

*THE EFFECTS OF PLAY MATERIALS ON SOCIAL PLAY*¹H. ROBERT QUILITCH² AND TODD R. RISLEY

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To increase cooperative and social behaviors in children, contingency management programs have been successfully employed. This study examined the possibility that children's social behavior might also be significantly influenced by the nature of the available play materials. Children in an urban recreation center were systematically provided with toys designed for social or isolate play. It was found that social play occurred only 16% of the time when the children were provided with "isolate" toys, whereas social play occurred 78% of the time when children were provided with "social" toys. Thus, the selection of play materials should be an important consideration in any effort to teach children social behaviors.

Teachers and parents consistently emphasize the importance of youth developing the social skills necessary to lead productive lives. A recent task force on child care concluded that: "In the end, the content of a child care program is most important to the development of the child. Children need to learn social and intellectual skills that will enable them to cope successfully with society and meet their own individual needs" (*Report to the President: White House Conference on Children*, 1970).

While many children probably learn social skills through unplanned interactions with peers and adults, others with limited opportunities for such interactions might benefit from a program designed to teach social skills (Risley and Baer, *in press*).

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Wiesen, Hartley, Richardson, and Roske (1967), O'Leary, O'Leary, and Becker (1967), Whitman, Mercurio, and Caponigri (1970), and Kirby and Toler (1970) demonstrated the feasibility of using extrinsic reinforcers to increase the rate of social interaction among pairs of children within an institution for the retarded and between normal siblings at home. Allen, Hart, Buell, Harris, and Wolf (1964), Hall and Broden (1967) and Hart, Reynolds, Baer, Brawley, and Harris (1968) used contingent teacher attention to increase social interaction among selected children. Wahler (1967) used children as "therapists" to administer contingent social attention to increase the level of appropriate social play in their peers. Specific social responses developed and reported thus far include smiling (Hopkins, 1968), social greetings (Kale, Kaye, Whelan, and Hopkins, 1968; Risley, 1968*b*), eye contact (Risley, 1968*a*), and physical contact (Lovaas, Schaeffer, and Simmons, 1965).

Recent studies demonstrate convincingly that social responses in children may be effectively prompted and reinforced by adults and other children. Yet educators have also consistently emphasized the importance of selecting appropriate play materials to develop children's social behaviors deliberately. "Play is a great socializing force. . . . Cooperation, the ability to get

on with others, and the 'give and take' which is so necessary to successful life adjustments may be developed through such play materials as housekeeping toys, dishes, balls, blocks, and games of all sorts" (Kawin, 1934, p. 124). While this continues to be popular among some educators, few studies support this position.

Hulson (1930) developed a scale of social value for numerous toys by reporting the number of 4-yr old children playing with each of a group of toys. Wooden blocks, doll house, sand piles, and the see-saw occasioned much more multiple-child use than did the remaining toys. Van Alstyne (1932) evaluated toys' social utility by tabulating records of social interactions based upon conversations and instances of active and passive cooperation between children using a group of toys. The measure of active cooperation closely corresponded with observers' interpretation of children "playing together". Children most frequently played together around such toys as a wagon, dishes, blocks, doll house, and dump trucks. Updegraff and Herbst (1933) developed a complex observation protocol to collect data on the play behavior of pairs of 2- and 3-yr-old children using clay and blocks at different times. Each material was associated with different aspects of social play and the results were inconclusive. More recently, Buell, Stoddard, Harris, and Baer (1968) increased a child's level of social play by reinforcing the child's use of a particular piece of outdoor play equipment. In all these studies, differences in social play were directly related to differences in play materials and not to differences in the children themselves.

The aim of the present study was to examine the effect that different play materials might have upon childrens social play.

METHOD

Subjects and Setting

Boys and girls averaging about 7 yr of age, attending the Juniper Gardens Community

Recreation Center served for this study. This center serves a primarily black poverty neighborhood located within Kansas City, Kansas. The center's recreation program was run for several hours daily. Recreational equipment within the center included two pocket billiard tables, a bumper pool table, a portable tetherball, a ping pong table, and numerous small toys and games placed on tables along one side of the center.

Toys

The authors of this study have been involved in the evaluation of over 150 children's toys. Observations of children's play indicated that some toys were primarily played with by one child at a time. These came to be called "isolate" toys. Other toys, often designed for competition, were most often played with by two to four children at a time. These toys came to be called "social" toys. Drawing upon these observations, the authors created a group of six social and six isolate toys for use in this study.³ These toys were purchased from toy and department stores and were typical of the toys ordinarily available to parents.

These toys were displayed, one group at a time, by placing three toys on each of two, 6-ft (1.8 m) long tables. The two tables were placed parallel to each other, about 5 ft (1.5 m) apart. A rope was strung around both tables at a distance of about 5 ft, creating an artificial "room" of about 300 sq ft (90 sq m). Observers stood just outside this area to take data and prevent children from inadvertently entering or leaving the experimental area during sessions.

³The six social toys were: Don't Cook Your Goose, Don't Break the Ice, Don't Spill the Beans (Schaper Mfg. Co.), Pick Up Stix, Checkers (Steven Mfg. Co.), and a deck of playing cards (Bicycle Mfg. Co.). The six isolate toys were: Gyroscope (Steven Mfg. Co.), Crayons (Binney & Smith, Inc.), Tinker Toys (Toy Tinkers, Inc.), Jig Saw Puzzle (Milton Bradley, Inc.), Farmer Says Talking Book (Mattel, Inc.), and Play-Doh (Kenner Products Co.).

Recording Procedures and Reliability

Experimental sessions involved six subjects and were always 45 min long. Time-sampling procedures were used to collect data on children's play (*cf.* Risley and Cataldo, *in press*). Observations were made every minute, on the minute. Observers counted the number of children playing in any manner and then immediately proceeded to count the number of children playing with other children at the instant the observation was made. Both counts could be completed in a matter of 10 sec. Inter-observer agreement on the "number of children playing with other children" was consistently high, thus eliminating the necessity, for this study, of further defining the term. The number of children playing with each other was interpreted as an index of children's social play. If, for example, of the six children in a session, four children were observed playing a game of poker, one child was manipulating a set of "Pick up Stix" and another child was staring out the window, then the observers would count five children playing and four of them playing with other children. The level of social play would be computed by dividing the number playing socially by the total number playing, $4/5 = 80\%$ social play for that observation. Exactly the same method of computations was used to determine the percentage of time spent in social play in both Experiments 1 and 2.

Data were always collected by two observers simultaneously. The first, or "prime" observer would always verbally cue the second, or "reliability" observer by quietly saying "Total play now" and "Total playing with other children now". Observers were always positioned in such a way as to prevent them from seeing each other's data sheets. Data were collected for at least one session in each experiment by a naive observer (a person having no personal knowledge of the study, receiving only a list of written instructions before the collection of data) as a control for the fact that the experienced observers all knew which toys had been designated as

"social" and "isolate" and hence, knew the authors' expectations concerning the outcome for both experiments.

A reliability coefficient was obtained for the number playing and the total playing with other children. This was obtained by summing the observations made for a category by each of the two observers and dividing the smaller figure by the larger. If one observer obtained 85 by adding all the figures for "total playing", while the second observer obtained 87 by adding the same figures gathered by him, then the reliability coefficient for that category of data for that session would be $85/87$, or 97% agreement. The percentage of agreement for all categories of data for all sessions in *both* Experiments 1 and 2 ranged from a low of 65% to a high of 100%, averaging 91%. Percentage agreements obtained only when data were collected by a prime and naive reliability observer ranged from a low of 85% to a high of 100% with an average of 95%.

EXPERIMENT 1: PROVIDING THE SAME CHILDREN WITH SOCIAL AND ISOLATE TOYS

Experimental Procedures

Six children within the recreation center were allowed to volunteer their participation for a 45-min session of free play with toys. At the end of the session each child received 10¢. Each session was divided into three conditions of 15 min each. At the beginning of each session, the children were told to play with the toys in any way they wished. Data were collected on the percentage of time spent in social play. These procedures were carried out four times, using different children each time, so that four distinct groups of six children were presented with both the social and isolate toys in counterbalanced order. Two groups of children received the social toys first, while the other two groups received the isolate toys first. One group of toys was substituted for the other at 15-min intervals within each session, between observations, so

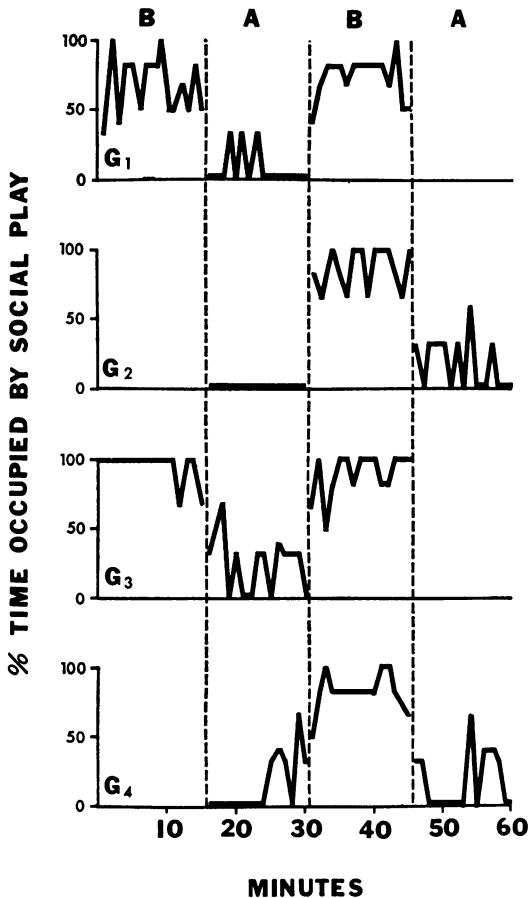


Fig. 1. Percentage of time engaged in social play by four groups of six children when computed at 1-min intervals for 45-min sessions for each of the four groups. Social toys provided the children during the B conditions and isolate toys provided during the A conditions.

that children's transition time from one set of toys to another was minimal.

RESULTS

Group 1 was first presented with the social toys during its first, B condition, and the percentage of time spent by its children engaged in social play averaged 68% (See Figure 1). During the second 15 min, the A condition, the children were given the isolate toys and it may be seen that the percentage of social play quickly dropped, averaging 6%. During the third 15-min condition for this group, beginning

30 min after the start of the session, the children were again provided the social toys, causing their percentage of time spent in social play to increase quickly to an average of 74%. The comparable average figures for Group 2 were 0%, 89%, and 22%; for Group 3, 93%, 26%, and 95%; and for Group 4, 11%, 80%, and 12%.

Thus, even when the number of children participating in each of the four play groups was held constant, extreme differences in social play were seen that depended not upon the children or adults' interactions with them, but simply upon which toys were provided to them for play. It was possible to compute the percentage of children engaged in play (isolate or social) for all sessions in both experiments. The children were engaged in play 96% of the time when provided with social toys, and 98% of the time when provided the isolate toys. Thus, the differences in percentage of social play in the four groups cannot be attributed to differences in play in general, but only to differences in types of play (social or isolate).

EXPERIMENT 2: A REPLICATION ACROSS NINE DAYS

This experiment was designed to determine whether the effects on social play produced by toys would be maintained across much longer periods of time. Each daily session lasted 15 min. All procedures used in this replication were the same as those described above with one exception: the composition of the group of six children was deliberately not held constant in order to increase the potential variability of the data and to bring the play situation more closely to a natural free-play setting in which children might participate or not, depending upon their personal wishes. Children had no knowledge of the order of presentation of toys until after they had been presented each day. The isolate toys were provided on Days 1 to 3, the social toys on Day 4, the isolate toys on Day 5, and the social toys on Days 6 to 9.

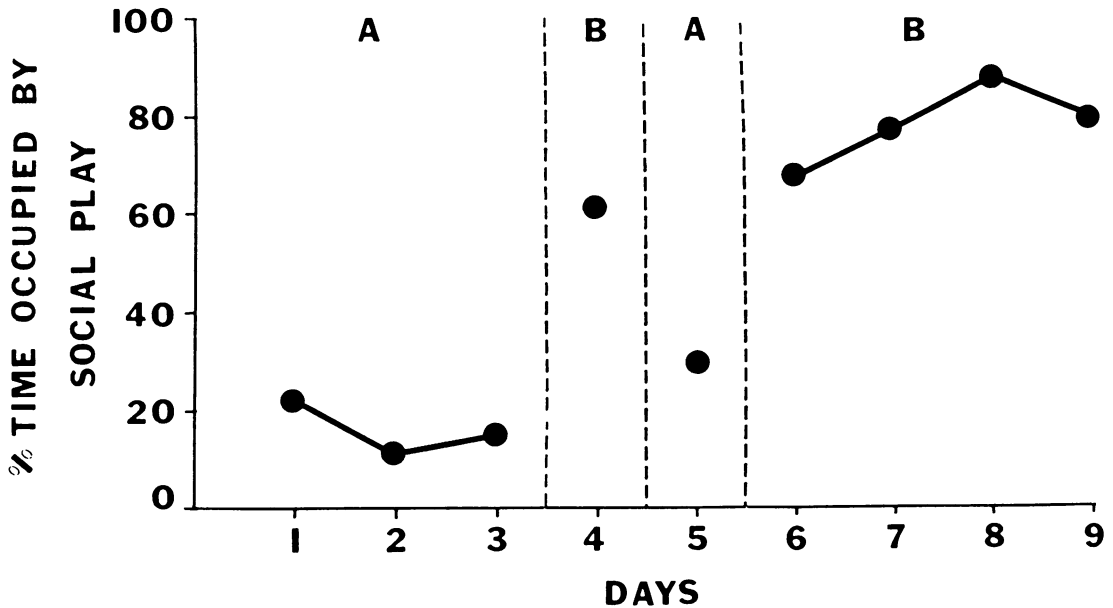


Fig. 2. Average percentage of time engaged in social play by six children for nine daily sessions of 15 min duration. Social toys were provided the children during the B conditions and isolate toys provided during the A conditions.

RESULTS

The substitution of one group of toys for another had an immediate and dramatic effect on the level of social play of the children.

The daily percentage of time occupied by social play averaged 22%, 11%, and 15% during the A condition, rose to 61% on Day 4 when the children were provided the social toys during the B condition, fell to 30% during the second A condition, and rose again to 67%, 77%, 88%, and 80% when the social toys were provided during the second B condition (See Figure 2).

DISCUSSION

The type of toys given to children within a free-play setting had a pronounced and dramatic effect upon their social play and the amount of time spent playing cooperatively with each other. These data support the position taken by Kawin in 1934, that toys have a profound effect upon the social play behavior of the children for whom the toys are provided.

Reliable information as to which toys are social or isolate can be made available to parents and educators in the near future, as research in this area is already well under way (Quilitch and Risley, *in preparation*). Such information could be used by administrators of child-care centers and preschools to create environments which, through the selection of appropriate play materials, would serve to maximize children's opportunities to practise social and cooperative play behaviors. This social training, traditionally left to chance, could be planned so that all children have the maximum possible opportunity to develop their social skills. Play materials that set the occasion for aggressive play, verbal behavior, sharing behavior, or competition might be used with groups of children suffering certain behavioral play deficits. Children suffering particularly deficient repertoires of social behavior could still be helped through individual remediation programs utilizing techniques already well developed. Thus, the study of the effects of toys upon children's social behaviors allows the applied psychologist to create developmental

or therapeutic play environments that promote social behaviors previously found amenable only to individual remediation programs.

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