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Mother and Infant Activity and Interaction in Japan and in the United States: I. A Comparative Macroanalysis of Naturalistic Exchanges

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It is widely held that Japanese and U.S. Americans differ in prominent aspects of their psychological make-ups, and that experiences of early life may be responsible for certain social and intellectual distinctions between members of these two cultures. To compare and contrast activities and interactions of Japanese and American mothers and their 5-month-old infants, 48 mother-infant dyads, half in Tokyo and half in New York City, were observed in the natural setting of their homes. This report examines mothers visual and verbal stimulation of infants and infants visual and tactual exploration and vocalisation from a macroanalytic viewpoint. First, similarities and differences among Japanese and American infants and

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mothers on these activities are assessed. Next, covariation among infants activities and among mothers activities within each culture is evaluated, and resultant patterns of covariation between the two cultures are compared. Finally, correspondence between mothers and infants activities in each culture is analysed, and patterns of interactions between the two cultures are compared. Two issues are discussed. First considered are the identification and description of activities, interactions, and developmental processes that are similar and different in these two cultures, and second considered are cross-cultural tests of developmental issues related to covariation and correspondence of activity in mother–infant dyads.

INTRODUCTION

These studies document and compare activities and interactions among Japanese and U.S. American infants and mothers from macroanalytic and microanalytic perspectives. Social scientists and lay observers have long commented on striking similarities and conspicuous differences in the psychological make-ups of Japanese and Americans. Contemporary Japan and America are similar in terms of industrial level, educational attainment, and living standards. The two cultures share many of the same child-centred goals, notably educational achievement and economic security. However, the two also differ considerably in terms of history, sociology, and culture. America is ethnically heterogeneous, and Americans are often characterised as self-assertive and future oriented, whereas Japan is ethnically homogeneous, and Japanese are commonly pictured as group oriented and traditional. On this basis, the two societies have established radically different expectations of their peoples. Notably, Japanese and Americans are thought to differ markedly in the child-rearing styles they employ to attain central cultural goals. By comparing Japan with America, therefore, two very different styles of child-rearing can be contrasted while minimising socioeconomic and educational differences (for further rationales, see Azuma, 1986; Befu, 1986; Benedict, 1974; Bornstein, 1986, 1989; Caudill, 1973; Fogel, Toda, & Kawai, 1988; Gallimore, 1981; Kojima, 1986; Reischauer, 1977; Stevenson, Azuma, & Hakuta, 1986; Tsunoda, 1985; Weisz, Rothbaum, & Blackburn, 1984).

Many social theorists in the traditions of anthropology (e.g. Bateson & Mead, 1942; Benedict, 1974; Naroll, 1970; Wallace, 1967) and psychoanalysis (e.g. Brody, 1956; Doi, 1973; Kardiner, 1939; Murray, 1938), as well as in psychology and learning theory (e.g. Miller & Dollard, 1941; Whiting & Child, 1953), have contended that the family generally, and the mother–infant relationship specifically, not only play important parts in the development of the individual but may be essential to evolving aspects of cultural style (Ainsworth, 1967; Minturn & Lambert, 1964; Super, 1981; Whiting, 1963). That is, the home environment is thought to
project the larger culture in terms of values, beliefs, and customs (e.g. Barnouw, 1963; Benedict, 1938; Mead, 1935; Murray, 1938; Spindler, 1974). As a result, studies of infancy and mother–infant interaction have often been undertaken in attempts to address questions about the origins and development of cultural identity. Of course, each society has evolved patterns of child-rearing adapted to its setting and needs (for discussions of the “Goodness of Fit” model of social interaction as applied to development in the context of culture, see, for example, deVries & Sameroff, 1984, Lerner, 1989; Lerner & Lerner, 1983; Super & Harkness, 1986).

Cross-cultural developmental comparisons of the type pursued in this paper, and the one accompanying it, are commonly acknowledged to be of value for many reasons (see Bornstein, 1980, 1989; Brislin, 1983; Super, 1981; Whiting, 1981). The present study was designed with two specific goals in mind. One prominent objective was descriptive. There exists presently a dearth of comparative information about circumstances surrounding early child development in Japan, especially in comparison with Western societies like the United States. Although studies of behavioural similarities and differences in Japanese and American infants and mothers were initiated more than 20 years ago, only a handful of comparisons can be found in the literature, and much of the available research lacks consensus. Specifically, four modern observational studies of Japanese and American mothers and babies interacting for extended periods in the natural setting of the home predate ours (Caudill & Weinstein, 1969; Otaki, Durrett, Richards, Nyquist, & Pennebaker, 1986; Sengoku, Davitz, & Davitz, 1982 (Note 2); Shand & Kosawa, 1985a, 1985b). General agreement exists among the four about maternal care-taking activities geared to meet infants physical and biological needs (e.g. Japanese and American mothers nourish, clean, and dress their infants comparably). However, the four as a group report results at variance with one another with respect to many more “discretionary” maternal activities and many infant behaviours (e.g. mothers stimulation of infants, and infants exploratory activities). Hess and his colleagues (1986) have also suggested that, based on cultural expectations, discretionary activities of mothers in the two societies may differ. As a consequence, there have been persistent calls for renewed efforts toward obtaining fresh and expanded observational data comparing infant and mother activities and interactions in Japan and the United States (e.g. Chen & Miyake, 1986). The present study was designed to address this need by identifying, describing, and comparing mother and infant discretionary activities and interactions in Japan and America.

Beyond nurturing, mother and infant activities in the middle of the first year of life feature physical and verbal emotional exchange and cognitive stimulation (e.g. Bornstein, 1988; Stern, 1977). Our study evaluated these behaviours as they are differentiated in two prominent types of interaction.
that occur between mothers and infants. Social interactions revolve within the dyad. They encompass, for mother, physical and verbal strategies whose aim is to engage the infant interpersonally (e.g. rocking, kissing, similing, vocalising, and non-object-oriented play). For the infant, they reflect a corresponding centre of attention on mother. Many published studies of mother–infant interaction (including cross-cultural ones) have focused on social activities, paying relatively less attention to the ways in which mothers and infants incorporate the world outside the dyad into their everyday exchanges. Didactic interactions turn outward from such an interpersonal focus. For mother, they comprise physical and verbal strategies whose intent is to stimulate the infant to engage the environment (e.g. encouraging attention to properties, objects, or events in the immediate surround, and providing opportunities to observe, to imitate, and to learn). For the infant, they reflect a corresponding centre of attention on the surroundings.

Of course interactive activities of mothers and infants are intricate and intermeshed, so that social and didactic modes of engagement do not occur in isolation from one another or from other maternal activities. Yet it is possible and has proved heuristically valuable to distinguish the two (e.g. Belsky, Gilstrap, & Rovine, 1984; Bornstein, 1988; Bornstein & Tamis-LeMonda, 1990; Brown, 1977; Penman, Cross, Milgrom-Friedman, & Meares, 1983; Snow, 1977). For example, recent investigation indicates that these discretionary activities on the part of parents possess moderate predictive validity for children’s cognitive development (e.g. Bee et al., 1982; Bradley & Caldwell, 1984; Carew, 1980; Gottfried, 1984; Olson, Bates, & Bayles, 1984). In previous research in Japan and America, we have found that mothers who more often encourage their infants didactically have children who later excel in verbal proficiency, representational competence, and intelligence test performance. We have also found that children who, as infants, vocalise non-distress more, or explore their environment more by looking or by touching, score higher on standardised tests of intelligence in childhood. In these assessments, mothers didactic interactions with their infants predicted children’s cognitive performance, even when stability of the children themselves from infancy and the later contributions of mothers were taken into account (e.g. Bornstein, 1985; Bornstein, Miyake, & Tamis-LeMonda, 1985–1986; Tamis-LeMonda & Bornstein, 1989).

In addition to its descriptive purpose, the present study had a second goal of providing a cross-cultural test of two contemporary theoretical issues in the developmental literature. One issue concerns consistency thought to underlie different parenting activities, and the other issue concerns consistency in the status of conceptually related parent and infant
activities. Classical authorities, including notably psychoanalysts and ethologists, have often conceptualised maternal behaviour as a more or less unitary construct—called "good", "sensitive", or "warm"—despite the dynamic range of activities mothers naturally engage in with their infants (e.g. Ainsworth, Blehar, Waters, & Wall, 1978; Brody, 1956; Brody & Axelrad, 1978; Rohner, 1985; Schaefer, 1959; Symonds, 1939; see Hunt, 1979; Wachs & Gruen, 1982). Analysis of covariation among maternal activities can be used to test the validity of this conceptualisation, and cross-cultural comparison can be used to test its generality.

An assumption often associated with this monistic view of parenting is that the overall level of parental stimulation affects the child's overall level of development (see Maccoby & Martin, 1983). This position has been challenged by a more differentiated one that favours specificity in mother-infant interaction (e.g. Bornstein, 1988; Hunt, 1979; Wachs & Gruen, 1982). Analysis of correspondence between mother and infant activities can be used to test the validity of consistency between specific mother and infant activities, and cross-cultural comparison can be used to test the generality of this proposition.

Previous empirical research in the U.S. and U.K. has found that few maternal (or infant) activities covary, but that, in interaction, conceptually similar mother and infant activities appear to correspond (e.g. Bornstein & Tamis-LeMonda, 1990; Dunn & Richards, 1977). Do these findings generalise to Oriental mother-infant dyads? Observations in the present study were designed to address this debate.

Our study follows in the tradition of longer home-based observations of Japanese and American families (e.g. Caudill & Weinstein, 1969; Otaki et al., 1986; Sengoku et al., 1982 (Note 2); Shand & Kosawa, 1985a, 1985b). In Tokyo and in New York City, the first and fourth largest metropolitan areas in the world respectively, we observed dyads of 5-month-old infants and their mothers interacting as they normally do in the natural setting of the home. Our study focused on the middle infancy period because of the intentionality and flexibility in behavioural organisation that infants demonstrate at this time (Emde, Gaensbauer, & Harmon, 1976; Wolff, 1984). By 6 months of age, the baby's scope of apperception includes both the dyad and the environment, and babies often also share the lead in turn-taking exchanges (Belsky et al., 1984; Bornstein & Tamis-LeMonda, 1990; Cohn & Tronick, 1987; Kaye & Fogel, 1980). The codes used to quantify observations of these activities, as well as the conduct of the observations, were extensively pretested and were found to transfer readily between the two cultural settings. In this study, we report the results of a macroanalytic approach to comparing exchanges in Japanese and American mothers and infants. In the accompanying study (Bornstein, Toda, Azuma, Tamis-
LeMonda, & Ogino, 1990), we report the results of a comparative micro-analytic assessment focused on selected types of mother–infant exchanges.

**METHOD**

**Sample**

Forty-eight primiparous mothers and their 5-month-old infants, recruited from patient populations of private obstetric and paediatric groups in Tokyo and in New York City, were observed interacting at home; 24 dyads were native Oriental Japanese, and 24 were Caucasian U.S. Americans. All infants were term at birth and healthy at the time of the study. The two samples were balanced for sex of baby and came from comparable middle- to upper-middle-class households. Babies in the Japanese and in the American samples were the same age at the time of the home visits, $M_s = 163$ and 165 days, and their mothers were the same age, $M_s = 29$ and 30 years, and had similar educational histories, $M$ numbers of years post high school $= 3.3$ and 4.6.

**Home Observation Procedure**

Home observations were conducted identically in the two cultures, using procedures similar to those we have employed previously. Briefly, mothers were asked to behave in their usual manner and to disregard the observer’s presence insofar as possible; beside the observer, only mother and baby were present in the home; and observations took place at times of the day that were optimal in terms of individual babies being in awake and alert states (see Bornstein, 1985; Bornstein & Tamis-LeMonda, 1990; Vibbert & Bornstein, 1989). Our goal in this study was to observe mothers and infants under the most natural and unobtrusive conditions possible, and to standardise the context of data collection beyond what naturally occurred in the home. After a period of acclimation, mothers and infants were videotaped for 45 minutes. A single female observer, always a native of the country, visited the home to videotape.

It has been suggested that factors external to child-rearing style *per se* may play a part in conditioning activities of mothers with their infants. For example, Japanese are reputedly unaccustomed to entertaining strangers at home, and living quarters in Japan are very small (see Chen & Miyake, 1986). In this respect, however, a Tokyo–New York City comparison is especially apt. For example, New Yorkers are normally also wary of inviting strangers into their homes. Importantly, both sets of mothers volunteered participation, and both expressed cordiality toward observers. Moreover, families in both cities lived in small one-floor apartments in
multi-storey buildings. These factors tend to diminish the possibility that differential reactivity on the part of mothers, or structural differences in their dwellings, systematically affected the observations.

Data Reduction

Five infant activities, four maternal activities, and one joint activity were coded from videotapes. Three of the five infant activities consisted in exploration: visual attention to a property, object, or event in the environment (didactic) or to mother (social), and touching an object. The other two infant activities consisted in non-distress and distress vocalisation. Of the four maternal activities, two consisted in mothers active environment-oriented (didactic) or mother-oriented (social) stimulation of infant attention by physical or verbal means. The two other codes assessed whether a mother passively stimulated her infant by providing unmediated opportunities for the baby to visually or tactually explore age-appropriate objects in the immediate environment. The final code assessed a joint activity of mothers and infants, face-to-face regard.

From the 45 minutes, intervals of 60 seconds were used for coding (Seitz, 1988), in which 30 seconds of observation were followed by 30 seconds of recording. The bounds of each interval were signalled to the coder by an automatic timer. At the beginning of each observation period, the coder noted the infant’s state (modified from Brazelton, 1973). Both Japanese and American infants were judged to be in states of quiet or active alert in equivalent and high (94%) numbers of intervals in the observation period.

A trained native Japanese who was fluent in English coded videotapes of both the Japanese and American samples. The coder was blind to issues and hypotheses concerning cultural and developmental similarities and differences between Japanese and Americans. A highly experienced native American independently coded 25% of the sessions (half Japanese and half American). On the ten categories of mother and infant activity and infant state, coders achieved and maintained an average reliability of $r = 0.84$ or 86% agreement for matched observation intervals (Gelfand & Hartman, 1975).

Frequencies of all mother and infant activities were obtained, consisting in the number of observation intervals (out of 45) in which each activity occurred. Before any statistical appraisal, univariate data were inspected in box plots, and bivariate relations were examined in scatter plots (Tukey, 1977). We identified five outlying data points (one mother on didactic and two on social stimulation, one infant on distress vocalisation, and one dyad on mutual regard); these data were deleted from relevant analyses. Neither infant status (birth weight or length at birth) nor maternal status (age or educational level) was systematically related to any of the infant or
maternal activities; moreover, the same general relations held for boys and girls alike. Therefore, our analyses collapsed across these factors. Inspection of bivariate distributions also showed that pairs of mother, infant, and mother–infant activities were not associated in any systematic non-linear fashion. Differences between correlation coefficients in the two cultures were significance tested using Cohen’s (1977, pp. 110 ff.) Effect size index, $q$. Effect size is a metric of the detectability of difference in magnitude between population $r_s$, and provides a frame of reference in which to appraise differences in the degree of correlation.

RESULTS

The results of this macroanalytic study are organised around three kinds of comparisons between the Japanese and U.S. American infants and mothers. First, comparisons of infant and mother activities in and between the two cultures are made. These comparisons meet the descriptive goal of the study. Second, analyses of covariation among infants activities and among mothers activities in each culture, as well as comparisons of covariation between the two cultures are presented. Finally, analyses of correspondence between mother and infant activities in each culture, as well as comparison of correspondences between the two cultures, are examined. The last two sets of comparisons meet the second goal of the study, namely the cross-cultural tests of covariation and correspondence.

Descriptive Comparisons

Table 1 presents descriptive statistics for activities in the two samples. Macroanalysis indicates that Japanese and American infants explore and vocalise at different rates, whereas mothers stimulate babies at the same rates and gear their interactions toward roughly similar goals. To facilitate comparison, the following descriptions convert frequencies of activity rates to percentages.

Infants. Comparisons of infants activities appear in Section A of Table 1. Frequencies of the five infant activities in the two cultures were submitted to a multivariate analysis of variance (MANOVA), which yielded a significant main effect, $F(5,41) = 6.01$, $P < 0.001$. Further pairwise comparisons between cultures showed that American infants explored didactically and socially in significantly more intervals in the observation period than Japanese infants (see Table 1). Infants of both nationalities engaged in didactic exploration in proportionally more intervals than in social exploration (49% versus 22% of intervals for Japanese and 61% versus 36% for Americans, $t_s = 5.99$ and 4.56, $Ps < 0.001$, respectively).
American infants also tended to explore objects tactualy during more intervals than Japanese infants (47% versus 39%, respectively).

Japanese and American babies vocalised in equivalent numbers of intervals, approximately 50%. (American infants vocalised non-distress more than distress, \( t = 6.67, P < 0.001 \).) However, the two forms of vocalisation were distributed differently between cultures: American infants vocalised non-distress more than Japanese infants (39% versus 32%), whereas Japanese infants tended to vocalise distress more than American infants (22% versus 13%).

Analyses comparing the variances associated with each infant activity between the two cultures \( (F_{\text{max}}) \) showed homogeneity on all variables, except distress vocalisation. The variance in negative expressions among Japanese babies significantly exceeded the variance observed among American babies.

**Mothers.** Comparisons of mothers activities appear in Section B of Table 1. The MANOVA between the two cultures among the four maternal activities was not significant. Japanese and American mothers stimu-
lated their 5-month-old infants attention in equal numbers of intervals of the observation period. Mothers in Japan and in America stimulated their 5-month-olds didactically (28% and 33%) in more intervals than they did socially (15% and 13%), ts = 3.05 and 4.73, Ps < 0.01, respectively. The relative foci of maternal stimulation in these nationalities were also similar; when they did actively stimulate their infants, Tokyo mothers did so in a ratio of 65 : 35 didactic : social, and American mothers did so in a ratio of 72 : 28 didactic : social. Japanese and American mothers also provided their infants with passive opportunities for visual and tactual exploration of the environment in equivalent numbers of intervals (on average in 44% and 35%, respectively).

Analyses comparing the variances associated with each maternal activity between the two cultures (F_{max}) showed homogeneity on all variables, except mothers encouraging infants to attend to the mothers themselves. Here the variance for Japanese mothers significantly exceeded that for American mothers. (Interobserver reliability was lowest on this variable.)

**Joint.** As shown in Section C of Table 1. American mother–infant pairs engaged in face-to-face regard in nearly twice as many intervals as did Japanese dyads (32% versus 17%, respectively). Mutual regard showed homogeneity of variance between the two cultures.

**Covariation of Activities in Infants and in Mothers**

Table 2 shows that in Japan and in the United States only a minority of infants activities or of mothers activities positively covaried. That is, infants who do more of one activity do not necessarily or automatically do more of others, just as mothers who do more of one activity do not necessarily or automatically do more of others. Nevertheless, the degree of relatedness among activities sometimes varied between the two societies.

**Infants.** Covariation estimates for infants activities in the two cultures are shown in Section A of Table 2. Less than one-quarter of infant activities positively interrelated; most notably, infants attending didactically and socially, and infants vocalising non-distress and distress, were unrelated or negatively related in each of the two societies.

Infants in the two cultures showed several similarities in coherence of behaviour patterns. Infants looking at their mothers was negatively related to their tactual exploration of the environment. Moreover, infants vocalising distress was unrelated to their visually or tactually exploring the environment, attending to mother, or engaging in mutual regard, just as their vocalising non-distress was unrelated to their tactually exploring. Finally, as expected, mother–infant mutual regard in both societies tended
### TABLE 2
Covariation of Activities: Japanese and American Infants and Japanese and American Mothers

<table>
<thead>
<tr>
<th>Didactic</th>
<th>Didactic</th>
<th>Social</th>
<th>Social</th>
<th>Tactual</th>
<th>Tactual</th>
<th>Vocalisation Non-distress</th>
<th>Vocalisation Distress</th>
<th>Mutual regard</th>
</tr>
</thead>
</table>

#### A. Infants activities

<table>
<thead>
<tr>
<th>Exploration Didactic</th>
<th>Social</th>
<th>Tactual</th>
<th>Vocalisation Non-distress</th>
<th>Vocalisation Distress</th>
<th>Mutual regard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Didactic</td>
<td>-0.21</td>
<td>-0.34*</td>
<td>-0.25</td>
<td>-0.34*</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tactual</td>
<td>0.14</td>
<td>MES</td>
<td>0.52**</td>
<td>-0.25</td>
<td></td>
</tr>
</tbody>
</table>

#### B. Mothers activities

<table>
<thead>
<tr>
<th>Active stimulation Didactic</th>
<th>Social</th>
<th>Passive opportunity Visual</th>
<th>Tactual</th>
<th>Mutual regard</th>
</tr>
</thead>
<tbody>
<tr>
<td>J</td>
<td>A</td>
<td>J</td>
<td>A</td>
<td>J</td>
</tr>
</tbody>
</table>

#### Notes

- $J = $ Japanese; $A = $ American
- Cohen's (1977) Effect size index: MES = Medium effect size; LES = Large effect size
- $^*P \leq 0.05; ^{**}P \leq 0.01; ^{***}P \leq 0.001$
to relate negatively to infants exploring the environment (visually or tactually), but positively to infants looking at their mothers.

For other infant activities patterns of covariation differed between the two societies. Infants attending to the environment and their vocalising non-distress related to one another positively in Americans but negatively in Japanese, $q = 0.85$, $P < 0.01$; and, attending to mother related positively to non-distress vocalising in Japanese infants, whereas the two were unrelated in American infants, $q = 0.43$, $P < 0.10$. Infant non-distress vocalising related positively to mother–infant mutual regard in Japanese dyads, whereas the two were unrelated in American dyads, $q = 0.40$, $P < 0.10$. Among American more than Japanese infants, by contrast, visual and tactual exploration of the environment related positively to one another, $q = 0.44$, $P < 0.10$.

**Mothers.** Covariance estimates for mothers’ activities are shown in Section B of Table 2. Only about one-fifth of maternal activities positively interrelated. Most notably, among both Japanese and Americans, mothers didactic and social styles of stimulating their infants were independent.

In both cultures, mothers making visual and tactual opportunities to explore available to their infants strongly covaried. As expected, moreover, in both cultures mothers who tended to stimulate their infants attention to themselves also engaged in more face-to-face regard with their infants. For Japanese and American mothers, didactic stimulation was unrelated to mother–infant mutual regard.

Several cultural differences in patterns of activity interrelations in mothers also emerged. Patterns of relations for active versus passive stimulation differed between Japanese and American mothers. Among Japanese mothers didactic stimulation tended to relate negatively to mothers providing their infants passive opportunities to explore visually, whereas among American mothers the two activities were unrelated, $q = 0.50$, $P < 0.10$. By contrast, among American mothers social stimulation related negatively to providing infants passive opportunities to explore visually and tactually, whereas among Japanese mothers the two kinds of activities were unrelated, $qs = 0.56$ and $0.63$, $Ps < 0.05$, respectively. Finally, American mothers looking face-to-face with their babies related negatively to their making visual opportunities to explore the environment available to their infants, whereas these modes of interaction were unrelated among Japanese mothers, $q = 0.46$, $P < 0.05$.

**Correspondence in Interaction between Mothers and Infants**

The third set of analyses assessed whether activities of mothers and infants were coordinated in Japanese and in American dyads. In both cultural settings, a pattern of corresponding relations between mothers and infants
emerged, suggesting a noteworthy specificity of interaction between partners in terms of their mutual organisation of attention. Table 3 shows this pattern of correspondences between the frequency and locus of maternal active and passive stimulation and the frequency and locus of infant exploration. Among both Japanese and American dyads, more frequent maternal didactic encouragement was strongly associated with more frequent infant didactic exploration, and more frequent maternal social encouragement tended to be associated with more frequent infant social exploration. This correspondence is perhaps best illustrated by the substantial associations between mothers proportional emphasis on didactic versus social foci of interaction and infants proportional emphasis on didactic versus social foci of exploration: among Japanese, $r = 0.57$, $P < 0.01$, and among Americans, $r = 0.55$, $P < 0.01$. Specificity in these mother–infant relations is further underscored by the lack of association in both societies between non-corresponding activities, that is the absence of any relation between mothers social stimulation and infants exploration of the environment, and mothers didactic stimulation and infants looking at their mothers.

One other mother–infant relation showed similarity in the two societies. Mothers in both Japan and the United States who more often gave their infants unmediated opportunities to explore the environment visually and tactualy (not unexpectedly) had infants who explored more often tactually.

Against this coherence of comparative results with regard to mothers and infants stand some equally noteworthy cultural differences. Among American dyads, mothers who provided their babies with opportunities to explore visually or tactualy more had babies who visually explored the environment more, whereas the two activities were unrelated among Japanese dyads, $q_s = 0.41$ and $0.40$, $P_s < 0.10$. These American babies also looked at their mothers less than Japanese babies looked at theirs, $q = 0.53$, $P < 0.05$. Such differences cannot be explained by variation in amounts of passive opportunity provided to babies in the two cultures, since no cultural difference in this maternal behaviour was found. Neither can they be explained by babies in the two cultures being left on their own different amounts of time, since ancillary analysis showed that mothers were within view of their babies equally often in Tokyo and New York City.

Among American, but not Japanese, dyads mothers didactically stimulating their infants related positively to infants exploring tactualy, $q = 0.57$, $P < 0.05$. Social stimulation by mothers and tactual exploration by infants were negatively related among American dyads, but the two were unrelated among Japanese, $q = 0.52$, $P < 0.05$.

In general, no consistent associations emerged between maternal stimulation of attention and infant vocalisation in either society. However,
### TABLE 3
Correspondence of Activities: Japanese Mothers and Infants and American Mothers and Infants

<table>
<thead>
<tr>
<th>Mothers stimulation of exploration</th>
<th>Didactic</th>
<th>Active</th>
<th>Social</th>
<th>Passive</th>
<th>Visual</th>
<th>Tactual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants exploration</td>
<td>J</td>
<td>A</td>
<td>J</td>
<td>A</td>
<td>J</td>
<td>A</td>
</tr>
<tr>
<td>Didactic</td>
<td>0.79***</td>
<td>-0.12</td>
<td>0.32</td>
<td>0.11</td>
<td>0.06</td>
<td>-0.47**</td>
</tr>
<tr>
<td>Active</td>
<td>0.34*</td>
<td>-0.07</td>
<td>-0.16</td>
<td>0.35</td>
<td>-0.03</td>
<td>0.34*</td>
</tr>
<tr>
<td>Social</td>
<td>-0.27</td>
<td>-0.21</td>
<td>-0.50**</td>
<td>LES</td>
<td>LES</td>
<td>0.49**</td>
</tr>
<tr>
<td>Passive</td>
<td>0.07</td>
<td>0.49**</td>
<td>-0.43**</td>
<td>LES</td>
<td>LES</td>
<td>0.54**</td>
</tr>
<tr>
<td>Visual</td>
<td>0.34*</td>
<td>-0.16</td>
<td>-0.50**</td>
<td>LES</td>
<td>LES</td>
<td>0.46**</td>
</tr>
<tr>
<td>Tactual</td>
<td>0.39*</td>
<td>-0.03</td>
<td>0.54**</td>
<td>LES</td>
<td>LES</td>
<td>0.54**</td>
</tr>
</tbody>
</table>

*J = Japanese; A = American 
Cohen’s (1977) Effect size index: MES = Medium effect size; LES = Large effect size

\*_{P < 0.05}; **_{P < 0.01}; ***_{P < 0.001}
Japanese dyads showed a complex differential relation between maternal stimulation and infant vocalisation. Mothers stimulating their infants attention to themselves related positively to infants vocalising non-distress, \( r = 0.35, P < 0.05 \), whereas mothers stimulating to the environment related negatively to infants non-distress vocalising, \( r = -0.45, P < 0.05, q = 0.85, P < 0.01 \).

Of course, concurrent correlations between mothers and infants activities do not imply causation. They indicate only that there was correspondence during the period of the observation in the frequencies of intervals in which particular activities of the two partners in the dyad occurred. In the accompanying report, we provide an order analysis of mother–infant activity in these two samples (Bornstein et al., 1990). Nonetheless, covariation does point to a kind of mutual attunement in dyads in both countries, and to bases for other developmental processes.

DISCUSSION

The results of this cross-cultural study of mother and infant activities and interactions in Japanese and U.S. Americans point to several areas of similarity and of difference in behaviour. In this discussion, we highlight and elaborate salient examples of each.

Consider first, prominent differences in the activities of mothers and infants in these two cultures. This study showed that American and Japanese babies differed from one another more than did their mothers. (Fogel and co-workers, 1988, also found similarities in activities among mothers and differences among babies in a brief, laboratory-based observation.) More specifically, American babies explored and vocalised positively more than Japanese babies, and Japanese babies tended to vocalise negatively more than American babies. These results confirm other reports that American babies tend to be more active than Japanese babies in terms of motor behaviour, exploratory play, and positive vocalisation (e.g. Caudill & Weinstein, 1969; Otaki et al., 1986; Sengoku et al., 1982 (Note 2), and that Japanese babies may be more negative or irritable than American babies (e.g. Miyake, Chen, & Campos, 1985; Ohyama, Murai, & Nihei, 1982) (Note 1). The findings raise inevitable questions about the origins of such differences in the genetics of temperament versus very early mother–infant interaction, questions that are not resolvable here.

It is widely believed that traditional Japanese mothers organise their interactions with infants so as to consolidate and strengthen the mother–infant bond, and that American mothers organise their interactions so as to foster physical and verbal independence in their infants (Befu, 1986; Caudill, 1973; Chen & Miyake, 1986; Doi, 1973; Hess et al., 1986; Kojima, 1986; Morsbach, 1980). However, we found only mixed support for these
cultural stereotypes in this macroanalysis of everyday activities of Japanese and American mothers. On the one hand we found that among the Japanese, mothers who more often engaged in social activities had babies who vocalised positively more often, and mothers who more often encouraged their infants didactically had infants who vocalised less often, whereas among the Americans, infants positive vocalisation tended to relate to their environmental exploration. This pattern suggests the possible hypothesis that, by 5 months, vocalisation in the infant is beginning to function according to the different interactional versus referential demands thought to typify each society (Penman et al., 1983). On the other hand we found that mothers in the two societies did not systematically differ in expected ways in terms of their engaging in social activities. Indeed, we were surprised to find that during the observation American mothers and infants actually engaged in more mutual regard than did Japanese mothers and infants.

It is possible that cultural differences are waning with the modernisation, urbanisation, and Westernisation of Japan. In a previous study we found that mothers in Sapporo, on the island of Hokkaido in the far north of Japan, stimulated their infants to the environment significantly less than did New York City mothers (Bornstein et al., 1985–1986). In the current comparison between Tokyo and New York City mothers there were no group differences. It may be that a developmentally earlier and stronger orientation to the environment characterises the more modern, urban, and Western mother, and that mothers in Tokyo are becoming more like those in the West. These findings would be consonant with those of Hess et al. (1986), who some time ago documented lesser expectations on the part of Japanese parents for their children’s motoric and verbal achievement. Another possibility is that residual cultural differences may be found at a different level of analysis (see Bornstein et al., 1990).

Our data also point to some significant similarities between Japanese and American babies and mothers, and these findings submit to cross-cultural evaluation the universality versus distinctiveness of at least two important developmental processes. Results of the present comparative study replicate and extend prior research in the U.S. that demonstrates the independence of activity patterns in babies and mothers on the one hand and selected correspondences between them on the other. First, against arguments that maternal behaviours align themselves along one or a small number of correlated dimensions (e.g. Ainsworth et al., 1978; Brody, 1956; Rohner, 1985; Schaefer, 1959; Symonds, 1939), these data suggest that lack of covariation among maternal activities may be more common. Dunn and Richards (1977) in the U.K. likewise reported independence across a diverse array of activities of new mothers towards their neonates. The finding of independence among maternal activities in such disparate
cultural settings as Japan, the U.S., and England casts into doubt a unitary or monistic view of parenting as being, for example, uniformly "sensitive". Although some of their activities may covary, mothers (and infants alike) appear more typically to engage in patterns of individualised and differentiated behaving.

The second similarity concerns the targets of engagement in mothers and foci of exploration in their infants. These related to one another systematically in both these societies, as predicted by a specificity model of interaction (e.g. Bornstein, 1988; Hunt, 1979; Wachs & Gruen, 1982). Despite stylistic distinctions (evident in individual differences), mothers and infants in Japan and in the United States appear generally to synchronise their activities in ways appropriate to their infants development. The fact that individual and interactive patterns found in one culture function analogously in a considerably different culture argues for their potential generality.

Cross-cultural developmental research has many goals. One is descriptive, an example of which is to inventory and compare similarities and differences among peoples in different lands. A second is hypothesis testing, an example of which is to assess the universality of psychosocial principles. The present study addressed both these aims. Given similarities and differences noted between the contrasting cultures of Japan and America, it will be rewarding in future research to trace the predictive validity and differential developmental course of prominent mother and infant activities already emerging in the first year of life.

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REFERENCE NOTES
