulating tools and is asked to choose "the one it goes with." The subject's choices for matching this "standard" are (a) a picture of a woman manipulating tools, (b) a picture of a man playing with a baseball, and (c) a picture of a woman reading. Matching the standard with the woman with tools is considered an activity or prop match, as this dimension of activity is what these two pictures have in common. Matching the standard to the man with the baseball is considered a gender match, since it is on this dimension that the stimuli are similar. Lastly, matching the standard to the woman reading is a random match - one having to do with personal idiosyncracies or attentional problems on the part of the child rather than to any schematic similarity.

In this part of the measure, there are 12 items, each on a separate page with three pictures to a page, where each picture is a stimulus for a prop, gender or random match. There is also a separate picture, a "standard" corresponding to each page of three pictures. The child is shown the standard, and asked to choose, from one of the three pictures on the page, "the one that it goes with" (see Table C-1 in Appendix C for the list of stimuli comprising the matching section).

Five of the standards depict males, seven depict females. The sex of the people portrayed in the stimuli for matching follow from the standard. Thus, if a standard depicts a male, the stimulus for a gender match also depicts a male. Over the 12 items, the matching

stimuli appear an approximately equal number of times in each of the possible positions (left, middle or right side of a page). Subjects receive a score out of 12 for each type of match: prop, gender and random. Each score represents the number of times that dimension is used in matching. For the purposes of this study, the score of interest, used in analyses, is the matching by sex score.

If a child matches randomly, throughout the 12 items, one would expect that purely by chance, four standards would be matched by gender, four by prop, and four randomly. It is unclear how to interpret results such as these, with respect to how the dimensions were used. Furthermore, more than four random matches would also be difficult to interpret: It would seem then that the dimensions considered available to the child are not the ones used, for many possible reasons, including attentional deficits. Therefore, the data from subjects with four or more random matching responses are eliminated. In this matching task, the structure and content of the photographs and line drawings are virtually identical. Some changes were made on the 11th item of the drawings version (see Table C-1).

The second part of the test is the affiliation preference section. Prior to administration of this section, children's sex preferences in the absence of other competing dimensions are determined. This is accomplished by showing them a series of eight pairs of pictures with a male and a female in each pair performing identical tasks, or with identical facial expressions. Children are asked which they would prefer to play with. The affiliation preference task, described below, measures the extent to which the

subjects choose to use their preferred gender as the basis for affiliation preference choices, rather than using another available dimension. As in the matching section, two dimensions are pitted against each other. Unlike the matching section, which examines the extent to which gender is used in classification, this section measures the extent to which gender versus activity is used as the basis of a preference decision.

In the affiliation preference section, subjects are asked to choose one of the people depicted in the stimuli with whom they would like to engage in a particular play activity, such as "go to the zoo." One of the choices depicts a person of the child's preferred sex doing nothing, with a blank facial expression. A second choice is a picture of a person of the child's nonpreferred sex doing something attractive, like playing with a toy farm. A third choice is a person of the child's nonpreferred sex doing nothing. Preferring to engage in a play activity with the person in the first picture is considered a gender choice; the child is choosing by preferred gender, despite the fact that there is an attractive alternative. Choosing the second picture is considered an activity or prop choice; an attractive activity is being chosen despite the fact that the engaged actor is of the nonpreferred sex. Choosing the third picture is considered a random choice, or a choice by an idiosyncratic dimension.

There are two versions of this affiliation preference section; a version for children who show a male preference when sex preferences are assessed, and a version for children who show a female preference. If subjects show equal preference, then the version corresponding to

their sex is given.

To illustrate: a child whose gender preference has been established as male, is asked "Who would you like to go sled riding with?" while being shown the three stimuli of a given page. Possible choices for affiliation are (a) a male with a blank facial expression sitting on a chair (gender choice), (b) a female playing with a toy barn and animals (activity choice), and (c) a female sitting, wearing a neutral facial expression (random preference choice).

The line drawings and photographs versions of the affiliation preference section differ more than they do on matching. There are five photographs items and six line drawings items, each consisting of three pictures to a page (see Tables C-2 and C-3). Tables C-2 and C-3 list the stimuli as they appear in the male affiliation preference version of the photos and the drawings. The female version is identical except that a female replaces each male, and similarly a male each female. In the same manner as the previous section, affiliation alternatives appear an approximately equal number of times in each possible position (left, middle and right side) across pages. The scores are simply the number of choices of each stimulus (gender, prop or random). The maximum score for the photographs is 5, for the drawings, 6. The score of interest, used in analysis, is called the preference by sex score. Because of the differing number of affiliation items, five on the photographs and six on the drawings, the preference by sex score was proportionalized so that the two versions are equivalent for the purpose of analysis. This proportion is the score divided by the total number of items on the version (five

on the photos; six on the drawings).

Subjects are not eliminated in this section based on number of random responses because it was felt that variation might legitimately reflect personal preferences for particular pictures, even if these were apparently aschematic.

After these two major sections, a "diagnostic" measure of subject's ability to match like things is administered. Its purpose is to examine whether subjects can match stimuli solely on the basis of the type of activity and prop cues used in the test. This section is used to screen for any attentional or cognitive deficits, or idiosyncratic thinking, which would indicate that the child's scores on the test as a whole are unsuitable for analysis. So, for example, a subject is shown a picture of a boy reading a book, and is asked to choose which of the following "it goes with:" a boy holding a bat; a boy playing guitar; a boy reading. The last one is the activity choice, which is considered the correct choice.

There are six items, with half depicting actors of one sex and half of the other. The prop awareness score is the number of correct matches. All data of a subject with a score of 3 or less (indicating three or more random responses) are eliminated from analyses since they are considered to have "failed" this diagnostic.

In summary, the Gender Salience Test takes approximately 5 to 10 minutes to administer. All data from subjects are discarded if they have four or more random responses on the matching section, and/or if they have a score of 3 or less on the diagnostic section.

In previous research, Serbin and Sprafkin (in press) did

pilot studies on the photographs version of the Gender Salience measure. The sample used consisted of 79 children, ranging from 3 to 6 years of age, with an approximately equal number of boys and girls. The children, drawn from two daycares and one nursery school, were predominantly middle-class in status. An initial number of items was developed, and those which yielded acceptable item-total correlation coefficients were retained. The matching and affiliation preference sections of the final version of the test were examined for internal consistency and test-retest reliability. The coefficient alpha (Cronbach, 1951) was found to be .90 for the matching section, and .66 for the affiliation preference section. Test-retest reliability, done on one of the daycare samples (N = 21) over a three week interval was found to be .88 on the matching section and .68 on the affiliation section.

In a further sample these same researchers tested 147 children aged 3 to 7 on the Photographs Gender Salience Test and on other measures (Serbin & Sprafkin, in press). Again, internal consistency was found to be satisfactory, with alpha coefficients of .92 for the matching section and .64 for the affiliation section. No test-retest reliability was done on this sample. The correlation between the gender scores of the two sections, that is, between matching by sex and preference by sex was not significant, $r(146) = .03$, p = n.s.

It has been hypothesized that The Gender Salience Test is related to both the more cognitive, classificatory aspects, and to the affective aspects of the sex-typing process. One of the ways to

assess the validity of this hypothesis is to compare the salience measure with some frequently used measures of sex-typing. Two commonly used measures of sex-typing and a peer sociometric were chosen for this study.

Measures of sex-typing: sex role knowledge and flexibility. These tests examine children's knowledge of the sex stereotypes concerning activities, occupations, and characterological or psychological traits. The tests also measure the flexibility with which children assign sex stereotypes according to these dimensions; that is, they measure the extent to which a child who knows what the stereotypes are is willing to attribute the activity or trait to both sexes. To measure sex role knowledge and flexibility, a section of the Sex Role Learning Inventory (SERLI), developed by Edelbrock and Sugawara (1978), and a modified version of the Sex Stereotype Measure (SSM), developed by Williams, Bennett and Best (1975) were used.

On the The Sex Role Learning Inventory (SERLI) children are shown line drawings of objects depicting either activities or occupations that are traditionally sex-stereotyped. For this test, Edelbrock and Sugawara selected objects common in childrens' environments and commonly considered to be sex-typed on the basis of content analyses on previous measures of sex-role acquisition and pilot studies with an initial pool of 200 items.

In a free choice task, subjects are asked to sort activities and occupations into boxes; either a "boy" box, a "girl" box, or a "both" box. For example, a child is given a picture depicting a hammer and nails, and is asked "Who uses a hammer to pound some nails? Boys,

girls, or both boys and girls?" Subjects must sort 20 pictures, always in the same order. Ten depict traditionally masculine items, and 10, feminine. The words "boys" and "girls" alternate as the first word the subject is asked. After all 20 pictures have been sorted, a forced choice task is given, in which the "both" box is removed, and children must choose between the "boy" and the "girl" box for any pictures which had been in the "both" box. This task is accomplished by asking "If you had to choose, who would you say (does the activity) more? Girls or boys?" These two rounds of sorting take approximately 10 minutes.

The 10 masculine items depicted are: hammer and nails, shovel, ball and bat, car, boxing gloves, saw, badge, rifle, fire hat, and stethescope. The 10 feminine items are: iron, needle and thread, stove, dishes, broom, baby bottle, desk and blackboard, pitcher and glasses, hairbrush and mirror, and apples and knife.

For the present research a knowledge score is used. This score is the number of items out of 20 the subject sorts into the box corresponding to the traditional social stereotype. It is computed by adding all the answers "correct" for the free choice round of sorting with those which were "correct" on the forced choice round.

A flexibility score, derived by counting the number of items out of 20 which were put in the both box (on the free choice round) is also used. An item is only scored as flexible, if, on the forced choice round, the subject chooses the stereotypically "correct" box. It was reasoned that subjects cannot be considered flexible in their use of stereotypes if they do not demonstrate knowledge of the

stereotypes.

Edelbrock and Sugawara (1978) retested 18 boys and 18 girls with the SERLI after a three week interval. Separate reliability coefficients were computed for own and opposite sex role knowledge and for sex of experimenter (same or opposite of the child's sex). Test-retest reliability coefficients ranged from .61 to .69, all significant beyond the .001 level.

On The Sex Stereotype Measure (SSM) (Williams et al, 1975) children are shown silhouettes and told brief stories with a "theme" pertaining to sex-typed psychological traits. As a preliminary step in developing this measure, Williams and Bennett (1975) used the Adjective Check List to study sex stereotypes held by college students. A particular adjective was considered masculine or feminine if at least 75% of subjects of both sexes had indicated that that adjective was a characteristic of one of the sexes. Of 300 adjectives, 33 adjectives met this criteria for masculine stereotypes, and 30 for feminine stereotypes.

The present research uses a modified version of the Sex Stereotype Measure in which children are shown two sets of 16 pictures. Each picture depicts a silhouette of a man and a woman in similar postures, with posture and position varying from picture to picture. In a free choice task with the first set, children are told "stories" about each picture, stories which involve an adjective or a trait. Then they are asked to choose who the story describes: the male, the female, or both. For example, one story is as follows: "One of these people is emotional. They cry when something good happens as

well as when everything goes wrong. Who is the emotional person? This one (pointing to the silhouette of the male), this one (pointing to the female) or both of them?" In a forced choice task with the second set of pictures, the same 16 stories depicting the same traits are retold. Here, however, the children are asked "what you think most people think" and are forced to choose between males and females. This measure takes about 10 minutes to administer.

In the present research, there are 16 traits described: 8 masculine and 8 feminine. The masculine traits are: adventurous, ambitious, stable, confident, messy, mean, aggressive, and coarse. The feminine traits are: soft-hearted, affectionate, gentle, appreciative, emotional, rattlebrained, dependent, and weak. Some traits are described in more simple words. For example, for coarse, the question is "Who uses bad words?" For appreciative, the question is "Who says thank you when you give them a present?"

As on the SERLI, scores of knowledge and flexibility are used. The knowledge score is computed by summing the number of adjectives out of 16 for which the subject knew the social stereotype on the forced choice round. The flexibility score is computed by summing the number of adjectives attributed to both sexes out of 16 on the free choice round. As on the SERLI an item is only scored as flexible if the social stereotype for that item is known on the forced choice round.

A second flexibility score, a ratio obtained by dividing the first flexibility score by the knowledge score, was developed upon preliminary examination of the mean responses to this measure. It was

reasoned that there were meaningful differences between, for example, the performance of a subject who knew 12 stereotypes and was flexible on 6 and the performance of a subject who knew 7 stereotypes and was flexible on 6. The flexibility ratio was developed to capture this difference. The first subject in this example would receive a flexibility ratio of 0.50, while the second would receive a flexibility ratio of 0.86.

The original measure was developed and tested in two major studies, Williams et al (1975) and Best et al (1977). No reliability testing was done.

Measures of sex-typing: sex role preference. Two tests of sex-typed preference are used. A peer sociometric measures children's choices of desired peers. The final section of the SERLI measures children's preferred child activities and adult occupations.

There are numerous variations of a peer sociometric task throughout the literature, used to test aspects of social development such as sex-role stereotyping and development of friendship (e.g. La Freniere, 1983; Moore & Updegraff, 1964). For the purposes of this research, children are shown a group photograph of their class. They are then asked three questions: Who they would like to sit beside during story time, who they would like to play outside with, and who they would like to do anything they wanted with. For each question, they must choose their first, second and third choices of peers. After the first choice is given, the second is elicited by saying to the subject "Let's say (name of first choice) was away, who would you like to (e.g.) sit beside during story time?" The third choice is

elicited in a similar manner, with the subject's second choice named. This measure takes approximately five minutes to administer.

The score derived from this test is computed by assigning weights to childrens' choices, and then summing the items for which children nominated someone of their own sex. A child's first choice is given a weight of 3, the second choice a weight of 2, and the third choice a weight of 1. Thus, with three questions and three possible choices (with different weights) for each question, the maximum possible score of own sex items is 18.

A section of the SERLI, sex role adoption, measures childrens' preferences regarding activities and occupations. There are two parts to this section. On the child ranks part, 10 line drawings showing a child performing various activities are placed on a table. Five of the drawings depict activities which are considered sex-typed such as a boy playing baseball, and five are of reverse sex-typed activities such as a boy cooking. The same activites are shown to both male and female subjects; however, the child in the drawings is always of the same sex as the subject. Therefore a stereotyped activity for males is a counter-stereotyped activity for females, and vice versa. After it has been ascertained that subjects understand what is depicted in the drawings, they are asked to choose their favourite activity, next favourite activity and so on, until all the activities have been ranked. The activities are: Hammering, digging, playing baseball, car play, boxing, ironing, sewing, cooking, dishwashing and sweeping.

The adult ranks part, administered after the child activites have

all been selected, is very similar to the child ranks part except that the line drawings are of adults, and the drawings depict adult occupations (e.g. teacher, soldier) instead of child activities. These pictures, too, are ranked by the subject. The adult occupations are: Sawing, policeman, soldier, fire fighter, doctor, feeding baby, teacher, serving juice, combing hair, and making a pie. These two sections take about 10 minutes to administer.

For the purposes of this research, the score computed for each part, child ranks and adult ranks, measures "adoption" of sex roles. The scores are computed by summing the ranks of the sex-typed activites. A subject who has very stereotyped preferences might choose sex-typed activities as the first five choices and thus would get a score of 1 + 2 + 3 + 4 + 5 = 15. A subject with less stereotyped preferences might choose sex-typed activities as first and second choices, and the three remaining sex-typed activities sixth, eight and ninth, receiving a score of 1 + 2 + 6 + 8 + 9 = 26. It can be seen that the higher the score (up to a possible 55), the less stereotyped the choices.

In examining the test-retest reliability of this section of the SERLI, Edelbrock and Sugawara (1978) found that when sex of child and tester were coincident, the reliability coefficients were high, $\underline{r} = .90$, $\underline{p} < .001$ for the child section, $\underline{r} = .84$, $\underline{p} < .001$ for the adult section. When sex of child and tester were opposite, the reliability coefficients were lower, $\underline{r} = .43$, $\underline{p}$ = n.s. for the child section, $\underline{r} = .57$, $\underline{p} < .05$ for the adult section.

In brief, these are the relevant scores:

1. Gender Salience: (a) photographs matching by sex, (b) drawings matching by sex, (c) photographs preference by sex, (d) drawings preference by sex.

2. Sex Role Knowledge: (a) SERLI knowledge (of sex-typed activities and occupations), (b) SSM knowledge (of sex-typed traits).

3. Sex Role Flexibility: (a) SERLI flexibility, (b) SSM flexibility, (c) SSM flexibility ratio.

4. Sex Role Preference: (a) peer sociometric, (b) SERLI adoption, child activity ranks, (c) SERLI adoption, adult occupation ranks.

Results

Analyses were performed to examine possible effects of the inconsistency in order of administration of the two versions of the Gender Salience Test, such that order was counterbalanced only at the second school. At the second school 23 children received the drawings first, and 19 children received the photographs first. With the subjects at the second school, age (children aged 5,0 to 8,11 years vs. children aged 9,0 to 12,11) by test order (photographs first vs. drawings first) by test version (photographs vs. drawings) analyses of variance were performed with the last factor repeated. One analysis was performed for each Gender Salience score, matching by sex and preference by sex.

There were no significant order effects or interactions of order with age or with test version for the preference by sex analysis (see Table A-1, Appendix A). For the matching by sex analysis (see Table A-2) the only significant effect was an order by test version interaction, $F(1, 38) = 9.72$, $p < .01$, indicating an order effect. Examination of the means revealed that the order effect was due to practice, that is, children matched less by sex on whichever test version they received second. Tukey post hoc tests failed to yield a significant difference between orders of a test version, that is, between those who received photographs first ($M = 2.53$) and those who received them second ($M = 0.78$) or between those who received drawings first ($M = 2.09$) and those who received them second ($M = 0.74$). Paired t-tests (for correlated samples) yielded significant

differences in performance on the test version subjects received second, that is between photographs (M = 2.53) and drawings (M = 0.74) when photographs were first, $t(38) = 3.01$, $p < .01$, and between photographs (M = 0.78) and drawings (M = 2.09) when drawings were given first, $t(38) = 2.47$, $p < .05$.

No significant differences in performance on any of the scores of the Gender Salience Test, or the scores of the sex-typing variables were found across schools, in school by age (younger vs. older) analyses of variance. Therefore, the data from subjects at both schools were analyzed together.

First Goal: Comparing the Two Versions of the Gender Salience Test

It was predicted that (a) the corresponding sections of the two versions of the Gender Salience Test (e.g. photographs matching section and drawings matching section) would behave similarly on tests of internal consistency, and (b) the corresponding sections would correlate significantly.

The matching by sex score. The items of this section of each test version were analyzed for internal consistency as a scale. Consistency was examined by computing mean responses to each item, item-total correlations and the coefficient alpha of the scale (Anastasi, 1982). The alpha coefficient examined was Cronbach's alpha, or Kuder-Richardson alpha, which are equivalent for dichotomous data (Cronbach, 1951).

On the drawings, where activity was coded as "0" and gender as "1", there were more activity than gender matches (the mean of the

matching items was .098). The item-total correlations were high, ranging from .47 to .85. The coefficient alpha was also high at .92. Thus, these items formed a scale, but because they shared a great deal of variance, they gave redundant information, with each item not necessarily contributing unique information.

On the photographs, with "0" representing activity and "1" representing gender, examination of mean responses for the 12 items also revealed that activity was used more than gender for matching choices (the mean of the items was .138). The inter-item correlations were high, ranging from .53 to .80. The coefficient alpha was also high (.93), indicating that the items formed a scale, but that here too there was redundant information.

The two versions of the matching section yielded virtually identical scales, with respect to internal consistency. Further, the internal consistency of the scales was similar to past research (Serbin & Sprafkin, in press).

To examine the relationship between test versions, correlation coefficients were calculated between the matching by sex scores of the photographs and the drawings, separately by age group and sex. Restricted variance occurred on this variable because there were fewer and fewer gender responses (scores of "1") in the older age groups. Restricted variance might also have occurred because of the practice effect; children, except for age group 1 females, switched quickly to classification by activity on the drawings, which over both schools were usually administered second. Therefore, correlation coefficients were calculated for only the youngest two age groups, the ones with

sufficient variance to perform correlational analyses. There were no significant differences between the coefficients of three age by sex cells, so the scores of these subjects were analyzed together, yielding a correlation coefficient which was significant, $r = .30$, $p < .05$. The correlation for age group 1 girls was significantly higher than others, $r = .86$ $p < .01$ (see Table A-3), providing some support for a relationship between these two variables.

The preference by sex score. On this section, with five items on the photographs and six items on the drawings, subjects could choose to affiliate by activity, gender, or randomly. In analyzing internal consistency on the drawings, examination of mean responses (where "0" represented affiliation by activity or randomly, and "1" represented affiliation by sex) indicated that children chose to affiliate by sex slightly more than by another dimension (the mean for the items was .64). The item-total correlations ranged from .29 to .41. The coefficient alpha was .62.

On the photographs, examination of mean responses for each item indicated an even balance between choosing to affiliate by sex or another dimension (the mean for the items was .50). Item-total correlations ranged from .30 to .41. The coefficient alpha was virtually identical to that of the drawings (.60) and to past research (Serbin & Sprafkin, in press). These reliability coefficients were slightly lower than the coefficient level (.70) considered by some researchers to be the minimum acceptable level to use a test in prediction or classification (Walker, 1985). Walker does say, however, that coefficient alphas just under this level suggest that

the researcher is on the right track to consider items as sharing variance and being part of a scale. Given that these are experimental scales, items were considered to share variance, and to contribute to a scale.

As on the matching section, similar results with respect to internal consistency were found on the photographs and the drawings, results which were also similar to previous research. It is likely that the affiliation section would be even more internally consistent if it included more items, as reliability is a function of length (Ferguson, 1971). It is also likely that additional items would not be as redundant as items on the matching section; with preference items the relative attractiveness of the two dimensions may vary with each set of stimuli.

To examine the relationship between test versions, correlation coefficients were computed between the preference by sex scores of the two forms of the test, separately by age by sex cells. There were no significant differences between the correlation coefficients of the eight cells, so the scores of all the subjects were analyzed together, yielding a significant correlation coefficient, $r = .42$, $p < .001$ (see Table A-4 for cell correlations). Thus, as hypothesized, there was a significant relationship between the alternate versions of the test on this section. The existence of variance in each cell of this variable also illustrated its function as a measure of individual differences.

It was predicted that the drawings preference by sex scores would be higher than the photographs preference by sex scores. To examine any test differences, an age by sex by test version (photographs vs.

drawings) analysis of variance was performed on the preference by sex score, with the last factor repeated. This analysis was done after determining that there were no violations of assumptions underlying repeated measures analysis, particularly of the assumption of homogeneity of regression, or symmetry (Tabachnik & Fidell, 1983). Because there were five items on the photographs and six items on the drawings, the scores were proportionalized for the purpose of comparison.

There was a significant main effect of test version, $F(1,107) = 21.12$, $p < .001$, with no significant interactions of test version with age, sex or age and sex (See Table A-5). As predicted, children made preference choices by the dimension of gender more on the drawings (mean = 0.64) than on the photographs (mean = 0.50. See Tables 4 and 5 for means and standard deviations of the preference by sex scores.)

Second Goal: Assessment of Cognitive and Affective Aspects of Measures

It was hypothesized that matching by sex measures a primarily cognitive process of sex-typing, while preference by sex includes an affective component. From this hypothesis, specific predictions were made.

The first prediction was that matching by sex would be relatively unrelated to preference by sex. To examine this prediction, the correlation coefficients between matching by sex and preference by sex were computed, separately for each test version.

For the drawings, this correlation was calculated only for the first three age groups with sufficient variance in matching by sex.

There were no significant differences in the coefficents of six age by sex cells, in comparing the two sections, so the scores were analyzed together, yielding an average correlation coefficient which was not significant, r = .11, p = n.s. (see Table A-6).

For the photographs, for the youngest two age groups in which there was variance, there were no significant differences between correlation coefficients, so the scores were analyzed together, yielding a significant correlation, r = .28, $p < .05$ (see Table A-7).

Thus, as predicted, matching by sex and preference by sex, as measured by the drawings, were not signficantly related. The correlation between these two variables was significant as measured by the photographs, but was still fairly low. These correlations indicated that the two scores measure somewhat distinct aspects of the use of gender; one is conceptualized as primarily cognitive, the other, affective.

The second prediction was that the matching by sex score would decrease with age. For the drawings, this prediction was tested using an age by sex analysis of variance. This analysis violated the assumption of homogeneity of variance underlying ANOVA (Pagano, 1981), Bartlett's Box $F(7, 10015) = 18.62$, $p < .001$. Because of this violation, the possibility that the matching score was unsuitable for parametric testing was considered. It was felt, however, that given the robustness of the F test, analysis of variance was meaningful, provided results were discussed within the context of the violation. Nevertheless, chi-squared analysis was performed in addition, using a mode split, thus dividing the scores into "0" and "not 0."

There was a significant main effect of age, $F(3,107) = 9.26$, $p < .001$, and a significant age by sex interaction, $F(3,107) = 4.48$, $p < .01$ on drawings matching by sex (see Table A-8). Tukey post hoc tests revealed that the youngest age group ($M = 3.09$) matched significantly more by sex than the other age groups (M, age group 2 = 0.75; M, age group 3 = 0.59; M, age group 4 = 0.13). Tukey tests also revealed that the youngest females ($M = 4.82$) matched significantly more by sex than the rest of the females (M, age group 2 = 0.52; M, age group 3 = 0.92; M, age group 4 = 0.08). There were no other significant differences between means in meaningful comparisons (Keppel, 1982). Examination of the mean matching by sex responses of males in the four age groups revealed less matching by sex with age even though the mean decreases with age were not statistically significant (for cell means, see Table 2). Even the youngest males ($M = 1.36$), however, did not make many classification choices by the dimension of gender.

The relationship between matching by sex and age group was also examined by the chi-squared statistic; separately for each sex. Scores were considered to be "0" or "not-0". The analysis was significant for girls (see Table A-9), χ^2 (3, $N = 58$) = 12.67, $p < .01$. An age decrement was seen for girls: 73% had matched somewhat by sex at age 1, 24% at age 2, 38% at age 3, 8% at age 4. The analysis was not significant for boys (see Table A-10), χ^2 (3, $N = 57$) = 5.94, p = n.s. For boys, the percentages of matching by sex were 54%, 53%, 25%, and 18% for age groups 1 to 4 respectively.

The predicted developmental decrease in matching by sex in older

Table 2

Drawings Matching by Sex: Cell Means and Standard Deviations

Group	N	Mean	SD
Males	57	0.72	1.46
Age group			
1	11	1.36	2.62
2	19	1.00	1.33
3	16	0.31	0.60
4	11	0.18	0.40
Females	58	1.33	3.10
Age group			
1	11	4.82	5.25
2	21	0.52	1.25
3	13	0.92	2.18
4	13	0.08	0.28
Both sexes	115	1.03	2.42
Age group			
1	22	3.09	4.42
2	49	0.75	1.30
3	29	0.59	1.52
4	24	0.13	0.34

Note: The range of this score is from 0 - 12

age groups was found, especially for girls. This reflects the cognitive-developmental aspect of this variable. The floor effect on matching by sex may have accounted for the lack of a clear decrement with age for males. It is not clear why this floor effect didn't occur for the youngest girls. Possibly the low group means overall were due to the practice effect, where most subjects received drawings second. Cell sizes were too small where subjects got the drawings first to assess this effect.

The ANOVA on photographs matching by sex also suffered from heterogeneity of variance across age and sex groups, Cochran's $C(13,8) = 0.39$, $p < .001$ (approx. Bartlett's Box F could not be calculated because there was no variance in one cell, age group 4 girls, because they all matched exclusively by activity). With this limitation an age by sex ANOVA was done, as well as a chi-square analysis.

There was a main effect of age on the photographs, $F(3,107) = 8.21$, $p < .001$. There was no significant effect of sex, or interaction between age and sex (see Table A-11). Tukey post hoc tests revealed that the youngest age group ($M = 3.82$) matched significantly more by sex than all the other age groups (M, age group 2 = 1.80; M, age group 3 = 0.38; M, age group 4 = 0.04; see Table 3 for means).

In the chi-square analysis, there was a significant relationship between age and matching by sex for girls (see Table A-12), χ^2 (3, N = 58) = 11.73, $p < .01$, and a marginally significant relationship for boys (see Table A-13), χ^2 (3, $N = 57$) = 6.27, $p < .10$). With increasing age, there was less matching by sex. For girls, 63%

Table 3

Photographs Matching by Sex: Cell Means and Standard Deviations

Group	N	Mean	SD
Males	57	1.49	3.35
Age group			
1	11	3.91	5.28
2	19	1.89	3.59
3	16	0.31	0.60
4	11	0.09	0.30
Females	58	1.43	2.93
Age group			
1	11	3.73	4.38
2	21	1.71	3.08
3	13	0.46	0.88
4	13	0.00	0.00
Both sexes	115	1.46	3.13
Age group			
1	22	3.82	4.74
2	40	1.80	3.30
3	29	0.38	0.73
4	24	0.04	0.20

Note: The range of this score is from 0 - 12

sometimes matched by sex in age group 1, 43% in age group 2, 31% in age group 3, and 0% in age group 4. For boys, 54% sometime matched by sex in age group 1, 42% in age group 2, 25% in age group 3, and 9% in age group 4. The analysis of responses to the photographs provided clearer support for the prediction that matching by sex decreases with age.

The third prediction was that the preference by sex score would not change with age. It was suggested that boys' scores would be higher than girls'. Some of the results of an age by sex by test version repeated measures ANOVA performed on this variable have been presented earlier in an analysis of differences in test versions (see Table A-5). Although there was a main effect of version, there were no age or sex main effects but there was an interaction of age and sex, $F(3, 107) = 2.78$, $p < .05$. For the drawings, Tukey post hoc tests revealed that there were no significant meaningful cell differences. Thus, boys' scores were not higher than those of girls, and children of different ages did not differ in their mean responses (see Table 4).

For the photographs, Tukey tests revealed that two comparisons were significant. Age group 1 females ([M = 0.71] scores were proportionalized, so a score of "1.00" would indicate exclusive use of gender in preference) had significantly higher preference by sex scores than age group 2 females (M = 0.39). Age group 2 males (M = 0.65) also had significantly higher preference by sex scores than age group 2 females. Examination of all the means (see Table 5) revealed that age group 1 females and age group 2 males used gender more than

Table 4

Drawings Preference by Sex: Cell Means and Standard Deviations

Group	N	Mean	SD
Males	57	0.61	0.30
Age group			
1	11	0.59	0.40
2	19	0.62	0.25
3	16	0.68	0.26
4	11	0.52	0.31
Females	58	0.67	0.27
Age group			
1	11	0.77	0.21
2	21	0.62	0.26
3	13	0.69	0.32
4	13	0.63	0.26
Both sexes	115	0.64	0.28
Age group			
1	22	0.68	0.32
2	40	0.62	0.25
3	29	0.68	0.28
4	24	0.58	0.29

Note: The range of this score is from 0.00 to 1.00

Table 5

Photographs Preference by Sex: Cell Means and Standard Deviations

Group	N	Mean	SD
Males	57	0.52	0.32
Age group			
1	11	0.44	0.39
2	19	0.65	0.34
3	16	0.47	0.26
4	11	0.42	0.23
Females	58	0.48	0.30
Age group			
1	11	0.71	0.27
2	21	0.39	0.26
3	13	0.45	0.34
4	13	0.48	0.29
Both sexes	115	0.50	0.31
Age group			
1	22	0.57	0.36
2	40	0.52	0.32
3	29	0.46	0.29
4	24	0.45	0.26

Note: The range of this score is from 0.00 to 1.00

the other cells; the other cells used gender for about 40% to 50% of their preference choices. This is not evidence of any specific pattern; it does not indicate patterns of responding according to age or sex groups. The lack of significant developmental changes in preference by sex, both versions, suggests it could be a useful measure of individual difference.

Relationship of Gender Salience to measures of sex-typing. To examine which scores on the sex-typing variables are most strongly related to performance on the salience variables, multiple regression analyses were performed. There was no evidence of violation of the assumptions underlying linear multiple regression, including linearity, homoscedasticity and the existance of outliers (Tabachnik & Fidell, 1983).

Preliminary examination of the sex-typing variables revealed that two were unsuitable for further analysis. One was SERLI knowledge; subjects knew nearly all the stereotypes measured by this test. Therefore, this variable yielded restricted response variance and was not included in analysis. The other variable was SSM flexibility. Since it was decided to use the SSM flexibility ratio, SSM flexibility could not be used, because these two variables were mechanically redundant and correlated highly, $r = .90$, $p < .001$.

The correlation between SERLI child ranks and SERLI adult ranks was also checked; since these are very similar tasks, there was the possibility that they would correlate too highly to use both. The correlation coefficient was found to be low, $r = .185$, $p < .10$, so both variables were used. Thus, the remaining six sex-typing

variables were (a) Sex Stereotype Measure (SSM) knowledge, (b) Sex Role Learning Inventory (SERLI) flexibility, (c) SSM flexibility ratio, (d) the peer sociometric, (e) SERLI adoption - adult ranks, and (f) SERLI adoption - child ranks.

Four main regressions were performed, one for each of the four criterion variables: drawings matching by sex, photographs matching by sex, drawings preference by sex, photographs preference by sex.

For each analysis, age (as a continuous variable), sex (as a "dummy" variable; this is a way of handling dichotomous variables to use them in regression analysis (Kleinbaum & Kupper, 1978) and the interaction between age and sex were used as independent variables in addition to the sex-typing variables. Age, sex, and their interaction were forced into the regression equation ahead of the sex-typing variables, in order to "partial out" the variance associated with these variables, and to assess the effects of the sex-typing variables independent of the effects due to age and sex.

Since there was no firm theoretical basis from which to consider the relative importance of the sex-typing variables, the order of entry into the regression equations was determined empirically, according to predictive power of the variables (Kleinbaum & Kupper, 1978; Tabachnik & Fidell, 1983). After the sex-typing variables, "interaction variables" were entered; these were variables computed to account for potential interactions between the sex-typing variables and age or sex. Because there were so many variables, results are reported only for those which are significant and marginally significant.

The fourth prediction was that measures of sex role knowledge and flexibility would account for variance in matching by sex. Measures of sex role preference would not account for variance in matching by sex.

With drawings matching by sex as the dependent variable, age, forced in on the first "step", accounted for a significant proportion of the variance, $R^2 = .13$, $F(1,113) = 16.62$, $p < .001$. Sex and the interaction between age and sex, forced in next, contributed significantly to explaining the variance. The regression summary table showed that the interaction accounted for this. The squared semi-partial correlation or sr_i^2 measures the unique amount of variance explained by a variable (Tabachnik & Fidell, 1983). For the interaction between age and sex, $sr_i^2 = .033$, $F(1,93) = 5.2$, $p < .025$.

On step 3, SSM knowledge entered the equation, acounting for a significant amount of variance in drawings matching by sex, $sr_i^2 = .033$, $F(1,93) = 5.2$, $p < .025$. At this point, the overall F was significant, $R^2 = .21$, $F(4,110) = 7.33$, $p < .01$. The correlation coefficient between the dependent variable and this predictor, $r = -.32$, $p < .01$ indicated that with greater knowledge of sex-typed traits, children matched significantly less by sex. No other sex-typing variables, including the sex role flexibility scores, accounted for variance in drawings matching by sex (see Table 6).

Three interaction variables contributed significantly to prediction of drawings matching by sex: (a) the interaction between SSM knowledge and age, $sr_i^2 = .057$, $F(1,93) = 8.98$, $p < .005$; (b) the interaction between SSM knowledge and sex, $sr_i^2 = .045$, $F(1,93) =$

Table 6

Coefficients of a Linear Multiple Regression Analysis with Drawings Matching by Sex as the Dependent Variable

Variable	sr_i^2 *	r
Age	.13***	-.36
Sex	.016	-.13
Interaction	.033*	-.13
SSM knowledge	.033*	-.32
Peer sociometric	.012	-.21
SERLI adult ranks	.012	-.13
SSM flex ratio	<.001	-.09
SERLI flexibility	<.001	-.13
SERLI child ranks	<.001	.05
Interactions:		
SSM knowledge with age	.057**	-.35
SSM knowledge with sex	.045**	-.12
Child ranks with sex	.039*	.06

Note: N = 115. Total R^2 = .41, $F(21, 93) = 3.05$, $p < .001$

*sr_i^2 = Squared semipartial correlation coefficient. This is the unique amount of variance a variable accounts for on its step of entry into the equation.

***$p < .001$

**$p < .01$

*$p < .05$

7.09, $p < .01$; and (c) the interaction between SERLI child ranks and sex, $sr_i^2 = .039$, $F(1,93) = 6.15$, $p < .025$.

To explore the interactions with sex, separate regressions were performed for males and females, forcing age in first. For males, after age, which was significant, child ranks, entering on the second step, was the only sex-typing variable which contributed significantly in explaining the variance associated with drawings matching by sex, $sr_i^2 = .185$, $F(1,43) = 15.6$, $p < .001$. The correlation between SERLI child ranks and drawings matching by sex, $r = .51$, $p < .01$, revealed that with more stereotyped preferences for sex-typed activities, boys matched significantly less by sex.

For females, after age, which was significant, SSM knowledge, entering on the second step, was the only sex-typing variable which significantly explained variance in drawings matching by sex, $sr_i^2 = .114$, $F(1,46) = 11.15$, $p < .005$.

In attempting to account for the age by sex interaction seen with SSM knowledge, it did not seem wise to perform separate regressions for each age by sex cell, because the cell sizes seemed insufficiently large for meaningful regression analysis. Therefore, correlation coefficients were computed, separately for the six age by sex cells with sufficient variance, between drawings matching by sex, and SSM knowledge (see Table 7). The source of the SSM knowledge by age interaction seemed to reside in age group 3. For males, there was a positive correlation between drawings matching by sex and SSM knowledge at this age, $r = .49$, $p < .05$, and for females, there was a negative correlation at this age, $r = -.64$, $p < .05$. The

Table 7

Age by Sex Cell Correlations: Drawings Matching by Sex and SSM Knowledge[a]

Age by sex Cell	df	r
Males		
1	9	-.18
2	17	.10
3	14	.49* [b]
Females		
1	9	-.56
2	19	-.32
3	11	-.64* [b]

[a]N = 91

[b]these two groups differ significantly from each other, $p < .01$

*$p < .05$

difference between these correlations was significant beyond the .01 significance level.

Overall, for girls, the more aware they were of stereotyped traits, the less they matched by sex (as before). For most boys, SSM knowledge scores were independent of their drawings matching by sex score. In age group 3, however, the more aware boys were of stereotyped traits, the more they matched by sex.

With photographs matching by sex as the dependent variable, age, forced in on the first step, accounted for a significant amount of the variance, $R^2 = .19$, $F(1,113) = 25.96$, $p < .001$. Sex and the interaction between age and sex, forced in next, did not account for any additional variance.

On the third step, SSM knowledge entered the equation, explaining a marginally significant amount of the variance associated with photographs matching by sex, $sr_i^2 = .023$, $F(1,94) = 3.49$, $p < .10$. At this point overall F was significant, $R^2 = .21$, $F(4,[illegible]) = 7.3$, $p < .001$. The correlation between the dependent variable and the predictor, SSM knowledge, $r = -.38$, $p < .01$, indicated that the more sex-typed traits children knew, the less they matched by sex. This was consistent with results from the drawings. None of the other sex-typing variables, including the sex role flexibility scores, explained variance in photographs matching by sex (see Table 8).

One interaction variable, the interaction between BERLI adoption - child ranks, and sex, explained a significant amount of variance in photographs matching by sex, $sr_i^2 = .08$, $F(1,94) = 12.13$, $p < .001$.

Table 8

Coefficients of a Linear Multiple Regression Analysis with Photographs Matching by Sex as the Dependent Variable

Variable	sr_i^2 *	r
Age	.187***	-.43
Sex	<.001	.01
Interaction	<.001	-.25
SSM knowledge	.023+	-.38
Peer sociometric	.01	-.23
SSM flex ratio	.01	-.12
SERLI child ranks	.007	.14
SERLI adult ranks	.009	-.10
SERLI flexibility	.001	-.23
Interactions:		
Child ranks with sex	.08***	.01

Note: N = 115. Total R^2 = .38, $F(20, 94) = 2.88$, $p < .001$

*sr_i^2 = Squared semipartial correlation coefficient. This is the unique amount of variance a variable accounts for on its step of entry into the equation

***$p < .001$

+$p < .10$

In order to examine this interaction, additional regressions were performed, separately for males and females, forcing age in first.

For males, after age, which was significant, SERLI child ranks accounted for a significant amount of the variance in photographs matching by sex, entering the equation on the second step, sr_i^2 = .16, $F(1,43) = 13.54$, $p < .001$. No other variables were significant. The correlation between SERLI child ranks and matching by sex for males, $r = .52$, $p < .001$, indicated that with more stereotyped activity preference choices on the SERLI child ranks, boys matched significantly less by sex.

For females, child ranks did not explain a significant amount of the variance in photographs matching by sex, whereas SSM knowledge did, entering the equation on the second step after age, $sr_i^2 = .092$, $F(1,44) = 6.83$, $p < .025$. No other variables proved significant (except age). SSM knowledge was significant for girls but not for boys even though a SSM knowledge by sex interaction was not indicated. With the data of both boys and girls in the equation, SSM knowledge had been marginally significant. This effect then became significant for girls, possibly because the "confounding" influence of boys' scores was removed.

These two analyses, with matching by sex as the dependent variable, provided some support for the prediction that measures of knowledge are significantly related to Gender Salience matching by sex. The results were clearer with photographs matching by sex as the dependent variable, because there were fewer interactions. Measures of sex role flexibility did not account for any variance in

either salience variable. Sex role knowledge accounted for variance in matching by sex, however, primarily for girls. For boys, the results were much less clear; sex role preferences seemed to play a role in addition to age and sex role knowledge in accounting for variance in the matching by sex score.

The fifth prediction was that measures of sex role preference (regarding peers, activities and occupations) would account for variance in preference by sex. Measures of sex role knowledge and flexibility would not account for variance in preference by sex.

With drawings preference by sex as the dependent variable, in regression analysis, the variables of age, sex, and their interaction, forced in together before the sex-typing variables, did not explain a significant amount of the variance. On step 2, the peer sociometric entered the equation, explaining a significant amount of the variance in drawings preference by sex, $sr_i^2 = .064$, $F(1,93) = 7.63$, $p < .01$. The correlation coefficient between this predictor and the dependent variable, $r = .21$, $p < .05$ indicated that subjects with more sex-typed peer choices had significantly higher preference by sex scores.

On step 3, SERLI adult ranks entered the equation, accounting for a significant amount of variance associated with drawings preference by sex, $sr_i^2 = .038$, $F(1,93) = 4.53$, $p < .05$. The overall F was significant at this point, $R^2 = .123$, $F(5,109) = 3.03$, $p < .025$. The correlation coefficient between this predictor and the dependent variable, $r = -.26$, $p < .01$, indicated that subjects with more sex-typed occupation choices had significantly higher preference by sex scores. No other variables, including interaction variables,

contributed significantly in explaining the variance associated with drawings preference by sex (see Table 9). Thus, this analysis indicated that two sex role preference variables accounted for variance in drawings preference by sex. The correlation between the two predictors, the peer sociometric and adult ranks, was -.18, $p < .10$ (see Table A-14).

With photographs preference by sex as the dependent variable, on the first step, age, sex and their interaction, forced into the equation, did not explain a significant amount of the variance.

On step 2, SERLI child ranks entered the equation, explaining a significant amount of the variance, $sr_{.i}^2 = .056$, $F(1,93) = 6.5$, $p < .025$. On step 3, SERLI adult ranks entered the equation, accounting for a marginally significant amount of variance, $sr_{.i}^2 = .03$, $F(1,93) = 3.49$, $p < .10$. Overall F was significant at this point, $R^2 = .118$, $F(5,109) = 2.92$, $p < .025$. The correlations between each of these predictors and photographs preference by sex, $r = -.22$, $p < .05$ for each comparison, indicated that with more sex-typed activity or occupation choices, subjects had significantly higher preference by sex scores. The correlation between SERLI child and adult ranks was .185, $p < .10$ (see Table A-14). No other sex-typing variables significantly contributed to the variance in predicting preference by sex as measured by the photographs. The interaction variables also did not contribute significantly to the variance (see Table 10).

Both these analyses showed clear support for the prediction that measures of sex role preference, and not measures of sex role

Table 9

Coefficients of a Linear Multiple Regression Analysis with Drawings Preference by Sex as the Dependent Variable

Variable	sr_i^{2} *	r
Age	.01	-.10
Sex	.01	-.10
Interaction	<.001	.02
Peer sociometric	.064**	.21
SERLI adult ranks	.038*	-.26
SERLI flexibility	.013	.044
SSM flex ratio	.003	-.10
SSM knowledge	< .001	-.06
SERLI child ranks	< .001	-.05

Note: N = 115. Total R^2 = .22, $F(21, 93)$ = 1.23, p = n.s.

*sr_i^2 = squared semipartial correlation coefficient. This is the unique amount of variance a variable accounts for on its step of entry into the equation.

**p < .01

*p < .05

Table 10

Coefficients of a Linear Multiple Regression Analysis with Photographs Preference by Sex as the Dependent Variable

Variable	sr_i^2 *	r
Age	.029	-.17
Sex	.003	.05
Interaction	<.001	-.14
SERLI child ranks	.056*	-.22
SERLI adult ranks	.030+	-.22
SSM flex ratio	.009	-.16
Peer sociometric	.006	.11
SSM knowledge	< .001	-.11
SERLI flexibility	< .001	-.12

Note: N = 115. Total R^2 = .20, $F(21, 93)$ = 1.11, p = n.s.

*sr_i^2 = squared semipartial correlation coefficient. This is the unique amount of variance a variable accounts for on its step of entry into the equation.

*$p < .05$

+$p < .10$

knowledge or flexibility, accounted for a signficant amount of variance in preference by sex, as measured by both the photographs and the drawings.

The sixth prediction was that the sex role preference variables would account for variance in preference by sex more strongly than the knowledge variables would account for variance in matching by sex, because more individual variability was expected on the preference by sex score. There was support for this prediction. Variance in preference by sex was more clearly explained than variance in matching by sex. All three of the sex role preference variables in the data set contributed significantly to predicting variance in the preference by sex score. Two sex role preference variables contributed to explaining the variance associated with each salience variable (i.e. two predicted drawings preference by sex and two predicted photographs preference by sex). Neither age nor sex were significant contributors to explaining the variance associated preference by sex.

In summary, there was support for the prediction that preference by sex yielded individual variability in responding. In contrast, the matching by sex score did not. Older children matched more by sex than did younger children. There were very different patterns for males and females; and there were several variables which interacted with age and sex.

Discussion

This study was designed to examine some cognitive and affective aspects of sex-typing. There were two major goals. The first was to compare the two forms of the Gender Salience Test: the original photographs and the new drawings. The second was to examine evidence for the hypothesis that the two scores of the Gender Salience Test measure distinct aspects of sex-typing, with one measuring cognitive processing, and the other including an affective component. Within this hypothesis, specific predictions were tested which related to one or more properties of cognitive or affective processing.

Comparing the Two Forms of the Gender Salience Test

The two versions were compared directly by examining the internal consistency of each, by calculating the correlation coefficient between corresponding sections, and by performing a repeated measures analysis of variance on the preference by sex scores. The two versions were also compared in the context of other questions. For example, in analyzing whether there was a developmental decrease on the matching by sex score, both versions were used, and consequently both versions could be compared with respect to the developmental patterns found. Each section of the Gender Salience Test comprised a scale, and the corresponding scales had very similar properties; properties which were also similar to the scales in past research (Serbin & Sprafkin, in press).

Because the matching by sex variable produced restricted response

variance in the older age groups it was somewhat difficult to assess. Using only data from age by sex cells with variance, a significant but low correlation was seen between the two versions for three cells, and a significantly higher correlation was seen for age group 1 girls. Thus, there was evidence that the two forms of the test were related.

In measuring group differences on Gender Salience, the photographs matching by sex score produced a clearcut developmental pattern, with children matching less by sex as they got older. On drawings matching by sex, the dimension of activity was used for classification choices to a great extent. Activity was used almost exclusively by children, except for age group 1 girls, who matched by gender significantly more than all the other groups (thus producing the significant age by sex interaction). It is not clear if greater use of the activity dimension on the drawings was due to a practice effect. Most children in the sample (92 of a total 115) received the photographs before they received the drawings. Therefore, it is possible that they used activity, the more intellectually difficult dimension, to a greater extent the second time around (i.e. on the drawings).

The preference by sex scores of the photographs and the drawings correlated significantly, indicating that the two test forms were related. An additional finding was an overall response difference between the tests. Children used gender for preference choices significantly more on the drawings than on the photographs. This result is attributed to the strong same-sex peer preferences which school-aged children have. Because of these strong preferences, they

would rather play with a child of their sex than of the opposite sex, even if the latter child is playing with a tempting toy. It is also possible that the drawings produced fewer distracting elements such as variations between stimuli in attractiveness. Therefore, gender was more "available" for preference choices, and was used more in making them.

For the preference by sex score, there were no meaningful patterns of responding by age or sex for either version of the test, indicating that the test forms were equivalent in the responses they generated. The lack of a practice effect for this score is likely due to the fact that when expressing preferences, one dimension (e.g. sex, activity) is not inherently more intellectually difficult than another.

Analyses were also performed relating each test version score to standard measures of sex-typing. The matching by sex scores yielded similar results on analyses relating them to measures of sex role knowledge. The photographs score provided a clearer picture than the drawings of how matching by sex was related to measures of sex role knowledge. Both matching by sex scores related to age, Sex Stereotype Measure (SSM) knowledge, and the interaction beween SERLI child ranks and sex. For photographs matching by sex, there were no additional unexpected interactions between sex-typing variables, age and sex.

The preference by sex scores were very similar in the responses they generated. Each preference by sex score was related to two sex role preference scores, with the photographs score related to SERLI child and adult ranks, and with the drawings score related to the peer

sociometric and SERLI adult ranks.

It seems that the two versions of the Gender Salience Test are equivalent measures. Some of the limitations with the drawings, which could be easily remedied, seemed to be due to a practice effect. It is recommended that future research employ the drawings because of the inherent limitations of the photographs (such as differences in attractiveness between different people depicted) and because the drawings are much less expensive and less difficult to reproduce.

Based on the results of this research, it seems clear that the preference section produced variation in the responses of children, even in the older children in the sample. The matching section did not. The matching section is not a sensitive test for children past the preschool and early elementary years. If it is used in future research, it should be modified to make it a less simplistic task. One suggestion is to use more than two dimensions to use, for example, prop, gender and another social dimension, such as race, in eliciting classification choices.

Distinct Cognitive and Affective Aspects in Sex-Typing

It was predicted that matching by sex would be relatively unrelated to preference by sex. This prediction was supported, as measured by both versions of the Gender Salience Test, particularly drawings. This finding does not directly support the hypothesis that the matching section measures cognitive use while the preference section measures affective use. It does, however, indicate that gender is used differently in the different sections, which is consistent with this hypothesis.

Matching by sex as cognitive. As predicted, matching by sex decreased with age. This prediction was supported somewhat less clearly by the performance of children on the drawings than on the photographs. Although there was a main effect of age on the drawings, there was also an age by sex interaction caused by the high group mean of age group 1 females compared to the rest of the groups. It is not clear why the floor effect did not occur for the youngest girls. Possibly the low group means overall were due to the practice effect.

Regression analyses indicated that age and SSM knowledge accounted for a significant amount of variance in the matching by sex scores, primarily for girls. These findings provided further support for a cognitive process in matching by sex. For boys, age and SERLI child ranks, a sex role preference score, accounted for a significant amount of variance in matching by sex. The relationship of SERLI ranks, considered to be a manifestation of an affective process, to matching by sex suggests an overlap between cognitive and affective processes for boys in this cognitive aspect of sex-typing. Sex role preferences seem to be processed cognitively for boys, to some degree, because with greater sex role preferences, they matched less by sex.

It is confusing that in one age group, age group 3, boys with higher SSM knowledge scores matched more by sex on the drawings. This not only suggests lack of support for cognitive-developmental theory, it refutes it. However, this result occurred for only one cell of a sample, and its significance should not be overemphasized.

It was predicted that measures of sex role flexibility would also account for variance in the matching by sex score. This prediction

was not supported, perhaps because flexibility is not in fact mediated by a cognitive-developmental process. This interpretation is not plausible, however, because there is support in the literature for the hypothesis that flexibility is mediated by cognitive-developmental factors, and there is insufficient evidence in this thesis to refute this idea. It could also be that the measures of sex-role flexibility used in this research were not valid. There is little evidence for this, however. The measures were face valid, and correlated significantly with each other, $r = .36$, $p < .01$, suggesting that there was construct validity.

A third possibility is more likely. Flexibility, an aspect of cognitive growth, was not related to the matching by sex score because the latter score was limited in assessing more sophisticated aspects of cognitive development such as flexibility. Older children matched almost exclusively by activity rather than by sex on this test. Researchers have found flexibility to begin at the end of the preschool period. Therefore, it is possible that there was little flexibility at the ages when matching by sex produced more gender responses, and that when children began to be flexible in their sex role responses, they had already switched to matching primarily by activity, yielding no variability in the matching by sex score. Therefore, regression analysis would not show flexibility to be a significant predictor of matching by sex. An analysis which is sensitive to different developmental rates of responding, such as a Guttman scale analysis, might have been a more appropriate way to assess this relationship.

The matching by sex variable itself, because of the patterns of responses it produced, specifically heterogeneity of variance across age and sex groups, was probably not ideally suited to regression analysis. These analyses are considered meaningful, however, as preliminary analyses revealed that there were no violations of important assumptions, including homoscedasticity, underlying regression analysis.

These results support the hypothesis that matching by sex is primarily mediated by cognition. It was significantly related to age, for both males and females, and to SSM knowledge, primarily for females. The data suggests that for males, cognitive and affective aspects in sex-typing are more closely related.

Preference by sex as affective. Support for the idea that preference by sex reflects an affective process comes from the results of the regression analyses. As predicted, the peer sociometric, and the SERLI child and adult ranks, measures of sex role preference, accounted for variance in preference by sex in both versions. SSM knowledge, SERLI flexibility and SSM flexibility ratio, measures of sex role knowledge and flexibility, did not account for variance in preference by sex.

Preference by sex seemed to reflect individual differences, rather than developmental patterns. It did not systematically change with age for either sex. Age and sex were unrelated to drawings preference by sex. Two cells, age group 1 females and age group 2 males, preferred by sex on the photographs significantly more than other groups, but this was not a finding which could be explained by

systematic factors. Further, this score, measured by both versions, was not accounted for by age in regression analysis. These findings provide support for the idea that preference by sex measures individual differences.

It was also predicted that, because of more individual variability in response to the preference by sex score, it would be related more strongly to the sex role preference variables than would the matching by sex score be related to the sex role knowledge variables. Support was found for this prediction. Two variables were related to each preference by sex score. The actual numerical value of the squared multiple correlation coefficient was larger with the matching by sex scores as dependent variables than with the preference by sex scores as dependent variables. This finding was due to the strong effect of age in matching by sex. Removing the effect of age, the sex role preference variables accounted for more variance in preference by sex than the sex role knowledge variable accounted for variance in matching by sex.

Towards an Integrated Approach to Sex-Typing

Researchers have not yet modified cognitive theories to provide a role for affect early in the development of sex-typing, despite empirical evidence that sex-typed preferences occur early in life, before articulated sex role concepts appear. Both Kohlberg (1966) and Bem (1981) theorized that cognitive gender schemata guide children's sex-typed preferences. Martin and Halverson's (1981) information-processing theory of sex-typing also discussed how children's schemata

guide their gender preferences.

This thesis and the previous work by Serbin and Sprafkin (under review) provide evidence supporting distinct cognitive and affective aspects of sex-typed processing. It must be kept in mind that support was not found for a "purely" affective process; this is not possible using a task which asks children to choose between dimensions.

"Affect" clearly is not limited to playing a role in a cognitive theory; it has long been a focus of research in social learning theories of sex-typing (e.g. Perry & Bussey, 1979). Given that there is evidence that affect plays a part in cognitive processes, however, cognitive theories must attempt to integrate it. A modified cognitive theory of sex-typing would have to address the issue of how affective processes might originate, how they might operate in early sex role development, and how they might interact with cognitive processes.

Affective processes may originate from preferences about who one wants to be with and who one does not want to be with. Deciding who one wants to be with, based on a minimal understanding that there are two genders (Constantinople, 1979; Fagot, 1985; Martin & Halverson, 1981) may be a motivator of sex segregation, a phenomenon which occurs in groups of preschool children (Jacklin & Maccoby, 1978; La Freniere et al, 1984; Maccoby & Jacklin, 1985). Goodenough (1934) suggested a theory of "behavioral compatibility" to account for sex segregation. In this theory, it was argued that differences between the sexes emerge, early in life, at least partly due to maturational factors. Because of these differences, the sexes seek out similar, same sex-peers and shun dissimilar, opposite-sex ones. In contrast, social

learning theory suggests that these preferences are learned, primarily by reinforcement and modeling. Clearly, further research is necessary to understand more about these processes. Possibly, certain preferences, such as sex-typed toy preferences are learned, primarily on a reinforcement, item by item basis, while other preferences, such as same-sex peer preferences, are due to maturational or other factors.

In considering how affect might operate and interact with cognition in sex-typed development, another cognitive theory can be considered. Martin and Halverson (1981) proposed a theory of sex role development which is primarily cognitive. Like Kohlberg (1966), they discussed a cognitive process whereby children's gender schemas guide their sex-typed preferences. Their theory does provide room, however, through extrapolation, for the operation of preferences in developing sex-typed cognitions. Martin and Halverson argue that the process whereby 2 to 4 year olds tend to attribute positivity to their own sex, and negativity to the opposite sex (which has been discussed above, e.g. Zalk & Katz, 1978) can be seen as same-sex preference. This preference, they suggest, may facilitate acquisition of same-sex information, and thus may help develop the gender schemata.

In line with Zajonc's (1980) thinking that "preferences need no inferences", Martin and Halverson did an experiment to demonstrate that sex-related preferences may develop upon minimal understanding, and may guide cognitions. They examined young children's reactions to the terms "tomboy" and "sissy" (Martin & Halverson, 1983a). They discovered that young children negatively evaluated children labelled

as sissies and tomboys even before they could verbalize what these labels actually meant. Although children did not seem to understand the definitions of these terms, they had already made preference choices about them. This finding provides some support that affect may, early in life, shape children's sex role cognitions. If children negatively evaluate these gender terms before knowing what their meaning is, then when they learn the meanings more fully, they already have an affective value system in which to place further information. This analysis may be a reason there is no positive information about sissies and tomboys. The salience of these words begins and ends in early childhood, however, so may be of limited value for investigative purposes. One could speculate that other gender labels such as "homosexual" may have negative connotations to many people because of a similar operation. Then an "affective gender schema" may guide further information about "homosexual", with a possible result being retention only of negative information.

At later phases in the child's development, when both cognitions and preferences are more developed, the preferences of children may be guided and influenced by their cognitions or schemata, as conceived by Kohlberg (1966) and Bem (1981). So, for example, a child with a firm gender identity who understands many of society's sex-stereotypes may be motivated to perform sex-stereotyped activities because these actions enhance self-esteem. Martin and Halverson's (1981, 1983a) suggestions provide a model in which sex-typed cognitions and preferences develop in an interactive, dynamic process, with both beginning early in development.

A hypothetical cognitive model which provides a role for affective development early in sex-typed development would also need to include a role for individual differences in sex-typing. Kohlberg's (1966) cognitive-developmental theory does not. Empirically, individual differences have been found more on measures of preference than on measures of sex-role knowledge. The latter measure the contents of cognition. The former may measure an affective process, in which individual differences are likely to occur, possibly because it is more reflexive. These individual differences may allow an important role for environmental factors in the sex-typing process.

Bem's (1981) gender schema theory provided an explanation of individual differences. She suggested that these originate in differences in socialization histories. Once these individual differences in preference are established, based on societal input, they influence both cognitive and affective aspects of sex-typed processing.

Clearly, further research is needed to examine the origins of sex role preferences, the role of affective processing in the development of sex-typing, the interaction of cognition and affect, and the role of individual differences. The origin of sex role preference and the role of affect in sex-typing may be elucidated by study of gender segregation in young children. The interaction of cognition and affect may be examined by developing tasks which manipulate the relative amount of input to children of each of these components, and by then measuring the effect of these manipulations on, for example,

reaction time in making preference decisions.

Possible sources of individual differences in sex-typing have been studied by researchers primarily from a social learning perspective. For example, differences in parental reactions (e.g. Fagot, 1978), and peer reactions (Lamb & Roopnarine, 1979; Langlois & Downs, 1980) to girls and boys have been examined. Social learning theory, in fact, has been primarily interested in the influence of the environment on the behavior of individuals. It is important that environmental factors be incorporated into a cognitive account of sex-typing, as well. Social learning theorists have focused on behaviors, including "preference behaviors" such as same-sex play and sex-typed activities during free play. Cognitive theorists have focused on sex-typed cognitions, and verbalized sex-typed preferences for toys, activities and occupations. In Beverly Fagot's words:

> Developmental psychologists have studied cognitive processes with cognitive approaches and social processes using social learning theory. Within each world view, methods have been developed that have given us insight, but each world view is incomplete and fails to use whole realms of data. (Fagot, in press)

Affect is evident in overt preference behaviors, and it is also evident in less overt phenomena, such as attitudes. Possibly, affect is the "keystone" to a closer conceptual integration of these two major theoretical frameworks of sex-typed development.

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Appendix A

Statistical tables A-1 to A-14

Table A-1

Repeated Measures Analysis of Variance: Order Effect of Preference by Sex*

Source	df	Mean square	F
Age	1	.07	.44
Order	1	.10	.63
Age * order	1	.06	.40
Error between	38	.16	
Test version	1	.45	11.14*
Version * age	1	.10	2.57
Version * order	1	0	.01
Version * age * order	1	.94	1.03
Error within	38	.04	

*The subjects used were from School B, N = 42

*p < .01

Table A-2

Repeated Measures Analysis of Variance: Order Effect of Matching by Sex*

Source	df	Mean square	F
Order	1	.02	0
Age	1	46.07	3.66+
Age * order	1	9.19	.73
Error between	38	12.58	
Test version	1	.22	.06
Version * age	1	5.48	1.55
Version * order	1	34.37	9.72*
Version * age * order	1	11.31	3.20+
Error within	38	3.54	

*Subjects were from School B, N = 42

*p < .01

+p < .10

Table A-3

Age by Sex Cell Correlations Between the Two Matching by Sex Scores: Photographs and Drawings*

Age by sex cell	df	r
Males		
1	9	.36
2	17	.31+
Females		
1	9	.86***b
2	19	.07

*Total N = 62

bsignificantly differs from other cell correlations

***p < .001

+p < .10

Table A-4

Age by Sex Cell Correlations Between the Two Preference by Sex Scores: Photographs and Drawings*

Age by sex cell	df	r
Males		
1	9	.42
2	17	.52*
3	14	.34
4	9	.23
Females		
1	9	.75**
2	19	.34
3	11	.45
4	11	.62*

Note: For all 8 cells combined, $r = .42$, $p < .001$

*Total $N = 115$

**$p < .01$

*$p < .05$

Table A-5

Repeated Measures Analysis of Variance: Preference by Sex*

Source	df	Mean Square	F
Age	3	.11	.89
Sex	1	.10	.85
Age * sex	3	.33	2.78*
Error between	107	.12	
Test version	1	1.05	21.12***
Version * age	3	.05	.99
Version * sex	1	.06	1.20
Version * age * sex	3	.08	1.62
Error within	107	.05	

*N = 115

***p < .001

*p < .05

Table A-6

Age by Sex Cell Correlations between Matching by Sex and Preference by Sex: Drawings*

Age by sex cell	df	r
Males		
1	9	-.13
2	17	-.03
3	14	.05
Females		
1	9	.21
2	19	.18
3	11	.02

Note: For all 6 cells combined, $r = .11$, p = n.s.

*Total $N = 91$

Table A-7

Age by Sex Cell Correlations Between Matching by Sex and Preference by Sex: Photographs*

Age by sex cell	df	r
Males		
1	9	.28
2	17	.33
Females		
1	9	.09
2	19	.38+

Note: For 4 cells combined, $r \geq .28$, $p < .05$

*Total N = 62

+$p < .10$

Table A-8

Analysis of Variance: Drawings Matching by Sex*

Source	df	Mean Square	F
Age	3	40.88	9.26***
Sex	1	11.33	2.57
Age x sex	3	19.77	4.48**
Error	107	4.41	

*N = 115

***p < .001

**p < .01

Table A-9

Cell Frequencies, Chi-Squared Analysis with Females: Drawings Matching by Sex[a]

	Responses of "O"			Responses of "non O"		
Age group	F[b]	EF[c]	%	F	EF.	%
1	3	7.5	27	8	3.6	73
2	16	14.37	76	5	6.88	24
3	8	8.74	62	5	4.26	38
4	12	8.74	92	1	4.26	8

Note: $\chi^2(3) = 12.67$, $p < .01$

[a]N = 58

[b]F = Frequency

[c]EF = Expected frequency

Table A-10

Cell Frequencies, Chi-Squared Analysis with Males: Drawings Matching by Sex[a]

	Responses of "0"			Responses of "non 0"		
Age group	F[b]	EF[c]	%	F	EF	%
1	5	6.75	46	6	4.24	54
2	9	11.67	47	10	7.33	53
3	12	9.82	75	4	6.18	25
4	9	6.75	82	2	4.24	18

Note: $\chi^2(3) = 5.94$, p = n.s.

[a]N = 57

[b]F = Frequency

[c]EF = Expected frequency

Table A-11

Analysis of Variance: Photographs Matching by Sex*

Source	df	Mean Square	F
Age	3	69.73	8.21***
Sex	1	.18	.02
Age * sex	3	.18	.02
Error	107	8.49	

*N = 115

***p < .001

Table A-12

Cell Frequencies, Chi-Squared Analysis with Females' Photographs Matching by Sex[a]

	Responses of "O"			Responses of "non O"		
Age group	F[b]	EF[c]	%	F	EF	%
1	4	7.21	36	7	3.79	63
2	12	13.76	57	9	7.24	43
3	9	8.52	69	4	4.48	31
4	13	8.52	100	0	4.48	0

Note: $\chi^2(3) = 11.73$, $p < .01$

[a]N = 58

[b]F = Frequency

[c]EF = Expected frequency

Table A-13

Cell Frequencies, Chi-Squared Analysis with Males: Photographs Matching by Sex[a]

	Responses of "0"			Responses of "non 0"		
Age group	F[b]	EF[c]	%	F	EF	%
1	5	7.3	45	6	3.67	54
2	11	12.67	57	8	6.33	42
3	12	10.67	70	4	5.33	25
4	10	7.33	91	1	3,67	9

Note: $\chi^2(3) = 6.27$, $p < .10$

[a]N = 57

[b]F = Frequency

[c]EF = Expected frequency

Table A-14

Correlations: Stereotyping Variables With Each Other

	1	2	3	4	5	6	7
Age (1)		.60***	.48**	.11	.30**	-.09	.07
SSM awareness (2)			.09	a	.17+	-.07	.04
BERLI flex (3)				.36**	.13	-.04	.09
SSM flex ratio (4)					-.15	.11	.19*
Peer sociometric (5)						-.25*	-.18+
BERLI child ranks (6)							.19+
BERLI adult ranks (7)							

Note: for all correlations, df = 113

aThis correlation coefficient cannot be calculated because SSM awareness is the denominator in the SSM flex ratio score

***p < .001

**p < .01

*p < .05

+p < .10

Appendix B

Eliminated Data

Table B-1

Eliminated Data

Cause	Males	Females
Data incomplete	2	1
Data spoiled*	1	1
Random responding	3	7

*A tester administered both versions of Gender Salience in one sitting.

Appendix C

Tables of Gender Salience Items

Table C-1

The Gender Salience Test: Matching Section Stimuli

Page	"Standard"	Prop Stim	Gender stim	Random stim
1	male with tools	female hammering	male with bat	female reading
2	female looking angry	male looking angry	female smiling	male smiling
3	female; arms in wrestling pose	male; hands in wrestling pose	female; apron on	male smiling
4	female eating donut	male eating apple	female holding hammer	male reading
5	male holding box	female holding box	male reading	female playing guitar
6	male sweeping	female sweeping	male with bat	female reading
7	female knitting	male knitting	female playing cards	male playing guitar
8	male playing cards	female playing cards	male drinking	female reading
9	female cleaning floor	male cleaning floor	female playing cards	male playing guitar
10	female with baseball mitt	male with mitt and bat	female sweeping	male reading
12	male with frying pan	female with pot	male with barbell	female reading
PHOTOS:				
11	woman standing behind chair	man standing behind chair	woman standing; smiling	man standing
DRAWINGS:				
11	girl sitting on chair	boy sitting on chair	girl standing	boy standing

Table C-2

The Gender Salience Test: Photographs, Male Preference Version.

Affiliation Preference Stimuli

Page	Question	Prop Choice	Gender Choice	Random Choice
1	Who would you like to go the zoo with?	Woman sailing	Man; neutral Expression	Woman; neutral Expression
2	Who would you like to go sled riding with?	Woman playing with toy barn	Man; neutral expression	Woman; neutral expression
3	Who would you like to Invite to your birthday party?	Woman playing guitar	Man sailing	Woman sailing
4	Who would you like to be your friend?	Woman with a teddy bear	Man; neutral expression	Woman; neutral expression
5	Who would you like to sing a song with?	Woman with a doll house	Man sailing	Woman sailing

Table C-3

The Gender Salience Test: Drawings, Male Preference Version,

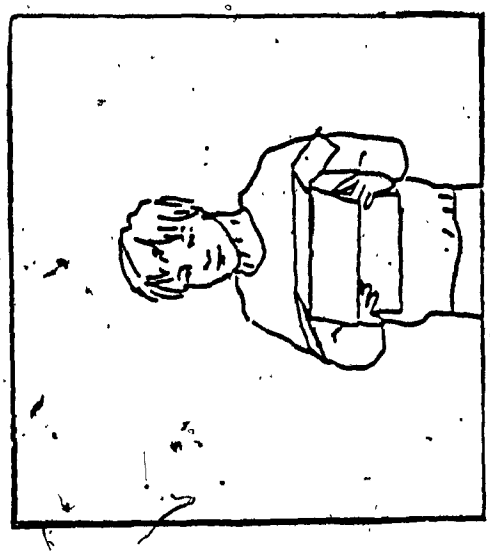
Affiliation Preference Stimuli

Page	Question	Prop Choice	Gender Choice	Random Choice
1	Who would you like to go to the zoo with?	Attractive girl, smiling	Boy; neutral expression	Girl; neutral expression
2	Who would you like to go sled riding with?	girl with a toy barn	boy; neutral expression	girl; neutral expression
3	Who would you like to invite to your birthday party	girl playing guitar	boy; neutral expression	girl; neutral expression
4	Who would you like to sing a song with?	girl with a toy barn	boy; neutral expression	girl; neutral expression
5	Who would you like to be your friend?	girl reading a comic	boy; neutral expression	girl; neutral expression
6	Who would you like to invite to your house?	girl with a toboggan	boy; neutral expression	girl; neutral expression

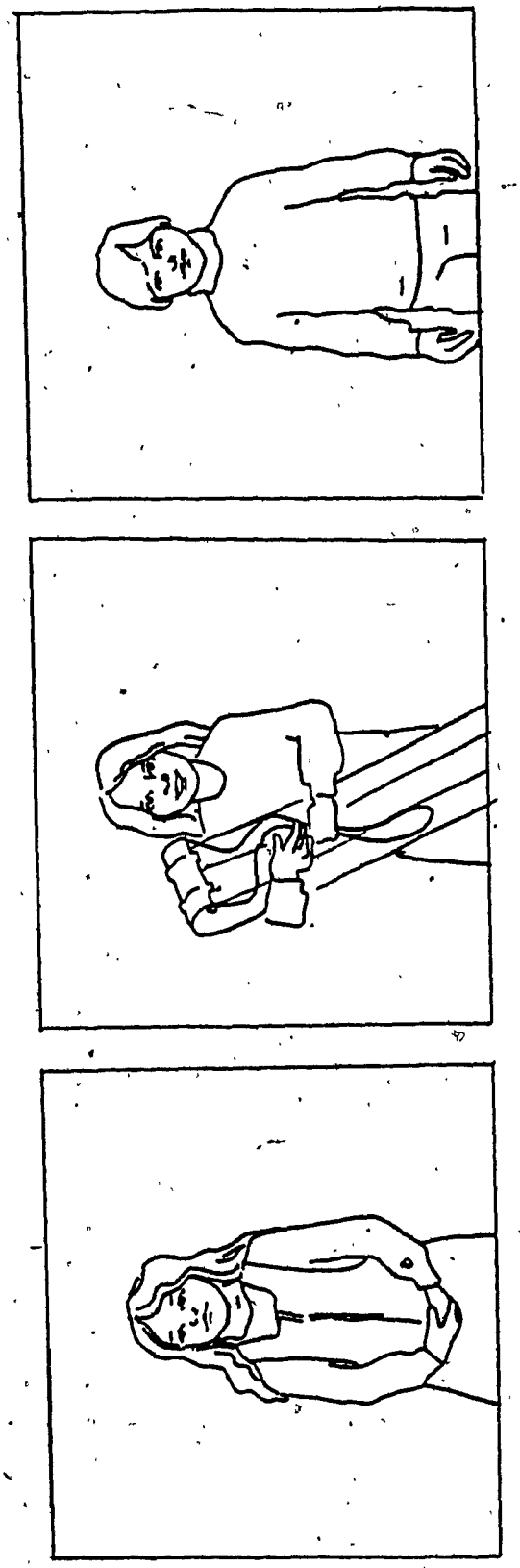
Appendix D

Sample Gender Salience Drawings

A Matching Section Stimulus



An Affiliation Preference Stimulus: Male Preference Version



An Affiliation Preference Stimulus: Female Preference Version