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What is This?
Language and Play at One Year: A Comparison of Toddlers and Mothers in the United States and Japan

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The present study compared American and Japanese toddlers and their mothers on dimensions of language and play when the toddlers were 13 months of age. In both cultures and in both domains, individual variation in toddlers was associated with individual variation in mothers. In general, the

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frequency and variance of language and play activities were similar in the two
groups. However, two notable cultural differences emerged. American
toddlers were more advanced in both their productive and receptive vocabu-
laries, and this cultural difference was matched by the tendency for American
mothers to label and describe properties, objects, and events in the environ-
ment more frequently. In contrast, Japanese toddlers were more advanced
on symbolic play, and their advanced play was matched by more advanced
play in Japanese mothers, particularly for “other-directed” acts of pretence.
These findings suggest that during this early period of symbolic development,
as expressed through language and play, American and Japanese dyads
emphasise different modes of representation and do so in ways that accord
with traditional cultural concerns.

INTRODUCTION

To date, research on developmental milestones and individual variation in
toddlers’ emerging language and play capacities, as well as research on the
maternal mediators and correlates of individual variability, have almost
exclusively built on investigations of Western families. This monocultural
emphasis restricts understanding of early communicative growth and
experience, because characteristics of language and play among toddlers
and mothers which are universal cannot be distinguished from those which
are culturally specific (Bornstein, 1980, 1991; Kennedy, Scheirer, &
Rogers, 1984; Moghaddam, 1987; Russell, 1984). Moreover, the Western
finding that language variation among children at the start of the second
year is associated with variation in children’s play sophistication suggests
that these twin emerging capabilities might reflect a transition in a common
underlying “representational competence” (Bretherton & Bates, 1984;
Fein, 1981; Fein & Apfel, 1979; McCune-Nicolich, 1981; Tamis-LeMonda
& Bornstein, 1990; Ungerer & Sigman, 1984). However, little if any,
research tests the generality of this observation, namely, whether language
and play during early development covary systematically in non-Western
societies.

The present study compares the language and play of U.S. American
and Japanese 13-month-old toddlers, and it compares American and
Japanese mothers for their use of referential statements (e.g. “That’s a
ball”) and questions (e.g. “What’s that?”) and for their demonstrations
and solicitations of specific play actions. These particular maternal
behaviours are thought to stimulate verbal development, such as the ability
to recognise concepts expressed by self and others, and to foster “play with
objects”, the ability to engage competently in explorations and representa-
tions through playful gesture (e.g. Belsky, Goode, & Most, 1980; Carew,
1980; Teti, Bond, & Gibbs, 1988).

America and Japan represent a provocative base of comparison in this
respect, as these two countries maintain reasonably similar levels of
industry, modernity, and living standards, and both are child-centred societies. At the same time, however, the two differ in terms of history, culture, beliefs, and child-rearing goals, as well as the activities mothers in each emphasise in interactions with young infants and children (e.g. Bornstein, 1989; Bornstein, Azuma, Tamis-LeMonda, & Ogino, 1990a; Bornstein et al., 1990c; Caudill, 1973; Caudill & Weinstein, 1969; Fogel, Toda, & Kawai, 1988; Morikawa, Shand, & Kosawa, 1988; Otaki, Durret, Richards, Nyquist, & Pennebaker, 1986; Shand & Kosawa, 1985a, b; Toda, Fogel, & Kawai, 1990). The general finding is that American mothers emphasise independence and regulate interactions so as to foster physical and verbal assertiveness in children, as well as interest in features of the external environment; in contrast, Japanese mothers promote interactions that consolidate mutual dependence within the dyad (e.g. Azuma, 1986; Befu, 1986; Bornstein, Tal, & Tamis-LeMonda, 1991; Chen & Miyake, 1986; Conroy, Hess, Azuma, & Kashiwagi, 1980; Doi, 1973; Hess et al., 1986; Kojima, 1986; Miyake, Chen, & Campos, 1985).

Several studies highlight this cross-cultural distinction. First, American mothers respond more to infant object orientation, with responses focusing on object-oriented labels, descriptions, and gestures, whereas Japanese mothers respond more to infant social bids, and their responses tend to be more social-affective in nature (Bornstein et al., 1991). Second, Japanese mothers use speech to alter physical and emotional conditions of infants more often than do American mothers (Morikawa et al., 1988). Third, American mothers are more information-oriented in their speech towards 3-month-olds, whereas Japanese mothers’ speech is more affect-oriented (Toda et al., 1990). Finally, American mothers interact vocally and stimulate object exploration more often than Japanese mothers, whereas Japanese mothers exhibit more bodily contact and soothing of infants (Bornstein et al., 1990a, c; Caudill & Weinstein, 1969). This literature indicates dyadic versus extradyadic emphases in the early interactions of American versus Japanese mothers and infants. The present study explores the cultural continuity of this mother–infant contrast into the child’s second year by assessing similarities and differences in the language and play interactions of American and Japanese mother–toddler dyads.

We observed dyads at the start of the second year as this is typically the time when the child first utters words (Bates, Bretherton, & Snyder, 1988; Nelson, 1973), begins to understand words in the absence of contextual support (Snyder, Bates, & Bretherton, 1981), and starts to represent everyday experiences of self and others in play (Fein, 1981; McCall, 1979; O’Connell & Bretherton, 1984). During this period of rapid developmental transition, children vary substantially among themselves in emerging language and play abilities (Bretherton & Bates, 1984; Ungerer & Sigman, 1984; Vibbert & Bornstein, 1989). This variability might represent differ-
ences in children’s cognition or maturation, and might also be mediated by differences in mothers’ stimulation and promotion of language and play (Tamis-LeMonda & Bornstein, 1990).

To evaluate language, we focus on the “flexibility” of children’s productive and receptive vocabularies by assessing proficiency of language which is “free” of temporal, gestural, tonal, or spatial cues. In the early stages of language development, both production and comprehension are bound to narrow contexts, requiring concrete contextual supports in order for a child to produce or understand a given word or phrase (e.g. using a harsh tone when telling a child to “stop”; Volterra, Bates, Benigni, Bretherton, & Camaiioni, 1979). Through the course of language acquisition, language proficiency is distanced from concrete referents as children achieve “nominal insight” (Snyder et al., 1981). The present study examines whether American and Japanese toddlers differ quantitatively in their articulation and understanding of words and phrases in context-free (i.e. flexible) ways, both before and after considering the role of mothers’ own language stimulation. We also examine whether mothers’ references and questions about environmental objects and activities differ in the two cultures, both with and without toddlers’ language production and language comprehension covaried. Finally, we assess concurrent associations between toddlers’ language and mothers’ language-oriented stimulation separately in the two cultures and compare resultant patterns of covariation.

For play, we compare American and Japanese toddlers and their mothers on spontaneous activity at eight levels of increasing sophistication (see Tamis-LeMonda & Bornstein, 1991). Research in the United States indicates that, prior to the first year, children’s play is virtually all nonsymbolic, characterised predominantly by sensorimotor manipulation. These nonsymbolic actions are at first directed towards a single object (e.g. squeezing a foam ball) and later incorporate combinations of two or more objects. These combinations in turn are initially inappropriate and later appropriate (e.g. a nesting block might first be juxtaposed with a busy box, only later to be inserted in its appropriate partner block). Over the course of the second year, children’s play becomes increasingly symbolic, as they begin to enact activities performed by self, others, and objects in simple pretence scenarios. In symbolic play, pretence schemes are normally applied to self before others (e.g. pretending to drink from a cup before feeding a doll); single-scheme pretence appears before multi-scheme pretence (e.g. pretending to drink from a cup and later pretending to pour and drink); and pretence with literal objects precedes pretence with “substitute” objects (e.g. a telephone will at first represent a telephone, and later a stick might represent a telephone). (For a complete background to this scheme, see Belsky & Most, 1981; Fein, 1981; Lowe, 1975; Piaget, 1962; Shore, O’Connell, & Bates, 1984; Ungerer, Zelazo, Kearsley, & O’Leary, 1981; Watson & Fischer, 1977.)
In this study we apply these Western-derived play scales to the play of American as well as Japanese toddlers and mothers using procedures developed elsewhere to assess interactive play in American dyads (Tamis-LeMonda & Bornstein, 1991); play coding systems were found to translate readily to Japanese. Toddler and mother play within the two cultures, as well as comparisons of play between the two cultures, are examined in a number of ways. First, because the targeted play levels are hypothesized to form a Guttman scale, we test the linearity of the eight play levels for toddlers and for mothers in the two cultures. We hypothesized that, at this period of early play development, toddlers and mothers in both cultures would tend to show a linear decrease in activity as play level sophistication increases. Moreover, we hypothesized that the trend toward linearity would be stronger for toddlers than for their mothers. As toddlers’ play sophistication is thought to reflect maturation and cognition, some linearity in play must be explained by endogenous determinants. In contrast, mothers’ play is not limited by capability but is probably informed by cues from toddlers or by intuitive notions on play (see Tamis-LeMonda & Bornstein, 1991); thus, mothers’ play might tend to fluctuate across levels of sophistication. We also compare the overall “shapes” of play distributions across the coded levels for American and Japanese toddlers and for American and Japanese mothers. In more specific analyses, we compare toddlers and mothers in the two societies at each of the eight levels of play. We assess concurrent associations between toddler play and mother play in the United States and Japan, so that patterns of covariation might be contrasted.

Finally, we examine and compare associations between domains within each culture, relating toddlers’ language to their play and likewise relating mothers’ language stimulation to their play stimulation. We sought to replicate the play-language link in American toddlers and to ask whether the same association obtains in Japanese children.

**METHOD**

**Sample**

A total of 78 first-born toddlers (38 American and 40 Japanese, balanced for sex in both countries) and their mothers participated in the study. Subject recruitment was essentially the same in the two countries. Subject names were obtained from the hospital records of local and private paediatric and obstetric groups in New York City and Tokyo. All toddlers had been term at birth, had uneventful prenatal and postnatal histories, and were healthy up to and at the time of the study. Toddlers were matched for age at observation, $M$ age in days = 403 for Americans and 405 for Japanese, $t(76) = 1.12$. Moreover, the samples came from compa-
rable middle to upper-middle class intact households with the majority of mothers and fathers in both countries having completed some college or graduate school. Initial analyses were conducted separately for males and females and indicated no gender differences in patterns of findings. In addition, analyses which did and did not covary toddlers’ age at testing showed no differences. Therefore, we collapsed across these variables.

Procedure

Procedures were identical in the two societies. Data on toddler language production, language comprehension, and play sophistication, and data on maternal statements and questions about environmental referents and maternal play sophistication were collected during a 2½-hour home visit. Visits were scheduled at optimal times of day for individual dyads when mother felt her toddler would be alert and rested. The home visit included a videotaped session of toddler and mother engaged in free-play for 15 minutes and a detailed maternal interview of the child’s productive and receptive vocabularies. The maternal interview took place after the videotaped play session in both countries.

Toddler Language Measures. Mothers were interviewed about their children’s productive and receptive vocabularies using the Bates et al. (1988) language inventory. We elected to use this inventory rather than other report instruments because it distinguishes between restricted and flexible language in production and comprehension; this contrast is central during early stages of language development. Moreover, this inventory yields reliable language data and has been shown to possess concurrent and predictive validity for children’s second-year language performance across American samples, especially when flexible language measures are targeted (Bates, Benigni, Bretherton, Camaioni, & Volterra, 1979; Bates et al., 1988; Bretherton & Bates, 1984; Tamis-LeMonda & Bornstein, 1989). During the language interview, the experimenter read approximately 100 common words or phrases to the mother and asked whether her child demonstrated productive and receptive proficiency with each item. If a mother indicated that her child produced and/or understood an item, the experimenter further probed to determine whether any specific gestural, vocal, spatial, or temporal cues were required for the child to display competence with the word or phrase. Two authors (S.T. and M.O.) ascertained that all lexical items generalised to Japanese or made appropriate substitutes by word class.

Videotaped Interaction. Each dyad was videotaped for 15 minutes in free-play. Mothers were told that the experimenter was interested in
general dimensions of children’s development and that they were to remain with their toddlers, behave in their usual manner, and disregard the observer’s presence as far as possible. No further instructions were given. A set of toys (doll, blanket, teapot with cover, two teacups, two saucers, two spoons, telephone, train, two small picture books, foam rubber ball, and nesting barrels) was placed in front of toddler and mother, usually on the floor. These toys provided toddlers and mothers opportunities to exhibit various forms of play, ranging from simple manipulation of objects to more sophisticated pretence.

### Scoring and Data Reduction

Children’s language data were obtained from the maternal language inventory, and maternal language stimulation, children’s play competence, and maternal play sophistication were coded from videotapes of the play session. Children’s language and play and mothers’ language and play stimulation were each coded by different people so that coders were blind to the nature of different data sets.

**Toddler Language Production and Comprehension.** Language data were scored according to procedures developed by Bates et al. (1988). Children were credited with production if in the maternal report they demonstrated consistent and appropriate use of a sound which approached the phonetic version of the adult target word (e.g. “wawa” for water in English; “nyunyu” for gyunyu [milk] in Japanese), and they were credited with comprehension if their behavioural response was appropriate to a particular word or phrase (e.g. walking over to mother if she said “Come here.”) In cases where contextual or other cues were necessary to produce or comprehend a word or phrase, mastery was further classified as “restricted”. Items which were independent of contextual cues were classified as “flexible” (Snyder et al., 1981). In both production and comprehension, we distinguished nouns and non-nouns (i.e. verbs, exchange words, adjectives, commands, and the like) in order to test whether patterns of results were different for these separate word classes. For analyses, we used only flexible measures of language production and language comprehension because, as mentioned earlier, these measures are thought to index the extent to which children understand reference (Bates et al., 1988; Snyder et al., 1981; Tamis-LeMonda & Bornstein, 1989). Moreover, flexible production was characterised by greater variability than restricted production in New York, $F_{S\cdot\text{max}} = 4.05, P < 0.01$, and flexible comprehension was characterised by greater variability than restricted comprehension in both New York and Tokyo, $F_{S\cdot\text{max}} = 3.96$ and $9.44$ respectively, $P_s < 0.01$. 

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Maternal Language Stimulation. This was coded over 60 successive 15sec intervals in the same 15min play session. This time interval was based on prior work in our laboratory indicating that the median duration of attention in play at 13 months is about 12.5sec (Tamis-LeMonda & Bornstein, 1991). During each interval, two types of language stimulation were coded for their occurrence or nonoccurrence. These were object-oriented statements, in which mothers verbally indicated an object, activity, or event in the environment by describing, labelling, or otherwise highlighting the unique qualities of that object (e.g. "That's a spoon" and "You're stirring with the yellow one"), and object-oriented questions, in which mother asked about the unique qualities of an object (e.g. "What colour is that?" and "What are you stirring?"). Thus, over the entire play session mothers could be credited with as many as 60 statements and 60 questions. We chose to examine these two types of stimulation because referential language is associated with more rapid vocabulary expansion during early language development (e.g. Furrow, Nelson, & Benedict, 1979; Nelson, 1973; Newport, Gleitman, & Gleitman, 1977; Tomasello & Mannle, 1985). Intercoder reliabilities for these categories were obtained by having independent observers code approximately 15% of the total sample. Coders maintained an average kappa for maternal language stimulation of 0.70 across the study (Cohen, 1968; Hartmann & Wood, 1982).

Toddler Play. This was coded over the same 60 contiguous 15sec intervals. During each interval, the coder noted whether or not the child achieved each of eight states of play; these levels were based on prior research on first- to second-year play development (e.g. Belsky & Most, 1981; Fein, 1981; McCune, 1985; McCune-Nicolich, 1981; Shore et al., 1984; Ungerer et al., 1981; Watson & Fischer, 1977). Briefly, the eight levels were defined: (1) Unitary functional activity; (2) Inappropriate combinatorial activity; (3) Appropriate combinatorial activity; (4) Transitional play; (5) Self-directed pretence; (6) Other-directed pretence; (7) Sequential pretence; and (8) Substitution pretence. Operational definitions of these play levels along with examples are provided in the Appendix. The total number of intervals in which each level of play occurred was calculated for each of the eight play levels. In addition, total nonsymbolic play was computed by summing across the frequencies obtained for levels 1 through 4, and total symbolic play was calculated by summing across the frequencies obtained for levels 5 through 8 (Tamis-LeMonda & Bornstein, 1991). Intercoder reliabilities for toddler play were obtained by having independent coders score toddler play on 20% of the total sample. Kappa averaged 0.76 across the study for the eight levels of play for matched intervals.
Mother Play. For mother play, during each 15sec coding interval coders noted whether or not mothers demonstrated or solicited play. Each demonstration and each solicitation was also coded for its level of sophistication using the same eight-level play scale as that for toddlers. In demonstrating, mothers provide children with information about how to engage in particular activities by modelling the action themselves. For example, a mother can dial the toy telephone herself (a demonstration at level 1) or a mother can pretend to talk on the toy telephone (a demonstration at level 5). In soliciting, mothers place the onus for play on toddlers by encouraging their participation in specific play activities. For example, a mother can move the telephone toward her child suggesting that the child dial the toy telephone (a solicitation at level 1) or move the toy telephone toward her child and suggest that her toddler talk on the telephone (a solicitation at level 5). Together, these two forms of activity describe two major approaches of mothers’ play overtures to toddlers (Bornstein, Tal, Toda, & Berlin, 1990b). At an empirical level, mothers’ demonstrations and solicitations of play can be categorised according to the same coding scheme applied to children’s play. Moreover, these two categories of maternal play were independent in both societies lending empirical support to their conceptual distinction. Mothers were only credited with a demonstration or a solicitation of a given play level once per interval.

The number of intervals in which mothers exhibited a particular level of play was calculated for each of the eight play levels separately for demonstrations and solicitations. In addition, maternal nonsymbolic demonstrations, symbolic demonstrations, nonsymbolic solicitations, and symbolic solicitations were calculated, by distinguishing play levels 1 through 4 versus levels 5 through 8 for demonstrations and solicitations separately. Total maternal nonsymbolic play was the sum of nonsymbolic demonstrations and nonsymbolic solicitations; total maternal symbolic play was the sum of symbolic demonstrations and symbolic solicitations. Intercoder reliabilities for maternal activities were obtained by having independent observers code approximately 15% of the total sample. Coders maintained an average kappa of 0.81 across the eight levels of maternal play stimulation.

Prior to analyses all univariate data were inspected in box plots, and bivariate relations were examined in scatter plots (Tukey, 1977) in order to identify extremes which might change patterns of group data. One American toddler was found to be a bivariate outlier on the language-to-play analysis and was selectively omitted. No other outliers emerged. Inspection of bivariate plots showed that pairs of mother–toddler activities were not systematically associated in any nonlinear way either.
RESULTS AND DISCUSSION

Toddler and Mother Language

Table 1 presents descriptive data (mean and range) for toddlers’ language production and comprehension and mothers’ statements and questions in the United States and Japan. Also shown are univariate t-tests comparing differences between toddler language and between mothers’ language stimulation in the two cultures, and the results of univariate analyses of covariance testing the same differences in the two cultures with partner contributions partialled. Table 2 presents concurrent associations between toddler and mother language measures.

Cultural Similarities and Differences in Language. Analyses comparing the variances of language measures between cultures (F-max) showed homogeneity of variance for comprehension, but not production. Toddlers in America had larger variances associated with common nouns and non-nouns in production, $F_{S-max} = 4.24$ and 7.61, respectively, $P < 0.01$. However, when sample sizes are matched, as in the present study, the $F$-tests used in ANOVAs are robust against heterogeneity of variance (Box, 1953; Edwards, 1985).

A $2 \times 2$ (language channel—production-comprehension) × 2 (language type—nouns-non-nouns) × 2 (culture) ANOVA indicated only a main effect for

| TABLE 1 |
| Toddler and Mother Language in the United States and Japan |

<table>
<thead>
<tr>
<th></th>
<th>New York</th>
<th>Tokyo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>$M$ (range)</td>
<td>$M$ (range)</td>
</tr>
<tr>
<td>Toddler</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Common nouns</td>
<td>4.0 (0–23)</td>
<td>1.5 (0–13)</td>
</tr>
<tr>
<td>Non-nouns</td>
<td>2.6 (0–14)</td>
<td>1.0 (0–5)</td>
</tr>
<tr>
<td>Comprehension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Common nouns</td>
<td>16.1 (2–39)</td>
<td>7.8 (0–28)</td>
</tr>
<tr>
<td>Non-nouns</td>
<td>15.4 (4–32)</td>
<td>8.2 (0–21)</td>
</tr>
<tr>
<td>Mother</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statements</td>
<td>24.0 (6–42)</td>
<td>19.3 (2–38)</td>
</tr>
<tr>
<td>Questions</td>
<td>14.5 (3–34)</td>
<td>14.0 (3–30)</td>
</tr>
</tbody>
</table>

$^a$Separate variance estimate used in $t$-test when $F$-max is significant.

$^b$Culture difference with partner’s contribution partialled.

$^*P < 0.05$; $^{**}P < 0.01$; $^{***}P < 0.001$. 

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TABLE 2
Concurrent Relations between Toddler and Mother Language in the United States and Japan

<table>
<thead>
<tr>
<th></th>
<th>Toddler Production</th>
<th></th>
<th>Toddler Comprehension</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Common Nouns</td>
<td>Non-nouns</td>
<td>Common Nouns</td>
<td>Non-nouns</td>
</tr>
<tr>
<td></td>
<td>N.Y.</td>
<td>Tokyo</td>
<td>N.Y.</td>
<td>Tokyo</td>
</tr>
<tr>
<td>Mother language</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statements</td>
<td>0.33*</td>
<td>0.23</td>
<td>0.28*</td>
<td>0.06</td>
</tr>
<tr>
<td>Questions</td>
<td>0.40**</td>
<td>0.10</td>
<td>0.20</td>
<td>0.00</td>
</tr>
</tbody>
</table>

*P < 0.05; **P < 0.01; ***P < 0.001.

language channel, $F(1,76) = 164.04, P < 0.001$, a main effect for culture, $F(1,76) = 23.08, P < 0.001$, and a culture by language channel interaction, $F(1,76) = 14.67, P < 0.001$. The main effect for language channel indicated that, as expected, language comprehension was much greater than production in both cultures. The main effect for culture indicated that American toddlers were more advanced than their Japanese counterparts in language overall. As univariate assessments in Table 1 show, American toddlers had more nouns and non-nouns in both their productive and receptive vocabularies. The language channel × culture interaction indicated that differences between the two cultures in language was greater for comprehension than for production. As analyses of covariance show (Table 1, column 4), these language differences maintained even after mothers’ statements and questions were partialled. This suggests that cultural differences in toddlers’ language abilities at the start of the second year are in part independent of their mothers’ own contemporary tendencies towards environmental referencing.

Cultural comparisons of the distributions of mothers’ statements and questions indicated homogeneity of variance ($F_{S-\text{max}} < 2$). A 2 (culture) × 2 (stimulation-type) ANOVA showed a main effect for stimulation type, $F(1,76) = 87.83, P < 0.001$, indicating that mothers in both countries made more statements about objects than they asked questions. Given the limited productive abilities of children at this age, the general tendency towards statements rather than questions might be expected. The ANOVA also indicated a significant culture by stimulation-type interaction, $F(1,76) = 7.05, P < 0.01$, reflecting the fact that American mothers made significantly more object-oriented statements during the play session than their Japanese counterparts, whereas mothers in the two groups did not differ in their tendency to ask questions about objects (see Table 1 for univariate
assessments of these effects). However, as can be seen in the covaried F-values in Table 1, when toddler language production and comprehension were partialled from mothers’ language stimulation the cultural difference in mothers’ statements attenuated to nonsignificance. Thus, it appears that the greater tendency to make referential statements by American mothers is primarily ascribable to the differential language proficiency of American versus Japanese toddlers. The main effect for culture was not significant.

In sum, cultural differences in language that emerged tended to favour American toddlers and mothers. American toddlers both produced and comprehended more, and their mothers tended to make more referential statements about the environment (although the later tendency was attenuated when toddlers’ language was partialled). These data are generally consistent with research suggesting greater object or information orientation in American versus Japanese dyads during early interactive exchanges (e.g. Bornstein et al., 1990a, c, 1991; Toda et al., 1990).

Mother–Toddler Language Covariation. Table 2 presents concurrent relations between toddlers’ and mothers’ language. Individual variation in toddlers’ language abilities related to individual variation among mothers in terms of language stimulation, although relations differed for production and comprehension. In America, not Japan, mothers’ statements and questions related positively to children’s common nouns in production; the relation between maternal questions and toddler common nouns differed significantly in the two cultures, $q$ contrast = 0.32, medium effect size, (Cohen, 1977). For comprehension, mothers who described the environment more and asked more questions about it had toddlers who understood more common nouns and non-nouns in both cultures. However, it should be noted that language data for children are derived from maternal interview; therefore, these mother-to-toddler associations need to be considered with caution. One interpretation of these data might be that mothers who more often describe and question their toddlers about the environment infer more language in their toddlers, or, alternatively, are more sensitive to the language capabilities of their children.

Toddler and Mother Play

Table 3 presents descriptive data for toddler play at each of the eight play levels, as well as data on nonsymbolic and symbolic play. Tables 4 and 5 present data for mothers’ demonstrations and solicitations at each play level and for nonsymbolic and symbolic breakdowns. Toddler play and mother play within the two cultures, as well as comparisons of play between the two cultures, are organised as follows. First, the linearity of toddlers’ and of mothers’ eight play levels was tested in order to examine
TABLE 3
Toddler Play in the United States and Japan

<table>
<thead>
<tr>
<th>Play Level</th>
<th>New York M (range)</th>
<th>Tokyo M (range)</th>
<th>t*</th>
<th>Fb</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>17.3 (1-33)</td>
<td>15.4 (2-37)</td>
<td>1.16</td>
<td>0.18</td>
</tr>
<tr>
<td>2</td>
<td>5.0 (0-14)</td>
<td>5.5 (0-16)</td>
<td>0.55</td>
<td>1.65</td>
</tr>
<tr>
<td>3</td>
<td>5.3 (0-17)</td>
<td>4.4 (0-26)</td>
<td>0.72</td>
<td>3.25</td>
</tr>
<tr>
<td>4</td>
<td>3.2 (0-25)</td>
<td>3.7 (0-13)</td>
<td>0.52</td>
<td>0.36</td>
</tr>
<tr>
<td>5</td>
<td>1.8 (0-9)</td>
<td>4.3 (0-17)</td>
<td>3.19**</td>
<td>10.82**</td>
</tr>
<tr>
<td>6</td>
<td>1.1 (0-8)</td>
<td>2.9 (0-15)</td>
<td>3.17**</td>
<td>2.01</td>
</tr>
<tr>
<td>7</td>
<td>1.0 (0-8)</td>
<td>2.2 (0-14)</td>
<td>1.87</td>
<td>3.49</td>
</tr>
<tr>
<td>8</td>
<td>0.5 (0-4)</td>
<td>0.6 (0-4)</td>
<td>0.09</td>
<td>0.00</td>
</tr>
<tr>
<td>Total nonsymbolic</td>
<td>30.8 (4-55)</td>
<td>28.9 (9-75)</td>
<td>0.75</td>
<td>0.00</td>
</tr>
<tr>
<td>Total symbolic</td>
<td>4.5 (0-19)</td>
<td>9.9 (0-27)</td>
<td>4.14**</td>
<td>10.83**</td>
</tr>
</tbody>
</table>

*a Separate variance estimate used in t-test when F-max is significant.
bCulture difference with partner's matched play level partialled.

**P < 0.01.

whether there was a tendency for play frequency to decrease at increasing levels of play sophistication in the two societies. To do this we executed two 8 (play level) × 2 (culture) polynomial design repeated-measures analyses of variance (Judd & McClelland, 1989) followed by an 8 (play level) × 2 (partner—toddler—mother) × 2 (culture) polynomial design

TABLE 4
Mothers' Demonstrations of Play in the United States and Japan

<table>
<thead>
<tr>
<th>Demonstration Level</th>
<th>New York M (range)</th>
<th>Tokyo M (range)</th>
<th>t*</th>
<th>Fb</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5.0 (0-20)</td>
<td>5.5 (0-16)</td>
<td>0.71</td>
<td>0.64</td>
</tr>
<tr>
<td>2</td>
<td>1.3 (0-5)</td>
<td>0.4 (0-3)</td>
<td>3.62***</td>
<td>14.40***</td>
</tr>
<tr>
<td>3</td>
<td>3.6 (0-18)</td>
<td>4.6 (0-17)</td>
<td>1.25</td>
<td>3.37</td>
</tr>
<tr>
<td>4</td>
<td>0.0 (0-1)</td>
<td>0.2 (0-2)</td>
<td>1.62</td>
<td>2.73</td>
</tr>
<tr>
<td>5</td>
<td>1.5 (0-6)</td>
<td>1.4 (0-5)</td>
<td>0.43</td>
<td>0.79</td>
</tr>
<tr>
<td>6</td>
<td>2.0 (0-8)</td>
<td>5.6 (0-27)</td>
<td>3.77***</td>
<td>11.11***</td>
</tr>
<tr>
<td>7</td>
<td>0.7 (0-5)</td>
<td>0.4 (0-3)</td>
<td>1.68</td>
<td>2.73</td>
</tr>
<tr>
<td>8</td>
<td>0.4 (0-3)</td>
<td>0.2 (0-4)</td>
<td>0.83</td>
<td>0.68</td>
</tr>
<tr>
<td>Total nonsymbolic demonstrations</td>
<td>10.0 (2-35)</td>
<td>10.7 (0-23)</td>
<td>0.54</td>
<td>0.64</td>
</tr>
<tr>
<td>Total symbolic demonstrations</td>
<td>4.7 (0-17)</td>
<td>7.5 (1-29)</td>
<td>2.37*</td>
<td>2.95*</td>
</tr>
</tbody>
</table>

*a Separate variance estimate used in t-test when F-max is significant.
bCulture difference with partner's matched play level partialled.

*P < 0.05; ***P < 0.001.
### TABLE 5
Mothers' Solicitations of Play in the United States and Japan

<table>
<thead>
<tr>
<th>Solicitations Level</th>
<th>New York M (range)</th>
<th>Tokyo M (range)</th>
<th>t^a</th>
<th>P^b</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10.3 (0–24)</td>
<td>6.3 (0–15)</td>
<td>3.15**</td>
<td>8.35**</td>
</tr>
<tr>
<td>2</td>
<td>1.0 (0–9)</td>
<td>0.2 (0–3)</td>
<td>2.61*</td>
<td>7.42**</td>
</tr>
<tr>
<td>3</td>
<td>2.5 (0–8)</td>
<td>2.6 (0–18)</td>
<td>0.03</td>
<td>0.50</td>
</tr>
<tr>
<td>4</td>
<td>0.0 (0–1)</td>
<td>0.0 (0–0)</td>
<td>1.03</td>
<td>1.06</td>
</tr>
<tr>
<td>5</td>
<td>3.7 (0–11)</td>
<td>3.3 (0–13)</td>
<td>0.60</td>
<td>0.69</td>
</tr>
<tr>
<td>6</td>
<td>1.8 (0–9)</td>
<td>4.8 (0–15)</td>
<td>4.58***</td>
<td>10.63**</td>
</tr>
<tr>
<td>7</td>
<td>1.6 (0–5)</td>
<td>1.4 (0–6)</td>
<td>0.76</td>
<td>0.60</td>
</tr>
<tr>
<td>8</td>
<td>0.1 (0–1)</td>
<td>0.0 (0–1)</td>
<td>1.45</td>
<td>2.12</td>
</tr>
<tr>
<td>Total nonsymbolic solicitations</td>
<td>13.9 (1–28)</td>
<td>9.0 (0–28)</td>
<td>3.00**</td>
<td>8.54**</td>
</tr>
<tr>
<td>Total symbolic solicitations</td>
<td>7.2 (1–19)</td>
<td>9.5 (1–21)</td>
<td>2.15*</td>
<td>0.61</td>
</tr>
</tbody>
</table>

^aSeparate variance estimate used in t-test when F-max is significant.

^bCulture difference with partner's matched play level partialled.

*P < 0.05; **P < 0.01; ***P < 0.001.

repeated-measures analysis of variance testing for interactions in toddler versus mother play linearity. Next, ANCOVAs are used to test whether linear trends in toddlers' and/or mothers' play remained after considering the linearity of partner play in two 8 (play level) \times 2 (culture) polynomial design repeated-measures analyses of covariance; for these, mothers' linearity of play was covaried from toddlers' linearity of play, and toddlers' linearity of play was covaried from mothers' linearity of play.

The second set of play analyses compared the overall "profile" of the play distribution across the eight coded play levels for American versus Japanese toddlers and for American versus Japanese mothers. To do so, a 2 (culture) \times 8 (level) profile analysis was performed separately on toddler and mother play data. Where analyses identified cultural differences in the shapes of the play distributions, we compared toddlers' and mothers' play in America and Japan at each of the eight levels. These comparisons were made at the univariate level and also in ANCOVAs in which mothers' matched play levels were covaried from toddler analyses and toddlers' matched play levels were covaried from mother analyses. Finally, concurrent associations between toddler play and mother play in the United States and Japan are presented in Table 6.

**Cultural Similarities and Differences in Play.** Analyses comparing the variances of toddlers' nonsymbolic and symbolic play in the two cultures indicated homogeneity of variance. Similarly, variances in mothers' non-
symbolic demonstrations, nonsymbolic solicitations, and symbolic solicitations, did not differ in the two societies. However, the variance of Japanese mothers’ symbolic demonstrations exceeded that of American mothers, $F_{\text{max}} = 2.63, P < 0.01$. Examination of the linearity of toddlers’ distribution of play across the eight levels indicated substantial similarity in the two cultures. Specifically, in both cultures toddlers exhibited diminishing amounts of play as they moved from lower to higher play levels. This was indicated by a highly significant linear trend, $F(1,76) = 159.26, P < 0.001$, and this trend did not differ between the two cultures. Analyses also indicated a linear trend in mothers’ play for both demonstrations and solicitations, $F_S(1,76) = 33.36$ and $16.62$, $Ps < 0.001$; these did not differ in the two cultures. However, as expected, this tendency was not as regular as for toddler play, as evidenced by significant partner (toddler–mother) linearity interactions for both demonstrations and solicitations, $F_S(1,76) = 199.41$ and $179.29$, $Ps < 0.001$. A comparison of Table 3 with Tables 4 and 5 indicates that toddlers showed a generally smooth decreasing function as they moved from lower to higher play levels, whereas mothers’ demonstrations and solicitations of play at the various levels were characterised by multiple peaks and valleys. For toddlers, the trend towards linearity of play maintained after mothers’ linearity of play was partialled (collapsing across demonstrations and solicitations of play), $F(1,75) = 87.98, P < 0.001$. In contrast, when toddlers’ linearity of play was partialled from mothers’ linearity of play, the significant linear trends in mothers’ play demonstrations and play solicitations attenuated to nonsignificance, $F_S(1,75) = 2.45$ and $0.40$, respectively. This indicates that in both cultures the linearity of mothers’ play depends on toddlers’ play activity.

Despite comparable linearities, profile analyses comparing the “shapes” of toddler and mother play distributions in the two societies indicated significant differences between American and Japanese toddler play, and between American and Japanese mother play demonstrations and play solicitations, $F_S(7.70) = 2.95, 4.94,$ and $5.62$, respectively, $Ps < 0.01$. As can be seen in the univariate assessments for each of the eight levels and for summary scores of play (Tables 3, 4, and 5), these differences in overall shape primarily reflect the tendency of Japanese toddlers to engage in greater self-directed and other-directed single acts of pretence (levels 5 and 6) than their American counterparts, and for Japanese mothers to demonstrate and solicit other-directed pretence (level 6) more than American mothers. By comparison, American mothers attempted to solicit nonsymbolic play from their toddlers more, particularly at the two lowest play levels (i.e. level 1 unitary functional activity and level 2 inappropriate combinatorial activity). The more frequent single-pretence play of Japanese toddlers and mothers, and the more frequent unitary functional and combinatorial play of American mothers, were also reflected in significant
cultural differences in total toddler symbolic play, total mother symbolic demonstrations, and total mother nonsymbolic and symbolc solicitations.

The cultural difference in the shape of toddlers’ play distribution attenuated to nonsignificance when mothers’ play was partialled, $F(7,63) = 1.30$, $ns$, as did the tendency of Japanese toddlers to engage in other-directed pretence (see Table 3, level 6). This suggests that the tendency for Japanese toddlers to engage in other-directed pretence is mediated by their mothers’ prompting such play. In contrast, the more frequent self-directed pretence and overall symbolic play of Japanese toddlers maintained after considering mothers’ play. For mothers, the cultural difference in the overall shape of play for demonstrations and for solicitations remained after partialling toddlers’ play, $Fs(7,63) = 3.48$ and 3.63, $Ps < 0.01$, respectively, as did the stronger tendency of Japanese mothers to demonstrate and solicit “other-directed” pretence (level 6). This suggests that cultural differences in mothers’ play are not solely mediated by toddler activities; that is, it appears to be “in mothers’ minds” to act in these distinct ways.

In sum, the two cultures were highly similar in their overall distribution across eight levels of play, but differed on a few specific, but significant, levels of play. In both America and Japan, the play of toddlers and mothers supported the a priori Guttman scaling of play levels. Moreover, in both cultures, this linearity of play was stronger for toddlers than for mothers. Cultural differences in play sophistication favoured Japanese toddlers and mothers. Generally speaking, Japanese toddlers and mothers tended to engage in more symbolic play than their American counterparts and American mothers tended to engage in more nonsymbolic play. Moreover, the differential emphasis by Japanese mothers on symbolic play was specifically reflected in increased demonstrating and soliciting other-directed pretence. Thus, in line with the common cultural characterisation of Japanese as especially sensitive to others in dyadic interaction, Japanese mothers can be seen to organise second-year pretence in ways that encourage incorporation of a partner in play, and they do so independent of the toddler’s own contribution.

*Mother–Toddler Play Covariation.* As Table 6 indicates, individual variation in toddler play was associated with individual variation in mother play in specific ways, and patterns of associations were generally similar in the two cultures. In both America and Japan, mothers’ nonsymbolic play covaried positively with toddlers’ nonsymbolic play. This association existed in both cultures for nonsymbolic demonstrations; however, the relation between nonsymbolic solicitations and nonsymbolic play was significant only for Japanese dyads, $q$ contrast $= 0.50$, a large effect size. In Japan, not America, mothers’ nonsymbolic play related inversely to tod-
TABLE 6
Concurrent Relations between Toddler and Mother Play in the
United States and Japan

<table>
<thead>
<tr>
<th>Mother Play</th>
<th>Nonsymbolic</th>
<th>Symbolic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>New York</td>
<td>Tokyo</td>
</tr>
<tr>
<td>Nonsymbolic</td>
<td>0.32*</td>
<td>0.59***</td>
</tr>
<tr>
<td>Symbolic</td>
<td>-0.01</td>
<td>-0.15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Demonstrations</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonsymbolic</td>
<td>0.30*</td>
<td>0.30*</td>
</tr>
<tr>
<td>Symbolic</td>
<td>-0.01</td>
<td>-0.20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Solicitations</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonsymbolic</td>
<td>0.20</td>
<td>0.61***</td>
</tr>
<tr>
<td>Symbolic</td>
<td>0.00</td>
<td>-0.02</td>
</tr>
</tbody>
</table>

*P < 0.05; **P < 0.01; ***P < 0.001.

dlers’ symbolic play, and this difference was significant, q contrast = 0.49, a large effect size. In both cultures, mothers’ symbolic play covaried positively with toddlers’ symbolic play, but not with toddlers’ nonsymbolic play. Breakdowns by demonstrations and solicitations show that in America, but not Japan, symbolic solicitations related to toddler symbolic play, q contrast = 0.47, a large effect size.

Language-to-Language and Language-to-Play Interrelations

Our final analyses compared language-to-language and language-to-play associations for children and mothers in the two cultures. In both America and Japan, toddlers who produced more also comprehend more, rs = 0.44 and 0.45, Ps < 0.01, respectively. The magnitude of these associations is comparable to those of other studies assessing language links at this early period of development (e.g. Bates et al., 1988). Moreover, in both cultures mothers who made more referential statements toward the environment also asked more questions of their toddlers, rs = 0.57 and 0.69, Ps < 0.001, respectively.

In contrast to these cross-cultural consistencies within the language domain, patterns of language-to-play covariation differed somewhat in the two cultures. In American toddlers, not Japanese, children who showed more frequent symbolic play also had larger total receptive vocabularies,
r = 0.47, P < 0.01 for American toddlers and r = 0.12 for Japanese toddlers, q contrast = 0.39, a medium to large effect size. The language-play association found in the American sample is consistent with findings of others (Bretherton & Bates, 1984; Ungerer & Sigman, 1984; Vibbert & Bornstein, 1989). Finally, in both the United States and Japan mothers’ play and language were independent, Ps all greater than 0.10.

CONCLUSIONS

The present study compares toddler and mother language and play in America and Japan at the start of the second year. We found that these activities in mothers and toddlers are characterised by cultural similarities as well as cultural distinctions. Before discussing these findings, however, it is important to note that the samples studied were restricted in terms of their sociodemographic level, urban location, and educational history. For our purposes, this homogeneity across subjects controlled for potential confounding factors, because all families were from metropolitan areas, lived in comparable spaces, were well educated, and came from middle to upper-middle class households. However, these restrictions inherently limit the generalisability of findings; different results might obtain if families from other locales or other regions of the SES scale had been observed.

In both societies, variability in toddler language and play was generally associated with variability in maternal language and play stimulation. In addition, an apriori Guttman scaling of toddlers’ play levels was supported in both cultures by the finding of strong linear trends toward decreased frequency of play actions at increasing levels of play sophistication, even independent of mother. In contrast, mothers’ own play with toddlers, although also characterised by a general linear trend, showed a weaker tendency towards decreased play at higher levels of sophistication, and this tendency attenuated to nonsignificance when the linearity of toddler play was considered.

Provocative cultural differences were found in the language and play of American versus Japanese toddlers and mothers; however, assessments of toddler capabilities and mother stimulation did not “globally” favour one or the other culture. Instead, American toddlers tended to be more advanced in productive and receptive language, and American mothers tended to make more referential statements about the environment. In contrast, Japanese toddlers tended to exhibit more symbolic play, and Japanese mothers tended to demonstrate and solicit more pretence play from their toddlers where American mothers favoured nonsymbolic play.

Together, these cultural differences in developmental rate suggest that American and Japanese toddlers and mothers, at the onset of the second
year, tend to emphasise the two principal modes of representation and communication available to them differently. Consider the contrasts in language and their possible origins first. American dyads emphasised and excelled at language. In the toddlers, this is not a result without precedent. When standardising the Denver Developmental Screening Test in Tokyo, Ueda (1978, 1983) found that Japanese toddlers in the age range of this study consistently lagged behind American norms on imitating pronunciation, saying one word, saying three words (other than “papa” and “mama”), comprehending body part names, naming and labelling, as well as a number of other language-related items at older ages. Likewise, in a study comparing English, French, Swedish, and Japanese language-learning toddlers, Boysson-Bardies and Vihman (in press) found the relatively slowest lexical advance among the Japanese. They pointed to two potential sources of explanation for this effect. First, Japanese may be a more difficult language to learn; adult targets for early Japanese words were typically longer than those of the other three languages (Boysson-Bardies et al., 1991). For example, in America, 59% of target words were monosyllabic, and 54% of infant words were monosyllabic; in Japanese, 82% of adult target words were polysyllabic, and 76% of Japanese infant words were di- or trisyllabic (Vihman, 1991). Alternatively, Japanese childrearing may emphasise closeness and interdependency between dyad members and place less emphasis on verbal interaction, whereas American and European traditions of parenting are thought to encourage environmental interest and interpersonal independence and to be more information-oriented in their verbal interactions (e.g. Befu, 1986; Caudill, 1973; Chen & Miyake, 1986; Doi, 1973; Hess et al., 1986; Kojima, 1986; Miyake et al., 1985; Toda et al., 1990).

The present findings also suggest that dyads in these two cultures approach play in contrasting ways; that is, interactive play might serve different functions or have different meanings in the two. For Americans, the play session and the toys used during play were more frequently the topic or object of communication; in contrast, for Japanese, the play setting and associated toys often served to mediate dyadic communication and interaction. This functional contrast is reflected prominently in the differential use of specific levels of play by mothers in the two societies. Japanese mothers encouraged interactive (i.e. other-directed) pretence (e.g. “Feed the dolly”), whereas American mothers encouraged self-exploration at functional and combinatorial play levels (e.g. “Push the bus”) while making more referential statements about these objects. Only by looking at language and play together is it possible to detail these stylistic distinctions.

The present study assessed cultural differences in mothers’ activities while simultaneously considering children’s activities, and likewise
assessed differences in children’s activities after considering cultural differences between mothers. In some instances, cultural differences between children and between mothers maintained after covarying partner activity, whereas other societal differences were attenuated when partner contribution was considered. For example, the tendency of Japanese mothers to solicit more other-directed play than their American counterparts maintained after considering toddlers’ matched play, whereas differences between toddlers on other-directed play attenuated to nonsignificance after considering mothers’ play. These results highlight the importance of considering partner activity when seeking to elucidate cultural distinctions in mother and child activities. This analytic approach distinguishes cultural differences, which are independent of partner activity, from those which are mediated by partner action.

Finally, the present study contrasts patterns of covariation between language and play in toddlers in the United States and Japan. Researchers have long emphasised the common symbolic nature of flexible language and pretence play. In both, people, experiences, and actions can be symbolically depicted. The empirical coemergence of flexible language and pretence play at the start of the second year, as well as associations between rankings of individuals on language and play proficiency, have traditionally been regarded as evidence that a common cognitive component of representation underlies the two domains (see Bates, Bretherton, Shore, & McNew, 1983; Bretherton & Bates, 1984; McCall, 1979; McCune, 1985; McCune-Nicholich, 1981; Vibbert & Bornstein, 1989). Nonetheless, across studies, and as demonstrated here, the variance shared by play and language is still only moderate, leaving the majority of variance in one domain unexplained by performance in the other. We found a stronger language-play association for American toddlers than for Japanese toddlers; thus, data from the two cultures in this study differentially emphasised dependence and independence between these two symbol systems. Play and language are at times empirically and conceptually linked, but much remains unique to each. This suggests that a differentiated approach to language and to play that considers multiple components of each is called for (Bates et al., 1988; Tamis-LeMonda & Bornstein, 1990).

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REFERENCES


### APPENDIX

**Toddler Play Levels**

<table>
<thead>
<tr>
<th>Play level</th>
<th>Definition</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Unitary functional activity</td>
<td>Production of an effect that is unique to a single object</td>
<td>Throw or squeeze foam ball</td>
</tr>
<tr>
<td>2. Inappropriate combinatorial activity</td>
<td>Inappropriate juxtaposition of two or more objects</td>
<td>Put ball in vehicle</td>
</tr>
<tr>
<td>3. Appropriate combinatorial activity</td>
<td>Appropriate juxtaposition of two or more objects</td>
<td>Put lid on teapot</td>
</tr>
<tr>
<td>4. Transitional play</td>
<td>Approximation of pretence but without confirmatory evidence</td>
<td>Put telephone receiver to ear</td>
</tr>
<tr>
<td>5. Self-directed pretence</td>
<td>Clear pretence activity directed toward self</td>
<td>Eat from spoon or cup</td>
</tr>
<tr>
<td>6. Other-directed pretence</td>
<td>Clear pretence activity directed towards other</td>
<td>Kiss or hug doll</td>
</tr>
<tr>
<td>7. Sequential pretence</td>
<td>Linking of two or more pretence actions</td>
<td>Dial telephone and speak into receiver</td>
</tr>
<tr>
<td>8. Substitution pretence</td>
<td>Pretence activity involving one or more object substitutions</td>
<td>Pretend block is telephone and talk</td>
</tr>
</tbody>
</table>