Sex Bias in Children's Memory for Aggressive Scenes and Their Attributions of Aggressive versus Cooperative Intent

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ABSTRACT

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A visual recognition memory paradigm was used to test the hypothesis that children exposed to female aggressive memory targets would show more sex reversal errors than children exposed to male aggressive memory targets. Fifty-three boys and 37 girls whose mean age was 7.5 years participated in the study. A significant interaction revealed a tendency for subjects to make more sex reversal errors when viewing opposite-sex aggression. The results are discussed as providing only partial support for the hypothesis that children process sex role related information in ways which are concordant with sex role stereotypes.

The same subjects participated in a second experiment which required them to attribute aggressive and cooperative intent, as conveyed in separate story themes, to either male or female stimulus figures. Results revealed a significant attributional bias in favor of male aggression, whereas cooperation was attributed equally often to both sexes. These findings suggest that children, like adults, may be predisposed to associate aggression with males more than with females. Measures of subjects' level of sex-typing were not found to correlate significantly with performance in either experiment of the study. Implications for peer socialization of aggressive behavior are discussed.

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Introduction

A pervasive assumption underlying both lay discussion and theoretical speculation about the nature of sex differences is that males are more aggressive than females, and that this major difference is in part genetically or hormonally based. Irrespective of the etiological considerations, the expansive literature documenting basic sex differences in boys and girls has revealed that aggression is one dimension which consistently differentiates the sexes (Maccoby and Jacklin, 1974). The bulk of this corroborating evidence however, is derived from naturalistic observational data and global ratings from significant others, both measures being generated from methodologically problematic procedures. Detailed analyses of the reliability and validity problems inherent in naturalistic observational studies (Johnson & Bolstad, 1973) have served to underscore the importance of cautious interpretation of results.

An added methodological shortcoming in the study of sex-typed behavior has been the impact of observer bias on behavioral observations and ratings. Several investigators have sought to determine whether observers bias their observational ratings of a broad range of behaviors generally thought of as sex-typed. Meyer and Sobieszek (1972) employed videotapes of two 17-month-old children, each of whom was identified to half the observers as a girl and to the other half as a boy. The results indicated no overall tendency to rate the tapes

stereotypically, but did show that males having little experience with children attributed more sex stereotypical traits to the children, whereas females attributed more stereotypical masculine characteristics to children labelled as girls than to those labelled as boys. The same pattern of results was obtained in a later study which used the same basic procedure (Sobieszek, 1978). Since the degree of bias evidenced in both these studies did not reach significance however, the suggestion that observers rate behaviors differentially on the basis of sex remains merely suggestive.

More conclusive evidence for observer bias comes from a similar study by Condry and Condry (1976) in which university students observed a nine-month old child on videotape responding to several emotionally arousing stimuli. A significant interaction was obtained, such that males with prior experience with children were most likely to rate the child differently as a function of the sex ascribed to the child. Although these findings are discrepant in the direction of the effect with the findings previously cited (Sobieszek, 1978; Meyer & Sobieszek, 1972), they nonetheless attest to the substantial influence of the observers' specific sex role expectations in determining their subsequent "perception" and attribution of descriptive traits to boys versus girls. With respect to the purported sex differences in aggression, the importance of these findings is brought to focus when one considers that the observational studies cited by Maccoby and Jacklin (1974) to substantiate such claims have usually involved observers who were cognisant of the sex of the child being studied. To

the extent that observers unwittingly bias their observations of boys' and girls' behavior to conform to their a priori sex role prescriptions, the validity of the evidence for sex differences in aggression is mitigated accordingly.

A recent study (Lyons, 1981) addressed the issue of observer bias as it relates directly to the behavioral coding of boys' and girls' aggression in an experimentally controlled observational setting. Forty subjects were presented with sets of line drawings depicting two boys in five different aggressive episodes, and two girls involved in the identical aggressive activities. When asked to rate each of the ten sets of drawings on several dimensions including level of aggression, male subjects were found to bias significantly in the direction of greater aggression for boys than girls.

The biasing effect was illustrated more dramatically in the behavioral coding data obtained in a second part of this experiment designed to approximate the scanning procedure typically used in naturalistic observation. Subjects were presented with two scenes of about a dozen children involved in either solitary play or group play. An aggressive interaction between two same-sexed children was embedded in each of the two scenes presented, featuring boys in one scene and girls in the other. Following the presentation of each of the scenes, subjects indicated on a checklist those behaviors which they had observed. The results yielded a significant sex bias in the behavioral coding of aggression, with 25% of observers indicating that they saw boys more often engaged in aggressive activity when in fact the sexes

were equally aggressive. Thus, although this study did not exactly duplicate the conditions of observational research, it nonetheless suggests that sex bias in observational studies of aggression is indeed possible. Only when observers are given extensive pretraining and explicit coding definitions and when stringent levels of interjudge aggreement are enforced does sex bias appear to be obviated (Horn & Haynes, 1981). Since few studies employed such elaborate training procedures and stringent criteria, observer bias remains a potential contributing factor in the reported findings of sex differences in aggression.

Beyond alerting us to the possible influence of sex bias in observational studies of aggression, the Lyons study demonstrates more generally the importance of a person's pre-existing gender attitudes and knowledge in the processing and encoding of information, as well as its subsequent retrieval from memory. Clearly, those subjects who erroneously reported having seen more boys than girls engaged in aggressive activity were basing their judgements on their knowledge of cultural standards of appropriate or sanctioned sex role behavior. Gender schema theory has recently been proposed by Bem (1981) as a cognitive explanation for how people use role stereotypes to organize and guide perception. The developing child begins by learning the content-specific information related to sex, such as the particular behaviors and attributes of males and females. But the child is also learning to refer to a heterogeneous network of sex-related associations, a gender schema, in order to process incoming information.

Gender-schematic processing reflects a generalized readiness to process and assimilate incoming information in gender-related terms. The phenomenon of sex-typing derives in part from this gender based schematic processing.

Observer sex bias in observational studies may thus represent the tendency to invoke gender schema to process information and, with regards to aggression, to "perceive" that which is schema consistent, that boys are more aggressive than girls. Since gender schemata evolve concurrently with increasing knowledge of sex roles, it becomes interesting to question whether children also misperceive their peers' behavior to suit their own ideas of what boys and girls do. In other words, are children accurate sources of information regarding dimensions of behavior which are sex-typed, or do they parallel adults in misperceiving and incorrectly reporting behaviors which run counter to gender schemata?

That young children are aware of sex role prescriptions and proscriptions from early in life is very well documented in numerous studies (Williams, Bennett & Best, 1975; Thompson, 1975; Kuhn, Nash & Brucken, 1978). What has also become evident is that children actively respond to peers who show cross-gender behavior in ways that are contingent on the sex of the child who transgresses sex role norms. Fagot (1977) observed 207 preschoolers in free play situations over a six-year period in an attempt to assess the consequences of cross-gender behavior in terms of both peer and teacher reactions. The most salient finding was that cross-gender behavior resulted in markedly different

consequences for boys and girls. Neither peers nor teachers reacted negatively to girls who either occasionally or consistently displayed cross-gender behavior. However, boys received significantly less peer reinforcement and significantly more peer criticism for trying out female preferred behaviors. These findings are in accordance with the view that girls are allowed more latitude in their choice of play behaviors, and that females in general are permitted more sex role transgression than males. Fagot's study indicates that young children are keenly aware of which behaviors are permissible for each sex and which are not, and the extent to which they will penalize peers for noncompliance to this code of behavior. Moreover, it is interesting to note that in some instances, peer criticism surpassed teacher criticism, suggesting that the influence of peers may have been underestimated as an important agent of sex role socialization.

Lamb and Roopnarine (1979) extended Fagot's line of investigation to address the question of the effectiveness of peer reinforecement in shaping sex role behavior. They also attempted to determine whether positive reinforcement and punishment for sex-typed behavior had similar effects on children of both sexes. Their observations of preschoolers during free play periods in the nursery school revealed that while both sexes displayed some cross-gender behavior, each sex received significantly more positive reinforcement for their respective sex-typed behaviors compared to cross-gender behaviors. Furthermore, these positively reinforced behaviors continued longer than punished behaviors but only if the reinforced behaviors were gender concordant. In other

words, peer reinforcement of cross-gender behavior seemed ineffective in prolonging or maintaining that behavior, whereas reinforcement of sex-typed behavior appeared to readily affect its continuation, at least in the short-term. Whether this is merely a function of the comparatively infrequent occurence of cross-gender behavior reinforcement remains unclear. What is clearly established however, is that children not only react to one another's sex role behavior, they also appear to influence the direction of its further development.

Clearly then, sex role stereotyping is one dimension of behavior which is very salient to young children and to which they actively respond. The pervasive impact of stereotyping on children has led certain investigators to propose that sex role stereotypes constitute an organizational framework within which new information is processed (Koblinsky, Cruse, & Sugawara, 1978). They suggest that children perceive fictional characters as representative members of the male and female sex and thus activate stereotypic expectancies about their personality traits and behaviors. These expectancies serve to augment attention to sex-stereotypic information and to facilitate the processing of facts consistent with existing knowledge (Koblinsky, Cruse, & Sugawara, 1978; Koblinsky & Cruse, 1981).

This formulation was derived from experiments which examined children's memory for stereotypic and reverse-stereotypic sex role content in their reading material (Koblinsky, Cruse & Sugawara, 1978). Forty-eight fifth-grade students read two experimental stories which featured a male and female character, each exhibiting an equal number of

male and female characteristics. Once having read the stories, subjects were given a choice-recognition test requiring them to indicate which character displayed a specific trait or behavior.

The results confirmed the hypothesis that a systematic bias would be evidenced in memory for sex-related information. Specifically, it was found that information consistent with children's sex role stereotypes was remembered significantly better than inconsistent information. In addition, subjects displayed extremely poor memory for the feminine traits attributed to male story characters, a finding consistent with the view that prohibitions against the adoption of opposite sex characteristics are stronger for boys than girls.

Having demonstrated that children utilize frameworks of existing structures of knowledge about sex role behavior in processing story material, Koblinsky and Cruse (1981) then examined the effects of manipulating these frameworks using the same stories and procedures as in the Koblinsky et al. (1978) study. Their findings indicated that presenting character descriptions congruent with sex role stereotypes resulted in superior memory for stereotypic content in reading material containing equal amounts of stereotypic and reverse-stereotypic information. In contrast, when sex role incongruent character descriptions preceded the stories, children displayed better memory for reverse-stereotypic content rather than stereotypic content. Koblinsky and Cruse thus demonstrated that the manipulation of children's framework of knowledge regarding sex role behavior produced selective memory for content consistent with the recently activated expectancies.

This suggests that children's memory for sex-related information depends not only on existing knowledge and beliefs, but also on the availability of sources of information which are discrepant with stereotypes.

It appears therefore, that children show a definite bias in their memory for story content related to sex role sterotypes. Furthermore, corroborating evidence for such sex bias in children's memory comes from research dealing with visually presented sex role information. Cordua, McGraw and Drabman (1979) studied the effect of portraying males and females in stereotypical and counter-stereotypical occupational roles. Five and six-year old children were shown videotape presentations of a boy's visit to a physician's office. Four videotapes depicted all possible combinations of male and female nurses and physicians. When asked to identify the doctor and the nurse from photographs, it was found that children confronted with counter-stereotypical occupational portrayals were significantly more likely to relabel them into the typical pattern of male physician and female nurse. Moreover, there was a stronger tendency for children to relabel the male nurse than to relabel the female physician, presumably due to their differential exposure to female doctors and male nurses in real life as well as in the media.

These results thus indicate that the sex role appropriateness of certain occupational roles is very influential in shaping children's perception and memory of visually presented information. The failure of many children to accurately report a simple item of information immediately after its presentation underscores the saliency of sex role

stereotypes as an important organizational framework employed by young children in encoding and processing information.

A more recent set of experiments extended this line of study to include the variables of age and immediate versus long-term memory of sex role information (Drabman, Robertson, Patterson, Jarvie, Hammer & Cordua, 1981). Children in the first, fourth and seventh grade observed a video presentation of a seven-year old boy's visit to a female doctor and her male nurse, both of whom were identified by clearly differentiated names. In the recognition memory task that immediately followed the tape, the first and fourth grade subjects chose significantly more male names for doctor and female names for nurse, thereby reversing the sex role information to fit previously learned occupational stereotypes. And although the older children in the seventh grade gave correct name responses when tested immediately, their accuracy plumetted in testing conducted one week later, leading the authors to speculate that sex role stereotyping may alter long-term memory storage rather than immediate perception. Regardless of the actual site of action, the impact of sex role stereotypes in effecting a misperception of visual information and immediate memory in young children is what remains of primary interest.

In a study which examined the relationship between children's gender attitudes and memories, Liben and Signorella (1980) hypothesized that children with highly stereotyped gender attitudes would have greater difficulty remembering pictures that violate cultural gender stereotypes compared to pictures in accordance with cultural

stereotypes. Fifty-seven children between the ages of six and seven were shown pictures of men and women in traditional, nontraditional, and neutral occupations or activities. Children's attitudes about which activities can be performed by men and women were assessed using a stereotyping measure which was then used to classify children as being high or low in this dimension.

Tests for recognition memory revealed that children with highly stereotyped gender attitudes recognized significantly more traditional than nontraditional pictures, but only when the actor was male. As well, highly stereotyped boys were more likely to recognize pictures having male rather than female actors. However, children with low gender stereotypes did not show different levels of memory performance for the different picture types. The authors concluded that children's memories appear vulnerable to distortions stemming from their gender-related attitudes.

There thus seems to be empirical support for the suggestion that children may be inaccurate sources of information regarding sex-typed behaviors. Their selective memory for sex stereotypical information in reading material and their misperception of visual information to adhere to occupational stereotypes indicates that children may, like adults, show bias in their observation and memory of peer behavior which is incongruent with sex role stereotypes. The present study seeks to explore this possibility. Specifically, it addresses the question of observer bias in children's memory for aggression. Based on the Lyons findings indicating that adults bias their observational coding of

aggression by attributing more aggression to boys than girls, this study attempts to assess the accuracy of children's memory for aggession as a function of the sex of the aggressor child. Since aggression is the only behavior for which sex differences have been consistently reported, it is an appropriate behavior to study. Moreover, the documented importance of peer influence in shaping sex role behavior (Fagot, 1977; Lamb & Roopnarine, 1979) suggests that children's reactions to peer aggression may mediate its ultimate expression in boys and girls. Hence, it becomes important to know whether children are predisposed to see aggression in one sex and to ignore it in the other, as are adults, or whether they are accurate sources of information regarding peer aggression.

The importance of ascertaining the accuracy of children's memory for boys' and girls' aggression is especially evident in studies employing peer assessments as criterion measures of aggression. To the extent that children display a sex bias in their memory for aggression among peers, the validity of their nominations of children purportedly high or low in aggression is seriously compromized. The question of observer sex bias may thus need to be addressed in sociometric studies, particularly when aggressive behavior is of primary focus or concern.

The first experiment of the present study was designed as a visual memory test of children's ability to accurately report whether they just saw two boys or two girls aggressing. Line drawings depicting children interacting in a variety of ways were borrowed from the Lyons study and supplemented with several new items purposely created for this

experiment. The visual memory task involved exposing each child to sequential sets of drawings. Contained in each set was one drawing depicting an aggressive interaction between two same-sexed children, as well as three other stimuli featuring non-aggressive interactions. Immediately following the presentation of each such set, the subject was tested for recognition memory of the aggressive interaction stimulus with three other drawings. These included the correct stimulus drawing previously seen, an incorrect random choice of a drawing which was never before presented, and a biased response of the correct aggressive activity but incorrect sex of children, in effect, a sex reversal error. A total of five aggressive interaction scenes were presented in the visual memory task, from which a bias score was derived for each child by summing the number of sex reversal errors.

Two versions of this visual memory test were created. Identical stimuli were contained in both versions, the only difference being the sex of the aggressive target children, which remained consistent across trials in each version. Therefore, the male version of the visual memory test featured only aggressive male target children, and only female aggressive children appeared as memory targets in the female version.

Male and female subjects were randomly assigned to either the male aggressive or the female aggressive target conditions. Sex bias in children's memory for aggressive scenes was thus ascertained via comparison of sex reversal errors between children exposed to male aggressive targets and those exposed to female aggressive targets. It

was hypothesized that children presented with male aggressive scenes would remember them accurately since this was consistent with their knowledge of male role behavior, or their male gender schema. The prediction for children viewing female aggressive scenes however, was that since aggression is not in the repertoire of positively sanctioned or desirable female behavior, those children would be more likely to ignore or "forget" this aggression and to attribute it to boys instead, thereby relabelling or reinterpreting events to make them concordant with their sex role knowledge and gender schemata. The degree to which children espouse or adhere to traditional sex role stereotypes was thus predicted to influence the extent of sex bias observed in the experiment, with strongly sex-typed children more likely to make reversal errors when exposed to female aggression than children less stereotyped.

Because the visual memory task was constructed such that each child would be exposed to and tested exclusively for memory of aggressive activity and only as portrayed by one sex, an equal number of filler items were generated to guard against subjects surmising the purpose of the experiment. Line drawings from the Peabody Picture Vocabulary Test were selected which depicted children in various types of activities, with the exception of aggressive interactions. These stimuli were arranged and presented in a similar manner as the previous items in the memory test. After viewing four of these line drawings, the subject was tested for immediate recognition memory for a randomly selected memory target. The subject's response options included the correct

stimulus drawing previously seen, or an incorrect choice between two stimulus drawings never before presented. Unlike the aggressive memory test items therefore, sex reversal errors were precluded in the filler test items since the subject could only make one correct choice and two equally incorrect choices. By summing the number of correct responses obtained on the filler items, a score was derived for each subject which served as an index of general memory ability and allowed for direct comparisons among groups of subjects. Since the filler items were identical in both the male aggressive and female aggressive memory target conditions, appearing in between successive aggressive memory trials in both conditions, general memory scores were not predicted to differ between subjects randomly assigned to either condition.

A second experiment in the study dealt with a somewhat different but related aspect of observer bias. In the first experiment, the aggressive stimuli were designed to be unambiguous in the message they conveyed. It paralleled the situation when a child directly observes a blatantly aggressive episode. The second experiment looked at how children make attributions of aggressive versus cooperative intent on the basis of sex when presented with ambiguous visual scenes. In other words, are children predisposed to see one sex as more aggressive or more cooperative than the other, and are they likely to construe what is happening in a situation on the basis of these expectations? A recent study by Hartley (1981) indicates that a marked disparity exists between boys' and girls' perceptions of their own behavior and that of the opposite sex. The Guess Who sociometric test was used to get children

to nominate classmates on ten behavioral dimensions reflecting both positive and negative characteristics, including the rough/gentle category. The interesting finding was that although both sexes nominated boys significantly more often for negative behaviors and especially for the "rough" category, when it came to positive behaviors, boys tended to view themselves as equal to or better than girls on several dimensions, including gentle. In other words, boys differed from girls in perceiving themselves as behaving both positively and negatively. Although this study needs to be replicated before meaning is attached to these findings, it does suggest that children may not necessarily view aggression as being incompatable with behaviors usually ascribed to girls. The second experiment sought to explore this question further.

The second experiment thus consisted of reading two short stories to each child, one conveying a cooperative theme and the other an aggressive theme. In both stories, the sex of the two children interacting remained unspecified. After each story, the child was asked to choose between two drawings the one he or she believed best depicted what was happening in the story. The line drawings portrayed two same-sexed children involved in what could be feasibly interpreted as either aggressive or cooperative activity. The drawings differed only in the sex of the children depicted. It was hypothesized that attributions of aggression and cooperation would vary as a funcion of sex. Specifically, the prediction was that children of both sexes would identify boys more often than girls as the children involved in the

aggressive stories. Whether or not children would see boys as equally cooperative as girls, a finding in line with Hartley's reported results, would also be interesting to see.

Finally, an attempt was made to determine whether children's responses in both the first and second experiments were related to their general awareness of sex role stereotypes as well as their sex role preference. The Sex Role Learning Index (SERLI) is a picture-choice instrument for measuring sex role acquisition in young children which was administered as a final task in this study (Edelbrock & Sugawara, 1978). It was predicted that the tendency to show bias in memory for aggressive scenes would be greater for children who are aware of sex role stereotypes and who adhere to them closely. Similarly, the tendency to associate aggression with boys in the second experiment was predicted to be related to children's espousal of stereotypical views regarding appropriate masculine and feminine behavior.

Method

Subjects. Ninety children enrolled in the first and second grades at Meadowbrook Elementary School in Lachine, Quebec participated in both experiments of this study. Informed consent was obtained from the parents or guardians of all participating subjects. The mean age of the 53 boys and 37 girls was 7.5 years, (S.D.= 7.7 months), with a range of 6 years 5 months to 9 years 5 months.

Experiment 1

Materials. Two binders containing line drawing stimuli were used to administer the visual memory test. Each binder was composed of twenty cardboard pages, on which were pasted line drawings of children interacting in numerous ways. The first page contained four separate line drawings, one of which depicted an aggressive interaction between two same-sexed children. On the next page appeared the three test items, which included a line drawing never shown before, as well as the male and female version of the aggressive activity previously seen. Each subject was thus required to point to the picture he or she had just seen. This simple recognition memory test was repeated for the trials featuring the following aggressive interactions; kicking, slapping, shoving, tripping, and destruction of another's puzzle. The positioning of these memory targets in the stimulus array was varied across trials so that a target appeared in every possible position. This was meant to ensure that the subject carefully scan all drawings

and avoid adopting fixed response patterns based on position.

The stimuli were thus arranged and assembled in two binders which differed only in the sex of the aggressive children depicted and designated as the memory targets. The two binders represented the two experimental conditions, since each child was assessed for accurate memory of either male aggression or female aggression. Appendix A includes photoreduced copies of the test stimuli.

Also included as part of the visual memory task were five trials in which aggression was featured neither in the stimuli presented nor in the recognition test. Stimuli from the Peabody Picture Vocabulary Test showing children in various types of interactions were adapted for use in these memory items. Again, four line drawings were presented and recognition memory for a randomly designated target was immediately tested. The response options included the correct target previously seen, as well as two different stimuli never before presented. Unlike in the aggressive memory items, therefore, sex reversal errors were not possible. These filler items were inserted between each aggressive memory item to draw attention away from the aggressive theme and to prevent subjects from being cued to the importance of sex, since the filler memory targets featured both male and female children whereas aggressive memory targets were portrayed by one sex only. These filler items contained identical stimuli in both the male and female aggressive memory test versions.

Procedure. The experimenter tested each child individually in a quiet room in a single session lasting approximately 20 minutes. After

establishing rapport, subjects were invited to play a few games with pictures. Subjects who were willing to participate, and none declined, were then instructed to watch the experimenter as the rules of the memory game were explained during a demonstration trial. Simplified line drawings of single objects were used to ensure quick and easy familiarization with the procedure. The child was clearly instructed to look at the four pictures carefully because he or she would later be asked to remember what he or she saw. If on the demonstration trial the subject pointed to the correct stimulus drawing, thereby indicating that he had attended to the task and understood the instructions, then the binder with test items proper was selected and the test administered. Subjects who failed the demonstration trial test were again shown the items, instructed to pay close attention, and were again tested for recognition memory. No subject required more than two demonstration trial runs to learn the procedure.

Approximately half of the male and female subjects, respectively, were randomly assigned to receive the male target version of the memory test, while the other half of the sample of subjects was administered the female target version. All subjects were permitted to survey the stimulus arrays for as much time as required, but most subjects scanned the drawings and responded fairly quickly and attentively. The experimenter observed subject's eye movements to verify that the entire stimulus array had been scanned, and would remind subjects to do so if necessary. Each subject was then asked if he or she was ready for the recognition test, and once affirming so, was not permitted under any

circumstances to go back to the stimulus array. Overall, the procedure ran smoothly and the fast pace contributed to the positive way in which subjects responded to the task.

Experiment Two

Materials. Four line drawing stimuli were used in this experiment. Each line drawing depicted two same-sexed children interacting in one of two ways. One scene featured two children on their knees in a face-to-face interaction involving an object held jointly. This scene was represented in one drawing with two boys and in another drawing with two girls. The other interaction scene involved two children standing closely together, their backs to the viewer. One child appeared to be leaning on the other. Again, the male and female representations of this scene appeared on two separate stimulus drawings, and these are contained in Appendix B.

Four stories were developed to convey themes of aggression and cooperation as they might be perceived in these four stimuli. Thus, the "toy scene" and the "standing scene" were both sufficiently ambiguous to permit the application of story themes totally opposite to one another. These stories are presented in Table 1.

Design. The design of the experiment appears in Table 2. Proportionately equal numbers of boys and girls were randomly assigned to either of two story-stimuli combinations. Half of the total sample of subjects heard an aggressive story paired with the Toy Scene, and a cooperative story paired with the Standing Scene. The other half of the

Table 1

Stories for Experiment 2

Toy Cooperation	: Two children were playing together with a toy. All of a sudden, one of the pieces fell out of the toy. One of the children picked up the broken piece and tried to help the other child fix the toy so that they could play once again.
Standing Aggression	: Two children got together to play. After a little while they began to argue and one of the children started to push and shove the other child. They decided not to play anymore.
Toy Aggression	: Two children were playing together with a toy. All of a sudden, one of the children started to grab the toy away from the other child. They decided to stop playing together.
Standing Cooperation	: Two children were playing together. All of a sudden, one of the children tripped and started to fall. Luckily, the other child was right there to help and no one fell down.

Table 2

Design of Experiment 2

	Stimulus Selected
Half of sample:	Male or Female
Toy Scene: Aggressive Theme	_____
Standing Scene: Cooperative Theme	_____
Other half of sample:	Male or Female
Toy Scene: Cooperative Theme	_____
Standing Scene: Aggressive Theme	_____

sample saw the same stimuli paired with the opposite story themes. That is, the Toy Scene now featured a cooperative narrative and the Standing Scene was now presented with an aggressive story. The purpose of designing the experiment this way was to ensure that if children did indeed associate aggressive intent in stories significantly more often with the male stimulus drawings, it could not simply be accounted for by the particular characteristics of one stimulus which might unwittingly predispose such an association.

Thus, the entire sample of subjects underwent similar treatment except for the controlled pairings of actual stimuli to story themes. The order in which story themes were presented was systematically counterbalanced in both groups to control for possible order effects.

Procedure. Immediately following the visual memory test in experiment one, children were told to listen carefully to the experimenter as a short story was read, and that they would be asked a question about it afterwards. Each child was then read either an aggressive story or a cooperative story. After the story, the male and the female stimuli corresponding to the story were placed side by side directly in front of the child. The child was then instructed as follows: "Now I want you to look at these two pictures. There are no right answers or wrong answers in this game. I just want to know what you think. I want you to point to the picture that you think tells what happened in the story I just told you." If subjects delayed in responding, they were asked "Which one do you think goes better with the story I just read?" Once the child's response had been recorded, the

stimulus drawings were removed and the task was repeated for the second story theme and set of stimuli.

Sex Role Learning Index (SERLI) Measure

In order to obtain a measure of subject's sex role knowledge and preference which could then be related to their performance on experiments one and two, the Sex Role Learning Index (SERLI) was administered as the final task of the testing session. Two measures were derived with this instrument, sex role discrimination and sex role preference. To determine a child's ability to discriminate between his own sex role and that of the opposite sex, black and white line drawings of 20 objects were presented sequentially to each child, who was then required to place each drawing in a box labelled "for boys", "for girls", or "for both boys and girls". After recording this free-choice classification, the "both" box was removed and the subject was asked to re-sort the items from that box according to who makes most use of that object, boys or girls. Sex role discrimination was scored as the percentage agreement between the child's forced choice classification of the objects and the sex role stereotypes of those objects. Each child received scores for own and opposite sex role discrimination ranging from zero to 100, with increasing scores indicating greater awareness of sex role stereotypes.

In addition to the standard scoring of sex role discrimination, the data from the free-choice classification were analyzed to yield a measure of subjects' degree of flexibility in categorizing objects as

male or female appropriate. Specifically, the flexibility score was obtained by summing the number of items each subject classified as being "for both boys and girls".

The second measure obtained in the SERLI is sex role preference, determined by the order in which a child chooses items stereotyped as being appropriate for the child's sex. Ten line drawings corresponding to the sex of the subject were laid out in front of each child. The drawings depicted a child performing activities of which half were masculine stereotyped and the other half were feminine stereotyped. The child was required to indicate in decreasing order which of the activities displayed he or she would like to do best, and these choices were ranked accordingly. This same procedure was then repeated using adult drawings of either a man or a woman involved in activites similarly stereotyped as half masculine and half feminine. This time, the child was instructed to indicate in decreasing order which of the depicted things he or she would like to do or be when he or she grows up. These responses were again ranked from one to 10.

Following the scoring method described in the SERLI manual (Edelbrock & Sugawara, 1978), sex role preference scores can range from 20 to 80, with increasing scores indicating an increasing preference for one's own sex role. Neutral sex role preference is indicated with a score of 50, which may reflect random choosing regarding sex role stereotyped items or no preference for either role.

Results

Experiment 1

In this first experiment, subjects were tested for immediate recognition memory of five aggressive interaction scenes and five non-aggressive interaction scenes, presented sequentially and alternately.

For the aggressive memory items, subjects' responses were recorded to reflect either a correct choice, a sex reversal error or bias response, or a random selection of an item which had never before been presented. Random responses would suggest that the subject was not attentive to the task or that the difficulty level was too great. Alternatively, sustained random responding might indicate a deliberate attempt to simply avoid choosing. Subjects who gave random responses on three or more of the five aggressive memory items were excluded from analysis in this experiment. These included a female subject in the male aggressive target condition, and three female subjects in the female aggressive target condition.

For each subject, a sex bias score ranging from 0 to 5 was derived by summing the sex reversal errors or biased responses obtained on the individual test items. These biased responses reflected the child's accuracy in remembering aggression as the activity depicted, but his or her reversal of the sex of the children involved. Since each child was tested for memory of aggression as portrayed by one sex exclusively, the direction of bias was simply determined by the experimental condition in which the subject fell.

The hypothesis that children exposed to female aggression would show greater bias in memory compared to children presented with male aggression was investigated using bias scores as the dependent variable in two-way unweighted means analysis of variance. In this between subjects design, the two factors were sex of aggressive memory target and sex of subject. Mean bias scores and standard deviations are presented for each group in Table 3.

Results of this analysis revealed a significant interaction between sex of aggressive target and sex of subject, $F(1,82)=6.127$, $p < .015$, with boys and girls respectively making more biased responses when viewing opposite-sex aggression (see Table A, Appendix C). Planned comparisons using two-tailed t-tests (Bruning & Kintz, 1977) yielded significant differences between boys ($M=0.93$) and girls ($M=1.72$) who were exposed to male aggressive memory targets, as well as between those boys viewing male aggression ($M=0.93$) and those viewing female aggression ($M=1.69$). These findings indicate that boys were consistently less accurate in remembering female aggression and were predisposed to attribute it to males instead. In contrast, girls in both the male and female conditions did not differ significantly in their tendency to make sex reversal errors, although girls exposed to male aggression were more prone to remember it as female aggression compared to boys in the same condition. The interaction effect is illustrated in Figure 1.

Differences between the two conditions (male versus female aggressive stimuli) could have resulted from differences in general

Table 3

Means and Standard Deviations of Bias Scores in Experiment 1

Sex of Memory Target	Subjects	N	Mean	Standard Deviation
MALE	Boys	27	0.93	0.62
	Girls	18	1.72	1.13
FEMALE	Boys	26	1.69	1.09
	Girls	15	1.34	1.45

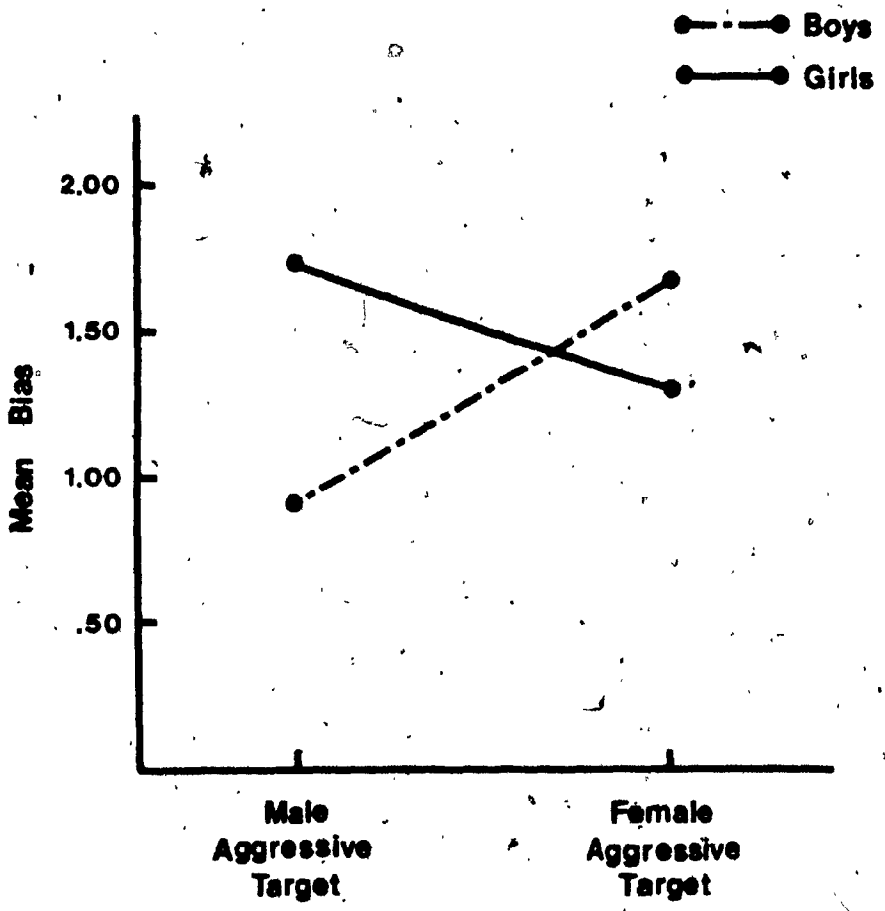


Figure 1. Mean bias in memory for aggression as a function of the sex of target for boys and girls.

memory ability occurring by chance after random assignment. In order to verify that general memory ability was comparable in both experimental groups, the number of correct responses on the five, non-aggressive filler items was tabulated for each subject and analyzed in a 2 X 2 unweighted means ANOVA, with sex of aggressive memory target and sex of subject as between subject factors. This analysis revealed no significant findings (see Table B, Appendix C), as is readily apparent in examining the group means presented in Table 4. These results clearly indicate comparable memory ability between subjects and thereby preclude the possibility that a priori differences in general memory ability among the respective groups could by themselves account for the observed differences in memory performance on aggressive memory items.

To determine whether the tendency to show greater bias in memory for aggression was in some way related to awareness and adherance to sex role stereotypes, the SERLI measures were analyzed (see Table C, Appendix C). The SERLI is appropriate for use with children between 3 and 8 years of age, and was therefore applicable to this sample of subjects whose mean age was 7.5 years. However, virtually every subject received a perfect score for sex role discrimination of own sex, opposite sex, and/or both, indicating that these children were thoroughly acquainted with the content of sex role stereotypes. The sex role preference measure for child and adult figures showed more variability, though the distribution was still quite skewed. A significant Pearson correlation, $r=0.49, p<.001$, between sex role preference scores for child and adult figures was obtained, and a

Table 4

Means and Standard Deviations of Filler Scores (non-aggressive memory items) in Experiment 1.

Sex of Memory Target	Subjects	N	Mean	Standard Deviations
MALE	Boys	27	4.19	0.68
	Girls	18	4.06	0.73
FEMALE	Boys	26	4.15	0.83
	Girls	15	4.14	0.71

general sex typing measure was derived for each subject by averaging these two scores. This measure was used as an index of sex stereotyping in all subsequent analyses.

Pearson correlation coefficients were calculated for bias scores and sex-typing for boys and girls separately under each of the aggressive conditions, but none proved significant. Table 5 presents these findings, as well as the Pearson correlations for bias scores and flexibility scores, which also failed to reach significance. Therefore, neither level of sex-typing nor degree of flexibility were found to be directly related to subjects' tendencies to make sex reversal errors in memory for aggression.

Experiment 2

The second experiment sought to establish whether children would associate aggressive intent significantly more often with male rather than female stimulus drawings when sex of actor was left unspecified in story content. All 90 subjects participating in the study were included in the analyses.

Chi-square tests of independence were used to test the hypothesis that children's attributions of aggressive intent are made on the basis of sex. Specifically, it was predicted that in response to aggressive story themes in either of the story/stimulus pairings, children would select the male stimulus scene significantly more often than its female counterpart.

An initial chi-square analyzed responses to the two different

Table 5

Pearson Correlation Coefficients for Bias and Sex-Typing Scores and Bias and Flexibility Scores for Boys and Girls Under Each Aggressive Memory Condition

Sex of Aggressive Memory Targert	Subjects	N	Bias/Sex-typing r^2	Bias/Sex-typing p	Bias/Flexibility r^2	Bias/Flexibility p*
	Boys	27	-.11	.30	.31	
MALE	Girls	18	-.04	.45	.29	
	Total	45	.00	.50	-.26	
	Boys	26	.24	.12	-.01	
FEMALE	Girls	15	-.21	.23	.05	
	Total	41	.03	.42	.11	

*$p < .10$

aggressive story/stimulus pairings separately. Table 6 displays the contingency table. A significant chi-square statistic was obtained using a one-tailed test, χ^2 (1,N=90) =5.731,$p < 0.025$, thus substantiating the hypothesis that children's attributions of aggressive intent are indeed differentiated on the basis of sex. The contingency table clearly demonstrated this sex bias, with 71% of subjects designating males as the perpetrators of aggression compared to only 29% who ascribed aggressive intent to females. This association prevailed under both stimulus/story pairings, although the standing scene seemed to emphasize the sexual discrepancies in aggressive attributions to a greater extent than the toy scene. In effect, tests for significance of the difference between two proportions (Bruning & Kintz, 1977) indicated no difference between the proportionate male stimulus selections in the standing and toy scenes, (z= 0.25, n.s.), suggesting that both versions of the aggressive theme were considered equally applicable to males. However, the proportionate differences between the female stimulus selections did prove significant (z= -2.4, $p<.05$), indicating that subjects were more likely to choose the female aggressive stimulus in the toy scene than in the standing scene. Since the male and female versions of the respective stimulus scenes were differentiated only by characteristics defining sexual identity (i.e., clothing, hair), subjects' propensity to choose females in the toy scene but not the standing scene must be due to their differential perception of the appropriateness of the actual story content. Perhaps fighting over a toy is deemed more justifiable, more "feminine" than deliberately

Table 6

Frequency of Male and Female Stimulus Selections in Toy and Standing Scenes under the Aggressive and Cooperative Conditions of Experiment 2.

Story Intent	Stimulus Selected	Story Version: Standing Scene	Story Version: Toy Scene
AGGRESSION	Male	35	29
	Female	7	19
COOPERATION	Male	24	19
	Female	24	23

pushing and shoving.

Sex differences in subjects' responses to the aggressive story themes were investigated for each scene separately using chi-square tests of independence. Table 7 presents these data. Boys and girls who were presented with the aggressive toy scene did not make significantly different choices, χ^2 (1,N= 48) = 1.01, n.s., suggesting that the sexes interpreted the aggressive situations in a similar fashion. However, a significantly different pattern of responding was evidenced between the boys and the girls who received the aggressive standing scene, χ^2 (1,N= 42) = 8.08, $p<.01$. A full 96% of the boys in this group, comprising all but one of the boys, designated the male drawings as representing the story theme, compared to only 63% of the girls who made the same choice. It appears therefore, that the magnified discrepancies in aggressive attributions in the standing scene noted earlier were due to the boys' overwhelming preference for the male stimulus drawing in this scene. Clearly, some feature of the standing scene story elicited an almost unanimous consensus among boys that the story pertained to males. And although girls were similarly disposed to make that association, the tendency was not nearly as strong.

In order to verify that the attributional sex bias observed did not simply reflect a spurious association caused by subjects choosing one sex for the first story presented and the opposite sex for the second story irrespective of the content, chi-square tests were used to ensure that sex bias in either aggressive scene was not contingent on order (see Table A, Appendix D). Nonsignificant findings in both the standing

Table 7

Frequency of Male and Female Stimulus Selections by Boys and Girls Under the Toy and Standing Scene Versions of the Aggressive Condition in Experiment 2.

Aggressive Condition	Subjects	N	Stimulus Selected	
			MALE	FEMALE
Toy Scene	Boys	27	18	9
	Girls	21	11	10
Standing Scene	Boys	26	25	1
	Girls	16	10	6

scene, χ^2 (1,N= 42) = 0.08, n.s., and the toy scene, χ^2 (1,N= 48) = 0.28, n.s., indicated that regardless of whether aggression was presented as the first or the second story theme in the experiment, subjects' attributions were biased in favor of males. This points conclusively to the overriding influence of the aggressive themes in the stories in determining subjects' responses.

An analysis of the cooperative story theme data, contained in Table 6, was undertaken using a chi-square test of independence. In contrast to the findings in the aggressive story conditions, the nonsignificant results, χ^2 (1,N=90) =0.20,n.s., revealed that subjects' attributions of cooperation were not contingent on sex and in fact, were almost evenly split between males and females, with 48% of subjects selecting the male and 52% choosing the female. Moreover, the two stimulus/story pairings produced virtually identical responses, indicating that the cooperative theme was conveyed equally well in both stories and was perceived as equally appropriate for both sexes. The data for the two cooperative scenes were thus pooled and sex differences in responding analyzed (see Table B, Appendix D). Results indicated that attributions of cooperative intent were independent of the sex of the subject, χ^2 (1,N=90) = 0.52, n.s., with boys selecting equal numbers of male and female drawings and girls choosing only slightly more female drawings.

To investigate the hypothesis that adherance to or preference for sex role stereotypes was directly related to the attributional sex bias observed in the aggressive story condition, a point-biserial correlational analysis was conducted for the entire sample using the sex

typing measure as the continuous variable and sex of stimulus selected as as the dichotomous variable. The correlation failed to reach significance, r_{pb} = +.16, n.s., thus refuting the prediction that the more stereotyped the child the more likely he or she is to associate aggressive intent with males.

Lastly, a final analysis was aimed at verifying that the significant attributional bias in favor of male aggression was in effect independent of subjects' pre-exposure to either male or female aggression in the first experiment. The chi-square test confirmed what was readily discernible from the frequency data (see Table C, Appendix D), that subjects' responses to the second experiment did not vary as a function of their first experimental treatment, χ^2 (1,N=90) = 0.02,n.s. Specifically, subjects who biased in favor of male aggression were just as likely to have been exposed to aggressive female memory targets as to aggressive male memory targets. Therefore, the attributional sex bias observed was not simply an experimental artifact but rather reflected subjects' own beliefs and associations regarding aggression and the sexes.

Discussion

The aims of the present study were two-fold: first, to determine whether children parallel adults in displaying sex bias in their perception and memory for aggressive behavior in peers, and secondly, to establish if children's attributions of aggressive intent are differentiated on the basis of sex to correspond to culturally defined sex-role norms.

The hypothesis that a systematic sex bias in memory for female aggression would be observed in the first experiment was not substantiated with a main effect of sex of target, since the overall sex reversal errors did not differ significantly between subjects exposed to male aggression and subjects exposed to female aggression. However, the hypothesis received partial support from the finding that boys exposed to female aggressive targets were significantly more likely to report male aggression instead, compared to boys viewing male aggressive targets. Since general memory ability was ascertained to be comparable in both these groups, the differences in memory performance are attributable to the experimental manipulation of sex of memory target. It appears therefore, that boys' memories were more vulnerable to distortions and their performance thus impaired when presented with counter-stereotypical images of female aggression. This finding corroborates previously documented reports of bias in children's memory for information which is incongruent with sex role stereotypes (Koblinsky et al., 1978; Co[illegible] et al., 1979; Drabman et al., 1981). As

well, this finding is consistent with earlier reports of greater perceptual bias by male subjects (Meyer & Sobieszek, 1972; Condry & Condry, 1976; Sobieszek, 1978; Liben & Signorella, 1980; Lyons, 1981).

The failure to obtain differential bias in memory between girls exposed to male aggression and girls exposed to female aggression poses a theoretical dilemma. Contrary to previous findings in the literature, girls in this study were equally likely to bias their memory for aggression in a counter-stereotypical direction as in the stereotypical direction. Indeed, girls exposed to male aggressive targets made significantly more sex reversal errors than boys viewing the same targets. The reasons for this counter-stereotypical bias remain obscure, since these girls were not found to be any less sex-typed or less proficient in visual recognition memory.

Only one earlier study (Jennings,1975) examining children's memory for sex role information reported poorer recall for stereotypic information. Preschool children listened to two stories, each featuring a character whose sex corresponded to the sex of the subject. One story described the character in sex stereotypic terms, while the character in the other story was described in reverse-stereotypic terms. Although children preferred the story with sex stereotypical behavior, they exhibited superior recall for reverse-stereotypic information, which included a male ballerina and a female letter carrier. The author attributed these findings to the novelty of the reversed sex role behavior.

Clearly, the findings in the present study are not amenable to this

simple explanation owing to the different nature of the design, methodology, and since the boys in this study did not exhibit better memory for counter-stereotypical information. Perhaps the major drawback of this experiment was precisely the limitation imposed by its design. Specifically, sex bias in memory for aggression was defined as the number of sex reversal errors each subject made in response to aggression as manifested by one sex only. Evidence for a systematic sex bias could thus be established via comparison of the quantitative differences in sex reversal errors between groups, and as such restricted the scope of interpretation of results. An alternative, more informative design would involve exposing each subject to both male and female aggression so as to obtain a directional measure of sex bias based on the difference in sex reversal errors when viewing male and female aggression, respectively. This difference score would allow for more precise testing of the directional hypothesis of interest, namely, that greater bias would ensue in memory for female aggression, and would thus provide clearer guidelines for the interpretation of the qualitative as well as quantitative nature of the sex bias. Moreover, this difference score would more accurately assess the degree of bias within each subject, thereby enhancing the generalizability of the findings.

Finally, another possibility must be considered in interpreting the findings of this experiment. The significant interaction obtained, in which sex bias was greater for subjects' viewing opposite-sex aggression, may in part be due to subjects' generalized tendency to

choose stimuli which correspond to their own sex. Thus, the finding that girls made more sex reversal errors in response to male aggressive targets than did boys in the same group would not necessarily imply that they were biasing in a counter-stereotypical direction. Similarly, since boys may also have tended to select own-sex stimuli, their sex reversal errors may not constitute clear evidence of bias for stereotypical information. However, boys were significantly more accurate when remembering male aggression, suggesting that boys were more error free when "assisted" by conventional stereotypes.

Notwithstanding the limitations of the research methodology employed in the present experiment, the findings, albeit tentative, do lend support to the underlying hypothesis that children's memory for aggressive behavior is to a certain extent vulnerable to the intrusive influence of sex role stereotypes and expectations, since differential levels of accuracy were evidenced. The nature and extent of the mediating influence of gender attitudes remains to be clarified in future studies investigating the processing of sex role related information.

The operation of a systematic sex bias in children's perceptions of aggressive behavior was more definitively and dramatically illustrated in the second experiment. Over two thirds of the entire sample designated male stimulus figures as being the actors involved in aggressive episodes regardless of whether they appeared before or after the cooperative stories. Clearly, subjects made deliberate rather than random attributions of aggressive intent based on their presumptions

that the story characters were probably males, even though sex was never specified. Anecdotal evidence for this claim was provided by some of the more talkative subjects who steadfastly asserted that naturally it had to be the male drawings because the story was about boys! Interestingly, this bias towards male aggression was especially pronounced among boys presented with the standing story theme, suggesting that the subtle differences perceived between the toy and standing versions of the aggressive theme served to enhance bias in the latter scene.

These findings provide compelling evidence to suggest that children, like adults, are predisposed to associate aggression with males rather than females. Although previous research has clearly established the impact of sex role knowledge in effecting gender schematic processing of information, whether textual (Koblinsky et al., 1978; Bem, 1981) or visual (Cordua et al., 1979; Drabman et al., 1981), the studies have focused primarily on occupational stereotypes pertaining perforce to adult models. In contrast, this study has emphasized one specific behavior, aggression, upon which are based many assumptions regarding the entrenched, irrevocable differences between the sexes, and which in turn limit their respective occupational and social roles. In dealing with aggression as a specific behavioral dimension along which male and female peers are seen to differ, this study has underscored the salience of sex role expectations in children's conceptions of the underlying differences in personal traits between boys and girls. Clearly, by approximately seven years of age,

children believe that boys are more aggressive than girls, and are prepared to make inferences about the participants in an interaction based on this belief.

The practical import of these findings pertains to studies in which peer assessments are employed as criterion measures of aggression. Peer assessment embodies a process of judging the degree to which a particular characteristic is exhibited by a member of one's own group, and is established via peer nominations, peer ratings, and peer rankings (Kane & Lawler, 1978). The efficacy and validity of peer assessments are thus predicated on the accuracy of subjects' memory for individuals' behavior and their fine discriminations among the individuals comprising the group. With respect to aggressive behavior, this study's findings alert researchers to the possible influence of sex bias in chilren's nominations, ratings or rankings of purportedly aggressive peers. For although the first experiment failed to establish a systematic sex bias in immediate recognition memory for aggression, it must be remembered that peer assessments rely on retrospective recollections and not judgements based on direct observation of ongoing events. The second experiment more closely resembles the decision-making process used in peer assessments, since subjects were basing their judgements on their past knowledge of who was most likely to aggress, boys or girls. Even older children who are accurate in immediate recall of reverse stereotypic information display biased memory in tests of long-term recall (Drabman et al., 1981), thus conveying the pervasive and enduring strength of sex role stereotypes and expectations in altering memory.

The sex bias observed in this experiment signals the extra caution which must be taken in peer assessment studies to attenuate the potential for sex bias in measures of aggression. For although children are typically required to evaluate their own sex or to nominate boys and girls separately, it is still possible that the overall frequency of nominations of female aggressive peers might be reduced as a result of bias within one sex, leading to a corresponding weakening in the accuracy and reliability of measurement.

The documented importance of peer influence in shaping sex role behavior raises further interesting questions regarding children's expectations of male and female aggression. Observational studies which establish the influential role of peers (e.g., Fagot, 1977; Lamb & Roopnarine, 1979) have generally utilized behavioral categories restricted to play activities found in the classroom, none of which were overtly aggressive. If in fact children are predisposed to associate aggression more often with males than females, then it becomes interesting to know how children would react to sex role transgressions in aggressive behavior (i.e., to girls behaving aggressively). Since children have been shown to effectively maintain sex-stereotypic behavior through peer reinforcement and conversely, to curtail reverse-stereotypic behavior through peer criticism, it is conceivable that peer reaction to aggression may mediate its ultimate expression in boys and girls, respectively.

That children show differential degrees of approval for aggressive behavior depending on whether it occurs in males or females is attested

to in an experiment which required children to respond to three stories in which the problematic situation inherent in each story was handled in three different ways; aggressively, assertively, and passively (Connor, Serbin & Ender, 1978). Each subject read one story featuring a male character, another story involving a female character, and a third story in which the sex of the character was not specified. The results indicated that verbal aggression was considered less desirable for females by both boys and girls, whereas passive female behavior and assertive male behavior were both seen as desirable. The authors speculated that children's endorsement of these behavioral strategies along sex-specific lines may correspond to the actual patterns of approval and disapproval that children give to and receive from their peers. Indeed, this hypothesis is consistent with the literature on peer influence in sex role socialization, with the one caveat that children's responses to verbal aggression may differ qualitatively from their reactions to physical aggression. Further research is needed to delineate the patterns of influence exerted by peers in maintaining or mitigating physical aggression in boys and girls, respectively, thus enabling the developmental course of peer socialization of aggressive behavior to be charted.

One final note on the attributional sex bias uncovered in the aggressive condition relates to the nonsignificant finding that pre-exposure to male or female aggression in the first experiment did not affect the patterns of attributions evidenced in the second experiment. Clearly, this was a desirable, indeed essential result, in order to

circumvent confounding effects which would compromize the validity of the findings in the second experiment. However, it does offer heuristic value by pointing to viable design options one might employ to observe the effects of directly manipulating pre-exposure to male or female aggression on subsequent attributions of aggressive intent. That is, are attributions of aggressive intent amenable to the influence of counter-stereotypic information, or is attributional sex bias so strong as to be immutable? Koblinsky and Cruse (1981) have already demonstrated that it is possible to produce better memory for counter-stereotypical information in stories when children are primed beforehand with sex role incongruent descriptions of the story characters. Whether or not children's beliefs and assumptions about aggressive behavior are as malleable as their beliefs regarding other sex-typed behaviors remains to be established empirically. The potential benefits of dispelling excessively rigid notions concerning female aggressive behavior depend on the extent to which these notions attenuate girls' aspirations to overtly aggressive but socially sanctioned activities, such as participation in male dominated contact sports and police and investigative professions.

The cooperative story condition in the second experiment, although not of primary interest, did provide results that differed markedly from the aggressive story conditions. The most glaring contrast was the almost even split between male and female drawings designated in both the standing and the toy scene versions of the cooperative stories. Evidently, cooperative intent is considered the prerogative of neither

sex, the consensus between boys and girls indicating that subjects were not merely associating a positive behavior with their own sex. In line with previous findings then (Hartley, 1981), children perceive male peers as capable of behaving both positively and negatively through the display of cooperative and aggressive behavior. Since the forced choice paradigm obliged subjects to select either the male or the female aggressive stimulus, it precludes any clear conclusion regarding children's perception of aggression as a component of girls' usual behavior. What is established however, is that within the confines of an either-or situation, children's attributions of aggressive intent are heavily favored towards males.

Finally, it is interesting to note that unlike the differences uncovered in the aggressive condition between the two-stimulus scenes, the types of cooperative themes employed for the two stimulus drawings were not perceived as qualitatively different. Therefore, the children made comparatively finer distinctions with regards to aggressive behavior than cooperative behavior. A tenable theoretical implication is that aggressive behavior represents a continuum in which boys and girls are thought to differ along both quantitative and qualitative dimensions. Cooperation, on the other hand, regarded unequivocally as desirable for both sexes, is less complex in its proscriptions and consequences for both boys and girls. Future research might seek to explore children's perceptions of the qualitative differences between male and female aggression, both physical and verbal, as well as to address the issue of social desirability of male and female aggression

in this context in order to learn about children's notions regarding the adaptive value of these and other sex-typed behaviors.

References

Bem, S.L. (1981). Gender scheme theory: A cognitive account of sex-typing. Psychological Review, 88, 354-364.

Bruning, J.L., and Kintz, B.L. (1977). Computational Handbook of Statistics. (2nd Ed). Glenview, Illinois: Scott, Foresman and Company.

Condry, J., and Condry, S. (1976). Sex differences: A study in the eye of the beholder. Child Development, 47, 812-819.

Conner, J.M., Serbin, L.A., and Ender, R.A. (1978). Responses of boys and girls to aggressive, assertive, and passive behaviors of male and female characters. The Journal of Genetic Psychology, 133, 59-69.

Cordua, G.D., McGraw, K.O., and Drabman, R.S. (1979). Doctor or nurse: Children's perception of sex typed occupations. Child Development, 50, 590-593.

Drabman, R.S., Robertson, S.J., Patterson, J.N., Jarvie, G.J., Hammer, D., Cordua, G. (1981). Children's perception of media-portrayed sex roles. Sex Roles, 7, 379-389.

Edelbrock, C., and Sugawara, A.I. (1978). Acquisition of sex-typed preferences in preschool-aged children. Developmental Psychology, 14, 614-623.

Edelbrock, C., and Sugawara, A.I. (1978). The Sex Role Learning Index (SERLI) Examiner's Manual.

Fagot, B.I. (1977). Consequences of moderate cross-gender behavior in

preschool children. Child Development, 48, 902-907.

Hartley, D. (1981). Infant-school children's perceptions of the behavior of same-and opposite-sex classmates. British Journal of Social Psychology, 20, 141-143.

Horn, W.F. and Haynes, S.N. (1981). An investigation of sex bias in behavioral observations and ratings. Behavioral Assessment, 3, 173-183.

Jennings, S.A. (1975). Effects of sex typing in children's stories on preference and recall. Child Development, 46, 220-223.

Johnson, S.M., and Bolstad, O.D. (1973). Methodological issues in naturalistic observation: Some problems and solutions for field research. In L.A. Hammerlynck, L.C. Handy, and E.J. Mash (Eds.), Behavior Change: Methodology, Concepts and Practice (pp.7-68). Champaign, Ill.: Research Press.

Kane, J.S., and Lawler, E.E. (1978). Methods of peer assessment. Psychological Bulletin, 85, 555-586.

Koblinsky, S.G., and Cruse, D.F. (1981). The role of frameworks in children's retention of sex-related story content. Journal of Experimental Child Psychology, 31, 321-331.

Koblinsky, S.G., Cruse, D.F., and Sugawara, A.I. (1978). Sex role stereotypes and children's memory for story content. Child Development, 49, 452-458.

Kuhn, D., Nash, S., and Brucken, L. (1978). Sex role concepts of two- and three- year olds. Child Development, 49, 445-451.

Lamb, M.E., and Roopnarine, J.L. (1979). Peer influences on sex-role

development in preschoolers. Child Development, 50, 1219-1222.

Liben, L.S., and Signorella, M.L. (1980). Gender-related schemata and constructive memory in children. Child Development, 51, 11-18.

Lyons, J. A. (1981). An experimental investigation of observer bias in the scoring of boys' and girls' aggression. Unpublished master's thesis, Concordia University, Montreal.

Maccoby, E.E., and Jacklin, C.H. (1974). The Psychology of Sex Differences. Stanford, California: Stanford University Press.

Meyer, J.W., and Sobieszek, B.I. (1972). Effects of a child's sex on adult interpretations of its behavior. Developmental Psychology, 6, 42-48.

Sobieszek, B.I. (1978). Adult interpretations of child behavior. Sex Roles, 4, 579-588.

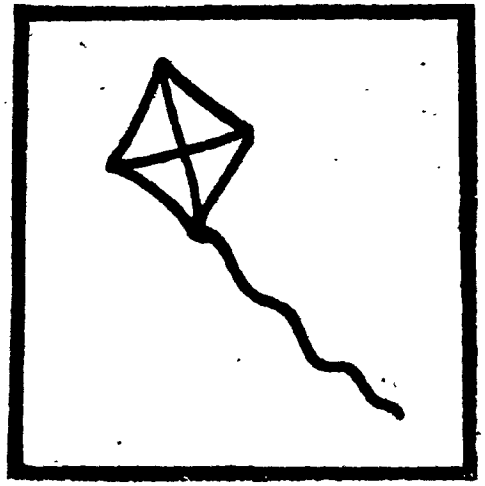
Thompson, S. K. (1975). Gender labels and early sex role development. Child Development, 46, 339-347.

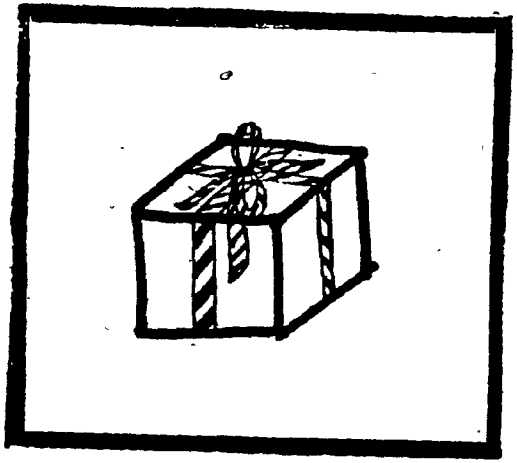
Williams, J.E., Bennett, S.M., and Best, D.L. (1975). Awareness and expression of sex stereotypes in young children. Developmental Psychology, 11, 635-642.

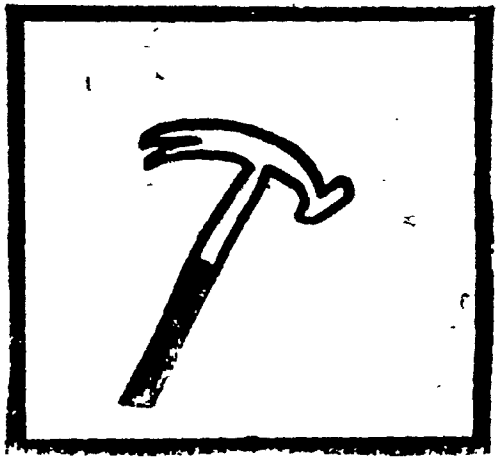
Appendix A

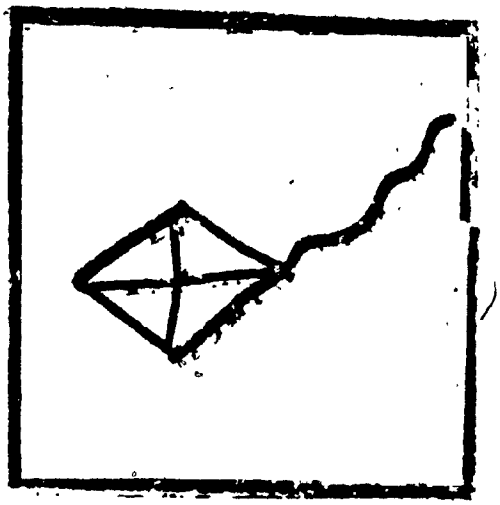
Stimuli for Experiment 1

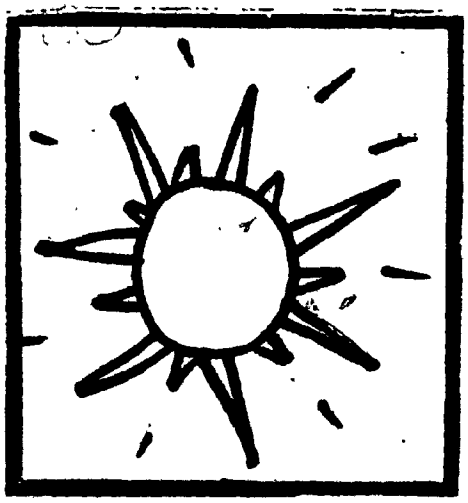
DEMONSTRATION TRIAL

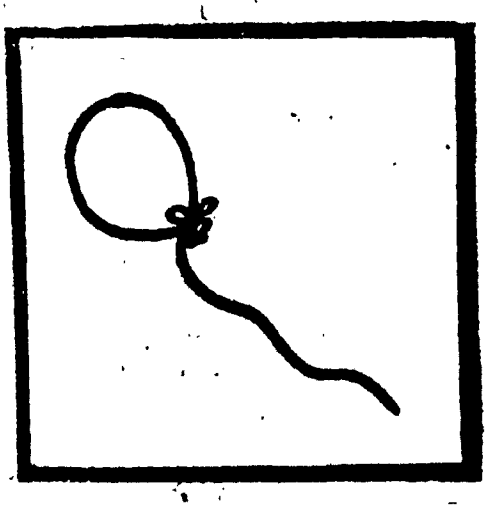




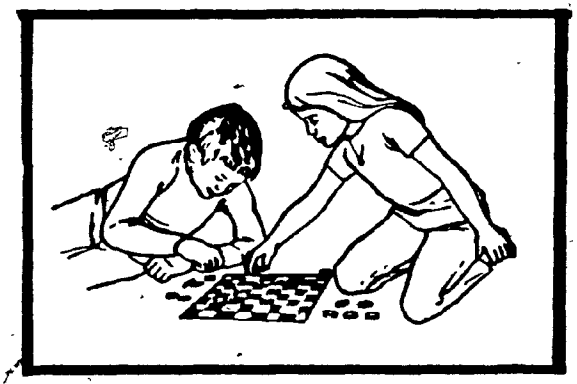


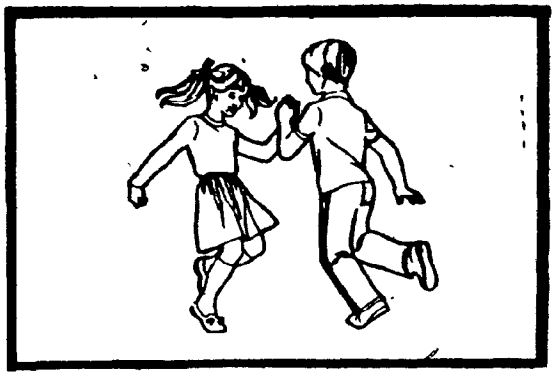


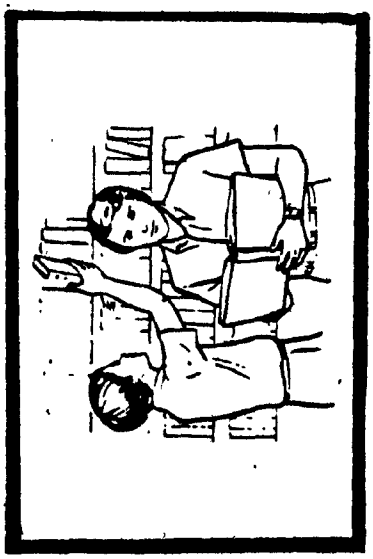




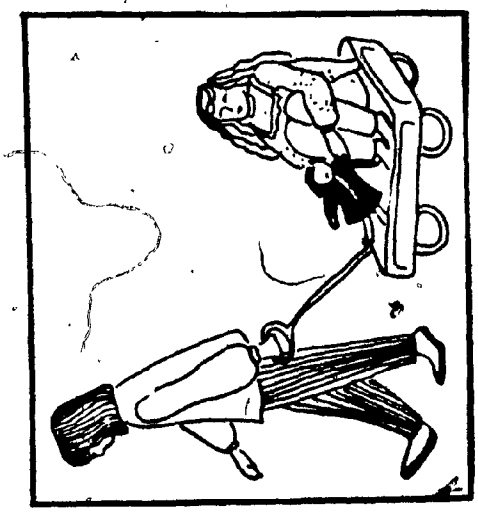
FILLER ITEM

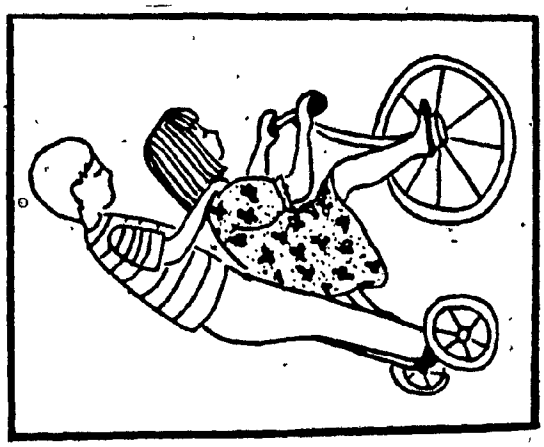






MALE KICKING





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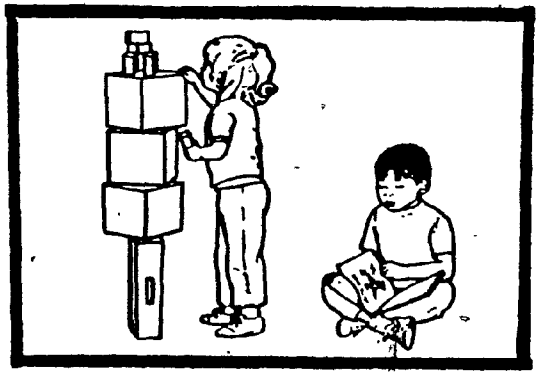
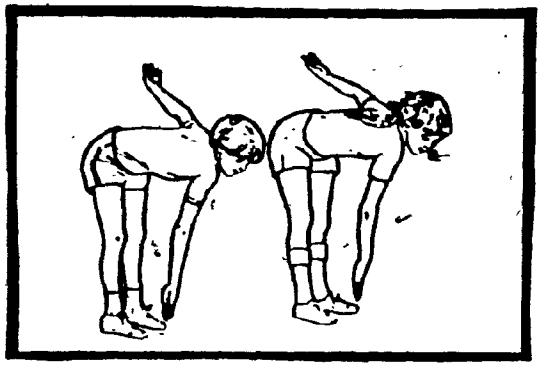
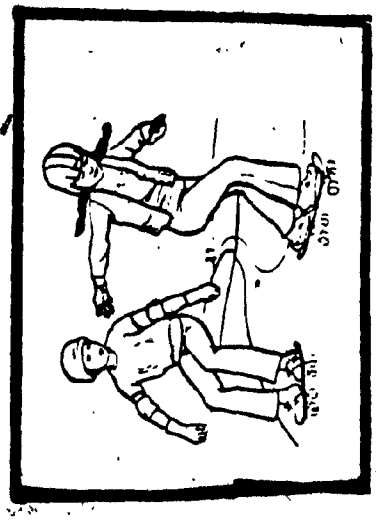
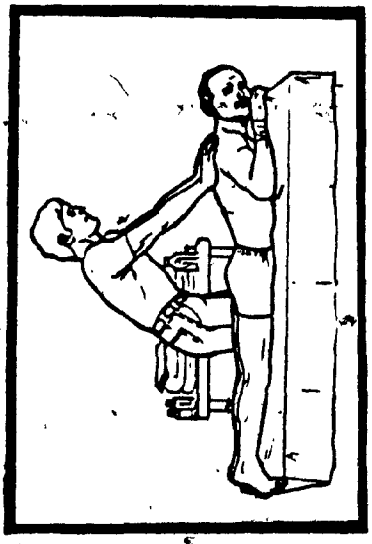
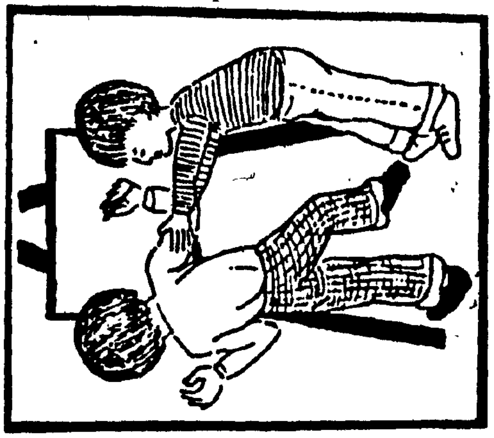


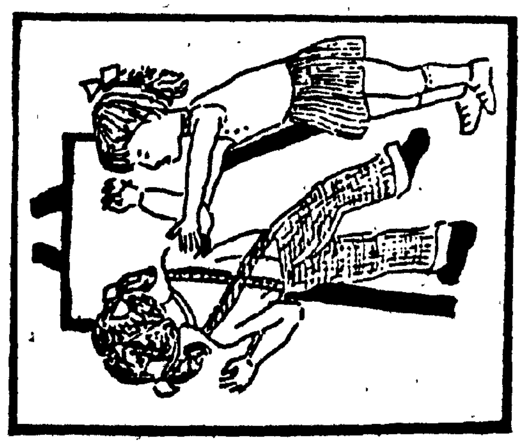






MALE SHOVING





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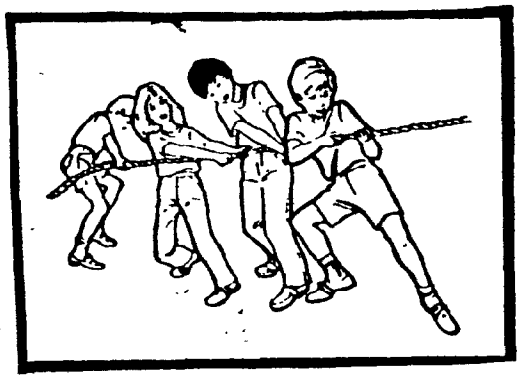
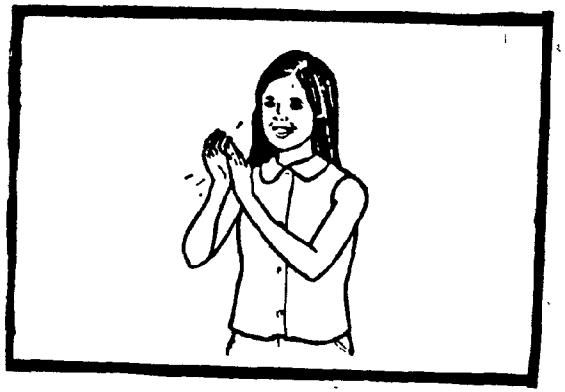
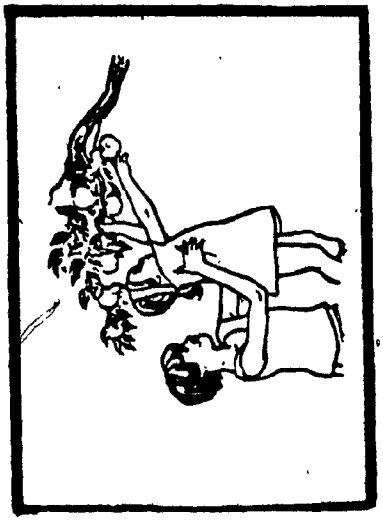
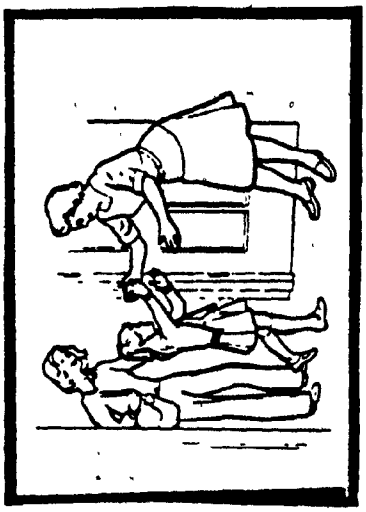
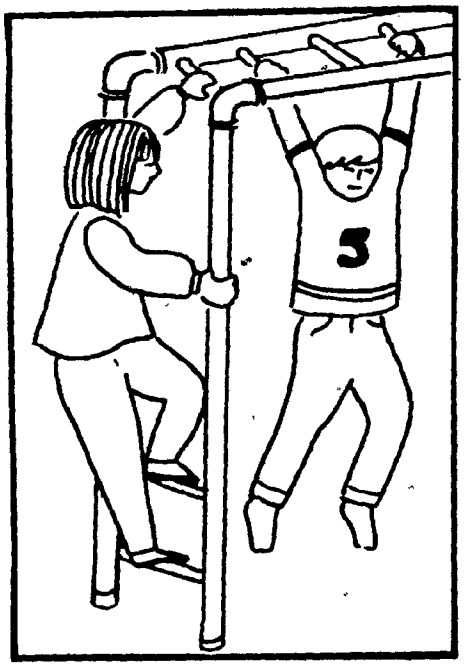


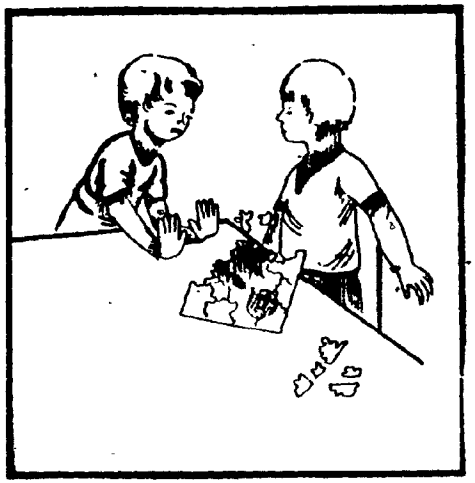


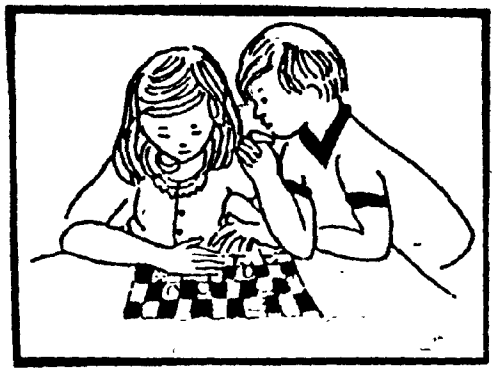


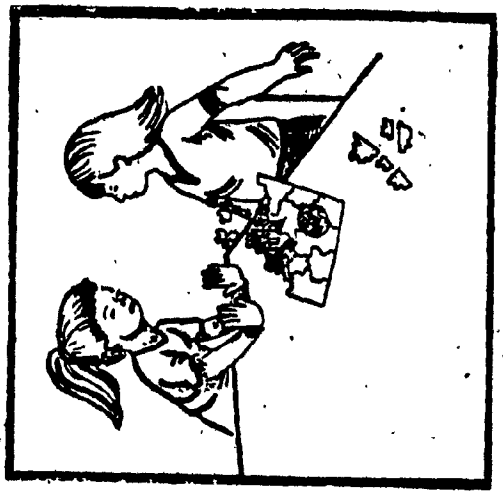


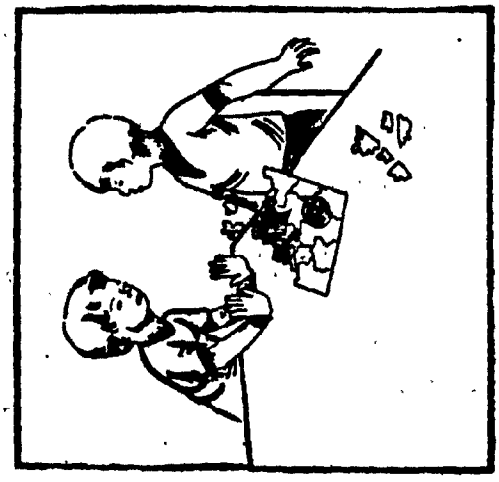
MALE DESTROYING PUZZLE











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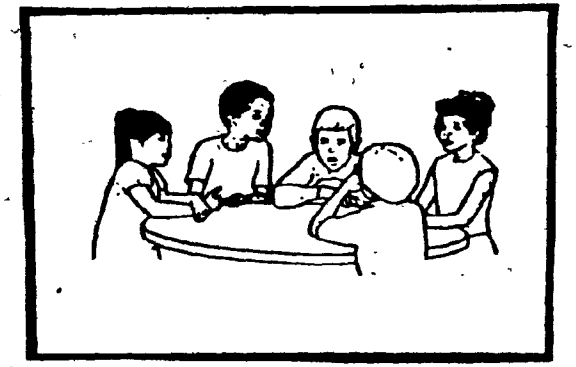

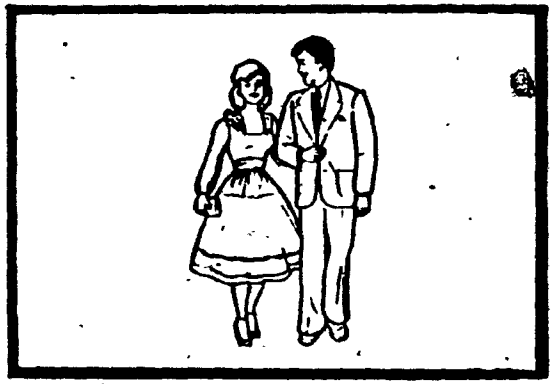

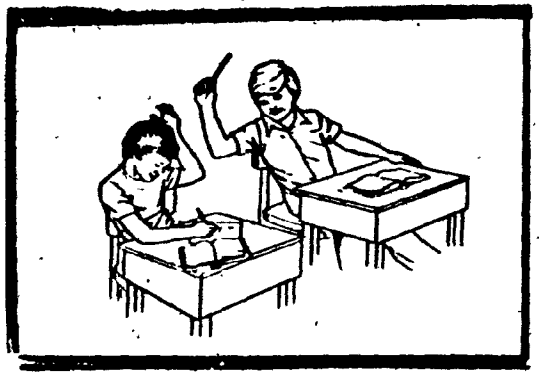

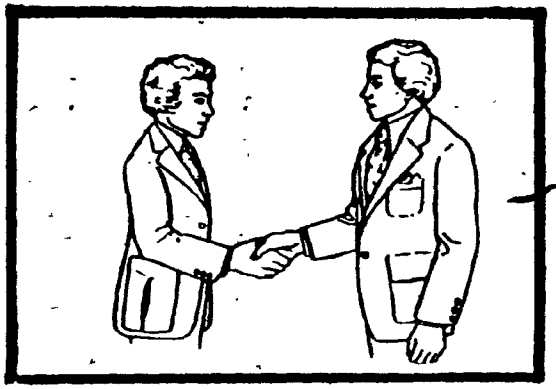

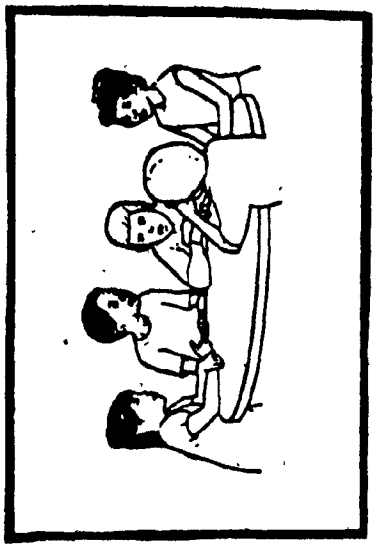

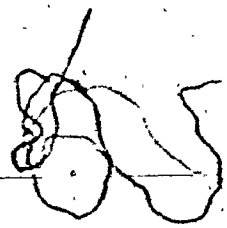

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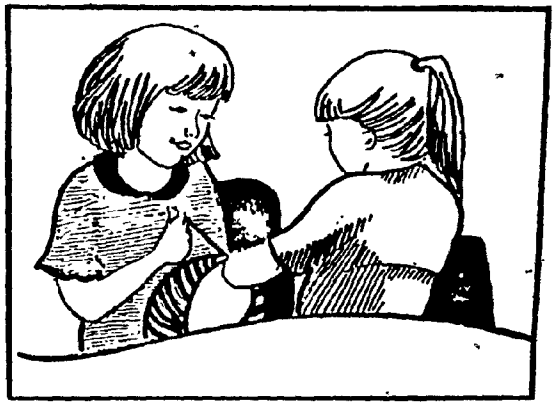
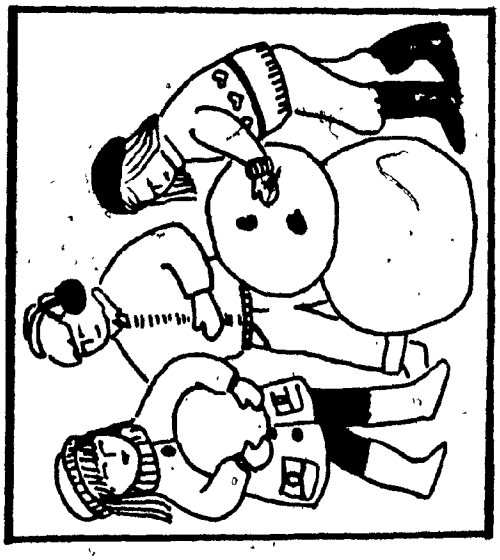
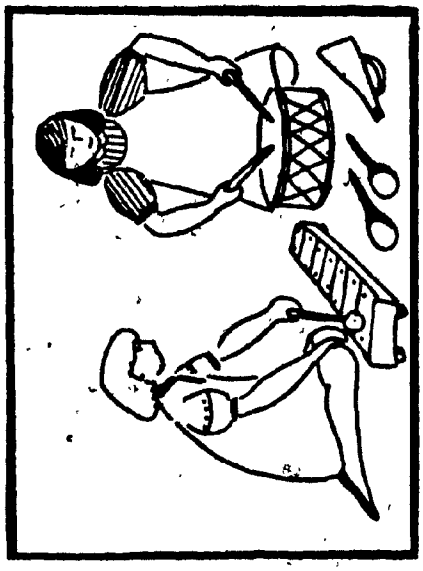
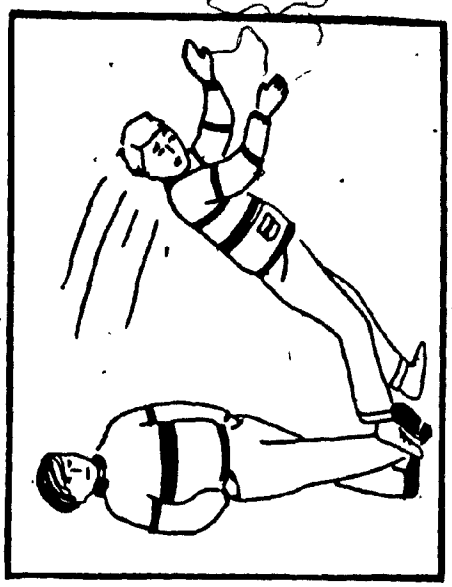
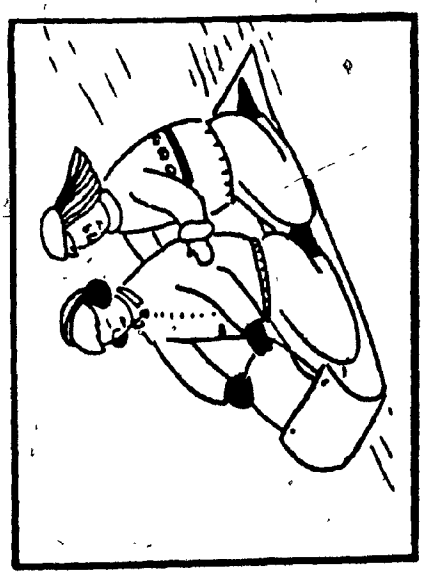


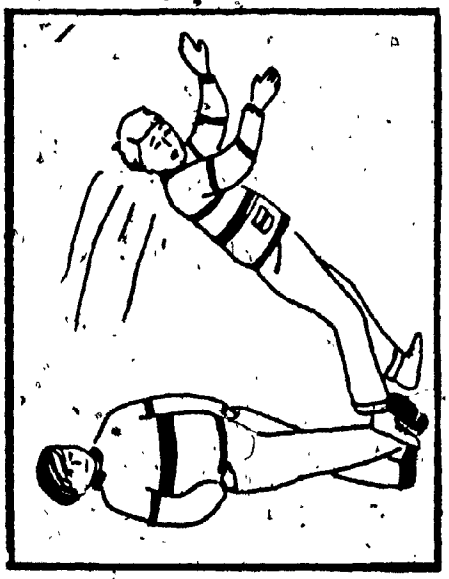




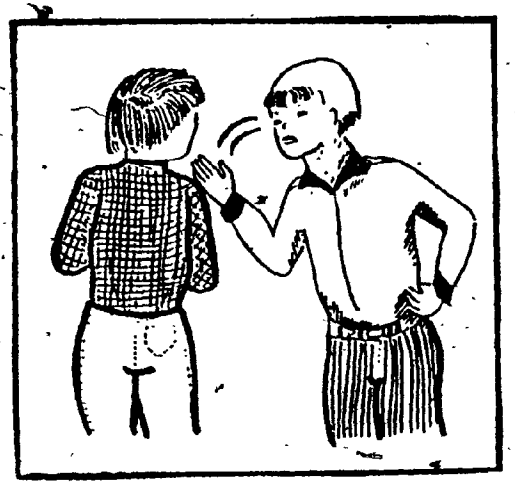
MALE TRIPPING

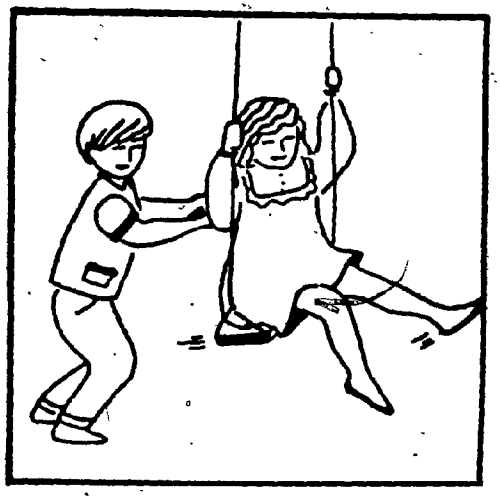


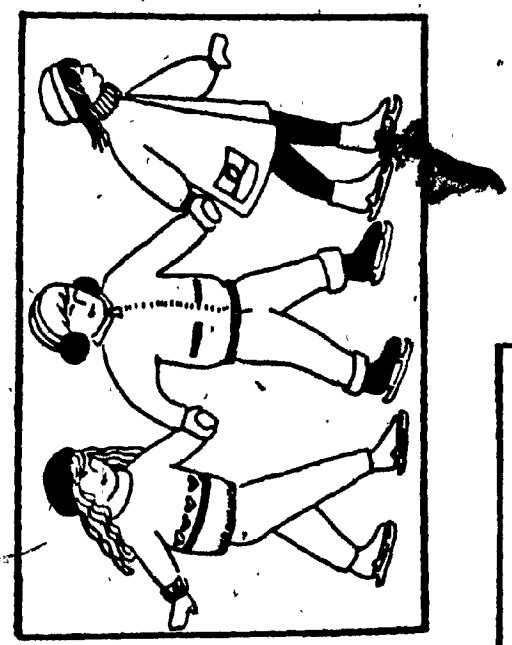




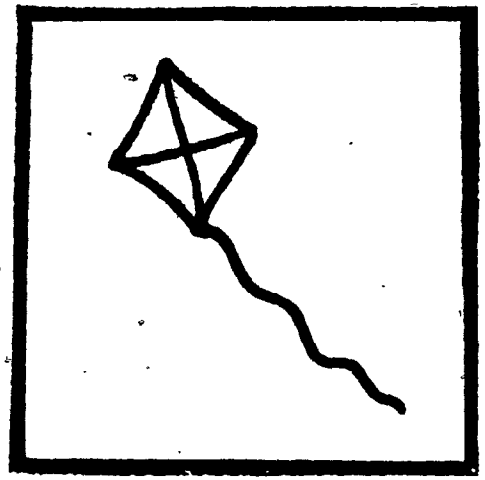
MALE SLAPPING

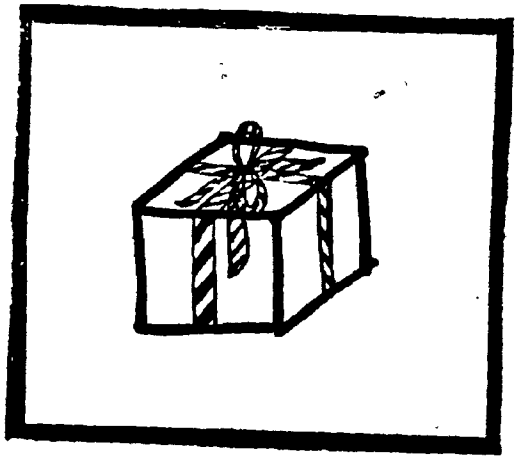


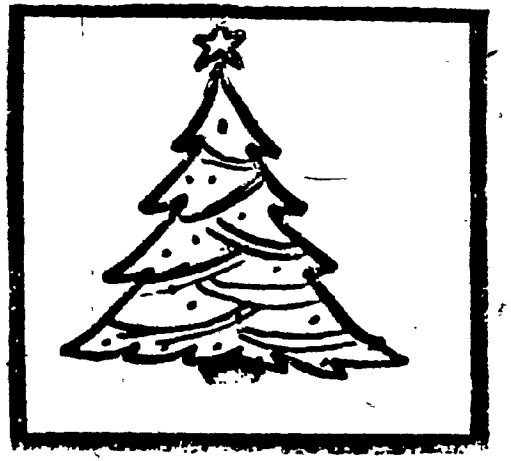


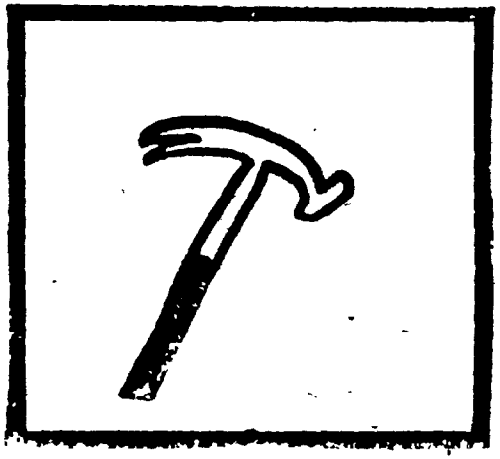


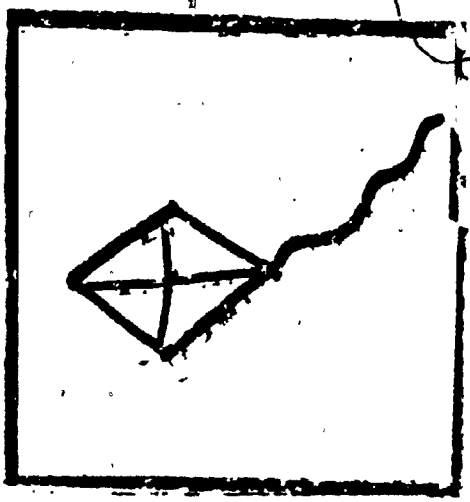
DEMONSTRATION TRIAL

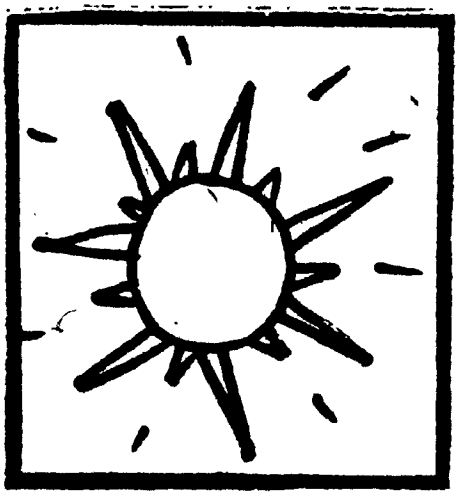


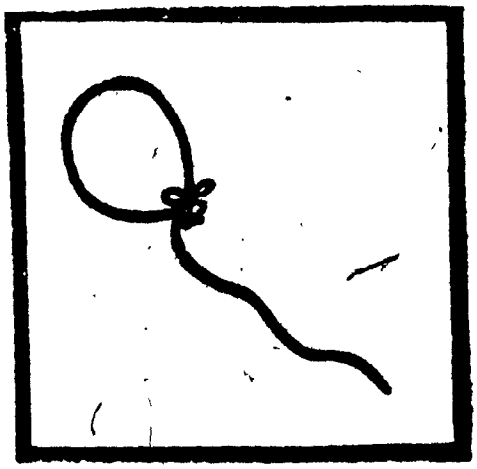




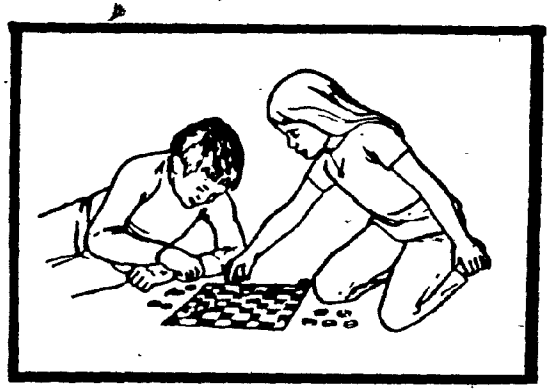


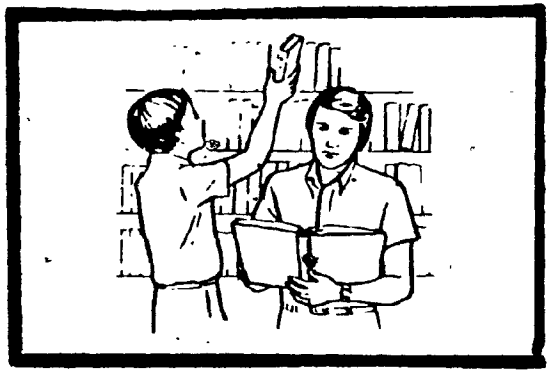


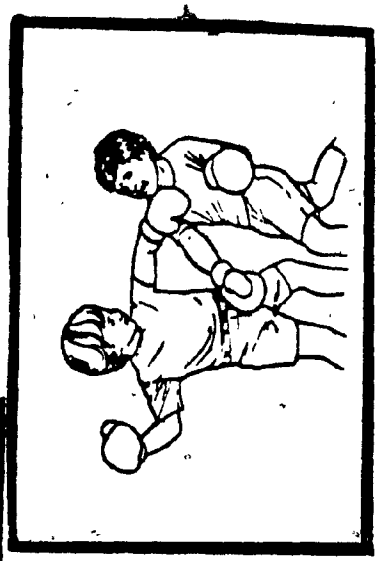




FILLER ITEM

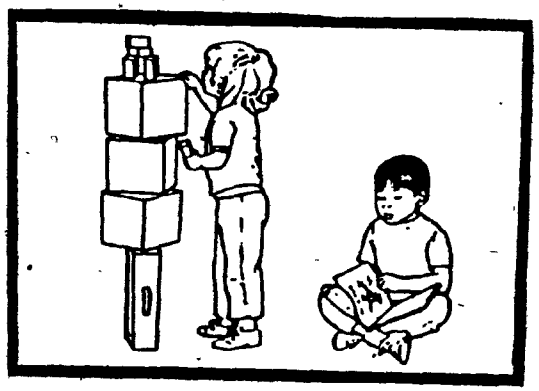


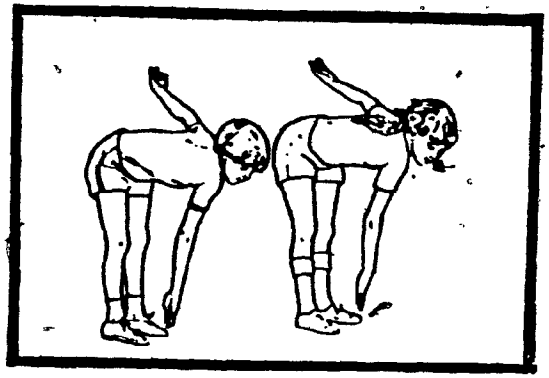


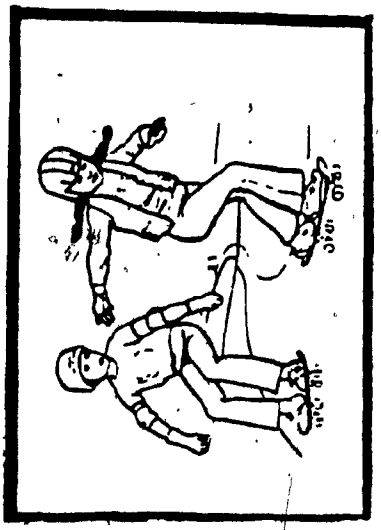


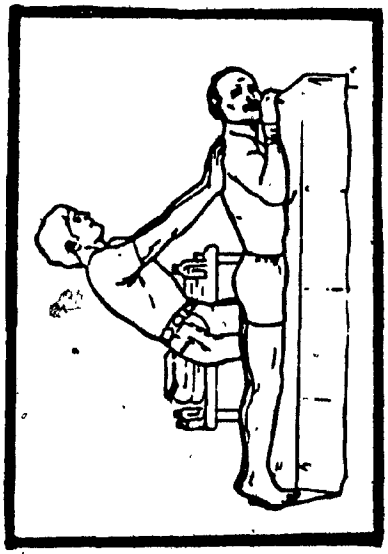
FEMALE KICKING

FILLER ITEM

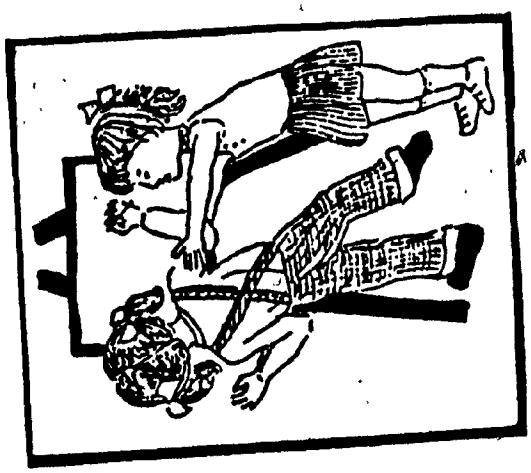


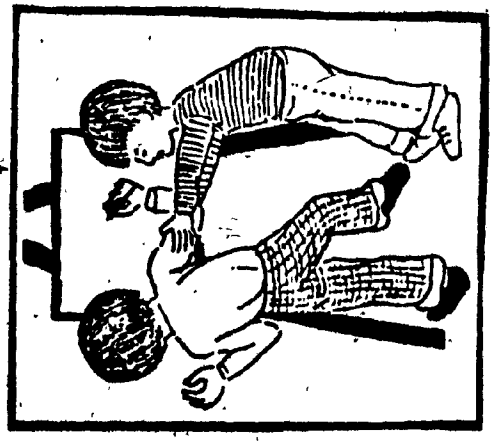






FEMALE SHOVING





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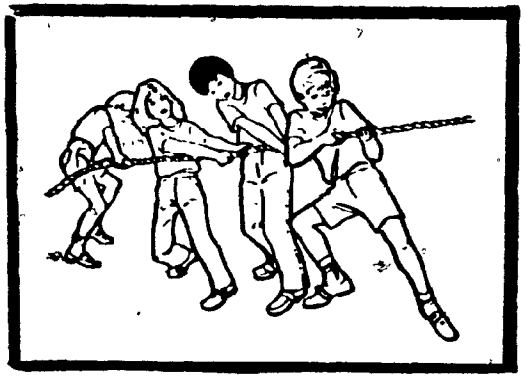
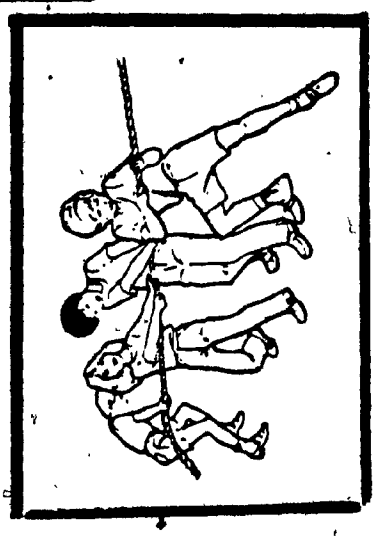
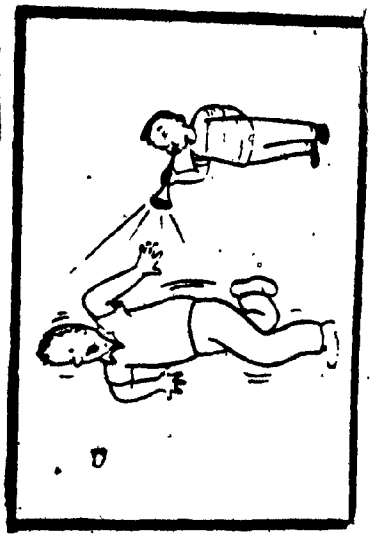
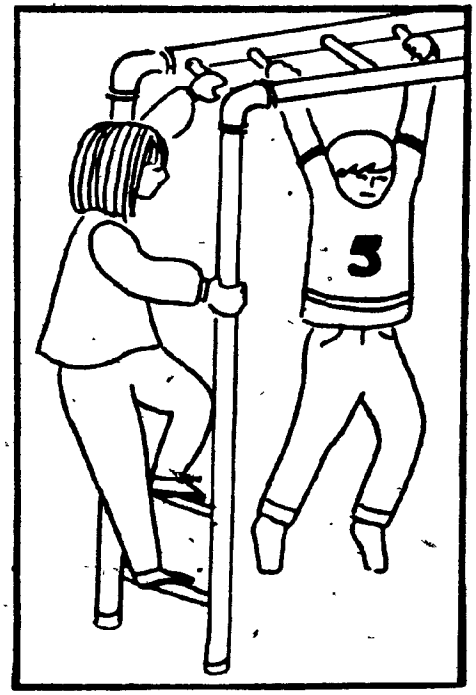
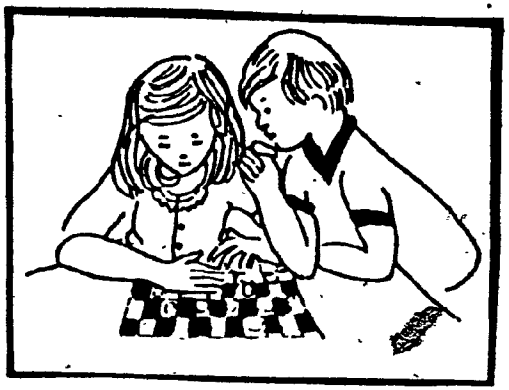


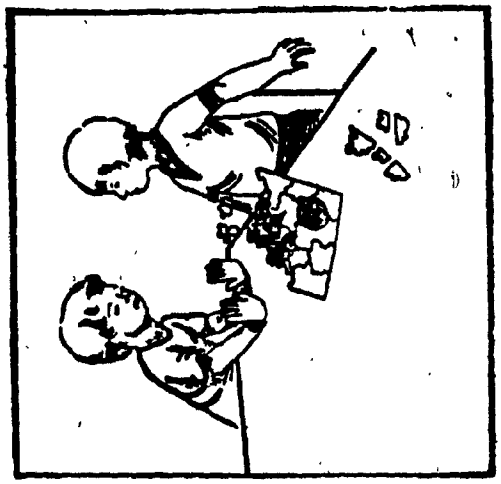


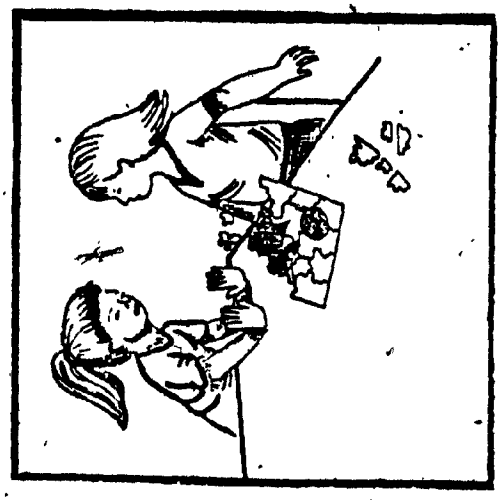


FEMALE DESTROYING PUZZLE









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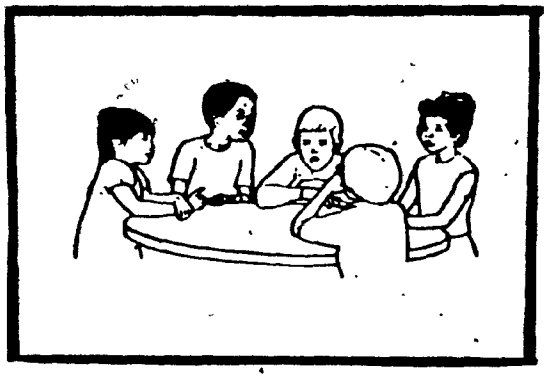
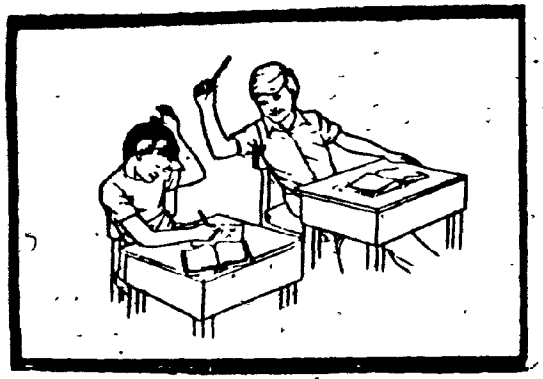
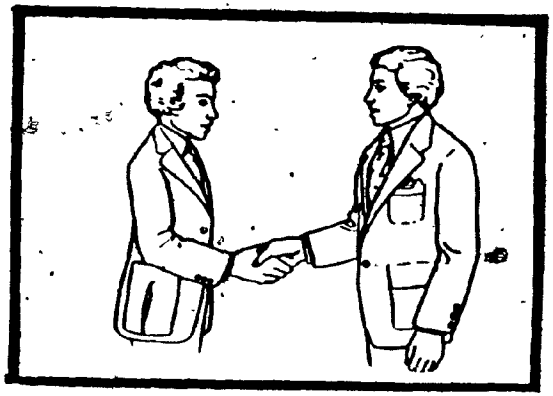
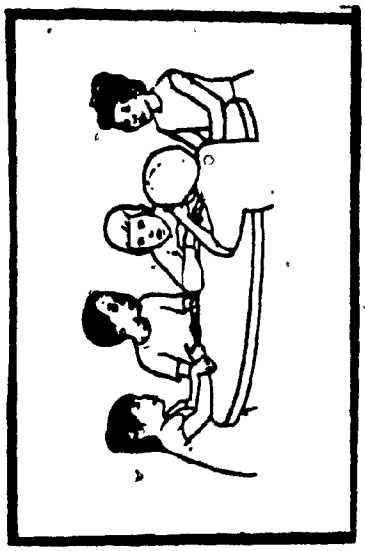
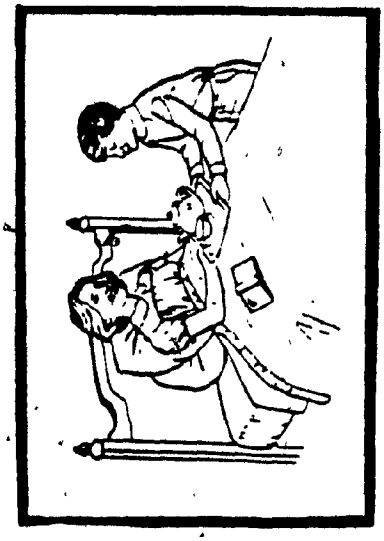


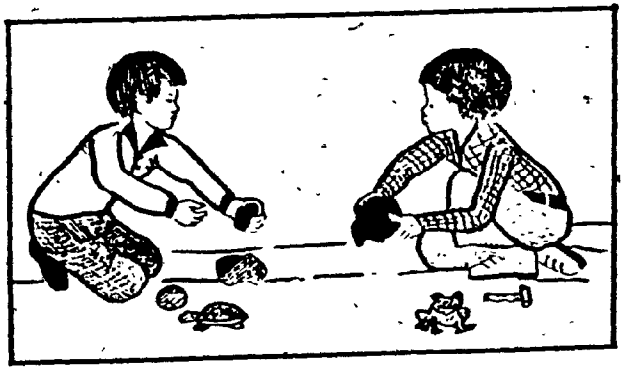


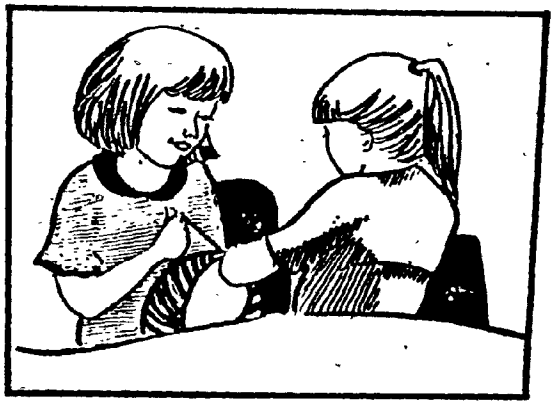


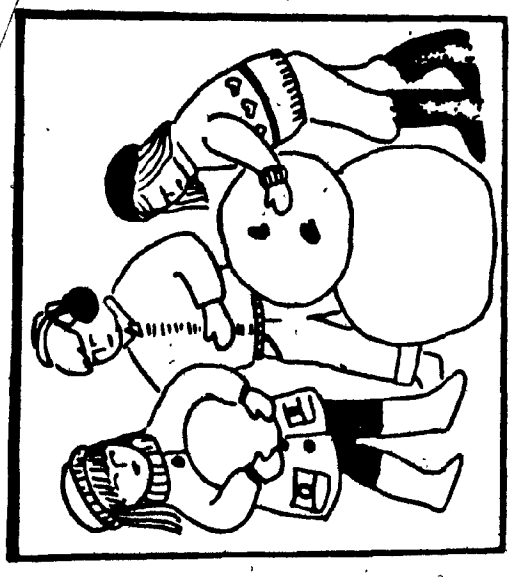




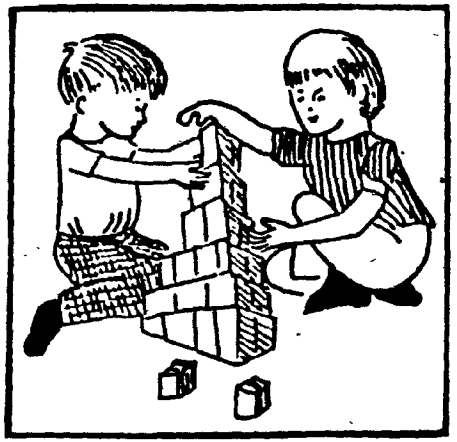
FILLER ITEM

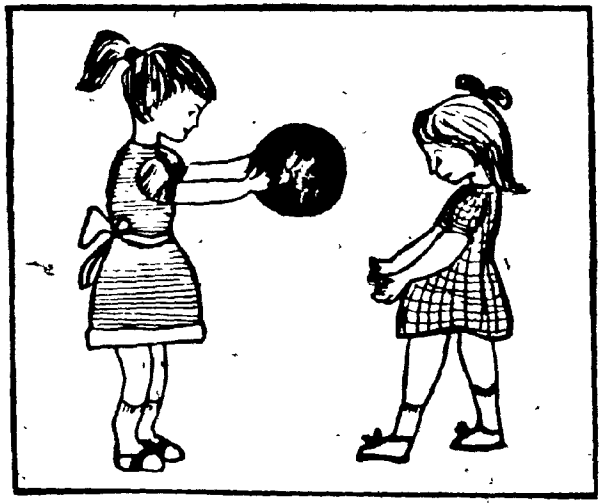


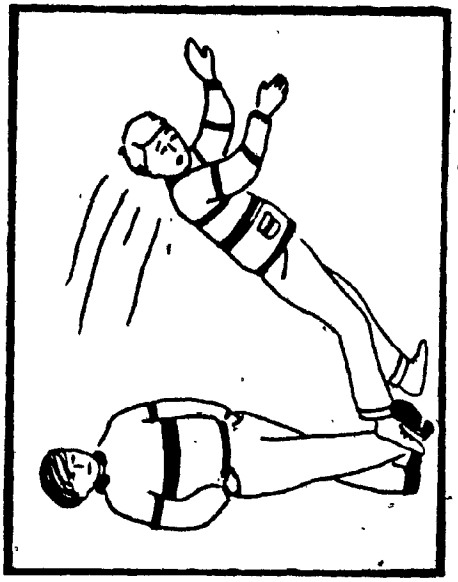


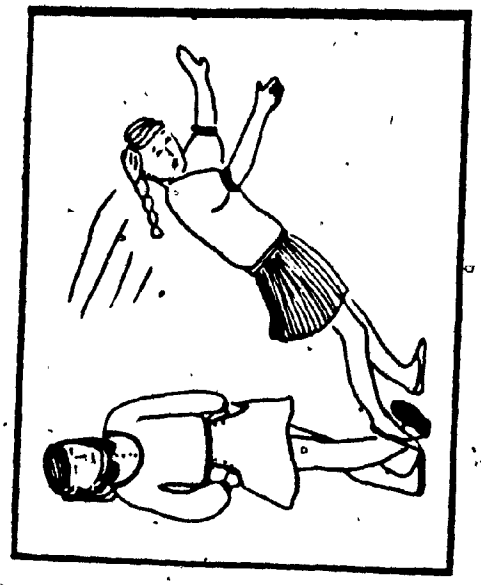


FEMALE TRIPPING

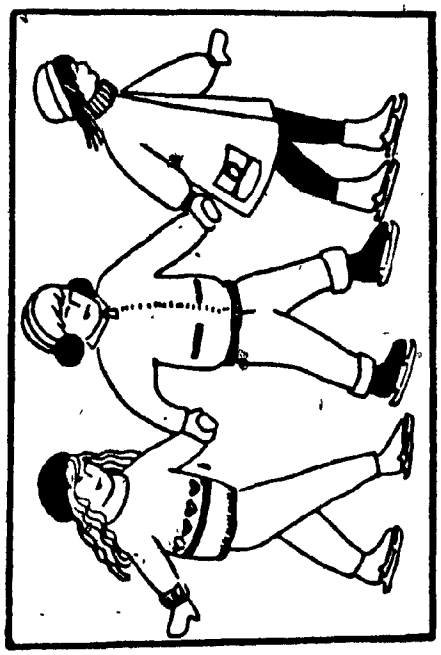






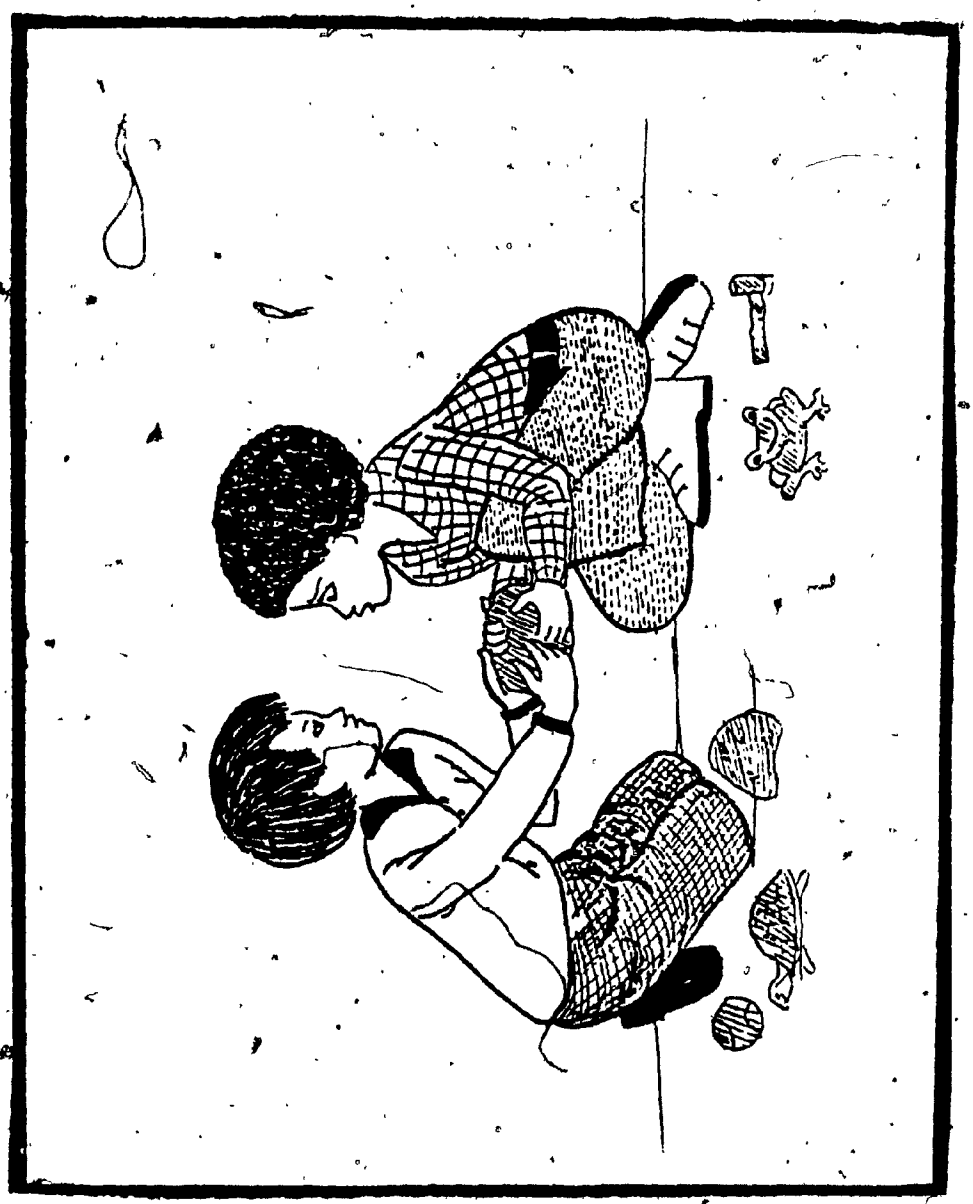


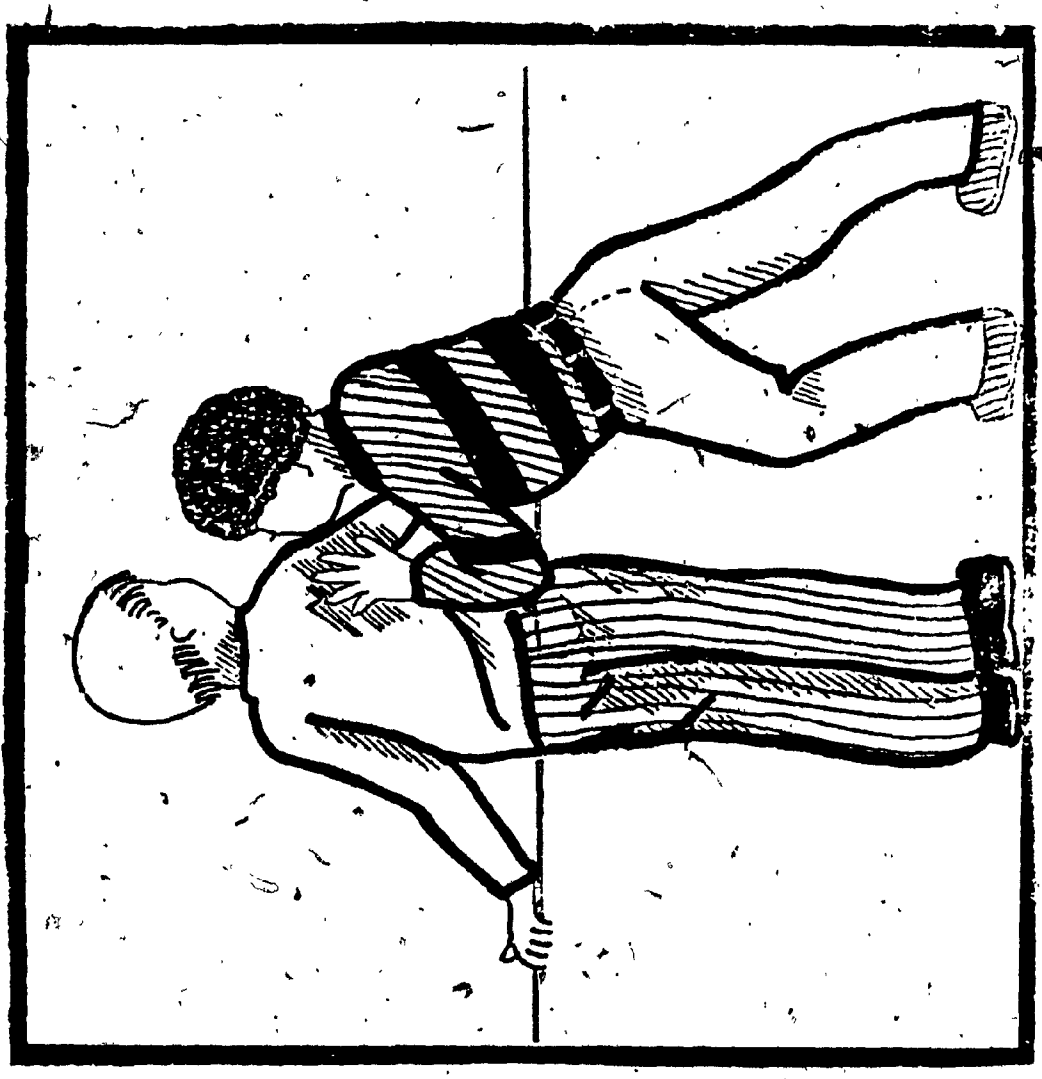
FEMALE SLAPPING

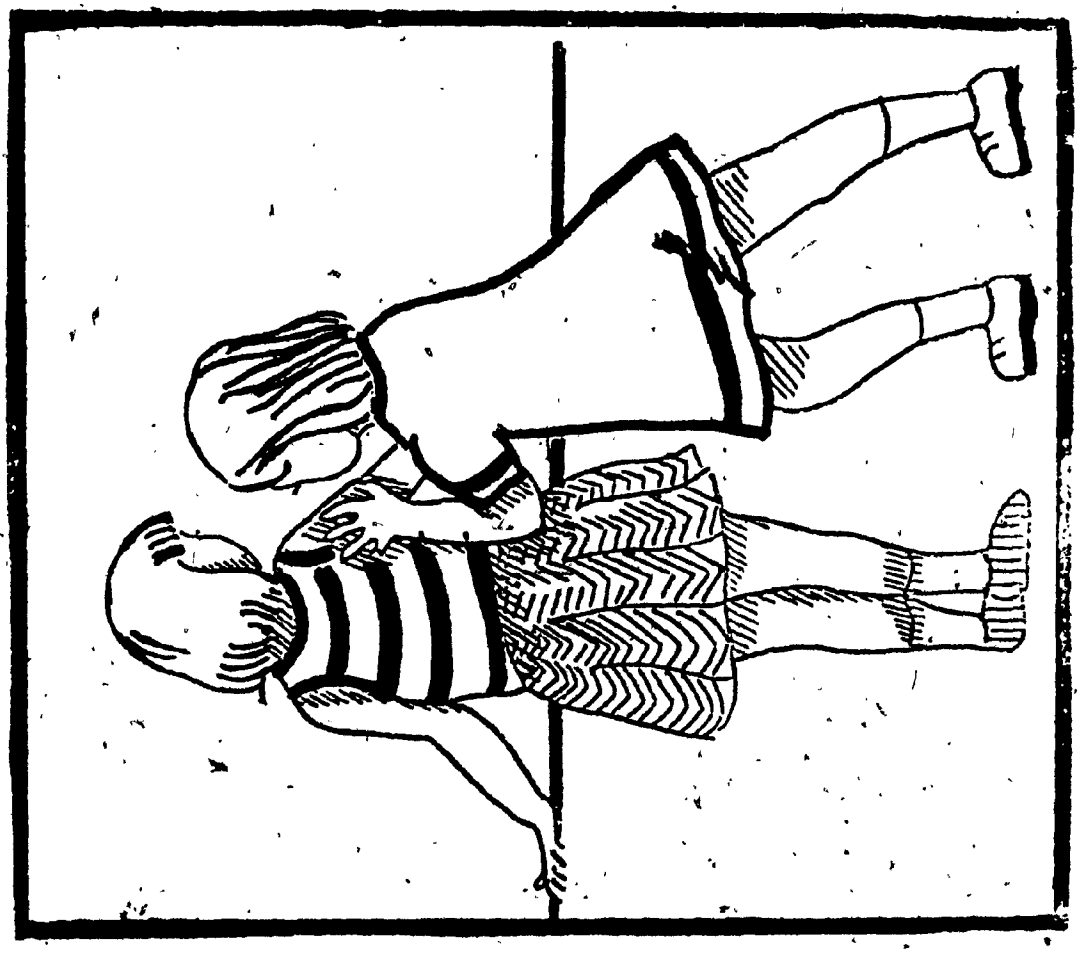


Appendix B

Stimuli for Experiment 2







Appendix C

Table A

Analysis of Variance for Mean Bias Scores in Memory of Male and Female Aggression

Source	d.f.	MS	F
A. Sex of Memory Target	1	2.27	2.06
B. Sex of Subject	1	1.33	1.20
AB Interaction	1	6.75	6.13*

*$p<.015$

Table B

Analysis of Variance for Mean Filler Scores in Male and Female Aggressive Conditions

Source	d.f.	MS	F
A. Sex of Memory Target	1	0.00	0.01
B. Sex of Subject	1	0.13	0.25
AB Interaction	1	0.06	0.12

Table C

Means and Standard Deviations of SERLI Sex Role Discrimination Scores for Own and Opposite Sex

Subjects	N		Sex Role Discrimination	
			Own Sex	Opposite Sex
Boys	53	Mean	98.11	96.79
		SD	3.95	6.77
Girls	37	Mean	96.76	97.84
		SD	6.26	4.79

Note: Sex role discrimination scores range from 0 to 100, with increasing scores reflecting greater awareness of sex role stereotypes.

Appendix D

Table A

Frequency of Male and Female Stimulus Selections in the Toy and Standing Versions of the Aggressive Condition as a Function of Presentation Order in Experiment 2.

Aggressive Condition	Presentation Order	Stimulus Selected MALE	FEMALE
Standing Scene	First	18	4
	Second	17	3
Toy Scene	First	16	9
	Second	13	10

Table B

Frequency of Male and Female Stimulus Selections by Boys and Girls under the Toy and Standing Versions of the Cooperative Condition.

Cooperative Condition	Subjects	N	Stimulus Selected MALE	FEMALE
Toy Scene	Boys	26	12	14
	Girls	16	7	9
Standing Scene	Boys	27	15	12
	Girls	21	9	12

Table C

Number of Subjects[a] Selecting Male and Female Stimuli under Aggressive Conditions in Experiment 2 as a Function of Memory Condition in Experiment 1.

Memory Condition in Experiment 1	Aggressive Stimulus Selected in Experiment 2	
	MALE	FEMALE
Male Aggressive Target	33	13
Female Aggressive Target	31	13

[a]N = 37 girls, 53 boys