

The Effects of Stereotyped Toys and Gender on Play Assessment in Children Aged 18–47 Months

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ABSTRACT *The goals of the present study were to identify the impact particular stereotyped toys have on young children's complexity of play; to identify how these behaviours may influence children's cognitive development using play assessment; and to ascertain the toys that would be most appropriate for use in play assessment sessions. A total of 30 children who ranged in age from 18–47 months were observed playing for 30 minutes in a playroom. Analyses revealed that higher levels of play complexity were only manifested when children played with female stereotyped toys. The implications for practitioners of this and other findings are discussed.*

Assessment is an integral part of early intervention services. In particular, the cognitive component in early childhood assessment is vital to the overall assessment process. Typically, this component is most commonly fulfilled by using a traditional standardised test such as the Bayley Scales of Infant Development (Second Edition) or the Stanford Binet Intelligence Scale (Fourth Edition) (Bagnato & Neisworth, 1994). Although these current standardised tests provide adequate reliability and validity, critics argue that the unnatural testing situation, the complex language demands, the lack of treatment utility, and the question and answer format are foreign to young children (Kelly-Vance, Needelman, Troia, & Ryalls, 1999; Neisworth & Bagnato, 1992). Furthermore, recent findings suggest that traditional standardised assessment instruments may be underrepresent a child's true developmental level (Calhoun, 1997; Kelly-Vance, Needelman, et al., 1999).

Because of the limitations of most standardised assessment instruments, a viable

alternative has been proposed: play assessment (Farmer-Dougan & Kaszuba, 1999; Fewell, 1991; Linder, 1993). Play assessment is an observational, functional assessment technique that can be used to focus on particular domains in the context of a child's play. The practice of observing a child's play to determine his/her cognitive functioning level has received widespread attention by researchers and practitioners alike (Athanasios, 2000). Many practitioners are interested in using play assessment in the evaluation of young children because it offers advantages over the use of traditional standardised tests.

There are three main advantages to using play assessment as an alternative to the traditional standardised assessments. First, it allows the practitioner to view the child's cognitive development through play in a naturalistic environment without placing situational demands on the child. Second, play assessment, in contrast to most standardised cognitive tests, is designed to produce the optimum level of performance. Finally, it provides a flexible format to monitor the child's progress.

The rationale for using play as a window onto a child's cognitive development is not new: play is considered to be an important contributor to the development of cognitive skills in children (Piaget, 1962). As such, play is said to exemplify a child's current and ever changing cognitive functioning over time (Linder, 1993). This development is evidenced in the transition from exploratory to symbolic play, where much of the research attention has been focused over the past several decades (Elder & Pederson, 1978; Fenson & Ramsay, 1980; Kennedy, Sheridan, Radlinski, & Beeghly, 1991; Lyytinen, 1991; McCune-Nicolich, 1981). Children find pleasure in play, as it occurs in the child's natural environment. Furthermore, play is considered to be intrinsically motivating for children (Bronfenbrenner, 1979) and elicits the highest level of developmental ability (Vygotsky, 1967).

Play in typically developing children, and play in most children with disabilities, evolves in a similar sequence but at different rates (Beeghly, Perry, & Cicchetti, 1989; Lifter, 1996; Rogers, 1988). It is thus reasonable to assume that the findings of the present study are important for the assessment of cognitive development in children with disabilities. In the present study we chose to focus on only one of the federally mandated components of early childhood assessment, namely cognitive functioning: the level of play complexity exhibited by the children in the study will serve as indicator of their cognitive development.

Because play assessment is still in its infancy, factors such as the gender of the child, the gender stereotype of the toy used during a play assessment session, and the complexity of play displayed by the child all need to be examined for their potential impact on a child's cognitive assessment. Research has shown that boys and girls from as young as 18 months and throughout childhood exhibit differential behaviours when playing with certain toys (Mayes, Carter, & Stubbe, 1993; O'Brien & Huston, 1985). For example, boys and girls make gender-typed toy selections by 18–20 months of age (Fagot, 1974; O'Brien & Huston, 1985). Gender differences found in the play of young children include differences in exploratory behaviour, type of pretend play exhibited, and the complexity of play. There is also compelling evidence that the gender associated with toys, objects, and/or characters can have significant impact on toy preferences (Carter & Levy, 1988) and exploration (Bradbard & Endsley, 1983; Bradbard, Martin, Endsley, & Halverson, 1986). Moreover, children's play with toys and their toy choices have also been shown to have long term consequences for later social and cognitive development. For example, play with feminine toys seems to elicit nurturing, proximity, and role play (Caldera, Huston & O'Brien, 1989) whereas play with masculine toys

tends to foster higher mobility, activity, and manipulative play (Serbin & Connor, 1979). In addition, gender stereotyped toys contribute to the formation of gender schemata (Martin & Halverson, 1981) which have been shown to contribute to stereotyped activities, roles, and to influence recall (Cherney & Ryalls, 1999).

Children reliably prefer toys deemed appropriate to their gender and children's toys continue to be differentiated with respect to gender (Campenni, 1999; Miller, 1987). For example, Miller noted that toys judged to be most appropriate for boys differ in a number of ways from those judged appropriate for girls: toys viewed as more appropriate for girls were rated as attractive, creative, nurturing, and manipulable while masculine toys were identified as more competitive, aggressive, constructive, conducive to handling, encouraging sociability, and reality based. In addition, Miller found that the toys stereotyped as female typically included domestically oriented toys and stuffed toys, whereas boys' toys included vehicles, balls, guns, and construction toys. Taken together, these differences suggest that children's toys may be differentiated reliably along particular qualitative dimensions that bear a theoretical relationship to cognitive development. It is thus important that individuals using play assessment account for children's differential toy preferences because these inclinations may impact upon play complexity.

For the purpose of this study, play complexity is defined as the level of symbolic and representational skills demonstrated by the child during play (Lyytinen, 1991). Different gendertyped behaviours may not represent an accurate account of a child's developmental skill level because certain aspects of his/her play may not be elicited using certain toys (Caldera & Sciaraffa, 1998). For example, girls tend to display more nurturing behaviours in doll play (feed, comb/brush, cover or wrap with blanket and/or put to sleep) and boys tend to display more mechanical knowledge when playing with male stereotyped toys (lining up and joining the truck and trailer in different ways, fixing the tires or filling the truck with gas) (Caldera, Huston, & O'Brien, 1989; Lowe, 1975). These examples support the contention that because boys and girls are more likely to play with own-gender stereotyped toys, they may demonstrate a higher level of play complexity when manipulating own-gender stereotyped toys with which they are more familiar and more experienced than with cross-gender stereotyped toys with which they are less familiar.

The purpose of the present study was to assess the effects of type of toy and gender on play complexity and young children's play behaviours. In particular, we wanted to identify the impact particular gender-type toys have on young children's complexity of play, and how these behaviours may influence cognitive development consistent with Lyytinen's (1991) as well as Fenson and Ramsey's (1980) classifications (Kelly-Vance, Gill, Ruane, Cherney, & Ryalls, 1999). At the same time, we attempted to identify the types of toys that would elicit the highest play complexity for both sexes and the toys which kept most of the young children's attention.

Based on children's toy preferences, it was hypothesised that both boys and girls would spend more time playing with same-gender stereotyped toys than with cross-gender stereotyped toys. Girls were expected to play more frequently with female stereotyped toys than male stereotyped toys and thus display a higher level of play complexity when playing with female stereotyped toys than with male stereotyped toys. Alternatively, it was expected that boys would choose to play with male stereotyped toys more frequently than with female stereotyped toys and thus display a higher level of play complexity when playing with these male stereotyped toys. Because boys tend to receive criticism from peers and parents for cross-gender-typed play, while girls receive less

differentiated reactions to gender-typed and cross-gender-typed behaviours (Fagot, 1977), we hypothesised that boys would tend to have a stronger bias for same-gender-typed play than girls. Furthermore, consistent with Piagetian (1962) cognitive theory, we expected that play complexity would increase with age.

Thus, our goals for this study were manifold. We attempted to identify the toys that would elicit the most complex play for each sex. Moreover, we tried to ascertain the toys that would be most appropriate for use in play assessment sessions based on 30 minutes of free play. This information is especially critical when play assessment sessions are to be conducted at locations other than an onsite playroom.

Methods

Participants

A total of 30 typically developing children participated in this study: 15 boys (mean age 30.40 months, $SD = 9.09$) and 15 girls (mean age 30.73 months, $SD = 10.66$). The majority of the children were Caucasian and from a middle class background. The children were recruited through flyers that were posted throughout the campus of a midsized Midwestern university and word of mouth. Each participant received a shirt or a gift certificate and prize for his/her participation.

Materials

The playroom, situated in a university laboratory, consisted of a square, carpeted room with two windows. Along the walls, low shelf units were mounted with a variety of colourful toys selected to elicit a wide range of behaviours. We attempted to balance the number of toys stereotyped as male, female, and neutral (Carter & Levy, 1988; Miller, 1987). Examples of toys included in the playroom were: kitchen set, mechanical toys, farm set, toy house, dressing-up clothes, blocks, crayons, dolls and accessories, puzzles, toy phones, shape sorter, puppets, and so on (see Appendix A for a complete list of toys).

Procedures

Each child, accompanied by his or her parent(s), was introduced to the playroom and was instructed to play with anything s/he wanted. The playroom contained a large assortment of toys and equipment arranged in play areas like those typically found in a preschool classroom (a kitchen area, block area, art area, and so on). The toys were placed on low shelves against the walls or on the carpeted floor in order to promote access to all play materials. The parents were instructed not to initiate play with their child and only to respond if the play was directed towards them. A session coordinator and a camera operator were also present during the playtime. The session coordinator sat on the carpeted floor in the play area with the child. She did not initiate or facilitate any play but only responded to play that was initiated by the child. The session coordinator imitated the child's words and actions and responded to any directions given by the child. Play sessions were videotaped by the camera operator and lasted approximately 40 minutes.

Coding

Sessions were videotaped and then coded at a later time. Thirty minutes of each child's play was used to assess the various behaviours. The play sequences were transcribed according to a set protocol (Kelly-Vance, Gill, et al., 1999) by highly trained observers. A second trained observer reviewed each transcript, coding each participant's behaviours at 15 second intervals. To examine the frequencies with which the participants played with toys, a third trained experimenter recorded the amount of time each child played with each toy based on the written transcripts detailing the sequence of behaviours. The total amount of time each child played with each toy was recorded and analysed. The proportions of time played with the toys and the proportion of children playing with each toy were also assessed.

Each child's play complexity (scheme) during the unstructured play scenarios was coded from a transcript to provide a measure of developmental level. Play complexity was evaluated by two trained experimenters separately using the play assessment inventory of cognitive development (Kelly-Vance, Gill, et al., 1999). Interrater agreement was initially 90%; all disagreements were discussed among the experimenters and reconciled to 100%. An evaluation of 1 was assigned to behaviours that were part of a single-scheme combination using the provided play materials—that is, the same play behaviour with the same toy was directed towards two or more different objects/people, or the same play behaviour with different toys on one object/person. An example of this behaviour is if a child takes a picture of a doll and then takes a picture of the session facilitator. Multischeme combinations of short sequences were given an evaluation of 2—that is, two or three different play behaviours appearing in a logical order. For example, a child cuts the pizza and then puts it on a plate for her mother. A 3 was assigned to events when four or five behaviours were combined in a logical order. For example, a child stirs the pot, feeds a doll, takes off the doll's clothes and puts it to bed. Finally, the highest ranking of 4 was assigned to episodes—six or more play behaviours combined in a logical order. For example, a child puts clothes on the doll, makes it sit down at a table, makes tea, and offers some to the doll.

Results

The 15 second intervals were summed for each toy across age and sex. Overall, boys and girls played with toys for a total of 713 minutes (girls 323 minutes, boys 390 minutes) or approximately 23 minutes on average. To determine sex or age differences in the total amount of time the children spent playing, a 2 (sex) \times 3 (age) analysis of variance on the total seconds played was computed. The analysis revealed a marginal main effect of sex [$F(1,24) = 3.76, P = 0.06$]. On average, girls (mean = 21.55 min, SD = 5.82) spent less time playing with the toys than boys (mean = 25.02 min, SD = 3.70). A main effect of age was not found, nor an interaction.

Toy Categories

In order to determine whether boys and girls differed in the amount of time they manipulated certain types of toys, we classified the various toys into eight different toy categories that are frequently found in early childhood education centres: animal toys, doll play, farm toys, house toys, kitchen/food toys, mechanical toys, puzzles, and sorting toys (see Appendix A for a listing of the toys in each category). Summing the total time

(in seconds) each child played with each toy and toy category revealed that overall, girls and boys spent the longest time playing with the mechanical toys (310 minutes), followed by kitchen/food toys (82 minutes) and toys classified as belonging to the house category (81 minutes). In terms of total time spent playing, the mechanical toys were ranked first for both boys and girls. Frequency counts revealed that 87% of the children played with the phone, 70% played with the cash register, 67% manipulated the farm, whereas the camera and car both attracted 60% of the children's attention.

In order to examine the average playtime in each toy category, the total playtime per gender was divided by the number of toys in that category. The mechanical toys were again the children's favourite types of toys, with girls spending on average 7.28 minutes and boys 13.12 minutes manipulating them. The participants also enjoyed the sorting toys/toys in the house category, and puzzles. In order to examine whether there were significant differences between the sexes in the eight toy categories, a set of paired *t*-tests was computed. There was a significant difference in the mean time spent playing with puzzles [$t(2) = 7.89, P < 0.05$]. Girls tended to spend more time playing with puzzles (mean 10.55 minutes, $SD = 4.15$) than boys (mean = 4.10 minutes, $SD = 4.17$). This finding is congruent with previous research showing that girls have a preference for certain toys such as puzzles (Clark, Wyon, & Richards, 1969). None of the other comparisons were statistically significant.

Gender Stereotyped Toys

One of our goals was to assess whether the gender stereotype of a toy would influence the children's play behaviours. To determine the stereotype of each toy, six men and six women rated each toy on a seven point Likert-type scale (1 = very male, 4 = neither male nor female, 7 = very female). The scores were summed and averaged. From a total of 59 toys, 14 were classified as male toys (range 1.25–3.50), 17 were considered neutral (range 3.58–4.42), and 28 were categorised as female toys (range 4.50–6.58). Note that half of the female stereotyped toys ($n = 14$) were play material from the kitchen/food area.

Table 1 ranks the ten toys with which boys and girls played the longest, based on their average playtime with each toy: 61% of the boys' total playtime and 51% of the girls' total playtime were spent manipulating these toys. Contrary to our predictions, girls did not play predominantly with female stereotyped toys. Rather, as indicated in Table I, half of the top ten toys for girls were those classified as neutral. In other words, the toys that kept the girls' attention the longest were neutral stereotyped toys, followed by the male stereotyped toys, and the female stereotyped toys. Consistent with our expectations, boys spent half their playtime with male stereotyped toys, followed by neutral and female stereotyped toys (see Fig. 1 and Table I).

Play Complexity

Another goal was to examine the impact stereotyped toys may have on typically developing children's play complexity. Play complexity was evaluated on a scale from 1–4. As expected, play complexity increased in frequency and levels with age. A total of 17 children displayed complex play (see coding scheme). Three one-year-old children displayed a single-scheme combination with the kitchen set, cash register, and phone. Six two-year-olds (four girls and two boys) exhibited complexity levels ranging from single-scheme combinations to four or five combined play behaviours (levels 1–3).

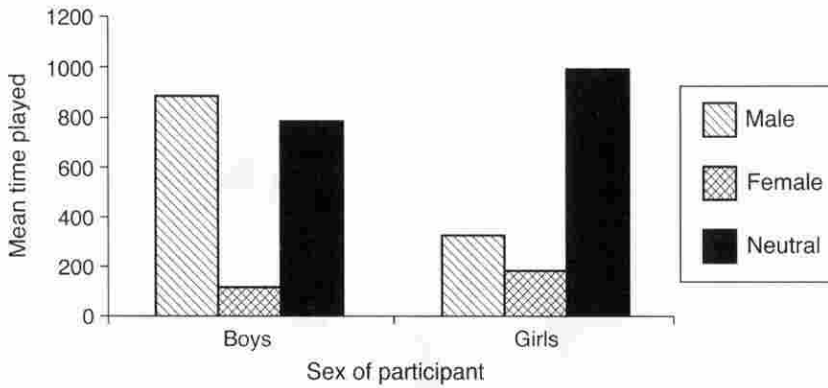


FIG. 1. Mean time (in seconds) played by boys and girls with the ten preferred stereotyped toys

Doll play elicited the most complex play behaviours in that age group. Finally, a total of eight three-year-olds (three girls and five boys) displayed the whole range of complexity levels (1–4). The kitchen set, doll, nesting cups, and toothbrush/paper elicited the most complex play. The highest levels of play complexity for boys and girls at each age group were elicited more frequently when they were playing with female stereotyped toys (see Fig. 2). Levels 3 and 4 were only manifested when the children manipulated female stereotyped toys. Sixty per cent of the boys and 73% of the girls in our sample played at some point in the kitchen/food area, whereas 33% of the boys and

TABLE I. Most popular toys by mean time played (minutes) for boys ($n = 15$) and girls ($n = 15$)

Gender	Toys	Gender of toy	M	Highest level of complexity elicited
Boys	Blocks	N	4.49	–
	Tow truck	M	3.34	2
	Car	M	3.05	2
	Gumball machine	M	2.58	–
	Camera	M	2.56	2
	Crayons	N	2.54	–
	Cash register	N	2.49	2
	Disney pop-up	N	2.18	–
	Farm	M	2.03	2
Phone	F	1.54	2	
Girls	Bears	N	4.12	1
	Crayons	N	4.11	–
	Disney pop-up	N	3.51	–
	Lion puzzle	N	2.10	–
	Gumball machine	M	1.55	–
	Cash register	N	1.51	2
	Farm	M	1.48	2
	Doctor's kit	M	1.38	2
	Phone	F	1.35	2
Nesting cups	F	1.30	4	

M = male stereotyped toy, F = female stereotyped toy, N = neutral stereotyped toy

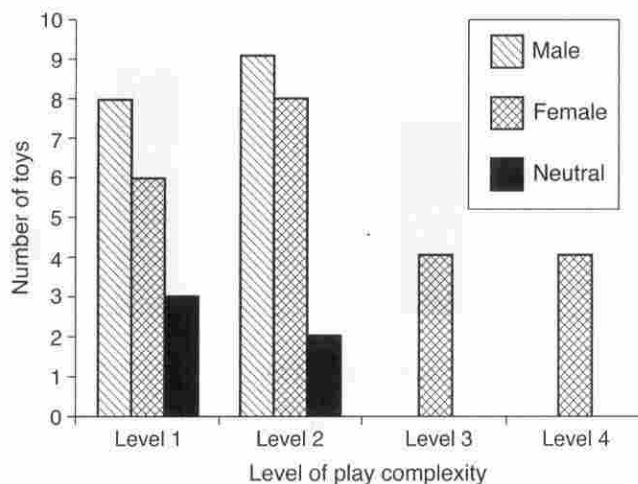


FIG. 2. Number of stereotyped toys at each level of play complexity manipulated by boys and girls

46% of the girls played in the doll area, the two play areas that elicited high levels of play complexity.

Discussion

The purpose of this study was to assess the effects of gender and stereotyped toys on children's play complexity. We attempted to identify the toys that would elicit the most complex play for each sex based on 30 minutes of free play. We wanted to examine how toy preferences would impact children's level of complex play, and thus how these behaviours may influence children's cognitive development, using play-based assessment.

Based on previous research on toy preferences (Carter & Levy, 1988) we hypothesised that girls would be more likely to play with female stereotyped toys than male or neutral stereotyped toys, whereas boys would be more likely to manipulate male stereotyped toys than female or neutral stereotyped toys. Our findings revealed that half of the ten toys that kept the girls' attention the longest were neutral stereotyped toys. These results are congruent with prior research, which has shown girls prefer playing with neutral toys (Cherney & Ryalls, 1999). Consistent with our expectations, half of the ten most popular toys for boys were male stereotyped toys. These findings are congruent with other research results indicating that boys display stronger own-sex stereotyped preferences than girls (Carter & Levy, 1988; O'Brien, Huston, & Risley, 1983; Schau, Kahn, Diepold, & Cherry, 1980).

We also hypothesised that, because of greater familiarity with own-sex stereotyped toys, girls would display a higher level of play complexity when manipulating female stereotyped toys than male stereotyped toys and that boys would display a higher level of play complexity when playing with male stereotyped toys than with female stereotyped toys. The data suggest that this pattern was more evident for girls than for boys. The highest levels of play complexity for girls in each age group were elicited when they were playing with female stereotyped toys. The highest levels of play complexity for boys at each age group were elicited more frequently when playing with female stereotyped toys (phone, kitchen) than with male stereotyped toys (camera). Further-

more, as Fig. 2 shows, the higher levels of play complexity (levels 3 and 4) were manifested only when the children played with female stereotyped toys. This finding suggests that it is crucial to include traditionally female stereotyped toys such as dolls and kitchen sets when conducting play assessment sessions.

Implications for Practitioners

Based on our study, we recommend that practitioners provide a variety of toys when utilising play assessment. First, the session should include mechanical toys such as a cash register, gumball machine, camera, Disney pop-up, and phone. Overall, the children played a large proportion of their time playing with them. Mechanical toys provide the children with the motivation to play and thus may help them overcome possible initial apprehensions.

Second, traditionally female stereotyped toys should be provided because they bring forth more complex play behaviours when compared to male or neutral stereotyped toys. Female stereotyped objects such as the kitchen set, phone, and doll elicited a higher level of play complexity for both boys and girls than the male stereotyped toys. Because boys tend to have stronger own-gender—stereotyped preferences than girls (Carter & Levy, 1988), they may avoid playing with these particular toys and therefore not display highly complex play behaviours. The boys' lack of play with traditionally female toys (especially those eliciting higher levels of complex play) due to their stereotyped preferences may potentially lead practitioners to underestimate the boys' current cognitive functioning, which in turn could lead to the overidentification of boys for early intervention services. In our sample only a third of the boys played in the doll play area and two thirds visited the kitchen/food area. A practitioner may want to direct boys to these play areas.

The present information is important, because it suggests that children's toy preferences may impact their cognitive scores in a play assessment. Practitioners may be tempted to assign higher levels of play complexity to children on the basis of the children's familiarity and greater exposure to certain stereotyped toys. Furthermore, the fact that only female stereotyped toys elicited high complexity of play behaviours demonstrates that toys and the gender stereotype that is attached to them (implicitly or explicitly) is an important issue in play assessment that needs to be addressed. Future research in this area needs to investigate further the impact of stereotyped toys and children's toy preferences on play assessment sessions and coding schemes. Studies should also examine whether boys may be systematically overidentified due to their toy preferences. The authors warn that the present results may not be generalisable to other cultures or children with disabilities, as the current study's sample examined typically developing middle class Caucasian children. Future studies should investigate the influence of cultural differences and varying levels of exceptionality on play assessment.

Note

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REFERENCES

- Athanasiou, M.S. (2000). Play-based approaches to preschool assessment. In B.A. Bracken (Ed.), *The psychoeducational assessment of preschool children* (pp. 412–427). Boston: Allyn and Bacon.
- Bagnato, S.J., & Neisworth, J.T. (1994). A national study for the social and treatment invalidity of intelligence testing for early intervention. *School Psychology Quarterly*, 9, 81–102.
- Beeghly, M., Perry, B.W., & Cicchetti, D. (1989). Structural and affective dimensions of play development in young children with Down Syndrome. *International Journal of Behavioral Development*, 12, 257–277.
- Bradbard, M.R., & Endsley, R.C. (1983). The effects of sex-typed labeling on preschool children's information-seeking and retention. *Sex Roles*, 9, 247–260.
- Bradbard, M.R., Martin, C.L., Endsley, R.C., & Halverson, C.F. (1986). Influence of sex stereotypes on children's exploration and memory: A competence versus performance distinction. *Developmental Psychology*, 22, 481–486.
- Bronfenbrenner, U. (1979). Toward an experimental ecology of human development. *American Psychologist*, 32, 513–531.
- Calhoun, J.M. (1997). Comparison of assessment results between a formal standardized measure and a play-based format. *The Transdisciplinary Journal*, 7, 201–214.
- Caldera, Y.M., Huston, A.C., & O'Brien, M. (1989). Social interactions and play patterns of parents and toddlers with feminine, masculine and neutral toys. *Child Development*, 60, 70–76.
- Caldera, Y.M., & Sciaraffa, M.A. (1998). Parent-toddler play with feminine toys: Are all dolls the same? *Sex Roles*, 39, 657–668.
- Campenni, C.E. (1999). Gender stereotyping of children's toys: A comparison of parents and nonparents. *Sex Roles*, 40, 121–138.
- Carter, D.B., & Levy, G.D. (1988). Cognitive aspects of early sex-role development: The influence of gender schema on preschoolers' memories and preferences for sex-typed toys and activities. *Child Development*, 59, 782–792.
- Cherney, I.D., & Ryalls, B.O. (1999). Gender-linked differences in the incidental memory of children and adults. *Journal of Experimental Child Psychology*, 72, 305–328.
- Clark, A.H., Wyon, S.M., & Richards, M.P.M. (1969). Free-play in nursery school children. *Journal of Child Psychology and Psychiatry*, 10, 205–216.
- Elder, J.L., & Pederson, D.R. (1978). Preschool children's use of objects in symbolic play. *Child Development*, 49, 500–504.
- Fagot, B.I. (1974). Sex differences in toddlers' behavior and parental reaction. *Developmental Psychology*, 10, 554–558.
- Fagot, B.I. (1977). Consequences of moderate cross-gender behavior in preschool children. *Child Development*, 48, 902–907.
- Farmer-Dougan, V., & Kaszuba, T. (1999). Reliability and validity of play-based observations: Relationship between the play behaviour observation system and standardized measures of cognitive and social skills. *Educational Psychology*, 19, 429–440.
- Fenson, L., & Ramsay, D.S. (1980). Decentration and integration of the child's play in the second year. *Child Development*, 51, 171–178.
- Fewell, R.R. (1991). Trends in the assessment of infants and toddlers with disabilities. *Exceptional Children*, 58, 166–173.
- Kelly-Vance, L., Gill, K., Ruane, A., Cherney, I.D., & Ryalls, B.O. (1999). Play-based assessment: Applying a reliable coding system. Paper presented at the 1999 Annual Meeting of the National Association of School Psychologists, Las Vegas, Nevada.
- Kelly-Vance, L., Needelman, H., Troia, K., & Ryalls, B.O. (1999). Early childhood assessment: A comparison of the Bayley Scales of Infant Development and a play-based technique. *Developmental Disabilities Bulletin*, 27, 1–15.
- Kennedy, M.D., Sheridan, M.K., Radlinski, S.H., & Beeghly, M. (1991). Play-language relationships in young children with developmental delays: Implications for assessment. *Journal of Speech and Hearing Research*, 34, 112–122.

- Lifter, K. (1996). Assessing play skills. In M. McLean, D.B. Bailey, Jr., & M. Wolery (Eds.), *Assessing infants and preschoolers with special needs* (pp. 435–461). Englewood Cliffs: Merrill.
- Linder, T.W. (1993). *Transdisciplinary Play-Based Assessment* (2nd ed.). Baltimore: Paul H. Brooks.
- Lowe, M. (1975). Trends in the development of representational play in infants from one to three years—an observational study. *Journal of Child Psychological Psychiatry*, 16, 33–47.
- Lyytinen, P. (1991). Developmental trends in children's pretend play. *Child: Care, Health and Development*, 17, 9–25.
- Martin, C.L., & Halverson, C.F. (1981). A schematic processing model of sex typing and stereotyping in children. *Child Development*, 52, 1119–1134.
- Mayes, L.C., Carter, A.S., & Stubbe, D. (1993). Individual differences in exploratory behavior in the second year of life. *Infant Behavior & Development*, 16, 269–284.
- McCune-Nicolich, L. (1981). Toward symbolic functioning: Structure of early pretend games and potential parallels with language. *Child Development*, 52, 785–797.
- Miller, C.L. (1987). Qualitative differences among gender-stereotyped toys: Implications for cognitive and social development in girls and boys. *Sex Roles*, 16, 473–487.
- Neisworth, J.T., & Bagnato, S.J. (1992). The case against intelligence testing in early intervention. *Topics in Early Childhood Special Education*, 12, 1–20.
- O'Brien, M.O., & Huston, A.C. (1985). Development of sex-typed play behavior in toddlers. *Developmental Psychology*, 21, 866–871.
- O'Brien, M.O., Huston, A.C., & Risley, T.R. (1983). Sex-typed play of toddlers in a day care center. *Journal of Applied Developmental Psychology*, 4, 1–9.
- Piaget, J. (1962). *Play, dreams, and imitation in childhood*. New York: Norton.
- Rogers, S. (1988). Cognitive characteristics of handicapped children's play: A review. *Journal of the Division for Early Childhood*, 12, 161–168.
- Schau, C.G., Kahn, L., Diepold, J.H., & Cherry, F. (1980). The relationships of parental expectations and preschool children's verbal sex typing to their sex-typed toy play behavior. *Child Development*, 51, 266–270.
- Serbin, L.A., & Connor, J.M. (1979). Sex-typing of children's play preferences and patterns of cognitive performance. *Journal of Genetic Psychology*, 134, 315–316.
- Vygotsky, L. (1967). Play and its role in the mental development of the child. *Soviet Psychology*, 12, 62–76.

Appendix A: List of Toys by Play Area

Sorting toys

Blocks, bucket, nesting cups, ring stacker shape sorter.

Mechanical toys

Camera, car, cash register, Disney pop-up, gumball machine, phone, radio, tow truck, workbench.

House

Doctor's kit, Dressing-up clothes, flowers, house, crayons, person, puppets.

Puzzles

Animal puzzle, fruit puzzle, house puzzle, lion puzzle.

Farm

Animals, plough, tree, tractor, shovel, farm.

Kitchen/food

Sink, oven/stove, cooler/fridge, dishwasher, hamburger & bun, cake, can, hot dog & bun, ice cream cone, ketchup, pizza bowl, cup, knife/pizza cutter, pan, silverware, spoon, shakers.

Doll

Baby, bottle, blanket, high chair toothbrush stroller.

Animals

Bears, dinosaurs, turtle.

