BRIEF REPORT

What Do Mothers Know About the Developmental Nature of Play?

CATHERINE S. TAMIS-LEMONDA AND AMY MELSTEIN DAMAST
New York University
MARC H. BORNSTEIN
National Institute of Child Health and Human Development

Mothers of 21-month-olds were given a list of 24 child play acts and asked to rank order the acts in terms of relative difficulty. Included were exploratory behaviors (e.g., mouthing), nonsymbolic acts (e.g., nesting cups), and symbolic acts (e.g., drinking from an empty cup). In general, mothers' rankings matched scalings of play established in the developmental literature. These findings represent a first step in elucidating mothers' knowledge about development in the domain of child play.

play   maternal judgments   developmental sequences

Researchers investigating first and second year developments in children's play have identified consistent progressions in the types of activities children normally engage in with objects. Generally, play is categorized into three broad levels: (1) exploratory activity (i.e., mouthing, manipulation), (2) nonsymbolic play acts (i.e., concrete or functional activities with one or more objects), and (3) symbolic play acts (i.e., play characterized by pretense). Within each of these levels, research has detailed more specific changes in play. For instance, mouthing occurs prior to manipulation. In nonsymbolic play, actions are normally first directed towards single objects (e.g., squeezing a foam ball), only later to incorporate combinations of objects (e.g., nesting cups). In symbolic play, pretense schemes are usually applied to *self* before they are applied to *others* (e.g., pretending to drink from a cup before pretending to feed a doll), *single-scheme* pretense appears before *multi-scheme* pretense (e.g., pretending to drink from

a cup and later pretending to pour and drink), and pretense with *actual* objects precedes pretense with *substitution* objects (e.g., a telephone will at first represent a telephone, and later a stick might represent a telephone). (For reviews, see Belsky & Most, 1981; Bornstein & O'Reilly, 1993; Fein, 1981; McCune-Nicolich, 1981; and Piaget, 1962.)

The goal of this study was to ascertain the extent to which mothers appreciate the ordinal nature of children's play. Our general interest in examining maternal knowledge derived from the notion that mothers' views might motivate or mediate interactions with their children and in turn have consequences for children's social and cognitive development (Goodnow & Collins, 1990; Sigel, 1992). This investigation is unique in its focus on maternal knowledge about a specific aspect of early human development, that is, progressions in play, rather than on mothers' knowledge about general development. In our own work on mother–toddler play interactions, we have shown that mothers both solicit and demonstrate play at levels that tend to match their children's spontaneous play (Tamis-LeMonda & Bornstein, 1991). Does maternal knowledge about the progressive nature of play in part explain matching in mother–toddler play sophistication? A number of researchers have suggested that mothers who are knowledgeable about general developmental sequences are more likely to create an environment that is appropriate to their children's developing abilities (Hunt & Paraskevopoulos,

1980; Miller, 1988). Here, we examined mothers' judgments about the relative difficulty of various play behaviors that are prominent in children's object-oriented activities across the first years of life. To what extent do mothers' judgments about the relative difficulty of specific play activities match extant scalings in the developmental literature?

Fifty-seven mothers of firstborn toddlers, all 21 months of age, participated in the study. They were recruited from private pediatric and obstetric groups in New York City. Mothers came from middle- to upper-socioeconomic status households ($M = 58.7$, $SD = 6.26$, on the Hollingshead Four Factor Index P.O. Box 1965, Yale Station, New Haven, CT). On average, mothers had completed 5.6 years of post high-school education (range = 3 to 15). The average age of mothers was 33.2 years (range = 25 to 40).

Integrating across studies of early play development, we developed a 24-item play scale containing actions ranging from concrete exploration to sophisticated symbolic play

(Table 1). Items on the 24-item play scale were randomized, and the resulting list of actions was mailed to mothers; labels for the actions were not provided. Mothers were asked to rank the items on the play scale exhaustively in order of difficulty, with 1 being the easiest and 24 the most difficult.

Mothers' rankings of the 24 items were analyzed in two ways. First, mothers' mean and modal rankings for all play items were correlated with the empirical ordering of the items. A correlation of 1.0 would indicate that mothers ranked the 24 items in exact accord with the empirical scale, whereas a correlation of 0.0 indicated random ordering of play items. Figure 1 plots mothers' modal ranks for each of the 24 activities against the empirical play levels, indicating a correlation of .90 (the correlation for mean ranking was .87). Overall, mothers are highly sensitive to the ordinal nature of play. Further examination of Figure 1 shows that mothers systematically overestimate the relative difficulty of sequenced actions (i.e., Levels 10 through 12, 17 through 20, and 22). This

TABLE 1
Empirical Play Scale

| Level	Action on Mothers' Questionnaire
Exploration	
1. Mouthing	1. Suck block.
2. Simple manipulation	2. Hold spoon and look at it.
Nonsymbolic	
3. Unitary functional	3. Turn wheel on toy car.
4. Inappropriate combinations	4. Put toy dish on car.
5. Combinations based on perception	5. Stack toy plates.
6. Combinations based on function	6. Put toy lid on teapot.
Symbolic	
7. Self	7. Feed self with toy spoon.
8. Agentive animate	8. Wash mom with toy sponge.
9. Agentive inanimate	9. Rock doll.
10. Sequenced self	10. Stir in toy cup and eat from toy spoon.
11. Sequenced agentive animate	11. Pour into toy cup from toy teapot and feed mom.
12. Sequenced agentive inanimate	12. Cover doll with blanket and pat to sleep.
13. Vicarious	13. Make doll wave hi.
14. Self substitution	14. Use block as sponge and wash own face.
15. Agentive animate substitution	15. Put toy plate on mom's head as hat.
16. Agentive inanimate substitution	16. Use spoon as brush and brush doll's hair.
17. Sequenced vicarious	17. Make stuffed bear walk to toy car and drive away.
18. Sequenced self substitution	18. Stir in toy pot with comb as spoon and eat from comb.
19. Sequenced agentive animate substitution	19. Wash mom with block and wipe her mouth with toy sponge.
20. Sequenced agentive inanimate substitution	20. Wash doll with block as sponge and dry with towel.
21. Vicarious substitution	21. Make toy person drive away in nesting cup as car.
22. Sequenced vicarious substitution	22. Put toy bib on doll as coat and make her walk.
23. Self-removed	23. Make one doll kiss another doll.
24. Emotive	24. Make doll fall down and cry.
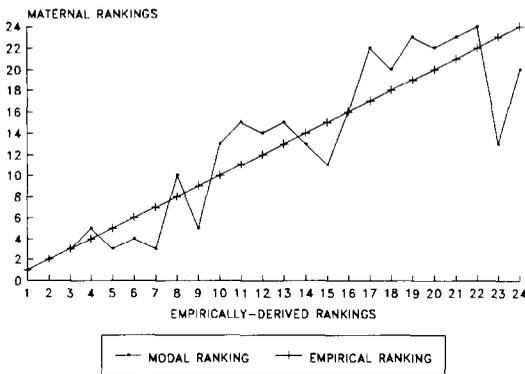
Figure 1. Mothers' modal rankings of play acts against the empirical scale.

suggests that the stringing of pretense actions by children is a particularly salient indicator of task difficulty to mothers.

Second, a selected series of paired contrasts based on developments in children's play was tested. For example, the comparison of "self" versus "agentive inanimate" symbolic play compared the percentage of mothers ranking "feed self" as easier than "rock doll" (Items 7 and 9; see Table 1). The percentage of mothers passing the contrast (i.e., rating the more difficult action as higher numerically) was compared to chance using z scores.

The results of the selected contrasts indicate substantive sensitivity in mothers to the ordinal nature of play. Specifically, 80% of mothers ranked mouthing (Level 1 in Table 1) as 1 or 2, $p < .01$, and 79% of mothers ranked manipulation (Level 2) as 1 or 2, $p < .01$. In addition, all 4 nonsymbolic acts (Levels 3 through 6) were ranked lower than 16 of the 18 symbolic acts (Levels 7 through 24), $ps < .0001$. Only pretend toward self (Level 7) and agentive inanimate pretense (Level 9) were ranked easier than (or of equal difficulty to) the 4 nonsymbolic acts. One explanation for this finding may be that developmentally, the onsets of Levels 7 and 9 coincide with high levels of sensorimotor play in children's repertoires. That is, children have not yet "discarded" empirically "lower" play levels when single pretense acts first appear (Tamis-LeMonda & Bornstein, 1991). The fact that mothers consider these acts to be on par with nonsymbolic play may partly reflect actual trends in children's play. A second possibility is

that mothers may consider these "long-mastered acts" as relatively simple in light of their children's current capabilities. At 21 months, children's ability to sequence pretense, engage in object substitutions, and so forth means that isolated pretense actions are infrequent. Parents may be more accurate at judging the relative difficulty of activities that fall within the current age range of their children than they are at judging activities that are above or below the age of their children (Goodnow & Collins, 1990).

Considering contrasts within nonsymbolic play, mothers did not appear to distinguish among play acts. Only 39% of mothers considered unitary functional activity (Level 3) to be easier than combinations (Levels 4 through 6); 46% ranked inappropriate combinations (Level 4) as easier than appropriate combinations (Levels 5 and 6); and 48% ranked combinations based on perceptual similarity (Level 5) as easier than combinations based on function (Level 6).

When considering contrasts within symbolic play, mothers were generally accurate in their rankings. Table 2 presents data on the 34 symbolic contrasts. Presented are the percentages of mothers who matched the empirical ordering of the item pairs and the z scores and probabilities associated with these percentages. Mothers correctly and significantly ordered 26 of the 34 pairs. An additional 5 contrasts were in the expected direction, but they did not achieve a conventional level of significance. Mothers' responses differed from the empirical ordering in only three instances as indicated by negative z scores.

To summarize the findings presented in Table 2, pretending toward self (Level 7) was judged to be easier than pretending toward other in both contrasts; that is, when pretense was toward an animate other (Level 8) and toward an inanimate other (Level 9). Single acts of pretense were judged to be easier than sequences of pretense in seven of the eight contrasts. More mothers judged literal symbolic play as easier than substitutive play in six of the eight contrasts. Mothers judged agentive play as easier than vicarious play in all four contrasts. Mothers judged vicarious play as easier than self-removed play in three of four contrasts, and also considered vicarious play as easier than emotive play in three of four contrasts.

TABLE 2
Percent of Mothers Matching Extant Scalings of Symbolic Play Contrasts

Subtypes	Contrast (Play Levels)		Match %	z	p
	Self	Other			
Agentive animate	(7)	(8)	86	5.14	.001
Agentive inanimate	(7)	(9)	65	2.14	.050
	Single	Sequenced			
Self	(7)	(10)	82	4.57	.001
Agentive animate	(8)	(11)	80	4.29	.001
Agentive inanimate	(9)	(12)	80	4.29	.001
Vicarious	(13)	(17)	86	5.14	.001
Self substitution	(14)	(18)	71	3.00	.010
Agentive animate substitution	(15)	(19)	79	4.14	.001
Agentive inanimate substitution	(16)	(20)	79	4.14	.001
Vicarious substitution	(21)	(22)	62	1.71	n.s.
	Literal	Substitutive			
Self	(7)	(14)	95	6.43	.001
Agentive animate	(8)	(15)	61	1.57	n.s.
Agentive inanimate	(9)	(16)	75	3.57	.001
Vicarious	(13)	(21)	84	4.86	.001
Sequenced self	(10)	(18)	91	5.86	.001
Sequenced agentive animate	(11)	(19)	68	2.57	.050
Sequenced agentive inanimate	(12)	(20)	89	5.57	.001
Sequenced vicarious	(17)	(22)	62	1.71	n.s.
	Agentive	Vicarious			
Inanimate	(9)	(13)	90	5.71	.001
Sequenced inanimate	(12)	(17)	86	5.14	.001
Inanimate substitution	(16)	(21)	86	5.14	.001
Sequenced inanimate substitution	(20)	(22)	86	5.14	.001
	Animate	Inanimate			
Single	(8)	(9)	32	−2.57	.050
Sequenced	(11)	(12)	27	−3.29	.010
Substitution	(15)	(16)	65	2.14	.050
Sequenced substitution	(19)	(20)	53	0.43	n.s.
	Vicarious	Self-Removed			
Single	(13)	(23)	42	−1.14	n.s.
Sequenced	(17)	(23)	77	3.86	.001
Substitution	(21)	(23)	83	4.71	.001
Sequenced substitution	(22)	(23)	77	3.86	.001
	Vicarious	Emotive			
Single	(13)	(24)	56	0.86	n.s.
Sequenced	(17)	(24)	91	5.86	.001
Substitution	(21)	(24)	93	6.14	.001
Sequenced substitution	(22)	(24)	93	6.14	.001

The only general set of contrasts in which mothers' responses did not consistently match the empirical ordering was for animate-directed pretense versus inanimate-directed pretense. More mothers considered play toward an animate other as easier than play toward an inanimate other in only 1 of the 4 contrasts. In two of the other contrasts, mothers' ranked play toward an inanimate other as easier than play toward an animate other.

This study lays a foundation for future investigations of maternal knowledge about early developmental sequences in play. In the context of overall group sensitivity to these progressions, individual mothers varied in their judgments. Does this variation relate to mothers' behaviors when playing with their toddlers? Specifically, does greater awareness about the ordinal nature of play prompt mothers to intervene effectively, provide models of

play, and solicit levels of play that optimally challenge toddlers? Empirical efforts that aim to describe phenomena such as scaffolding in mother–toddler play ought to consider not only dyadic interactions, but also cognitions that motivate and explain mothers' sensitive exchanges with children. Awareness of play levels is one possible route to that understanding.

REFERENCES

Belsky, J., & Most, R.K. (1981). From exploration to play: A cross-sectional study of infant free-play behavior. *Developmental Psychology, 17*, 630–639.

Bornstein, M.H., & O'Reilly, A. (Eds.) (1993). *The role of play in the development of thought.* In W. Damon (Series Ed.), *New Directions for Child Development, 59*, San Francisco: Jossey-Bass.

Fein, G. (1981). Pretend play in childhood: An integrative review. *Child Development, 52*, 1095–1118.

Goodnow, J.J., & Collins, W.A. (1990). *Development according to parents: The nature, sources, and consequences of parents' ideas.* Hillsdale, NJ: Erlbaum.

Hunt, J., McV., & Paraskevopoulos, J. (1980). Children's psychological development as a function of the inaccuracy of their mother's knowledge of their abilities. *Journal of Genetic Psychology, 136*, 285–298.

McCune-Nicolich, L. (1981). Toward symbolic functioning: Structure of early pretend games and potential parallels with language. *Child Development, 52*, 785–797.

Miller, S.A. (1988). Parents' beliefs about their children's cognitive development. *Child Development, 59*, 259–285.

Piaget, J. (1962). *Play, dreams and imitation in childhood.* New York: Norton.

Sigel, I.E. (1992). The belief-behavior connection: A resolvable dilemma? In I.E. Sigel, A.V. McGilli-cuddy DeLisi, & J.J. Goodnow (Eds.), *Parental belief systems: The psychological consequences for children (2nd Edition)*, (pp. 433–456). Hillsdale, NJ: Erlbaum.

Tamis-LeMonda, C.S., & Bornstein, M.H. (1991). Individual variation, correspondence, stability, and change in mother and toddler play. *Infant Behavior and Development, 14*, 143–162.