

The development of sex-typed toy preferences and symbolic play behavior

Brian Rotsztein, M.A.

Philip R. Zelazo, Ph.D.

McGill University and Montreal Children's Hospital

Poster presented at
the annual meeting of the American Psychological Association
Washington, D.C., August 4-8, 2000

Abstract

Play constitutes the dominant developmental activity of infants and toddlers. There is a developmental progression of play from stereotypically limited behaviors to more sophisticated activity. The current study empirically investigates the onset and development of infant and toddler sex-typed toy preferences and symbolic play using a free-play session. Twenty-eight (14 boys, 14 girls) normally developing infants were examined at 13, 22, and 31 months in order to differentiate the varying degrees of play behaviors and to determine which toy sets were functionally used more often, given different levels of cognitive capacity. Results indicated that both gender's functional play activity increased over the three ages while a corresponding decrease in stereotypical play was found. On measures of symbolic play (duration and sophistication of functional play), only the number of different toy sets used during the single longest epoch of sustained play differentiated the groups. Moreover, boys consistently spent more time playing with male-stereotyped toys at all ages while girls divided their time more evenly, particularly at the later two ages. Implications of results and suggestions for future research are discussed.

Introduction

Sex-typed toy and activity preferences among infants and toddlers represent a fundamental aspect of gender-role development. Children's values, attitudes and preferences are shown through their choices of specific toys (Huston, 1985). Moreover, because children's toy play behaviors are observable, these preferences represent the building block from which to theorize about children's knowledge of sex-role concepts.

Progression of sex-typed behavior in infant and toddler play

In a series of studies on play among infants at approximately one year, McCall (1974) concluded that there were no sex differences in the sample's manipulative play or in the amount or relative occurrence of any other play behaviors. However, there is evidence suggesting that children learn the meaning of gender labels and begin calling themselves boy or girl during the second year of life (Fein, Johnson, Kosson, Stork, & Wasserman, 1975; Huston, 1985). At about the same time, they demonstrate rudimentary knowledge of sex stereotypes for toys, tools, and clothes (Blakemore, LaRue, & Olejnik, 1979; Huston, 1985; Lewis, 1981). This distinct pattern of increasing sex-typed toy preference among preschoolers continues and becomes increasingly clear at least until they enter the fourth grade, particularly for boys (Carter and Levy, 1988; DeLucia, 1963). The increase in sex-stereotyped play over age is possibly due to the influence of friends, peers and teachers (Fagot, 1977; Eisenberg, Tryon, & Cameoron, 1984; Moller, Hymel, & Rubin, 1992).

Information about the time of onset of sex role stereotypes and their relation to other gender-related abilities and behaviors is critical to any explanation of sex role development (Weinraub et al., 1984). There is a paucity of research on sex role knowledge and behavior in children under three years of age, leaving several questions unanswered, including the identification of the earliest age at which sex-role stereotypes can be reliably observed and to what specific content areas do sex-role stereotypes apply (Weinraub et al., 1984).

Importance of play

Play constitutes the dominant developmental activity of infants and young children. While definitions of play are varied, for the purpose of this poster session, it will be generally defined as any number of intrinsically motivated activities that result in positive affect. Piaget (1962) was one of the first to claim that play is an important infant activity for cognitive development. Research on infant play has demonstrated that play advances a number of cognitive functions, including the promotion of social interactions, language use, and physical and motor skill development (Garvey, 1991; Singer, 1994; Wyly, 1997). Children engage in play behaviors because it is fun, voluntary, intrinsically motivated, and flexible (Belsky & Most, 1981). Similar play behaviors have been identified across cultures and across settings indicating its uniform nature (Sigman & Sena, 1993; Tizard, Philips, & Plewis, 1976).

Developmental progression of play

The general developmental progression of play during the first two and a half years of life has been documented (e.g., Belsky & Most, 1981; Fenson et al., 1976; Garvey, 1991; McCall, 1974; Wyly, 1997; Zelazo & Kearsley, 1980).

Fenson, Kagan, Kearsley and Zelazo (1976) examined age differences in play, using a cross-section of infants at 7, 9, 13, and 20 months. They found that by 13 months, infants showed more interest in physical and functional relations among the toys, signaling an important advance in cognitive functioning.

Zelazo and Kearsley (1980) observed sixty-four infants (8 boys and 8 girls) at each of four ages, 9 ½, 11 ½, 13 ½ and 15 ½ months during a 15 minute free play session. They found that while the amount of time spent engaged in functional play steadily increased from 9 ½ months to 15½ months, the number of different appropriate uses increased sharply as the children got older. The participants also showed three times more play with the neutral toys than female or male toys and a preference for same-sex toys. The authors concluded that a change in qualitative play from stereotypical play to the matching of appropriate uses for a large array of toys indicates that the child's manipulations become more object specified and functional over this 6-month age span.

Tamis-LeMonda and Bornstein (1993) observed several cohorts of children with sample sizes ranging from twenty to fifty children at 9, 13, 17, and 21 months of age observed during 10 minutes of free play. The authors found that more sophisticated levels of play steadily increased as less complex play behavior decreased. By the time the infants reach 20 months, they began displaying symbolic or pretend play. This more advanced form of play is then expanded and generalized to a variety of toys so that by thirty to thirty-six months, children have a larger repertoire of activities and interests (Garvey, 1991).

Duration and diversity of play

It has been shown that children's sustained overall attention relates to their symbolic play (Tamis-LeMonda & Bornstein, 1990). Two core indices of play include the duration and level of play (Tamis-LeMonda & Bornstein, 1993). The duration of play measures the time that the child pays attention to and engages an object. Level involves the progressive nature of play, especially the increasing sophistication of symbolic play. These indices are conceptually distinct measures of play. For example, a child can play for a prolonged period of time at a low level of sophistication such as mouthing an object or play for shorter epochs at a more complex level such as feeding a doll and brushing its hair. Few studies have examined the duration and level of sophistication from infancy to the second year of life, yet the data indicates that the variation in children's duration of attention during play behaviors is associated with the variation they demonstrate in their level of sophistication in play from infancy through the middle of their second year (Tamis-LeMonda & Bornstein, 1993).

Kruzynski et al. (1996) examined 43 normally developing infants during a 15-minute free play session at each of three ages (13, 22, and 31 months). Results indicated that stereotypical play decreased while functional play increased from 13 to 22 months but reached a plateau thereafter. Breadth of play increased linearly from 13 to 31 months as demonstrated by increasingly longer sustained durations and an increase in the number of different appropriate uses across toy sets during that time.

Zelazo and Rotsztein (1999) observed 20 (10 boys, 10 girls) normal and 20 (10 boys, 10 girls) children at risk for developmental delays at each of three ages (13, 22, 31 months) during a 15-minute free play session. They found that measures of breadth of functional play, including the number of different appropriate uses and different toys sets used during an overall free-play session and the number of different appropriate uses during the single longest epoch of sustained play discriminated between groups at all ages. The authors concluded that the results provided preliminary validation that breadth of play may reflect objective nonverbal indices of symbolic play and may provide a less confounded measure for use with seriously developmentally delayed children.

Hypotheses

The present study investigates naturally occurring sex-typed behaviors in toy preferences and the complexity of play from before the period in which sex-role stereotypes are thought to begin until the age where behavioral sex differences appear in areas over which the child can exert some control based on their level of cognitive development. This study had two main objectives. The first aim was an examination of the development of observed sex differences in overall and complex play behaviors. A second objective was to determine the ages of onset of sex-role knowledge, that are critical to explanations of sex-role development, through an examination of sex-stereotyped toy preferences and children's abilities to categorize based on observable behavior.

The following hypotheses were made:

1. The sophistication and amount of functional play for the session will increase with a corresponding decrease in stereotypical play across ages for both sexes.
2. Boys will spend more time playing with male-typed toys at all ages while girls will spend more time playing with female-typed toys at the later two ages.

Method

Participants

The participants were drawn from of a larger longitudinal study of the development of normal and at-risk infants. Twenty-eight normally developing infants (14 boys, 14 girls) were examined at 13, 22, and 31 months.

Materials

Most toy sets in the present study were chosen because they lend themselves to multiple uses. Six sets of toys were used, with two sets for each of three gender categories (male, female, and neutral). Thirty functionally appropriate acts representing specific associations for this set of realistic toys were pre-determined and are listed in Table 1.

Procedure

A 15-minute free play session was conducted in a 14x16 foot carpeted room with one couch and a chair. The child was placed in the center of a semi-circle of six sex-typed sets of toys (e.g., two neutral: tea set, telephone; two female: large doll, small doll and furniture; two male: baseball set, truck and garage) arranged in a non-adjacent order. One parent remained seated in the room with the child throughout the session, fill in a questionnaire while avoiding to initiate any interactions. Parents were told to respond naturally and redirect the child to the toys if the child initiated contact.

Two observers coded the child's play behaviour in mutually exclusive categories from an adjacent observation room using a checklist with 10-second groupings. Thus, functional and stereotypical play were coded on-line, while the remaining measures were derived from the functional play data.

Stereotypical play. Stereotypical play was scored when waving, banging, fingering or mouthing of the toys occurred.

Functional Play. Functional play was scored when any one of 30 objective predefined appropriate uses for each toy occurred. Both functional play and stereotypical play are mutually exclusive measures.

Duration of Sustained Play. Duration of play was measured using the longest epoch of sustained functional play, defined as the longest string of consecutive 10-second blocks in which appropriate uses for the toys occurred.

Level of Sophistication. The level of sophistication was evaluated using the number of different appropriate uses, reflecting the breadth of functional play and the number of different toy sets used during the longest epoch of functional play.

Toy Set Preference. The number of 10-second units of functional play per toy set was used to assess toy set preferences.

Reliability was calculated for a similar subset of the larger longitudinal study which involved 6 categories of child activity, including stereotypical and functional play. The other measures reported are based on a breakdown of functional play. Cohen's Kappa documents a point-by-point agreement beyond chance for two independent observers coding 7 children over ninety 1-second units of observation, and reached excellent observer reliability with $k=0.8230$.

Results

The analysis was broken down into two main sections. The first section focussed on the amount and sophistication of play while the second part concentrated on the different toys used by each sex.

Overall Play Session

A two-way ANOVA with 3 levels of age (13, 22, 31 months) as a repeated measure and 2 levels of group (sex - boys, girls) as a between group factor was performed on each dependent variable. As was predicted, the children in both groups spent more time in functional play and less time engaged in stereotypical behavior as they developed. On the measure of functional play, a main effect of age was found, $F(2, 83) = 13.8$, $p < .0001$, revealing a significant increase in functional play behavior as the children grew older. A main effect of age was also found on the measure of stereotypical play, $F(2, 83) = 21.0$, $p < .0001$, indicating that both groups decreased significantly over age. No significant main effect of Group or Group x Age Interactions were found. The proportion of time spent engaged in either form of play (functional or stereotypical) by each sex can be found in Figure 1.

Tukey post hoc comparisons showed that both boys and girls demonstrated significant differences between 13 months and 22 months and between 13 months and 31 months for both functional and stereotypical play (both $p < .05$).

Duration of Play and Level of Sophistication

It was predicted that the duration of sustained play would increase over age and that play would become more sophisticated. Analyses revealed that the longest period of sustained play increased significantly for both groups, $F(2, 83) = 34.1$, $p < .05$, over the three ages (see Figure 2). Specific comparisons between means using Tukey post hoc tests demonstrated that both groups differed between 13 and 31 months ($p < .05$).

The breadth of activity within the longest epoch of sustained play, reflecting level of sophistication was assessed by examining the number of different appropriate uses and the number of different toy sets used within the longest epoch. A main effect of age, $F(2, 83) = 52.7$, $p < .0001$, indicated that both groups increased over time (see Figure 3). While a main effect of group approached significance ($F(2, 83) = 3.4$, $p < .07$), it is possible that a larger sample size may have lead to a significant difference between the groups. Tukey post hoc tests revealed that significant differences were found between 13 and 31 months and 22 and 31 months ($p < .05$).

The number of different toy sets used within the longest epoch of sustained play increased significantly over age, $F(2, 83) = 6.4$, $p < .01$ (see Figure 4). A main effect of group was also significant, $F(2, 83) = 4.4$, $p < .05$, indicating that the groups differed in the number of different toy sets that were used during the longest epoch. Specific comparisons between means, using Tukey post hoc tests revealed that the groups differed significantly between 13 and 31 months ($p < .05$).

Toy Set Preference

The first part of the results served to validate that the overall amounts of functional play between groups were not significantly different. For this part of the analyses, a 2 (Group) x 3 (Age) x 6 (Toy Set) ANOVA was performed in order to assess whether any significant differences would be found with respect to the children's preferred toy sets.

A main effect of age was found, $F(2, 503) = 1.9$, $p < .01$, indicating that use of the sets in functional play significantly increased over time. A significant main effect of toy set, $F(5, 503) = 17.5$, $p < .0001$, revealed that there were significant differences in the amount of functional use between the different toy sets. No main effect of group was found. A Group x Toy set Interaction, $F(5, 503) = 6.6$, $p < .0001$, showed that the children in each group played with each of the toy sets for significantly different amounts. A significant Age x Toy set Interaction, $F(10, 503) = 2.0$, $p < .05$, demonstrated that there were significant differences between amount of functional use of each toy set over time. Finally, a Group x Age x Toy set Interaction, $F(10, 503) = 2.0$, $p < .05$, was found. One possible explanation for this finding is that as the children age, the two groups play choose to with different toys.

In order to further assess the differences between toy sets, means and standard errors can be found in Table 2 . The total amount of functional play per toy set can be seen in Figures 6-8. One salient feature of these figures is that boys hardly played with female-typed toys at all three ages, especially the small doll toy set. While girls played the large doll in relative equal amounts across all three ages, it was only at 31 months that they played relatively evenly across toy sets. At 13 months, boys spent most of their time playing with neutral toys, while at 22 and 31 months, they spent most of their time playing with both neutral and male-typed toys. At all three ages, the neutral toys were played with more often than those sex-typed for boys or girls.

Discussion

This study set out to examine sex differences in the development of sex-stereotyped toy preferences and symbolic free play behavior. The first objective was to establish whether overall sex differences exist in observed infant and toddler play behaviors. The amount of functional play for the entire 15-minute session increased with a corresponding decrease in stereotypical play over three ages, independent of sex. Moreover, the duration and level of sophistication of play increased for both groups over time. There is a normal progression in object use from stereotypical to functional to symbolic acts representing a development from least to most mature (Belsky & Most, 1981; Zelazo & Kearsley, 1980). The results for the two groups in the present study are consistent with this progression. The youngest children displayed the least functional play, shortest sustained durations of play and the greatest amount of immature stereotypical uses (mouthing, waving, banging, and fingering) of objects. The only measure that differentiated the sexes was the number of different toy sets used during the longest epoch of sustained play, with girls playing with significantly more toys than boys. It is possible that boys at this age engage in less complex forms of play. For example, a study of 57 3-year-olds (27 boys, 30 girls) in pre-school centres found that the boys demonstrated significantly less symbolic play, and more “partial use” of play materials than same-aged girls (Tizard et al., 1976). These differences disappeared by age 4.

The second goal of the present study was to assess the development of sex-stereotyped toy preferences through direct observation. The children in this study demonstrated both different sex-typed patterns of play activities as well as clear preferences for specific toys. The hypothesis that boys would spend more time playing with male-typed toys at all ages while girls would spend more time playing with female-typed toys at the later two ages, was only partially confirmed. While the boys tended to ignore the female-typed toys, they showed a clear preference for neutral toys at 13 months which became more evenly distributed between neutral and male-typed toys at 22 and 31 months. Girls spent more time playing with male-typed toys than boys spent playing with female-typed toys. Although there was only a slight difference at 13 months, the gap increased as the children grew older. Beginning at 13 months, the boys demonstrated rudimentary understanding of sex-stereotyped toys as demonstrated by their ignoring the female sex-stereotyped toys. These results are consistent with previous findings (e.g., O'Brien and Huston, 1985).

Aside from theoretical reasons, there may be another reason why the children in both groups did not play with the small doll toy set as much as any of the other toy sets. It is possible that toys with clear functions are engaged more often. Younger infants tend to play with more functionally explicit toys, and their play and language follow the themes suggested by the toys. So, in order to play with a toy such as a doll, they would require a greater cognitive capacity and ability (Pellegrini & Jones, 1994). When children play with toys that are less constructive and more fantasy-based, their language tends to be less context based. However, when given constructive toys, play is less imaginative and more constructive and contextualized (Pellegrini & Jones, 1994). Therefore, when presented with a small doll, the youngest children were not yet ready to engage it while the other toys may have been more appealing.

Not only did the boys in the present study behave in a way that suggested more sex-role socialization from earlier on, but in a follow-up of 36 3- and 4-year-old children at age 10, a significant correlation was found between preschool and elementary school on measures of masculinity and femininity for boys but not for girls (Fagot & Littman, 1975). The authors concluded that while both sexes demonstrated more varied interests, boys were more restricted in their play behaviors.

The overall results indicate that there are indeed sex differences among the play behaviors of infants and young children. As such, it is important to take the results under consideration for future research, assessments, and clinical and educational interventions that utilize children's play activities as a focal point.

Implications

The results of the present study have implications for clinical use. Play assessments are now commonly used to evaluate a variety of infant abilities (Bornstein & Watson-O'Reilly, 1993; Garvey, 1991; Wyly, 1997; Zelazo, 1989). Observations of infant free play behaviors have distinct advantages in clinical settings such as providing information that is both more objective and richer than simply parental report. Using the longest epoch of sustained play as a measure of symbolic play also has the advantage of being quantitative and more objective than many other traditional measures of more complex play. Although it yields less qualitative information, using this method of scoring is important in that it involves the sequencing of ideas and objects into a coherent action. Measures of breadth of play during the longest epoch of sustained play may be an objective measure of complex play that is useful with handicapped or developmentally delayed individuals who frequently have difficulty expressing themselves during play. Thus, this study provides further evidence as to the validity of these measures of non-verbal symbolic play. Determining the types of functional play acts, toy sets used, amount of activity per sex, and level of sophistication that is expected at each developmental stage, in populations that are at-risk for developmental delays and autism is important for several reasons. Such results could potentially provide professionals with a basis from which to

design and implement intervention programs. Research on the content of play indicates that existing play scales, typically administered in a standardized, structured situation, relate concurrently and predictively to other measures of cognitive performance. Given the results, it is possible that the play and attention measures derived from a loosely-structured, short, free-play sessions, would be useful in screening children who are potentially at-risk for concurrent or later cognitive delays (Damast, Tamis-LeMonda, Fox, & Bornstein, 1996). Therefore, the creation of a normative measure of play in normally developing infants can be beneficial for clinical reasons. Moreover, it offers insight into the functioning of the brain for developmental theorists.

Currently, practitioners and researchers continue to develop and use play assessments as guides for planning intervention strategies for “infants with disabilities” (Wyly, 1997). Increasingly, play activities that advance the development of social, cognitive, and linguistic abilities are being incorporated into treatment plans (Wyly, 1997). Because of its intrinsic value to infants, using an intervention that is “framed in the context of play” increases the likelihood of the child participating in the activities (Wyly, 1997).

Limitations and Directions for Future Research

This study is limited by its relatively small sample size, thus the results should be considered as preliminary evidence. Differences between the play behaviors and toy preferences of the boys and girls supports the discriminative validity of the use of various toy sets and as measures of complex play. It is suggested that future research try to validate this procedure further on a larger sample, in order to further establish normative data about the age of onset and levels of sophistication of these behaviors.

The present study adds a piece of the puzzle to sex-role stereotypes. The majority of research on our understanding of children’s sex-role concepts tend to be based on a singular measure, most often behavioral observations (Huston, 1985). Moreover, these measures are often incomparable due to different criteria. However, other factors such as peer choices and self-perception measures create a multidimensional approach, which is often taken for granted (Huston, 1985).

Future studies might also include similar play data and correlating this information with IQ scores. Data were collected on IQ scores for the present study, including scores on the Bayley Scales of Infant Development at 13 and 22 months and on the Stanford-Binet at 31-months. This data could be used to correlate chronological age with mental age at different levels sophistication of play. Moreover, Malone and Langone (1998) suggest that, in order to increase the ability to compare the results of different studies, research on play behaviors should take into account sex, context, type, severity of disability, presence or absence of disability. Finally, literature reviews suggest that there is a paucity of research related to gender differences among children with disabilities, especially as compared to normal populations (Malone & Stoneman, 1995). Therefore, it would be beneficial to undertake more research for clinical, developmental, and theoretical reasons.

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Table 1
List of appropriate uses for toy sets used during free play session

Gender	Toy Sets	Appropriate Uses
Neutral	Telephone	Receiver to ear Dial Converse (babble) Present telephone to other Replace receiver properly
Neutral	Cup, Spoon, and Pot	Place cover on pot Stir spoon in cup/pot Pour from pot to cup Drink from cup Set cup in saucer
Female	Small doll, furniture	Sit doll in chair/bed Lay doll in bed Arrange furniture Stand and walk doll Child sit on toy chair
Female	Large doll, bottle	Undress/Dress doll Brush hair Feed with spoon (Doll/Self) Feed with bottle Cradle in arms
Male	Truck, garage, blocks	Push truck Truck noises Push/place truck in garage Place block in truck Place other toy(s) in truck
Male	Ball, bat, glove, hat	Throw ball Roll ball Place glove on hand Place hat on head Hit ball with bat

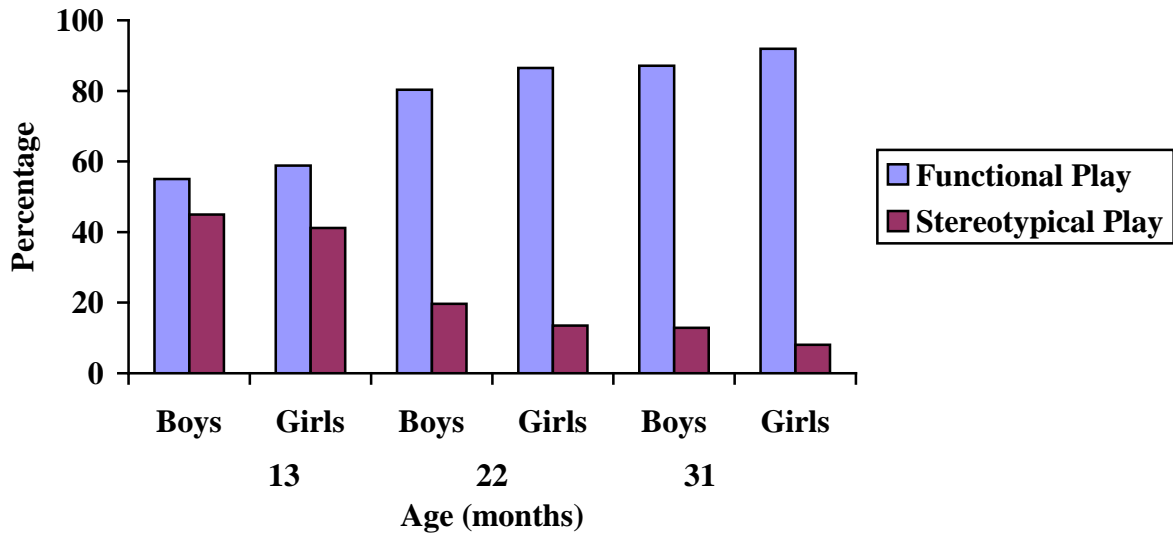


Figure 1. Mean percentage of total play (functional play plus stereotypical play) for each type of play over three ages.

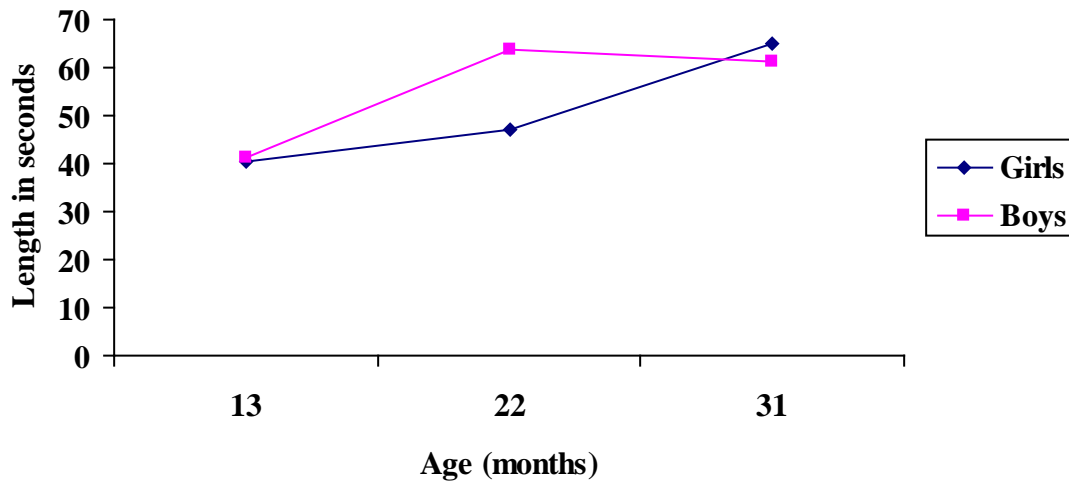


Figure 2. Mean length of the longest epoch of functional play per participant per 15-minute session over three ages.

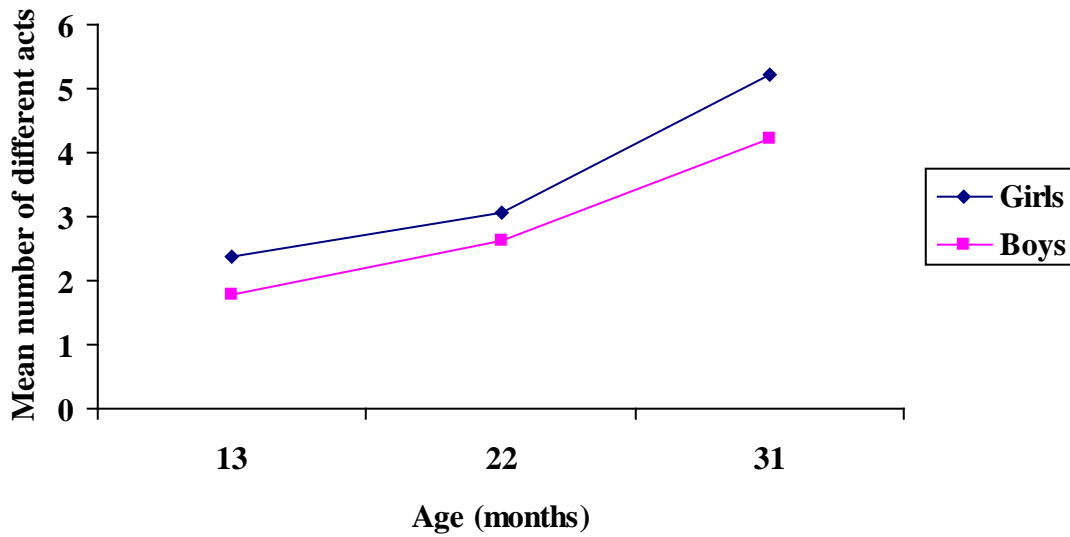


Figure 3. Mean number of different acts of functional play during the longest epoch of functional play per participant per 15-minute session over three ages.

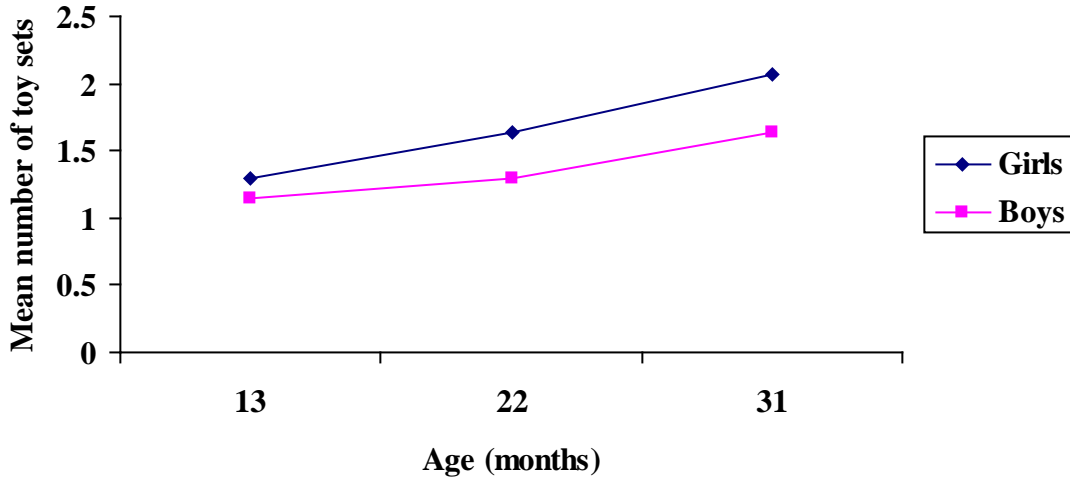


Figure 4. Mean number of different toy sets used during the longest epoch of functional play per participant per 15-minute session over three ages.

Table 2

Means and standard errors of the amount of functional play per toy set by sex, over three ages

Toy Set	13 months		22 months		31 months	
	<u>M</u>	<u>SE</u>	<u>M</u>	<u>SE</u>	<u>M</u>	<u>SE</u>
Cup, Saucer, Spoon						
Boy	12.0	2.8	4.6	1.4	10.0	2.5
Girl	4.2	1.2	5.3	1.9	7.3	1.4
Telephone						
Boy	3.4	1.6	10	3.5	6.7	1.1
Girl	6.9	1.8	9.9	2.6	12	2.8
Small Doll						
Boy	0	0	0.07	0.1	0.9	0.3
Girl	0	0	1.3	0.5	4.1	0.7
Large Doll						
Boy	0.9	0.6	1.6	0.6	3.5	0.9
Girl	5	2.2	6.8	1.6	5.5	1.2
Truck, Blocks, Garage						
Boy	1.9	0.9	9.4	2.5	7.8	2.2
Girl	1.7	1.1	2.3	0.8	4.4	1.5
Ball, Bat, Hat, Glove						
Boy	2.2	4.2	6.9	2.1	6.4	1.3
Girl	2.7	3.0	4.6	1.2	5.9	1.1

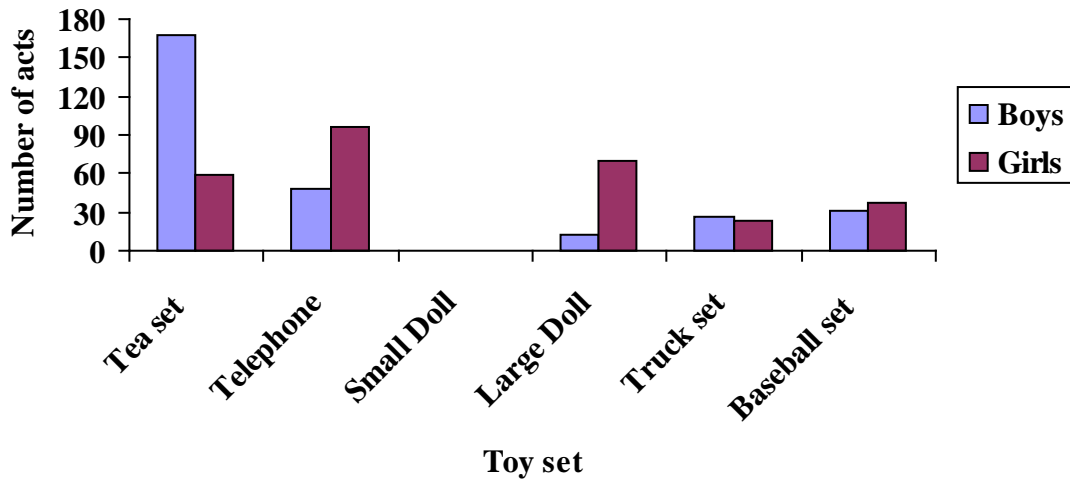


Figure 5. Total number of functional acts per toy set per 15-minute session at 13 months.

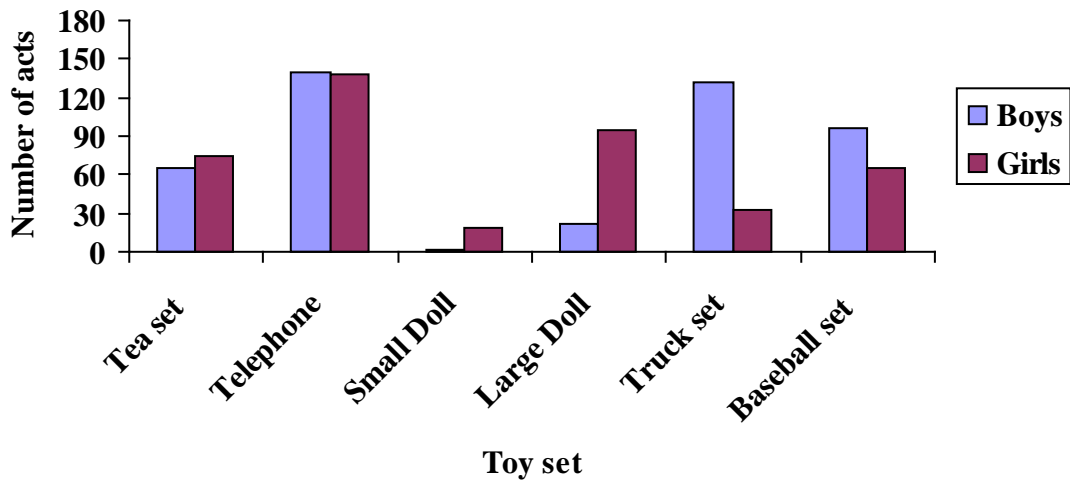


Figure 6. Total number of functional acts per toy set per 15-minute session at 22 months.

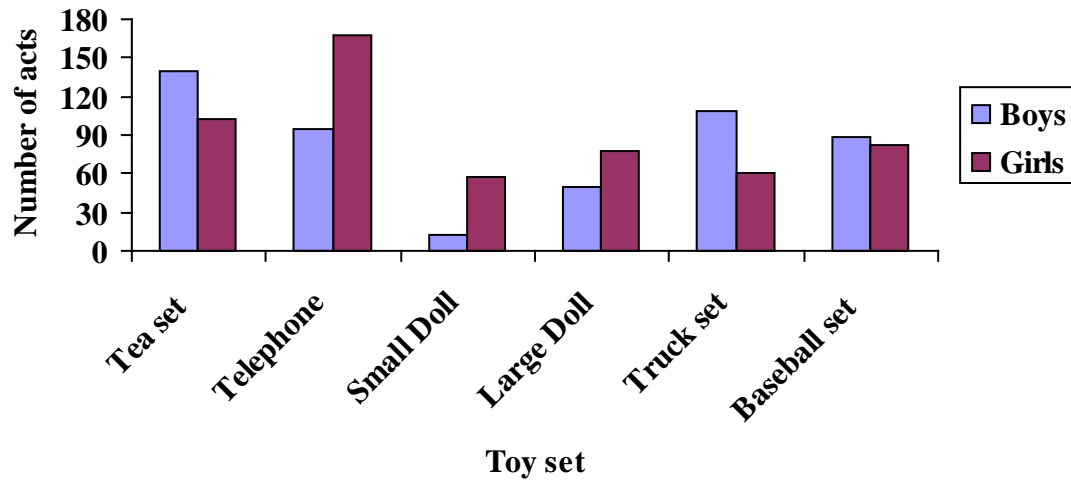


Figure 7. Total number of functional acts per toy set per 15-minute session at 31 months.