Mothers’ Knowledge About Children’s Play and Language Development: Short-Term Stability and Interrelations

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Sixty-four mothers of children ranging in age from 6 to 58 months were asked to determine, for pairings of play and language items, which item was more advanced developmentally. This procedure was repeated within 2 weeks. In general, mothers’ orderings of play and language items matched those established in the developmental literature and were stable over the short term. Mothers’ knowledge about language development was stronger than and unrelated to their knowledge about play, suggesting that maternal knowledge about developmental domains is differentiated and specific. Finally, mothers’ judgments about the developmental milestones depended on their children’s current developmental stage: Mothers were less accurate at estimating the timing of milestones that their children had mastered many months earlier, supporting the view that mothers’ knowledge is informed by their children’s recent rather than past achievements in specific areas.

How knowledgeable are mothers about the developmental nature of play and language? Interest in examining maternal knowledge about growth in these key areas of development derives from the notion that mothers’ views might motivate interactions with their children and in turn have consequences for children’s social and cognitive development (see, e.g., Bornstein et al., 1996; Goodnow, 1995; Goodnow & Collins, 1990; Holden, 1995; McGillicuddy-DeLisi & Sigel, 1995; Pomerleau, Malcuit, & Sabatier, 1991; Sigel, 1992). Mothers who are knowledgeable about general developmental sequences might be more likely to create an environment that is appropriate to their children’s developing abilities, which in turn will support their children’s cognitive and social advances (e.g., Hunt & Paraskievopoulos, 1980; Miller, 1988). Hence, maternal knowledge can be conceptualized as indirectly affecting developmental outcomes in children. Empirically, mothers of preterm infants who are more knowledgeable about infant development have been found to have babies with higher Bayley Mental Development Index and Physical Development Index scores (Dichtelmiller et al., 1992). Mothers are differentially knowledgeable about progressions in children’s play (Tamis-LeMonda, Damast, & Bornstein, 1994), and variation among mothers in accuracy at ordering play activities predicts their play with their own children (Damast, Tamis-LeMonda, & Bornstein, 1996). In this article, we seek to elaborate on these inquiries and to extend them to the nature of mothers’ knowledge about language development as well. Specifically, the goals of the present study were to (a) ascertain the extent to which mothers appreciate the ordinal nature of children’s play and language development, (b) assess the short-term (2-week) stability of maternal knowledge in these two areas, (c) examine whether mothers’ knowledge about play relates to their knowledge about language, and (d) evaluate how maternal knowledge is influenced by children’s developmental stage.

In general, before about 9 months, children’s play encompasses exploring objects (Belsky & Most, 1981; Fenson, Kagan, Kearsley, & Zelazo, 1976), and their communicative overtures are restricted to prelinguistic cooing first and then babbling (Bates, O’Connell, & Shore, 1987). Toward the end of the first year, children begin to engage in nonsymbolic play (i.e., concrete and functional activities with objects such as pressing buttons and nesting barrels; see Belsky & Most, 1981; Fenson et al., 1976) and to imitate adult vocalizations and use words in performative routines (e.g., waving and saying “bye-bye”; see Bates, Bretherton, & Snyder, 1988). During the early part of the second year, rudimentary symbolic play emerges, as children reenact simple actions that they or others have exhibited in the past, thereby demonstrating their first steps toward play that is generative and characterized by an “as if” quality (e.g., pretending to feed self or a doll; see Belsky & Most, 1981; Fein, 1981; McCune, 1995; McCune-Nicolich, 1981; Watson & Fischer, 1977). At roughly the same time, children spontaneously produce their first words, which are typically used to label common objects or events in the environment (e.g., ball as in “That’s a ball”; see Bates et al., 1988; Nelson, 1973). From this point onward, children become increasingly capable of symbolically representing their world both in play and in language (Fein, 1981; Mandler, 1983). Notable developments in the two domains include the ability to incorporate others into the repre-
sensation of events, as evidenced in children’s pretending toward others in play (e.g., feeding a doll; see Watson & Fischer, 1977) and describing others’ actions, possessions, and so forth in language (e.g., saying “mommy” to mother’s shoe; see Bates et al., 1988); their ability to integrate separate units, as evidenced in the sequencing of symbolic actions in play and combining of words in language (e.g., pretending to feed and then wash a doll; see Fenson & Ramsay, 1980; saying “Wash dolly”; see Fenson et al., 1994); their ability to cognize and represent objects or events that are not perceptually bound to the immediate and concrete world, as evidenced in the substitution of play objects for literal objects (e.g., Bril, Zack, & Nkounkou-Hom-bessa, 1989; Keller, Miranda, & Gauda, 1984; Ninio, 1988). In this study, we explored mothers’ knowledge about critical developments in these two areas of childhood representational thought. It represents one of the few empirical investigations of maternal knowledge about play (see Tamis-LeMonda et al., 1994), and it is the first to empirically assess mothers’ knowledge about the developmental timing of specific language milestones that emerge across children’s first 2 years. To date, investigations of mothers’ knowledge about children’s language development have been largely reported in anthropological and cross-cultural literatures (e.g., Bril, Zack, & Nkounkou-Hombessa, 1989; Keller, Miranda, & Gauda, 1984; Ninio, 1988).

This investigation is also one of the first to consider if parents’ knowledge about children’s development is specialized. Thus far, researchers have examined mothers’ ability to estimate the developmental timing of a wide range of childhood activities, an approach that characterizes mothers as more or less generally knowledgeable (e.g., MacPhee, 1981). However, mothers’ knowledge about development must include different specific domains of children’s functioning and thus may vary as a function of the domain being assessed. In particular, mothers’ knowledge about developments in child language might differ from their knowledge about developments in child play because of different societal emphases placed on the two domains. In Western cultures, the timely acquisition of key language milestones (e.g., first words, combinatorial speech) is considered to be an important indicator of children’s cognitive achievements. As a consequence, the mastery of language skills might be salient to mothers who actively seek information about normative development in that area. In contrast, the importance of play as a vehicle for learning and as a window on children’s cognitive abilities is less ubiquitous. Consequently, mothers’ knowledge about play milestones might not be as extensive as their knowledge about language, but instead might be influenced by individual factors such as education or personal views about the importance of play in children’s development.

In this regard, this study is the first to ask whether mothers who are more knowledgeable about one developmental domain (e.g., play) are also more knowledgeable about another (e.g., language). This question is central to theoretical models about the nature of relations between parenting thought and parenting action. That is, knowledge about a particular domain of child development might explain parenting behaviors in that domain but not others; it might be useful to consider knowledge as a specific construct when examining its association to parent–child interactions in play and language.

We hypothesized that the educated, urban, Western mothers we assessed would be knowledgeable about play and language development in general, that knowledge about language would be stronger than knowledge about play, and that mothers’ knowledge about play would be independent of their knowledge about language. That is, mothers’ knowledge about distinct developmental domains was expected to be specialized. The idea that parenting knowledge is specialized derives from extant models of environmental specificity that suggest that parenting is best conceptualized as multidimensional and as relating in specific ways to specific outcomes in children (e.g., Bornstein, 1989, 1995; Bornstein & Tamis-LeMonda, 1990; Tamis-LeMonda, 1996; Wachs, 1992). If parenting behaviors are multifaceted, it is likely that the cognitions that motivate and underlie dimensions of behavior are also multifaceted.

As a part of this investigation, we also examined the short-term stability of parenting knowledge. Insofar as cognitive structures affect parenting interactions, it is psychometrically requisite and basic to establish the stability of domains of parenting knowledge over brief periods. If measures of parental knowledge assess the extent to which mothers have developed well-formulated and specialized schema about domains of children’s development, we expected individual mothers to demonstrate variation in their judgments about play and language that would be relatively stable over a 2-week period.

Finally, we asked whether specific areas of parenting knowledge depend on the developmental stage of one’s own child vis-à-vis the activities a parent is being asked to judge. Investigators have recently expressed interest in the sources of parenting cognitions and have inspired theoretical debates over whether the experiences of rearing a child inform parenting views or whether such views are embedded in and are a reflection of larger contextual settings. Some have suggested that global beliefs and goals as well as expectations about the timing of developmental milestones are not modified by specific interactions and child rearing experiences (e.g., Murphy & Alexander, 1991); instead, beliefs about children might be the result of normative cultural socialization and values (e.g., Lightfoot & Valsiner, 1992; Russell & Russell, 1982). Alternatively, parental cognitions (including knowledge) may be subject to the influence of experience and hence susceptible to feedback from parent–child encounters. McGillicuddy-DeLisi (1982) asserted that parental beliefs about development are constructed and modified on the basis of one’s personal experiences as a parent (see also Bornstein, 1995; Goodnow, 1995; McGillicuddy-DeLisi & Sigel, 1995 for further discussion). DeGrada and Ponzo (1971), however, suggested that the modification of parental views is only temporary.
judging the timing of play and language milestones that were observed that when parents are involved with a child of a particular age, their knowledge about the competence of children at that age may be accurate. However, once their children are beyond the ages they are asked to judge, parents often rely on generalized stereotypes. In support of this hypothesis, studies have indicated that when parents of older children are asked to make judgments about preschoolers, they often underestimate children’s abilities, a finding that reflects their general bias toward considering young children to be “babies” (D’Alessio, 1990).

If knowledge about developmental milestones is only temporarily informed by current parenting experiences, mothers ought to be more accurate at judging childhood milestones that are close to their own children’s current developmental stage. As children advance beyond particular developmental periods, mothers’ awareness of the timing of past accomplishments might dim. We therefore expected mothers to be most accurate when judging the timing of play and language milestones that were close to the current age of their children and, in line with research by DeGrada and Ponzo (1971) and D’Alessio (1990), to overestimate the ages at which milestones occur when asked to make retrospective judgments.

Method

Participants

Sixty-four mothers of children ranging in age from 6 to 58 months were visited in their homes twice within a 2-week period. Mothers were recruited from private pediatric and obstetric groups in New York City as well as by local newspaper advertisements. Participants varied in their socioeconomic status (M = 40.1, SD = 13.4, on the Hollingshead [1975] Four-Factor Index of Social Status, range = 8 to 64) and came from diverse ethnic backgrounds (66% European American, 16% African American, 8% Asian American, 6% Latino American, 5% biracial); all spoke English as a first language. Twenty-three percent of mothers had graduate degrees, 41% had completed college, 28% had partial college educations, and 8% had either complete or partial high school degrees. The average age of mothers was 33.1 years (SD = 6.0). Of the 64 mothers, 3 did not complete the second visit, and an additional 7 had computer data missing in certain cells for various reasons (e.g., experimenter error, equipment failure, or participant fatigue). Analyses are based on unequal but maximal sample sizes.

Procedure

During each visit, mothers were administered an 11-item play scale and then an 11-item language scale using a paired-comparisons procedure presented on a computer (see two left columns of Tables 1 and 2). In the paired-comparisons task, each item was matched with each of the others, and randomized pairs were presented serially to participants in a left–right alignment. The mother’s task was to indicate, by pressing a key, which member of the pair she thought to be the more difficult for a child and hence to be mastered at a later age. The inclusion of 11 items in the paired-comparison procedure rendered 55 pairs in total for each scale. Mothers were asked to judge the difficulty of the same play and language activities during each visit. Items within each scale and across the two scales were equated for number of words and phrases to ensure that decisions regarding difficulty were not influenced by structural characteristics of specific examples. Each individual item was balanced in its spatial presentation, appearing half the time on the left and half the time on the right. Presentations of play and language items were completely randomized and followed guidelines on the optimum order for paired-comparison tasks with 11 stimuli (Ross, 1934).

At the conclusion of the second visit, mothers were asked to complete two age checklists that listed the 11 play items (randomized) and 11 language items (randomized). They were asked to estimate the ages (in months) at which children in general are first capable of exhibiting each of the 11 play and 11 language activities on these checklists.

Play and Language Scales

The play and language scales were based on empirical findings about children’s play and language in the extant literature (as discussed earlier). Specifically, Level 1 in play represented simple exploration; Levels 2 and 3 were examples of basic nonsymbolic play actions; Level 4 exemplified basic self-directed symbolic play; Levels 5 through 8 reflected pretense play in which one of several achievements was exhibited (other-directed play, sequencing, substitution, and vicarious play); and Levels 9 through 11 represented play actions in which combinations of symbolic achievements were exhibited (vicarious sequencing, sequencing with a substitution, and vicarious substitution).

In the language scale, Levels 1 through 4 represented prelinguistic communications in which vocalizations are used to communicate in increasingly sophisticated ways (e.g., first nondiscriminantly, then to request a target object); Levels 5 through 7 represented single-word utterances of increasing sophistication (first being used in imitation, then to label, then to express possession); and Levels 8 through 11 represented multword utterances of increasing sophistication (first to express concrete desires, and later to express playful substitutions, memories, and emotions).

From these procedures, we calculated mothers’ accuracy at judging the difficulty of play and language items by correlating their ordering of play items and ordering of language items with the empirical scales (using Spearman rho). Six accuracy scores were calculated for each mother: those obtained from paired-comparisons tasks during Visits 1 and 2 for play and language separately and two accuracy scores for play and language judgments from the age checklists.

In addition, two age-discrepancy scores estimated how discrepant mothers’ judgments of age onsets were across the 11 levels for play and language separately. These values were computed by summing the absolute differences between mothers’ age estimates and empirical estimates for age of onsets as documented in the literature. These discrepancy scores were calculated around an estimated window of time, given the large variation children show in the onsets of the milestones that we examine. For example, empirical studies suggest that toddlers express their first spontaneous words at about 13 months on average (see Bates et al., 1988). For our purposes, we created a window of accuracy around this time of 4 months. Thus, if a mother estimated first words to first occur earlier than 11 months or later than 15 months, she would be assigned a discrepancy score based on the number of months her estimate fell outside this developmental window (i.e., 2 months). Calculations based on the age checklists required mothers to have completed every item; when mothers omitted one or more item, their data were excluded from analyses (n = 13).

Results

We first report mothers’ accuracy at ranking play and language items on the basis of paired comparisons for Visits 1 and 2, followed by accuracy in age estimates based on the checklists. We then report the short-term stability of these estimates. Mothers’ knowledge about play development is then related to moth-
ers' knowledge about language development on the basis of the paired-comparisons and age-estimate tasks. Finally, we consider children's actual developmental stage in relation to maternal knowledge about play and language.

Before analyses, we examined relations between all demographic measures and mothers' accuracy scores for play and language. Children's gender did not relate to mothers' judgments about play and language at either visit, thus we report data on the full sample. However, mothers' education level was significantly related to play knowledge based on paired-comparisons estimates both for Visits 1 and 2 and for the assessment of knowledge based on mothers' age estimates (rs = .31, .35, and .42, ps < .05). Education showed a slightly positive, although nonsignificant, association to mothers' knowledge about language on Visits 1 and 2 (rs = .17 and .27) but showed no association to estimates based on age (r = .01). The association between maternal education and play knowledge specifically accords with our initial hypothesis that knowledge about play is more likely to be affected by individual factors. On the basis of these findings, we examined short-term stability in play and language, relations between play and language, and the role of children's developmental stage in mothers' knowledge with and without maternal education covaried. Results were essentially identical under the two conditions, and so maternal education was not considered further.

Mothers' Knowledge About Development of Children's Play and Language

To assess mothers' knowledge about progressions in play and language, we first correlated mothers' orderings of the 11 play and 11 language items from the paired-comparisons tasks with the empirical orderings of these items. Mothers' ratings related significantly to the empirical ordering: Spearman rs = .48, p < .05, and r = .82, p < .01, for play and language respectively, on Visit 1, and on Visit 2, rs = .57 and .83, ps < .01.

We next examined responses to each possible pairing of play items (e.g., Level 1 with Level 2), assessing the percentage of mothers who judged the lower play level to be easier than the higher play level for the paired comparisons judgments on Visits 1 and 2. As a group, mothers correctly ordered 40 of the 55 possible pairings on the first visit and 43 of the 55 pairings on the second visit. The same analyses were conducted for language. Mothers correctly ordered 31 of the 55 possible pairings on both Visits 1 and 2 (all binomial ps < .01).

We then assessed mothers' knowledge about play and language development on the basis of their ordering of items from the age checklists. That is, if a mother stated that Play Level 1 occurred in children at 9 months on average and Play Level 2 occurred at 11 months on average, she was credited with correctly ordering the two items developmentally. From the 55 pairings extracted from these estimates (to parallel all possible combinations), mothers were again accurate in ordering 40 of the 55 pairs for play and 48 of the 55 pairs for language (binomial p < .01).

These analyses do not consider how accurate a mother is in estimating the age at which children in general first exhibit each behavior. That is, mothers could potentially order play or language items perfectly, thereby achieving a 1.0 correlation with the empirical scale, and yet inaccurately judge the actual
Table 2

<table>
<thead>
<tr>
<th>Language level</th>
<th>Language milestone example</th>
<th>Average age (in months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nondiscriminant prelinguistic cooing</td>
<td>Look around room and then look into air and begin vocalizing ‘ahhh, ooooh’ repeated.</td>
<td>M = 9.3, SD = 6.4</td>
</tr>
<tr>
<td>Prelinguistic responsive person-directed babbling</td>
<td>Look over to partner, respond to person’s vocalizations with sounds such as “gugaga, bababa.”</td>
<td>M = 8.3, SD = 4.2</td>
</tr>
<tr>
<td>Prelinguistic intentional other-directed request for comfort</td>
<td>Whining “mamamama” when distressed in request to be picked up by mother or father.</td>
<td>M = 11.2, SD = 4.5</td>
</tr>
<tr>
<td>Prelinguistic intentional other-directed instrumental request</td>
<td>Look at person, reach for cup, and grunt “uhh uhh” to ask for cup.</td>
<td>M = 10.7, SD = 3.6</td>
</tr>
<tr>
<td>Single-word imitation</td>
<td>Look at person leaving the room, say “bye-bye” in imitation after person says bye-bye.</td>
<td>M = 14.1, SD = 5.0</td>
</tr>
<tr>
<td>Single-word nominal, label</td>
<td>Look at mother getting a bottle and spontaneously say “be ba,” labeling the bottle.</td>
<td>M = 12.7, SD = 4.3</td>
</tr>
<tr>
<td>Single-word nominal expressing possession</td>
<td>Look over to dog’s ball, say “dog dog,” indicating the ball belongs to dog.</td>
<td>M = 18.4, SD = 4.8</td>
</tr>
<tr>
<td>Multitword request for recurrence with a nominal</td>
<td>Look over to juice, reach for juice, and say “more ju” to request juice.</td>
<td>M = 17.9, SD = 5.8</td>
</tr>
<tr>
<td>Multitword utterance with a word substitution</td>
<td>Say “hat head” as mother exits the shower with a towel on her head.</td>
<td>M = 22.3, SD = 6.2</td>
</tr>
<tr>
<td>Multitword utterance expressing a memory</td>
<td>Say “baby down” to picture of park, indicating baby fell at park last week.</td>
<td>M = 22.0, SD = 6.1</td>
</tr>
<tr>
<td>Multitword utterance expressing an emotion</td>
<td>Look at picture of boy crying, point to picture, and say “boy sad.”</td>
<td>M = 22.7, SD = 5.4</td>
</tr>
</tbody>
</table>

developmental timing of these events. Thus, we examined information from the age checklists to determine the accuracy of mothers’ age estimates for the 11 play and 11 language items. Results indicated that the average ages at which mothers estimated each of the items to first occur generally accorded with ages that are documented in the literature (see Tables 1 and 2, right column); it should be noted, however, that this general accuracy occurred in the context of substantive variation among mothers in their age estimates, as reflected by the generally large standard deviations. Specifically, for play, mothers judged both simple manipulation (Level 1) and unitary functional activity (Level 2) to occur toward the end of the first year, self-directed symbolic play (Level 4) and other-directed symbolic play (Level 5) to occur toward the start of the second year, and vicarious play (Level 7), sequenced vicarious play (Level 9), sequenced substitutive play (Level 10), and substitutive vicarious play (Level 11) to occur during the latter half of the second year. As can be seen in Table 1, more subtle age distinctions among advanced forms of play did not occur. In contrast to the generally accurate estimates by mothers of the age of onset for these milestones, mothers considered combinatorial play (Level 3) to emerge as late as 16.1 months, sequenced play (Level 6) to emerge as late as 18.9 months, and substitutive play (Level 8) to occur as early as 14.1 months. Nonetheless, the Spearman correlation between the estimated ages and the empirical orderings of items overall was strong (r = .95, p < .001). As can be seen in Table 2, distinctions within certain categories were not made (e.g., the multitword utterances of Levels 9, 10, and 11 were all judged to occur around 22 months).

Short-Term Stability of Mothers’ Play and Language Judgments

To examine whether mothers’ knowledge about progressions in play and in language are stable, we related their accuracy at judging the 11 play items on Visit 1 to their accuracy at judging the 11 play items on Visit 2. The same was done for language items. Results showed that judgments about play as well as about language were stable over the short term (r = .46, p < .01 and r = .84, p < .001, respectively).

As a part of these analyses, we also examined whether mothers’ accuracy in ordering play and language items from the paired-comparisons tasks related to their accuracy in ordering the emergence of the same items based on the age checklists. Relations were significant for both play (r = .52, p < .001) and language (r = .62, p < .001).
Mothers' knowledge about language was significantly stronger than was their knowledge about play based on the paired-comparisons tasks on both visits (as indicated by *t* tests comparing correlations between their rank orderings and the empirical scale for play and language), *t*(58) = 5.65, *p* < .0001, and *t*(52) = 4.60, *p* < .0001, and based on responses to the age checklist, *t*(41) = 5.63, *p* < .0001. In fact, 49% of mothers on Visit 1 and 53% of mothers on Visit 2 had rankings of language items that correlated with the empirical scales at or above .90 in contrast with no mothers showing such high correlations in play. However, the lowered accuracy of play might be attributed to its lower reliability.

Mothers' knowledge about play was unrelated to their knowledge about language in Visit 1 (*r* = -.08) and in Visit 2 (*r* = .01). The same independence held when comparing knowledge from the two age checklists (*r* = .04). Thus, mothers who were relatively more knowledgeable about play were not necessarily more knowledgeable about language, suggesting that parenting knowledge is best conceptualized as a multidimensional construct.

**Maternal Knowledge in Relation to Children’s Developmental Stage**

As a first step toward assessing the dependence of maternal knowledge on child developmental level, we examined relations between children’s age and mothers’ knowledge from the paired-comparisons tasks and age estimates of when developmental milestones first occurred. Mothers’ accurate ordering of language milestones was inversely related to children’s age for Visits 1 and 2 (*r* = -.38 and -.44, *p* < .01) and to the age discrepancy score for language (*r* = .50, *p* < .01). Children’s age related nonsignificantly or weakly to orderings of play for Visits 1 and 2 (*r* = .03 and -.24) and inversely to the age discrepancy score (*r* = .50, *p* < .01).

To examine these relations more closely, we divided the sample into three stage groups based on developmental transitions as documented in the play and language literatures (e.g., Bates et al., 1988; Belsky & Most, 1981; McCall, Eichorn, & Hogarty, 1977; Tamis-LeMonda & Bornstein, 1996). That is, children between the ages of 4 and 12 months are typically considered to be presymbolic; children between the ages of 13 and 21 months to be in a stage of symbolic emergence and elaboration; and children over 21 months to have achieved moderately advanced levels of representational ability. We then analyzed the age estimates of these three groups in two 3 (stage group; *n* = 19 per group) x 11 (level) analyses of variance conducted separately for play and language. Results showed a significant main effect for play level, *F*(10, 420) = 34.5, *p* < .001, indicating mothers’ general sensitivity to the ordinal nature of the levels as documented above, as well as stage group, *F*(2, 42) = 10.7, *p* < .001, indicating mothers’ differential accuracy across the three groups. The interaction between stage group and play level was not significant.

Figure 1 plots the estimated ages for each of the 11 play actions for the three stage groups of children against the empirical orderings of these items. Note that the abscissa artificially represents the play milestones along equidistant intervals; this is merely a convenient representation of otherwise ordinal based information. Examination of these data shows that mothers from the advanced symbolic (i.e., oldest) group generally estimated most milestones to occur later than mothers from the other two groups. For example, mothers of older children considered simple manipulations (Level 1) to not occur until 11.1 months, nonsymbolic functional activities (Level 2) to not occur until 13.3 months, and single acts of self-directed symbolic play (Level 4) to not occur until 17.2 months; mothers of younger children considered the three activities to occur at the ages of 7.1, 9.4, and 12.2 months, respectively, on average.

Similarly, analyses for language estimates identified a significant effect for language level, *F*(10, 440) = 77.2, *p* < .001, and stage group *F*(2, 44) = 4.7, *p* < .01. Results of these analyses are presented in Figure 2. Again, mothers of the oldest children judged language milestones to first occur at later ages than did mothers in the other two groups. For example, mothers of older children did not expect cooing and babbling (Levels 1
MOTHERS' KNOWLEDGE ABOUT PLAY AND LANGUAGE

Discussion

In the first few years of life, children exhibit rapid advances in their mental abilities, as evidenced in the way they act on the objects in their environment (through play) and communicate socially (through language). Prior investigations of children's unfolding representational abilities have demonstrated that mothers tailor their play and language interactions to match the rapidly changing abilities and needs of their young children. For example, mothers match their children's play levels during free-play interactions (e.g., Damast et al., 1996; Tamis-LeMonda & Bornstein, 1991) and adjust the level of their own play over time in close synchrony with changes to their children's play (Tamis-LeMonda & Bornstein, 1991). Similarly, mothers modulate the complexity of their speech to meet their children's current language abilities (Bornstein & Lamb, 1992; Bruner, 1983; Ferguson, 1978; Snow, 1977).

Such studies suggest that parents are behaviorally responsive to their children's changing competencies, but they raise a question as to whether parents are cognitively aware of developments in children's play and language. As suggested by Miller (1988), awareness of developmental milestones might help mothers create stimulating and challenging environments for their young children. The goal of the present study was to examine mothers' cognitive appreciation of the progressive nature of children's play and language. More specifically, we ascertained mothers' knowledge about children's unfolding abilities, we asked whether such knowledge is stable over the short term, we assessed whether parental knowledge is generalized or specific, and we identified relations between children's developmental stage and maternal knowledge about specific areas of children's development.

Results indicated that mothers are knowledgeable about developments in play and language and that this knowledge is reasonably stable over a short-term period. These findings indicate that mothers have formulated relatively accurate schemas about specific areas of children's accomplishments and that these schemas are stably a part of mothers' knowledge base at least over brief time periods. It is possible that the stability we identified in mothers' knowledge about these two domains reflects, in part, mothers' memory of their previous judgments rather than consistent variation in mothers' underlying knowledge. The fact that mothers made judgments on a total of 110 different pairs at each visit makes it unlikely, however, that they would remember their responses to individual items.

The findings on play sensitivity replicate and extend findings by Tamis-LeMonda et al. (1994) by focusing on both play and language knowledge in a different population. To our knowledge, this is the first investigation to examine mothers' awareness of specific linguistic milestones. It is clear that mothers are highly accurate in their judgments about first- to second-year achievements in children's communication.

It is important to note that the levels of mothers' knowledge that we identified for both play and language are likely to be underestimates of the true levels of mothers' accuracy. That is, the empirical orderings of play and language items that we used in the present study were based on a careful and comprehensive compilation of extant findings on observations of children's play and language developments in their first few years. However, the play and language progressions that are documented in the literature are based on developmental trends observed in groups of children. Group data can mask the substantial variation that exists among individual children in the achievement of representational milestones (see McCall et al., 1977, for discussion). In this regard, the ordering of play and language items to which parents' judgments were compared should not be considered rigid "gold standards" but rather "best estimates" of general developmental trends in play and language. Insofar as different mothers have experienced different developmental histories with
their children, their own reported estimates of developmental milestones might reflect those histories. Consequently, mothers' orderings of play and language milestones, as well as their estimates of ages of onset in the two domains, might have been even more accurate than reported here if the developmental trajectories of their own children, rather than children in general, had been the standard.

In general, mothers' knowledge about language development appeared to be significantly stronger than their knowledge about play development. This difference might reflect the strong emphasis that is placed on children's language achievements in the United States and the widespread use of language milestones as manifest indicators of underlying transitions in children's cognitive growth. As a consequence of this societal emphasis, language achievements may be salient to mothers, or mothers may be especially motivated to seek out information about early and normative development in this domain. In contrast to the historical emphasis that is placed on language, research on the cognitive underpinnings of play and the diagnostic value of play achievements for the current and future cognitive performance of children is less well known or appreciated.

Alternatively, mothers' knowledge about play may appear to be less accurate than their knowledge about language because more mature play activities do not replace less mature activities in the same way that more mature forms of language replace less mature forms. That is, even a child who is able to engage in sequenced, substitutive, and vicarious play will still intersperse object manipulations and basic nonsymbolic play with these more advanced levels of pretense. In contrast, a child who is well beyond a two-word stage of language development will rarely engage in immature forms of babbling. Such structural features in language make it likely that most people would order prelinguistic utterances before single-word utterances before multiword utterances. In addition, the seeming lesser accuracy of mothers' knowledge about play versus language may be the result of differences in the robustness of the ordering of play versus language activities across children. That is, if individual children follow somewhat unique trajectories in their play development, and if there is more variability across children in the development of play than in the development of language, then mothers' lesser accuracy in judging play might reflect this greater variability. Indeed, children's play has been shown to be influenced by personal modes or styles of expression (e.g., Dixon & Shore, 1993; Gardner & Wolf, 1978; Wolf & Grollman, 1982), and these distinct styles will certainly influence mothers' judgments about certain forms of play. Together, the greater societal emphasis placed on language and the structural characteristics of broad levels of language, such as the fact that mature forms replace rather than add to less mature forms, might explain why mothers tended to be more accurate at ordering language milestones than at ordering play milestones.

As expected, individual mothers varied in their judgments in the two domains of child development. However, mothers' knowledge about language development was unrelated to their knowledge about play development. This finding underscores the importance of ascribing a multidimensional model to parental cognitions and beliefs on, at least, to knowledge about developmental milestones in children. An individual ought not be strictly conceptualized as knowing more or less about children's development; rather, knowledge may be specialized and a parent may know more about achievements in one domain than another. The areas in which parents are more knowledgeable may depend on their goals for their children, what they deem to be important to their children's future, their children's own competencies and interests in a specific area, parenting experience, and so forth (see Bornstein, 1995; Tamis-LeMonda & Bornstein, 1996).

Children's developmental stage related to their mothers' knowledge about children's progress in both domains, as well as to their judgments about the ages at which children achieve developmental milestones. Specifically, mothers of prerepresentational and emerging representational children were most accurate in their age estimates of language milestones and mothers of advanced representational children were least accurate. We did not expect mothers of prerepresentational children to be as accurate as mothers of emerging representational children, but they were. It may be that knowledge about the activities in children that are soon to occur are primed or salient to mothers who wish to be prepared for the next step. Consequently, mothers of the youngest children may have been accurate in their age estimates because they were asked to judge behaviors that would be relevant to their children in the near future.

In contrast, parents of children who were at more advanced stages (i.e., those older than 21 months) were less accurate in judging the developmental onsets of play and language behaviors that emerged during the first and second years of life. As hypothesized, these mothers consistently overestimated the ages at which play and language milestones emerged, thereby underestimating the abilities of younger children. The lower accuracy of these mothers, as well as the direction of error in their age estimates, accords with the research of DeGrada and Ponzo (1971) and D'Alessio (1977) in which adults were found to systematically underestimate the abilities of preschool children. D'Alessio (1977, 1990) further noted that actual experiences with children probably only temporarily modify such prejudiced conceptions of childhood; mothers will return to inaccurate judgments about the abilities of preschoolers once their children are older.

In line with these findings, our data indicate that mothers are cognitively aware of developments in their children's representational competencies, but that awareness tends to be circumscribed to the period surrounding children's current or emerging abilities. As children develop, mothers' refocus the spotlight of sensitivity to highlight their children's most recent accomplishments as well as those that are anticipated to occur in the near future. Future investigations might examine how variation in mothers' knowledge about specific areas of child development affects the quantity and quality of their interactions with children and, in turn, influences children's early achievements in these key areas of development.

References


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